AV7000

PRODUCT REFERENCE GUIDE

Linear CAMERA

DATALOGIC

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Software Version - This manual refers to software version 4.8.0 and later.

Patents

This product is covered by one or more of the following patents: Utility patents: EP1281271B1, EP2126781B1, EP2281264B1, EP2517148B1, EP2649555B1, EP2798573, FR2909442B1, GB2444409B, IT1403978, JP4571258B2, JP5154574B2, US6616039, US6628445, US6856440, US7385743, US7453614, US7548274, US8004604, US8308070, US8360318, US8888003, US8915443, US9088683, US9230142, US9247218, US9298959, US9589165, US9785817, US9798948, US9818197, US9870498, USRE44005, ZL200680056899.2, ZL200980163411.X, ZL201080071124.9, ZL201280008935.3

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PREFACE

ABOUT THIS MANUAL

This Product Reference Guide (PRG) is provided for users seeking advanced technical information, including connection, programming, maintenance and specifications. The Quick Reference Guide (QRG) and other publications associated with this product can be downloaded free of charge from the Datalogic website listed on the back cover of this manual.

MANUAL CONVENTIONS

The following conventions are used in this document: This symbols listed below are used in the manual to notify the reader of key issues or procedures that must be observed when using the camera.

This symbol draws attention to details or procedures that may be useful in improving, maintaining, or enhancing the performance of the hardware or software being discussed.

This symbol identifies a hazard or procedure that, if incorrectly performed, could cause personal injury or result in equipment damage. It is also used to bring the user's attention to details that are considered IMPORTANT.

This symbol alerts the user they are about to perform an action involving, either a dangerous level of voltage, or to warn against an action that could result in damage to devices or electrical shock.

This symbol alerts the user they are about to perform an action involving possible exposure to laser light radiation.

This symbol identifies a procedure that requires you take measures to prevent Electrostatic Discharge (ESD) e.g., use an ESD wrist strap. Circuit boards are most at risk. Please follow ESD procedures.

SUPPORT THROUGH THE WEBSITE

Datalogic provides several services as well as technical support through its website. Log on to **www.datalogic.com.**

For quick access, from the home page click on the search icon , and type in the name of the product you're looking for. This allows you access to download Data Sheets, Manuals, Software & Utilities, and Drawings.

Hover over the Support & Service menu for access to Services and Technical Support.

REFERENCE DOCUMENTATION

The documentation related to the AV7000 camera system management is listed below:

- S60 Series Instruction Manual
- AS1 Series Instruction Manual
- DM3610 Reference Manual
- LCC 75XX Light Curtain Instruction Manual
- DK501 Distance Kit Instruction Manual
- PGD100 Non-Contact Speed Detector Installation Manual
- PWR-480B Installation Manual

WARRANTY

The warranty period for this product is 24 months. See General Terms and Conditions of Sales at www.datalogic.com for further details.

COMPLIANCE

Electrical Safety

This product conforms to the applicable requirements contained in the European Standard for electrical safety EN-60950 at the date of manufacture.

LED Safety

These camera barcode readers include illumination that use high powered light emitting diodes (LEDs).

Red Light Illuminations

RISK GROUP EXEMPT LED emission according to EN 62471.

Avoid staring at the LEDs as one would with any very strong light source, such as the sun. A safety device is included that switches the LED illumination to low power mode if the conveyor stops or the trigger cycles cease.

White Light Illuminations

RISK GROUP 2 LED emission according to EN 62471.

Disconnect the power supply when opening the device during maintenance or installation to avoid exposure to hazardous LED light. The LED can be switched on or off through a software command.

Warning and Serial Labels

WARNING

Disconnect the power supply when installing the device or during maintenance to avoid unintentional exposure to LED light. Avoid starting at the LEDs as one would with any very strong light source, such as the sun. There are no user-serviceable parts inside the reader. Service should only be performed by Datalogic trained and certified technicians.

Power Supply

This product is intended to be installed by **Qualified Personnel** only.

This product is intended to be supplied by a UL listed or CSA Certified Power unit.

CE Compliance

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Customs Union:

The CU Conformity certification has been achieved; this allows the Product to bear the Eurasian Mark of conformity.

FCC Compliance

Modifications or changes to this equipment without the expressed written approval of Datalogic could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

UL Listing

CE Compliance

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

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Bureau Of Indian Standards (BIS)

Self Declaration – Conforming to IS 13252 (Part 1):2010, R-41009288

CHAPTER 1
INTRODUCTION

PRODUCTION DESCRIPTION

The AV7000 Camera is a high performance linear camera with an integrated image processing system dedicated to automatic code identification on moving parcels.

This chapter introduces the basic concepts necessary for camera installation and setup.

GENERAL VIEW

AV7000 Camera Front View

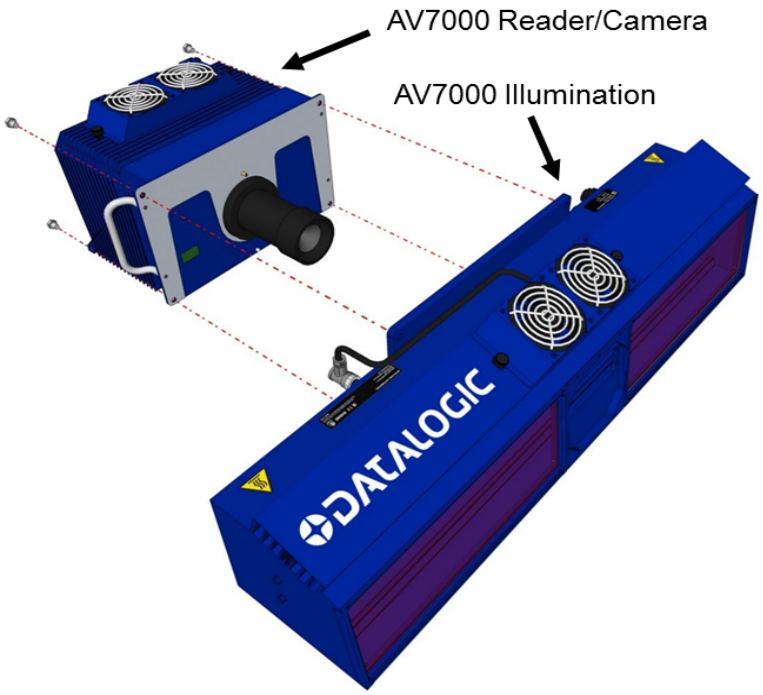
AV7000 Camera Back View

Field Procedure Quick Cross Reference:

- “Setting Up the DM3610 Dimensioner” on page 247
- “Setting up The RangeFinder” on page 255
- “Setting Up the DS2 Light Curtain” on page 242
- “Setting Up the DK501 (S80) Distance Kit” on page 243
- “Setting up the AS1 AreaScan” on page 241
- “Setup and Calibration” on page 265
- Protocol Index Setup“Protocol Index Setup Example” on page 157
- “Other Camera Checks” on page 285

READING STATION OVERVIEW

The AV7000 camera reading system consists of two pieces:



1. A barcode reader/camera for acquiring images and locating and reading the codes on a target.

2. A lighting system for illuminating the target codes to be acquired.

Most reading system applications use a network of multiple cameras.

All linear cameras need to know the moving speed of the targets to be acquired, so the conveyor speed must be constantly measured. There are several ways to accomplish this.

- **Optical Encoder Wheel (Tachometer):** Used underneath a conventional conveyor. The encoder generates a pulse per specified distance (mm [in]) of conveyor travel.
- **Internal Tach:** This is a software-generated pulse mimicking an encoder/tachometer.
- **PGD100 Speed Detector:** Used with tilt-tray or cross-belt sorters. This detector uses a series of photoelectric sensors to determine the conveyor speed.

The position sensor (DM3610, RangeFinder, light curtain (DS2), or S80 Position Sensor) can be used as a trigger source. When the height or left/right focus data measured by

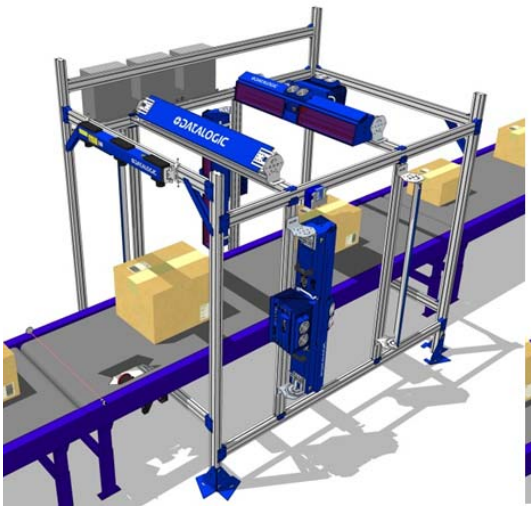
the sensor goes over a certain threshold, then a package is entering the image valid start, and when it goes under the threshold, the package is providing the image valid stop. In most cases this sensor is not sufficiently precise and an additional "Presence Sensor" (AS1 or photoelectric sensor) input is used. An additional photoelectric sensor or conveyor controller signal is usually connected to a separate trigger input.

When the codes are located on more than one face of the parcel, more than one barcode reader-illuminator pair is necessary (multi-camera reading station). In this case, one of the barcode readers (the "Master") collects the information from all the sensors and distributes it to the other barcode readers using a dedicated Ethernet connection.

A CBX connection box (CBX100, CBX510, CBX800) is used to simplify the connection of the camera to the other system components (photoelectric sensors, encoders, height sensors, and etc.). There is only one CBX box in a multi headed system. This CBX box is connected to the controller camera. Generally the CBX510 will be used. In cases where Fieldbus is required the CBX800 will be needed.

A typical reading station will also include:

- **Power Supply Systems:** The AV7000 requires a 24 Vdc power supply. Usually each barcode reader-illuminator pair has its own power supply system (i. e. PWR-480B).
- **Connection Box:** CBX100, CBX510, or CBX800
- **Height/Side Position Sensor:** RangeFinder, DM3610, light curtain or S80
- **External Deflection Mirrors:** To cover the requested reading field, the cameras must be positioned at a given distance from their targets. In order to create reading stations as small as possible, a deflection mirror is often inserted between the target and the barcode reader.



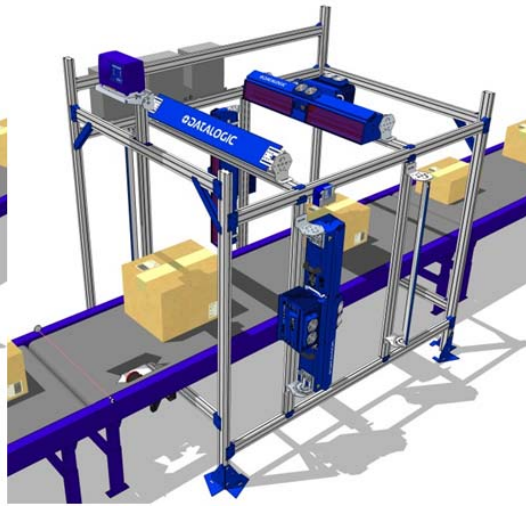


Image Acquisition

Each barcode reader contains two distinct groups of devices:

- The acquisition device or "camera." This part of the AV7000 has to work in strict real time to acquire the best possible images.
- The decoding device or “decoder." This part of the AV7000 interprets the data received through the camera.

The Standard AV7000 barcode reader contains both the camera and the decoder.

As already mentioned, the camera needs three kinds of external sensors:

- **Speed Sensor:** At all times the camera needs to know the speed of the objects to be acquired. The speed sensor is usually an encoder/tachometer connected to the

belt, an internal software tachometer, or a PDG100 Speed Detector when using a tilt-tray or cross-belt system.

- **Height/Side Position Sensor:** The focusing position is computed by the camera based on the position of the parcel measured by a position sensor. The Datalogic sensors may be a RangeFinder, DM3610 Dimensioner, or AREAscan™ DS2 Light Array (LCC-75xx Light Curtain Kit) or S80.
- **Trigger Source:** The camera needs to know when to acquire an object. In multiple camera systems, each package has to be uniquely identified by all the cameras. For this reason, all of the cameras in a reading station share a unique trigger source.

All the sensors are connected to the Master camera that interprets the information and distributes it to the Slave cameras.

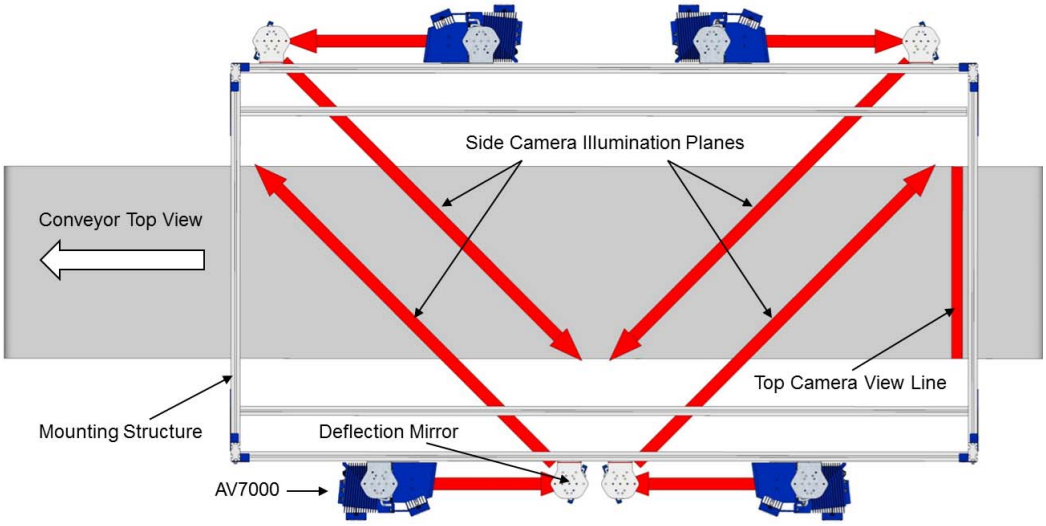
The start and stop of an acquisition are triggered by a start/stop event generated by the trigger device (position sensor). The acquisition of a package doesn't start when the trigger source detects it, but with a certain delay depending on:

- the distance between the trigger device and the view line and the far distance of the view line for each AV7000 in the Array
- the view line angle (alpha) of the camera
- the speed of the object

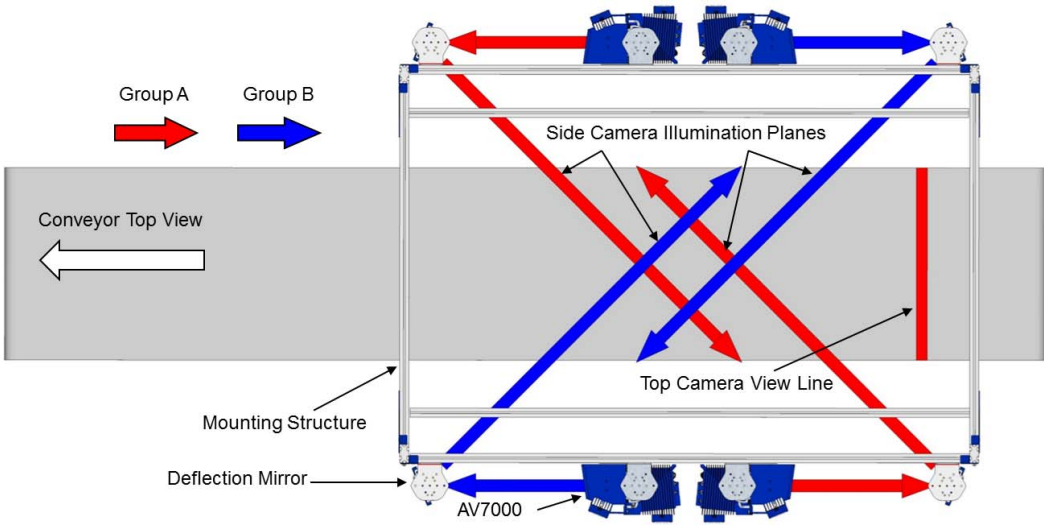
Based on the AV7000 mounting position, the unit tries to acquire one (reading angle alpha = 15°) or two faces of the parcel (alpha = +/-45°). The AV7000 can process a maximum package count of 64 between trigger and transmit.

Pulsed Illumination

When building multi-camera stations with standard continuous light illuminators, the illumination areas must be accurately chosen to avoid the illuminator of one camera disturbing the acquisition of another camera. In particular the lobes of the side camera illuminators must not cross over the conveyor belt. This constraint leads to long multi-sided reading stations.



In **Pulsed Illumination** systems, all the cameras are synchronized so cameras with crossing illuminator lobes are not illuminating simultaneously. Using pulsed illumination, the side cameras' illumination lobes can cross on the conveyor and the reading station dimensions can be greatly reduced.



To enable and configure Pulsed Illumination. To adjust image gain when using Pulsed Illumination.

Applications

The AV7000 cameras are specifically designed for industrial applications requiring high reading performance such as:

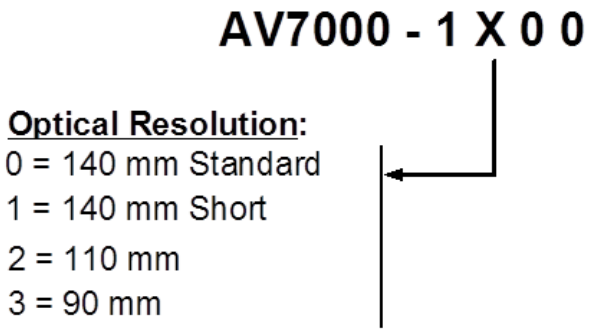
- Low aspect ratio barcodes
- Codes covered by plastic film
- Codes with a large depth of field
- Codes within a wide field of view
- High resolution codes positioned at long distances from the barcode reader
- Fast moving objects

These barcode readers are designed for both single-reader layouts and multi-reader layouts.

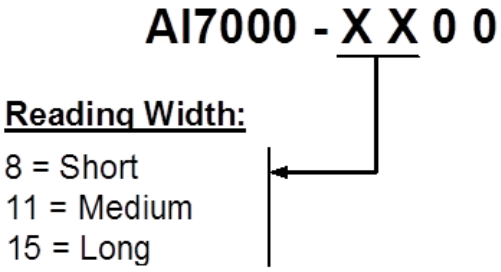
Model Description

AV7000 cameras are available in versions that differ depending on the optical resolution (focus range), while the AI7000 illuminators differ depending on the illuminated reading width:

AV7000 Camera Model Description Key



AI7000 Illumination Model Description Key



AV7000 and AI7000 Versions

Model	Description	Part Number
AV7000 BARCODE READER		
AV7000-1000	140mm f/5.6 STD	934001000
AV7000-1100	140mm f/5.6 SHORT RANGE	934001010
AV7000-1200	110mm f/8.0	934001020
AV7000-1300	90mm f/8	934001030
AV7000-1400	80 mm f/8 Adjustable Aperture	934001040
AI7000 ILLUMINATION		
AI7000-800	SHORT RED LIGHTING SYS	934001100
AI7000-1100	MEDIUM RED LIGHTING SYS	934001110
AI7000-1500	LONG RED LIGHTING SYS	934001120
AI7000-800W	SHORT WHITE LIGHTING SYS	934001200
AI7000-1100W	MEDIUM WHITE LIGHTING SYS	934001210
AI7000-1500W	LONG WHITE LIGHTING SYS	934001220

External Function Buttons (HMI – Human Machine Interface)

The AV7000 camera includes two external buttons that can be used to perform specific tasks without the need of connecting to **e-Genius** for functional description.

NOTE

Some of these functions may be performed using e-Genius. See Chapter 4.

Accessories

The following accessories are available on request for the AV7000 Camera Imaging System.

Description	Part Number
AV7000 CAMERA HEADS	
INDIVIDUAL HEADS	
AV7000-1000 140MM F/5.6	934001000
AV7000-1100 140MM F/5.6 SHORT RANGE	934001010
AV7000-1200 110MM F/8.0	934001020
AV7000-1300 90MM F/8	934001030
LIGHTING SYSTEMS	
AI7000-800 SHORT RED LIGHTING SYS	934001100
AI7000-1100 MEDIUM RED LIGHTING SYS	934001110
AI7000-1500 LONG RED LIGHTING SYS	934001120
AI7000-800W SHORT WHITE LIGHTING SYS	934001200
AI7000-1100W MEDIUM WHITE LIGHTING SYS	934001210
AI7000-1500W LONG WHITE LIGHTING SYS	934001220
AV7000 - ACCESSORIES	
EXTERNAL DEFLECTION MIRRORS	
EMK-NVS-800 EXT.MIRROR (800 MM)	93A201111
EMK-NVS-1100 EXT.MIRROR (1130 MM)	93A201110
EMK-NVS-1500 EXT.MIRROR (1460MM)	93A201109
RANGEFINDER FOCUSING	
RANGEFINDER,DLA,0.1IN	93ACC0156
RANGEFINDER,DLA,0.2IN/5MM/10MM	93ACC0157
RANGEFINDER,DLA,0.5IN/20MM	93ACC0159
CAB-GE01 M12-IP67 TO RJ45 1M	93A050034
CAB-GE03 M12-IP67 TO RJ45 3M	93A050035
CAB-GE05 M12-IP67 TO RJ45 5M	93A050036
CAB-GE10 M12-IP67 TO RJ45 10M	93A051389
POWER CORD, 125V, 10A, BLACK - 7 FT. - 6 IN.	0102414001
POWER CORD, 230V, 10A, EUROPEAN - 8 FT.	0102713001
LIGHT CURTAIN FOCUSING	
FOCUS CONTROL 5MT CABLE (M12-FREE WIRES)	93A201203
LCC-7501 AV7 LIGHT CURTAIN 150MM+CAB 10M	93ACC0170
LCC-7506 AV7 LIGHT CURTAIN 600MM+CAB 10M	93ACC0171

Description	Part Number
LCC-7509 AV7 LIGHT CURTAIN 900MM+CAB 10M	93ACC0172
LCC-7512 AV7 LIGHT CURTAIN 1200MM+CAB 10M	93ACC0173
POSITION SENSOR	
(S80) DK-501 DISTANCE KIT RS485 CABLE 5M	93ACC0175
DM3610 DIMENSIONER FOCUSING	
DMS100-100 DIM SOLU 1HD STD NLFT	932702110
FOCUS CONTROL 5MT CABLE (M12-FREE WIRES)	93A201203
PHOTOELECTRIC SENSOR	
S60 PHOTOCELL KIT W/R3 REFL BRKT HDWR	93ACC1895
MEP-593 PHOTOCELL KIT PNP (PH-1) WITH FREE WIRES	93ACC1791
AS1 PHOTOEYE	
AS1-HD-SR-010-J D 3M RES 5MM H 100MM	958101030
CS-A1-03-G-03 M12-5 P 3M (RECEIVER)	95ACC2110
CS-A1-03-G-05 M12-5 P 5M (RECEIVER)	95ACC2120
CS-A1-03-G-10 M12-5 P 10M (RECEIVER)	95ACC2140
CS-A1-02-G-03 M12-4 P 3M (EMITTER)	95A251280
CS-A1-02-G-05 M12-4 P 5M (EMITTER)	95A251270
CS-A1-02-G-10 M12-4 P 10M (EMITTER)	95A251390
WIRE CONN,COMPACT,3COND,12-28AWG	890003099
TACHOMETER/ENCODER	
TACH,PROGR,W/20FT CAB,8-30VDC	1000019875
KIT,TACH BRKT GENERAL/EXTRUSION MTG	1000020567
ASSEMBLY,ANTI-STATIC BRUSH W/FERRITE	0102974001
OEK-2 OPTICAL ENCODER (CAB 10M+SPRING)	93ACC1770
OEK-3 ENCODER HI RES M139,6M CBL +SPRI (START/STOP ANTI ROLLBACK)	93ACC0104
CV-A1-22-B-03 SE 4PIN CABLE 3M	95ACC1480
CV-A1-22-B-05 SE 4PIN CABLE 5M	95ACC1490
CV-A1-22-B-10 SE 4PIN CABLE 10M	95ACC1500
CV-A1-22-B-15 SE 4PIN CABLE 15M	95ACC2070
CV-A1-22-B-25 SE 4PIN CABLE 25M	95ACC2090
POWER SUPPLY	
PG-600 PWR SUPPLY 600W	93A201205
PWR-480B POWER UNIT 110/230VAC 24V	93ACC0076
CBL,JKTED,300V,18AWG,BLK,RED,GRN,N=1FT	890003359

Description	Part Number
PWR CORD 18 AWG 3 COND 118" BLACK SJT	890002738
ETHERNET SWITCHES	
SINGLE GIG 8-PORT SWITCH ENCLOSURE	93ACC0160
DUAL GIG 8-PORT SWITCH ENCLOSURE	93ACC0131
SYNC CABLES	
CAB-GE03 M12M TO M12F 3M	93A050079
SYNC SETUP DONGLE 8P(M), M12(F), RJ45, 0.2 M	1000065716
CAB-GE05 M12M TO M12F 5M	93A050080
CAB-GE10 M12M TO M12F 10M	93A050081
CAB-GE03 M12M-8PINS TO M12M-4PINS 3M	93A050109
CAB-GE05 M12M-8PINS TO M12M-4PINS 5M	93A050110
HOST AND IMAGE NETWORK CABLES	
CAB-9E05 RJ45-IP67 CABLE ETHERNET 5M	93A051364
CAB-9E10 RJ45-IP67 CABLE ETHERNET 10M	93A051365
AV7000 TO CBX CABLES	
CBL AV7-100 M16-IP67 CABLE TO CBX 3M	93A050072
CBL-AV7-101 M16-IP67 CABLE TO CBX 5M	93A050073
CBL-AV7-102 M16-IP67 CABLE TO CBX 10M	93A050074
CBX	
CBX100 CONNECTION BOX COMPACT	93A301067
CBX510 CONNECTION BOX MODULAR	93A301068
CBX510 CONNECTION BOX MODULAR	93A301087
CBX800 GATEWAY	93A301077
CBX ACCESSORIES For AV7000 applications, the CBX Fieldbus modules listed are only used in the CBX800 Gateway	
BM300 PROFIBUS MODULE	93ACC1810
BM310 PROFIBUS IP65 MODULE	93ACC1811
BM400 DEVICENET IP65 MODULE	93ACC1814
BM500 ETHERNET/IP MODULE	93ACC1812
BM510 ETHERNET IP65 MODULE	93ACC1813
BM520 ETHERNET/IP IP54 MODULE	93ACC1840
BM600 CAN OPEN MODULE	93ACC1815
BM700 PROFINET MODULE	93ACC1816
BM1100 CC-LINK MODULE	93ACC1845
BM1200 MODBUS TCP MODULE	93ACC1848

Description	Part Number
BM1210 MODBUS TCP IP65 MODULE	93ACC1849
BA100 DIN RAIL ADAPTERS	93ACC1821
BA900 TWO CABLE GLANDS PANEL	93ACC1847
BA300 M12 3P F. PANEL CONN. (SERVICE)	93ACC1877
BA400 M12 3P M. PANEL CONN. (EXT.POWER)	93ACC1853
BA500 M12 4P F. PANEL CONN. (TRIGGER)	93ACC1854
BA600 M12 5P F. PANEL CONN. (ID-NET OUT)	93ACC1855
BA700 M12 5P M. PANEL CONN. (ID-NET IN)	93ACC1856
DISPLAY	
KIT, VGA / USB INTERFACE PANEL	93A201204
KIT, MONITOR/KEYBRD/BRKT/USB HUB	93ACC0126
CBL,EXT,10FT,USB MOUSE/KEYBOARD	93ACC0108
CABLE,INTERFACE 10FT (MONITOR EXTENSION)	1000014572
CABLE,INTERFACE 25FT (MONITOR EXTENSION)	1000014574
MISCELLANEOUS	
AV7000 Controller Key	93A201206
FAN GUARD	93ACC0193
AV7000 Double Fan Kit	890000030

For AV7000 applications, the CBX Fieldbus modules listed above are only used with the CBX800 Gateway.

Focusing Devices

There are six focusing device options available for the AV7000 Camera, see section Five for details.

Photoelectric Sensor

The Datalogic Photoelectric Sensor is used in AV7000 camera systems to detect the presence of an item entering the scanning area.

The photoelectric sensor is used in singulated systems where the packages are separated by an open space between the trailing edge of one package and the leading edge of the next. In irregular package applications, the photoelectric sensor assists in maintaining the package footprint so that the AV7000 camera will only scan and provide data for a specific package.

Depending on the application, these devices may need to be configured differently. While the photoelectric sensor and tachometer work well with belt conveyors, a special configuration is needed for tilt-tray and cross-belt sorter applications. *See "S-60 Photocell" on page 239.*

Photoelectric Sensor	
S60 PHOTOCELL KIT W/R3 REFL BRKT HDWR	93ACC1895
MEP-593 PHOTOCELL KIT PNP (PH-1) WITH FREE WIRES	93ACC1791

Area Sensor

The photoelectric light grids of the AS1 series are crossed-beam area sensors able to detect all objects, with even 0.2mm thickness, inside a 100mm height, over operating distances reaching 3m between emitter and receiver. The AS1 area sensors represent the ideal solution for the detection of very small objects, even when passing in different positions inside the controlled height and width. Versions with trimmer adjustment and optic synchronism between emitter and receiver unit are available. Area sensors also help avoid multiple triggers on irregular shaped packages. *See "Setting up the AS1 Area-Scan" on page 241*

Area Sensor and Cable (recommended)

AS1-HD-SR-010-J D 3m RES 5mm H 100mm	958101030
CS-A1-03-G-03 M12-5 p 3m (Receiver)	95ACC2110
CS-A1-03-G-05 M12-5 p 5m (Receiver)	95ACC2120
CS-A1-03-G-10 M12-5 p 10m (Receiver)	95ACC2140
CS-A1-02-G-03 M12-4 p 3m (Emitter)	95A251280
CS-A1-02-G-05 M12-4 p 5m (Emitter)	95A251270
CS-A1-02-G-10 M12-4 p 10m (Emitter)	95A251390

LCC-75xx Kit with DS2 Light Array

The DS2 Light Array (Light Curtain), part of the LCC-75xx kit, is used to detect the presence of products as they enter the scanning area as well as report the package heights to the system Master. The AREAscan™ family of the DS2 series covers controlled heights ranging from 150 to 2500mm, with 5m operating distances for high resolution versions, or 10m for low resolution versions. Digital resolution is 12mm or 35mm while relative measurement precision is ±6mm or ±22.5mm. *See "Setting Up the DS2 Light Curtain" on page 242* .

Light Curtain Focusing

FOCUS CONTROL 5MT CABLE (M12-FREE WIRES)	93A201203
LCC-7501 AV7 LIGHT CURTAIN 150MM+CAB 10M	93ACC0170
LCC-7506 AV7 LIGHT CURTAIN 600MM+CAB 10M	93ACC0171
LCC-7509 AV7 LIGHT CURTAIN 900MM+CAB 10M	93ACC0172
LCC-7512 AV7 LIGHT CURTAIN 1200MM+CAB 10M	93ACC0173

Position Sensor

The DK-510 Distance Kit is part of a vision system used to signal the focus height of packages to be imaged by the AV7000 camera. It includes an S80 Class 2 visible red LASER sensor to measure direct proximity from 4 m to 7 m and from 20m to 100m retro-reflective models. The S80 is precise with high measurement speeds. It comes with PNP or NPN, 4-20 mA analog output and RS 485 serial interface. It comes with a cable, mounting bracket and non-reflective plate. *See "Setting Up the DK501 (S80) Distance Kit" on page 243*.

Distance Kit	
DK-501 DISTANCE KIT W/ RS485 CABLE 3M	93ACC0175

RangeFinder

The RangeFinder is used to detect the presence of products as they enter the scanning area as well as report the package positions/heights and sequence number to all cameras in the system. RangeFinders can also be used to provide rough dimensioning data. *See "Setting up The RangeFinder" on page 255*.

The RangeFinder module includes the following:

- RangeFinder Module
- RangeFinder Power Supply
- Mounting and adjustment brackets
- Power Supply

RangeFinder	
RANGEFINDER,DLA,0.1IN	93ACC0156
RANGEFINDER,DLA,0.2IN/5mm/10mm	93ACC0157
RANGEFINDER,DLA,0.5IN/20mm	93ACC0159

DM3610 Dimensioner

The DM3610 is used to detect the presence of products as they enter the scanning area as well as report the package positions/heights and sequence number to all cameras in the system. The DM3610 can also provide certified (Legal for Trade), side-by-side package detection, or volume measurements for the packages that pass below it. *See "Setting Up the DM3610 Dimensioner" on page 247* for information on setting up the DM3610.

For complete information about the features and capabilities of the DM3610 Dimensioner, see the dimensioner page on the Datalogic website: www.datalogic.com.

The DM3610 Dimensioner requires the following:

- DM3610
- Power Supply
- Universal Mounting Bracket
- Class 2 EU Adapter (optional)
- Beam Catchers

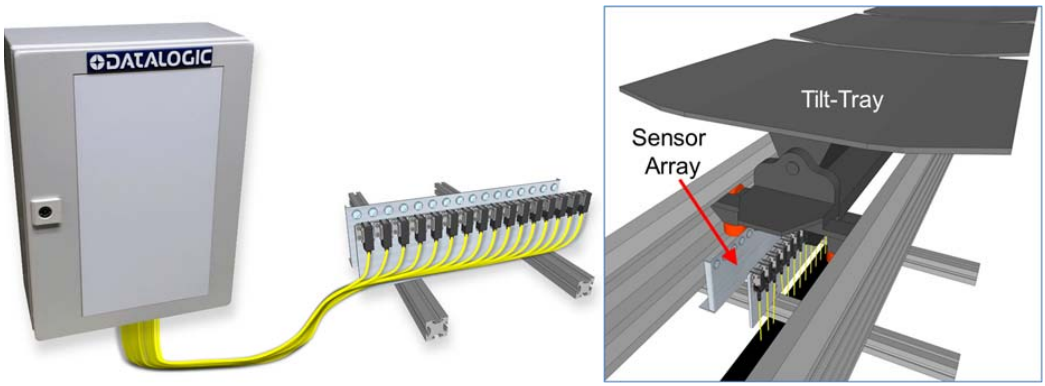
Encoder (Tachometer)

The encoder/tachometer delivers a continuous pulse to the system, which provides feedback on conveyor speed and transmit point, and can be used to help track the package position along the length of the conveyor.

Encoder (Tachometer)	
OEK-2 OPTICAL ENCODER (CAB 10m+SPRING)	93ACC1770
OEK-3 OPTICAL ENCODER HI RES,6M CBL+SPRI	93ACC0056
OEK-3 ENCODER HI RES M139,6M CBL +SPRI (START/STOP ANTI ROLL-BACK)	93ACC0104

PGD100 NON-CONTACT SPEED DETECTOR

The **PGD100** is a non-contact position measurement device, or **Speed Detector**, consisting of a Controller and Sensor Array(s). It is used in cases where a traditional contact encoder/tachometer will not work, as in a **Cross-Belt Sorters** or **Tilt-Tray** system where a continuous belt surface is not available. The speed detector is designed to function as an encoder/tachometer replacement in certified dimensioning and scanning applications.



For information on installing and wiring the PGD100, see the **PGD100 Non-Contact Speed Detector Installation Manual** at www.datalogic.com.

CBX INDUSTRIAL CONNECTION BOX

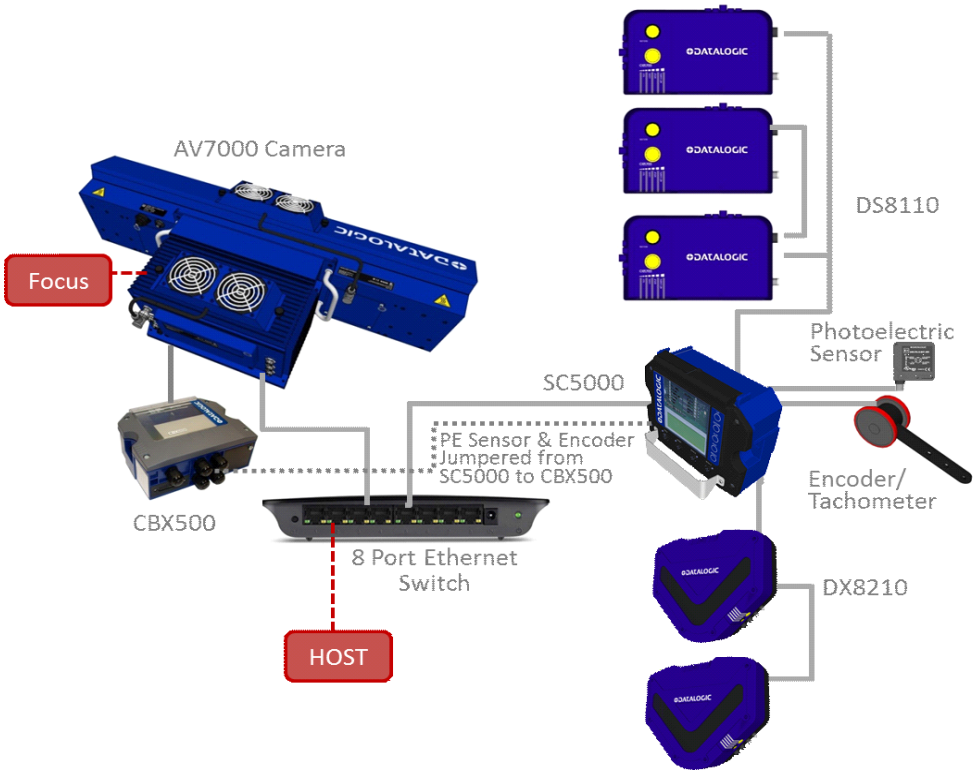
CBX Series are industrial connection boxes that can be used to connect the barcode readers to an encoder/tachometer, photoelectric sensor, serial devices, relays, or other peripherals.

CBX Connection Box

CBX100 CONNECTION BOX COMPACT	93A301067
CBX800 GATEWAY	93A201077
CBX510 CONNECTION BOX MODULAR	93A301087
BM100 Backup Module (Memory)	93ACC1808
BA100 DIN Rail Mounting Kit	93ACC1821
BA200 Bosch Frame Mounting Kit	93ACC1822
BA300 M12 3PF Service Connector (Aux port)	93ACC1877
BA500 M12 4PF Trigger Connector	93ACC1854
BA900 Two Cable Compression Conn. Panel	93ACC1847
CAB-DS01-S I/O Cable M12-17-pin to 25-pin D-sub 1m	93A050058
CAB-DS03-S I/O Cable M12-17-pin to 25-pin D-sub 3m	93A050059
CAB-DS05-S I/O Cable M12-17-pin to 25-pin D-sub 5m	93A050060
CAB-SC5000 Cable SC5000 to CBX510 1m	93A050071
CBX800 GATEWAY	93A301077

INTEROPERABILITY OPTIONS AVAILABLE

Some applications may require you to combine an AV7000 system with an SC5000 Controller and accompanying scanners (DS8110 and DX8210). Datalogic offers special interoperability features for this type of configuration. Reference the ***SC5000/DS8110, DX8210 and AV7000 Hybrid System Application Note*** for more details.



CHAPTER 2
MECHANICAL INSTALLATION

Electrical Installation must be performed b Qualified Service technicians ONLY! Procedures may involve exposure to high-voltage. A trained and authorized technician must perform these procedures. Do not attempt to perform any electrical installation procedures unless you are a trained technician.

AV7000 cameras contain electronics that may be affected by electrostatic discharge (ESD). To prevent personal injury or damage to the unit, please follow the safety precautions and warnings found in the References section at the beginning of this manual. Failure to follow these precautions may void your warranty.

PREPARING FOR MECHANICAL INSTALLATION

Application-specific drawings and documents provided by Datalogic supersede any contradictory content in this manual.

Before mounting any components, please do the following:

- Read all instructions before beginning your installation.
- Define and confirm the accuracy of your application's requirements and structure position, especially the height of the conveyor from the floor.
- Review all installation-specific drawings provided with your equipment.
- Review and plan the mechanical installation of all devices used in your application. Be sure to allow adequate clearance for maintenance.
- Review and plan the power requirements for your application.
- Check the contents of the shipping cartons against the packing list.
- Record all product serial numbers.

NOTE

Refer to the Chapter Electrical Installation **and Reference Documentation for details on connecting your readers to other devices in the system.**

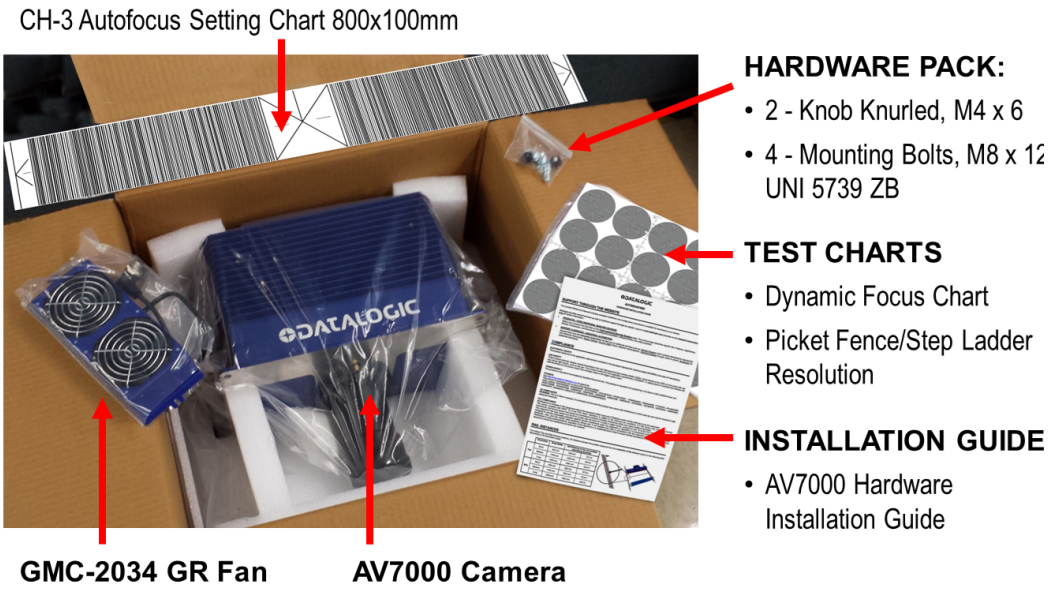
When installing several AV7000s, take care to position them so that no laser beam or LED illumination enters the reading window of other barcode reading devices in the system. This condition could occur more frequently for side mounted applications. If these precautions are not followed, read rate could be negatively affected. To resolve this problem, it is sufficient to slightly change the inclination and/or position of one of the two devices involved.

Tools Required

A 13mm wrench (combination ratcheting wrench recommended) and Philips Screwdriver (#1) are all the tools needed to assemble and install the AV7000/AI7000, deflection mirror, and brackets,

UNPACKING INSTRUCTIONS

Verify that the AV7000 Camera and all the parts supplied with the equipment are present and intact when opening the packaging; the list of parts includes:



NOTE

The AV7000 Camera and accessory packaging is designed to protect the unit(s) during shipment. Do not throw it away. Save all packing material in case you need to transport your unit(s).

Be sure to retain shipping boxes and packing material for use if the unit needs to be returned to Datalogic for any reason.

CABLES:

- CVL-2389 Cable, PS to AI7000, 6M
- CAB-503 9P01 M12-IP6 Cable 0.6M

AI7000 ILLUMINATOR

ARDWARE PACK:

4 – Bolt M8x8 UNI 5739 ZB

18 – Bolt M8x12 UNI 5739 ZB

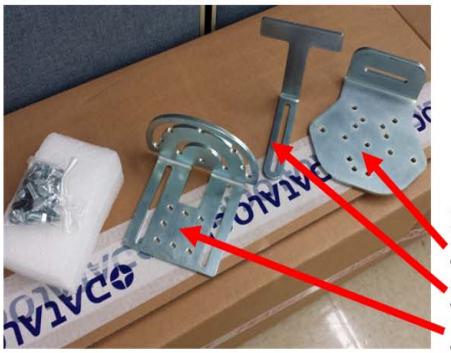
2 – Screw M4x8 UNI 7697 WZ

2 – Spacer H-5 D8 Cyl. Nickel Brass

4 – Stud, T-Slot, 5/16-18x3/4 Drop-in

4 – Locknut, Hex, 5/16-18x3/4, Serrated-Flange, STL

4 – Screw, M8x25 Hammer Head+INOX Nut



BRACKETS:

- 2 – ST-344 Rising Bracket
- 2 – ST-326 Support Brack
- 2 – ST-325 Main Bracket

NOTE

Be sure to retain shipping boxes and packing material for use if the unit needs to be returned to Datalogic for any reason.

INSTALLATION SEQUENCE

Everything should be MECHANICALLY INSTALLED before performing any ELECTRICAL INSTALLATION.

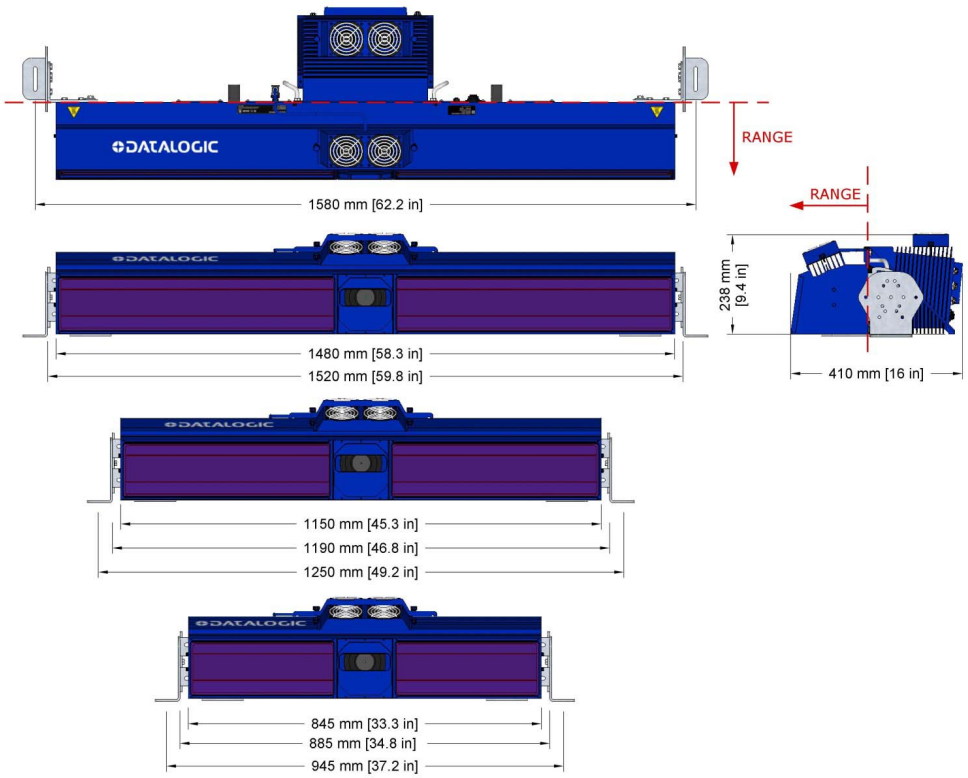
See Chapter 3, **Electrical Installation for electrical installation details.**

To complete mechanical installation and setup, you must:

1. Review the details of your application's requirements
2. Erect mounting structure or other supporting structures
3. Determine and mark the Mounting Bracket locations
4. Mount the brackets to the mounting structure
5. Mount the AI7000 Illuminator to its mounting brackets
6. Mount the fan assembly to the AV7000 Camera
7. Mount the AV7000 Camera to the Illuminator
8. Mount the brackets for the deflection mirror, if required.
9. Mount the deflection mirror to its brackets
10. Mount the height sensor (AS1, Light Curtain, RangeFinder, DM3610 Dimensioner, or S85)
11. Mount the photoelectric sensor to the mounting structure (optional)
12. Mount the tachometer to the mounting structure
13. Mount the CBX connection box to the mounting structure
14. Complete electrical installation ***(See Chapter "Electrical Installation" on page 47)***
15. Align the AV7000 for proper operation
16. Align the height sensor for proper operation
17. Configure the AV7000 ***(See Chapter "E-Genius" on page 89)***
18. Calibrate the AV7000 ***(See Section"Setup and Calibration" on page 265**)*
19. Check AV7000 operations***.***

Installation

Dimensions and Clearances



WARNING

The AV7000 is a sealed, unventilated unit. Mounting the unit with 300 mm [12 in] of clearance (front, top, and sides) is recommended for cooling and ease of maintenance.

NOTE

This symbol identifies a hazard or procedure that, if incorrectly performed, could cause personal injury or result in equipment damage. It is also used to bring the user's attention to details that are considered IMPORTANT.

Physical Support Requirements

For details on the weight of the barcode readers, *see Chapter 10, Technical Features.* Multiple-head systems may include further details on the physical support requirements with any application-specific documentation provided.

Vibration Limitations

See Chapter 10 “Technical Features” on page 332.

General Mounting Guidelines

It is important that you follow these general precautions when installing, setting up, operating, maintaining, troubleshooting, or replacing any Datalogic products, parts or related equipment.

As you plan and install your AV7000 camera imaging system application, be sure to keep the following guidelines in mind:

- Follow application drawings for structural details and barcode reader placement.
- Determine the proper orientation and position of the barcode reader(s).
- Leave adequate clearances (approximately 300 mm [12 in]) for wiring.
- The first camera in the system must be installed at least 254 mm [10 in] upstream from the focus device (DM3610, RangeFinder, light curtain, or S80) to work properly.
- Route wires carefully to reduce or minimize electrical noise. When power and communication wiring must cross, make their intersection perpendicular. Avoiding sharp wire bends or loops, which can affect performance.
- Proper grounding limits the effects of noise due to Electromagnetic Interference (EMI).

Mounting Structure Considerations

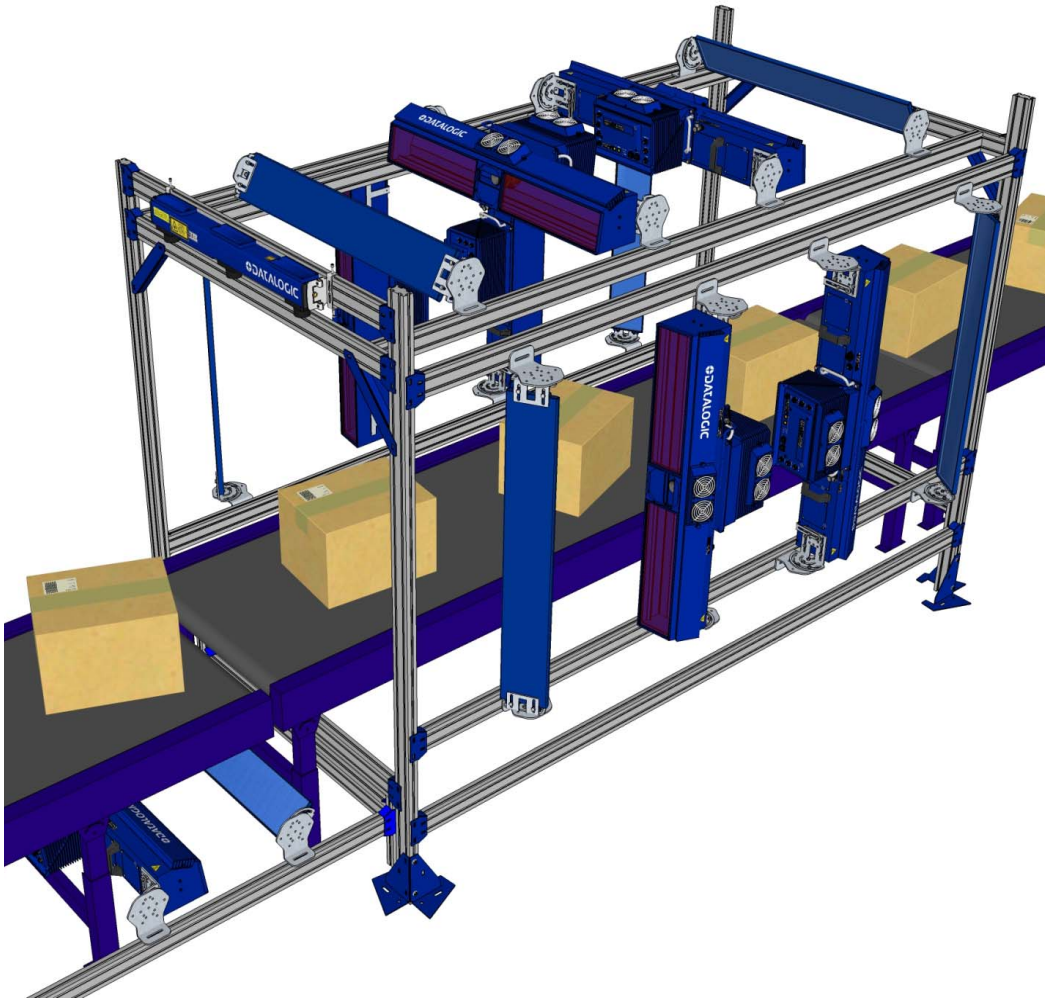
Your first task is to mount your AV7000 camera. You can provide your own mounting structure or Datalogic can design one for you. We recommend using a Datalogic mounting structure for standard applications.

Your mounting structure must provide the following capabilities:

- It is adjustable enough for you to move your unit to the optimum position for proper scanning.
- It allows a technician access to the barcode reader while it is mounted.
- It must be as vibration free as possible so as not to affect the scanning accuracy.
- It is constructed of steel or aluminum.
- It provides approximately 300 mm [12 in] minimum clearance on all sides. This clearance is necessary to provide proper ventilation, allow access to all panels of the barcode reader, and allow room for proper servicing.

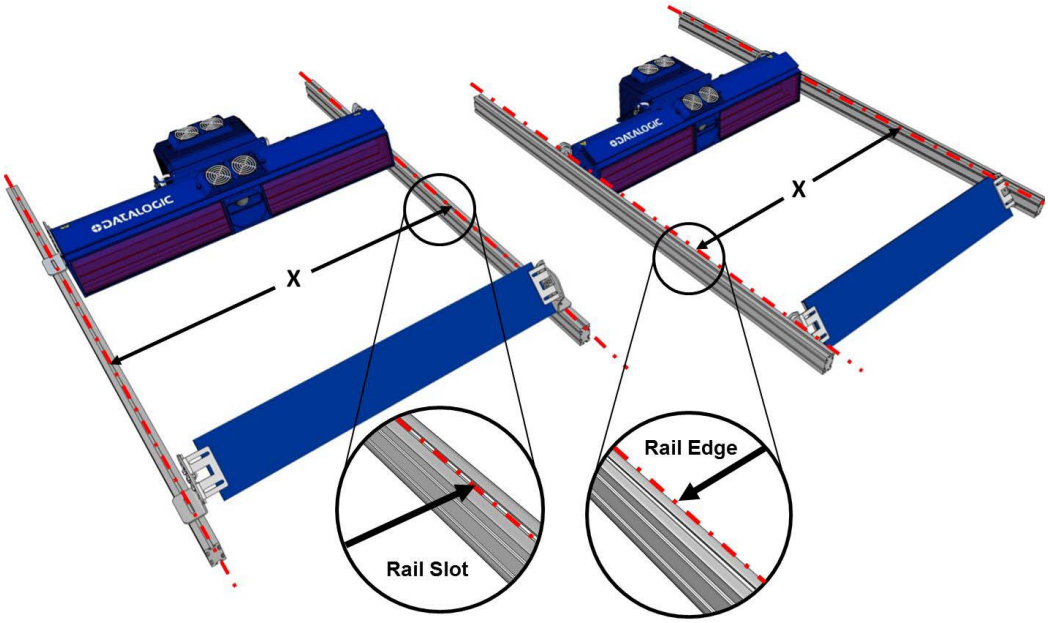
Scanning Station Frame/Mounting Structure Preparation and Positioning

The vision system components and in particular the mounting brackets have been designed for installation onto standard Bosch and 80/20 frame profiles (extrusions) and accessories. 60x60 mm profile is recommended for Bosch, although 45x45 mm profiles will work; and standard 1.5” x 3” for 80/20.



Mounting Rails

The Camera/Illuminator and Deflection Mirror are mounted to mounting structure rails, as shown below. Typically, the rising brackets are mounted to the rails, but in some cases it may be necessary to mount the camera and deflection mirror between the mounting rails.



For Rail configurations, the rails must be mounted so that the distance between the extrusion profiles (Bosch or 80/20) matches the illuminator model being used.

For Top Camera positions (both Direct and Indirect), the distance between the profiles measured from the internal sides is given in the following table depending on the illuminator model:

Illuminator	Body Width	x Distance Between Rail Slots with Rising Brackets		x Distance Between Rails without Rising Brackets	
Short	845 mm	945 mm	37.2 in	885 mm	34.8 in
Medium	1150 mm	1250 mm	49.2 in	1190 mm	46.8 in
Long	1480 mm	1580 mm	62.2 in	1520 mm	59.8 in

For Side Camera positions (either Direct or Indirect), the distance between the profiles measured from the internal sides is given in the following table depending on the illuminator model:

Illuminator	Body Width	x Distance Between Rail Slots with Rising Brackets		x Distance Between Rails without Rising Brackets	
Short	845 mm	955 mm	37.6 in	895 mm	35.24 in
Medium	1150 mm	1260 mm	49.6 in	1200 mm	47.24 in
Long	1480 mm	1590 mm	62.6 in	1530 mm	60.24 in

Illuminator Bracket Pre-Assembly and Mounting

The mounting brackets have been designed specifically to quicken, simplify and facilitate vision system mounting.

These brackets have universal mounting configurations and reference slots for all standard mounting angles allowing all of the standard Camera mounting positions to be made without the use of special tools.

The Illuminator Bracket kit included with the Camera contains:

2 ST-0325 universal main brackets

2 ST-0326 universal support brackets

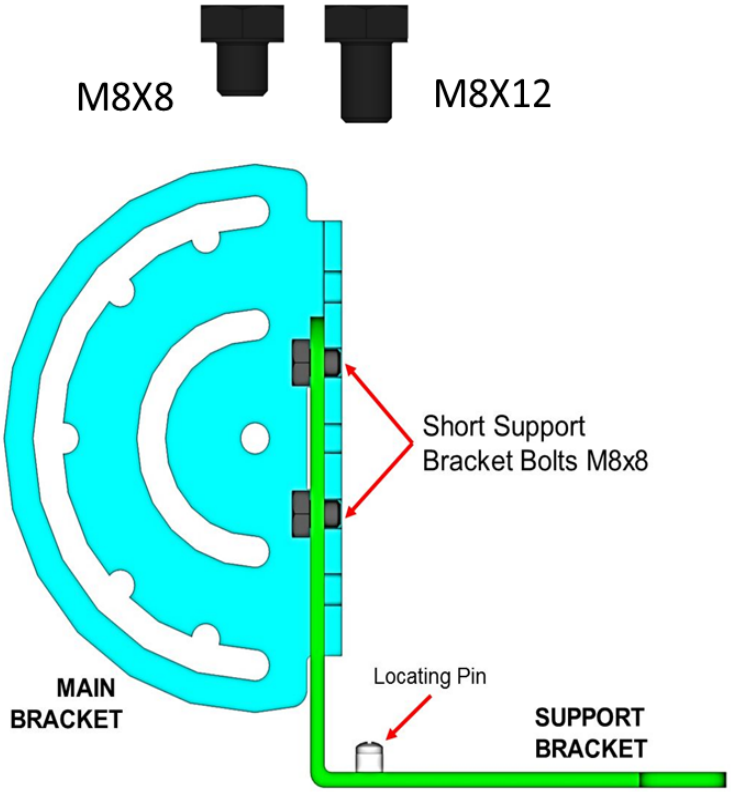
2 ST-0344 universal rising brackets

4 M8x8 bolts (for support to main bracket assembly)

8 M8x12 bolts (for illuminator to main bracket assembly)

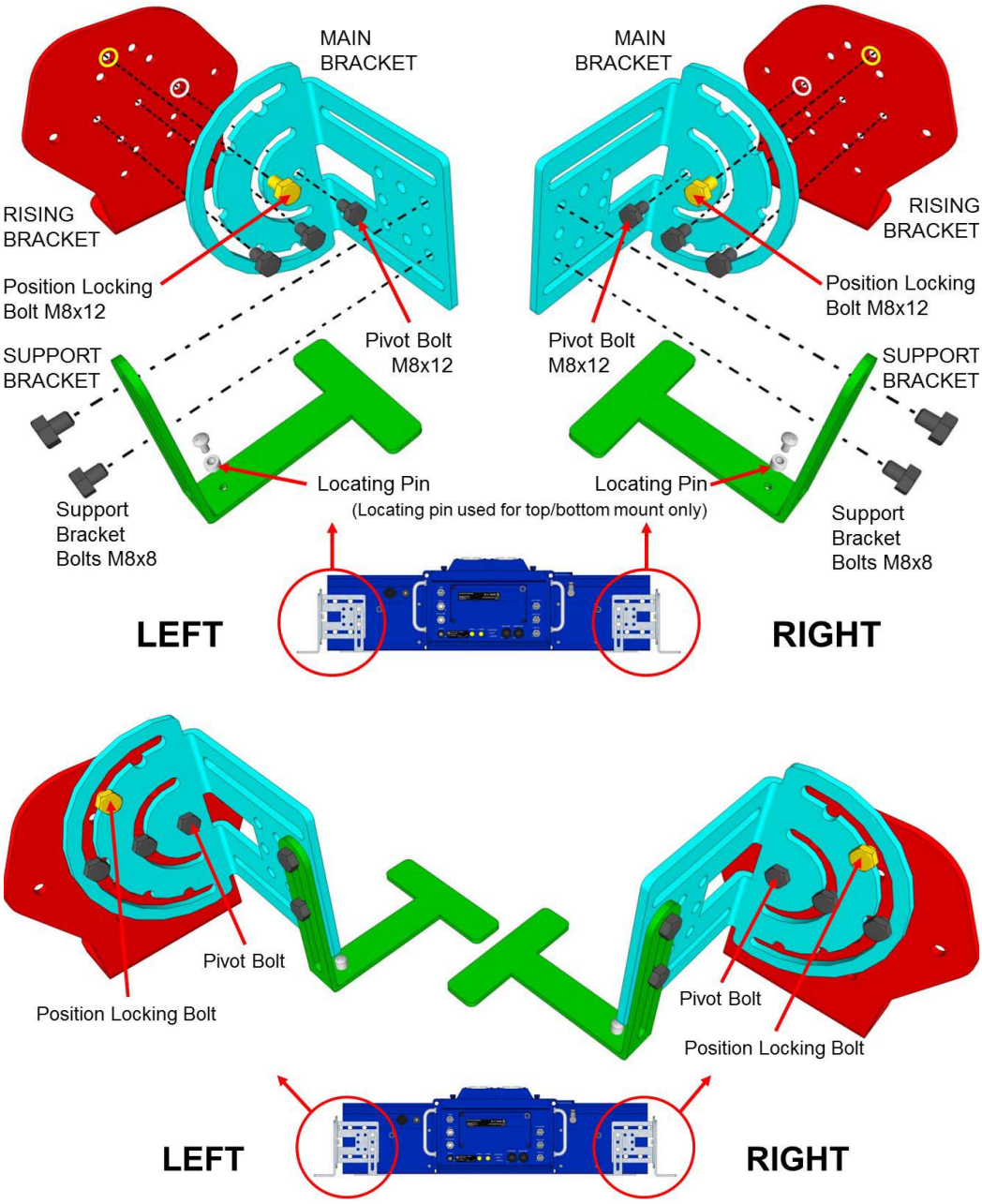
2 M4x8 screws + 2 H5 metal spacers (create illuminator locating pins on support bracket) (Not used for side mounted barcode readers)

Be sure to use the M8x8 (short) bolts when mounting the support brackets to the main bracket. Longer bolts will pass through the other side of the main bracket, interfering with the illuminator body.



AV7000/AI7000 Top/Bottom Mounting Bracket Assembly and Mounting

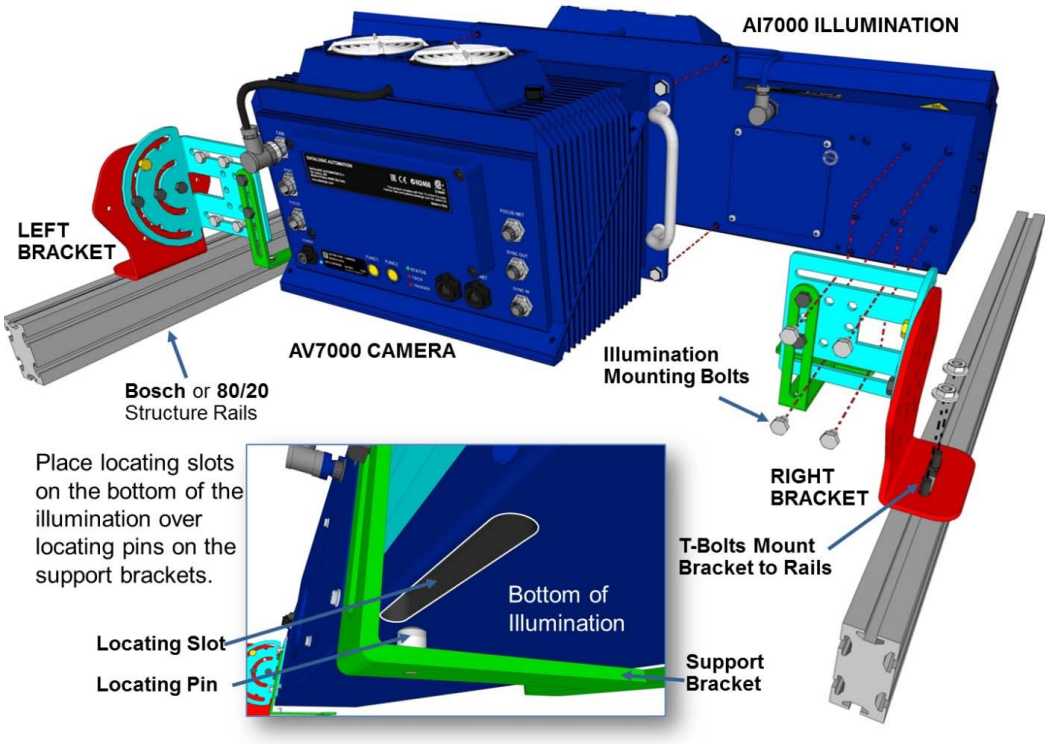
Both Top and Bottom Camera positions require the same pre-assembly of the Illuminator Bracket.



AV7000 Top/Bottom Mounting Sequence

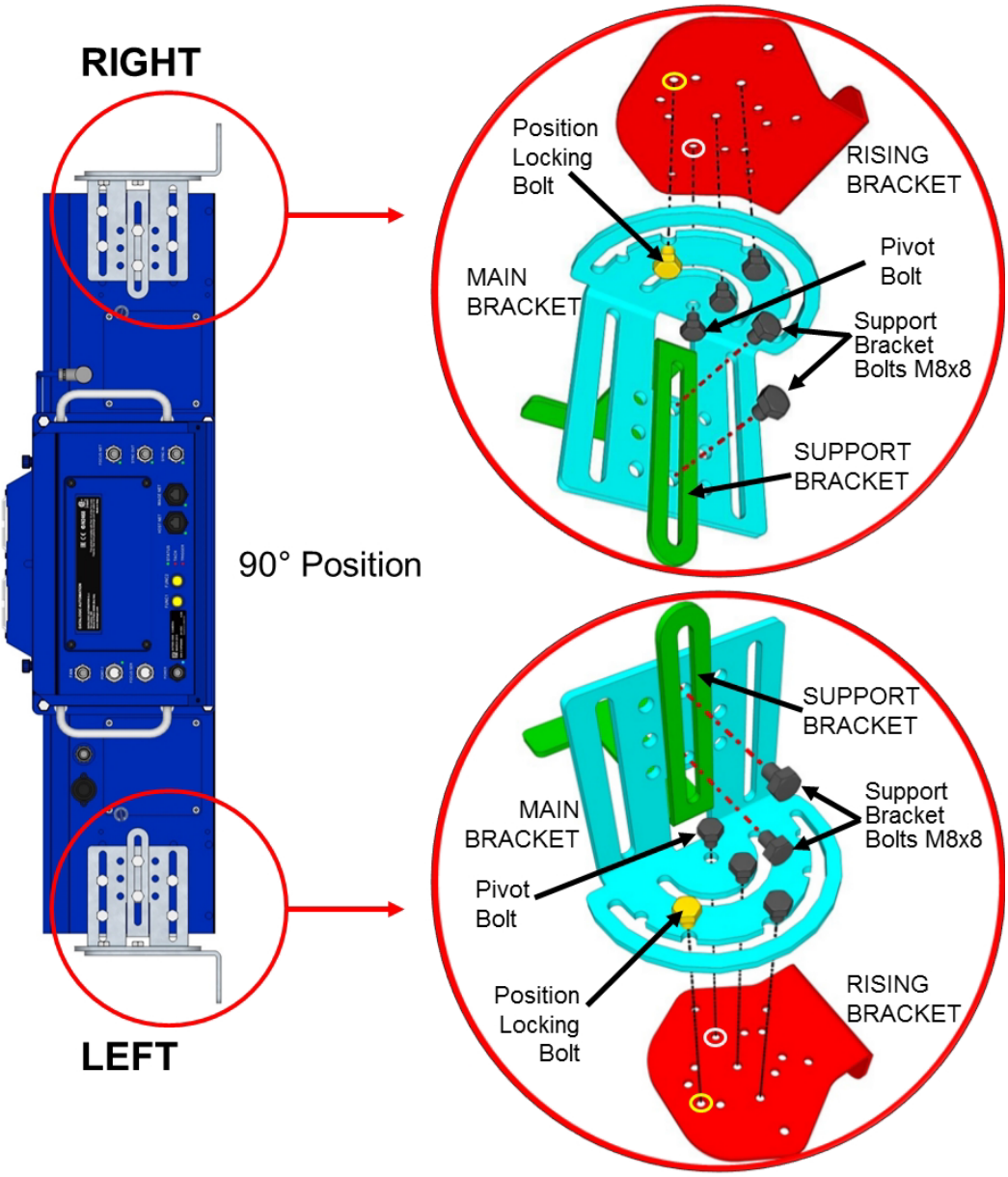
Since the brackets are mounted directly to the body of the illuminator and the camera is mounted directly to the body of the illuminator, no matter what standard mounting position is used, (Top, Side, or Bottom), the basic sequence is the same:

1. Mount the cooling fan to the AV7000 camera *(See section Mounting the AV7000 Camera to the AI7000 Illuminator).*
2. Pre-assemble the Illuminator brackets according to the application.
3. Mount the brackets to the mounting frame. Use two (2) T-bolts per bracket.
4. Set the Illuminator on top of the Support Brackets with the slots in the bottom of the illuminator positioned over the locating pins. *See Locating Pins in the illustration below.*
5. Mount the Illuminator to the bracket.
6. Mount the Camera to the illuminator.

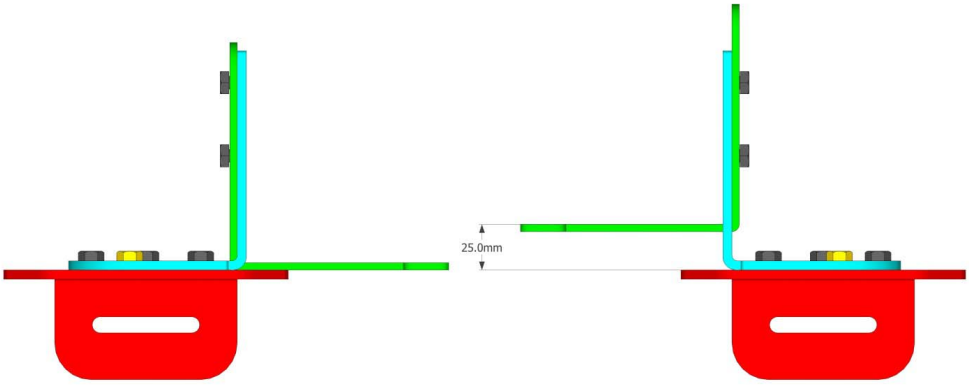


AV7000/AI7000 Side Mounting Bracket Assembly and Mounting

The illustrations below show how the brackets are assembled, and how the AI7000 Illumination is then mounted to the brackets. Typically, the brackets are pre-assembled and attached to the mounting structure, and then the illumination is mounted to its brackets. The **Support Bracket** (green in the figure) passes through the **Main Bracket** (blue). Then the **Main Bracket** is bolted to the Rising Bracket, positioning the Pivot Bolt and Position Locking Bolt (yellow) as shown.

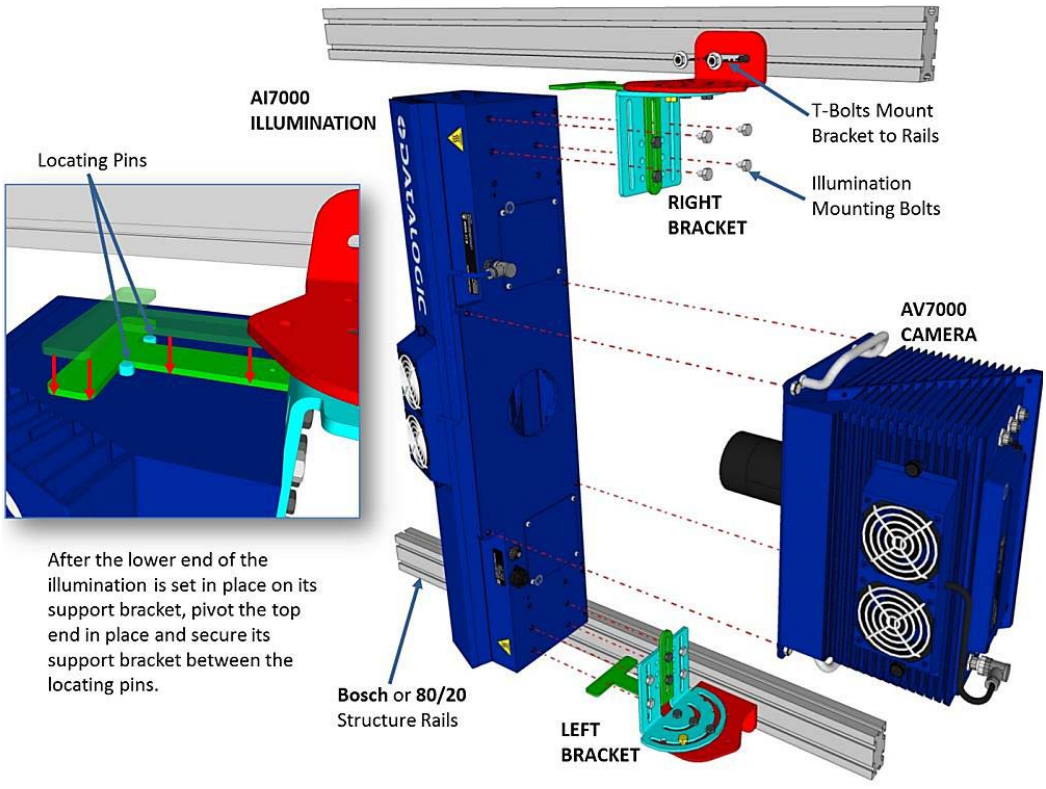


Although both brackets will be mounted having 25 mm [1 in] between the **Support Bracket** (green) surface and the **Rising Bracket** (red) surface, for mounting purposes the "top" bracket should be pre-assembled so that this distance is 0 mm/in. This will provide clearance when placing the camera/illuminator between the mounted brackets.



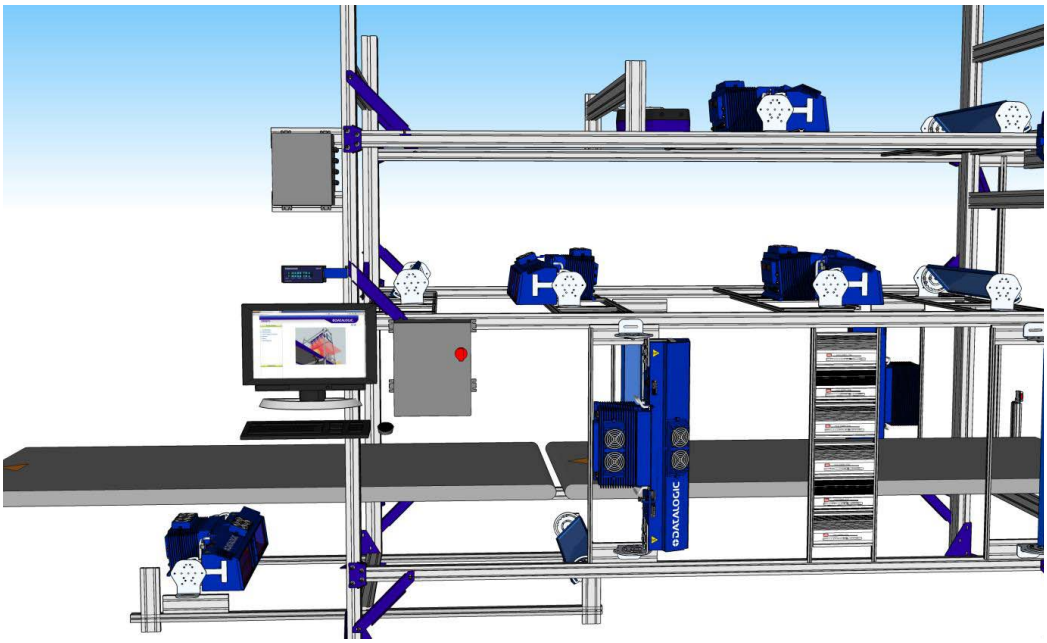
AV7000 Side Mounting Sequence:

1. Mount the cooling fan to the AV7000 camera.
2. Pre-assemble the Illuminator brackets according to the application.
3. Mount the bracket to the station frame.
4. Place the lower end of the illumination on the bottom bracket, and then tilt the top end of the illumination in line with the top bracket.
5. Lower the top support bracket down to capture the locating pins in the end of the illumination. *See Locating Pins in the illustration below.*
6. Mount the Camera to the illuminator.



AV7000 Bottom Mounting Sequence

In some applications it is beneficial to mount an AV7000 under the conveyor. When mounting a bottom read AV7000, it must be done so under a break in the conveyor.



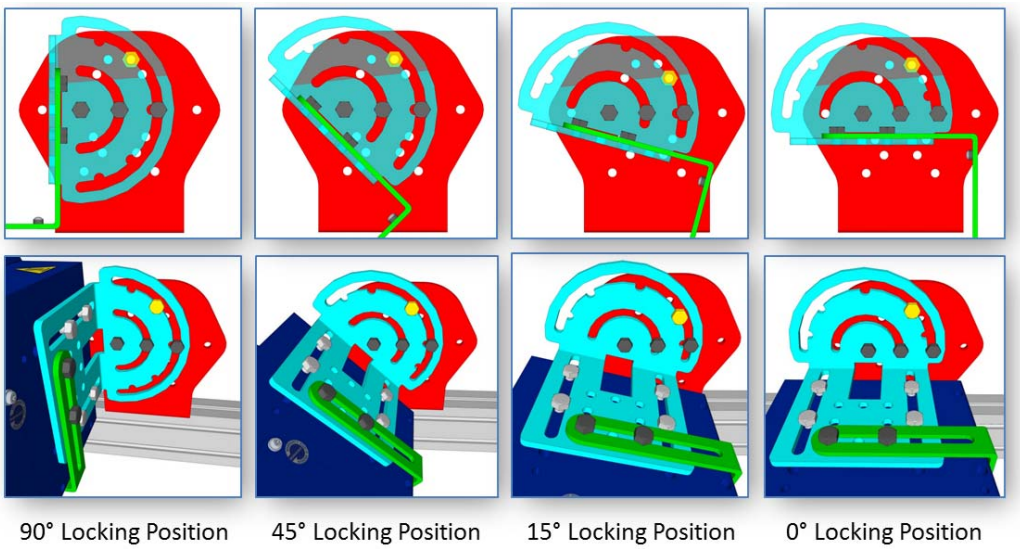
AV7000 Bracket Angles

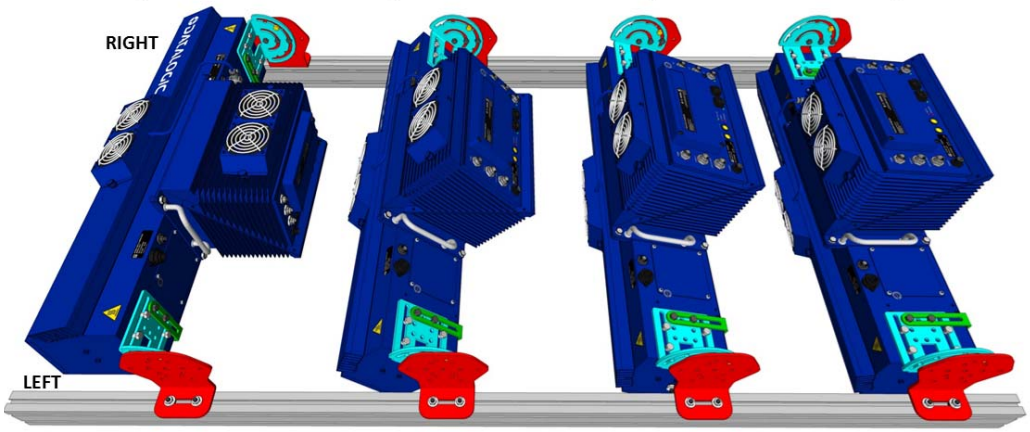
Standard camera bracket angles are shown below. The **YELLOW** bolt indicates the locking position between the Main Bracket (blue) and Rising Bracket (red).

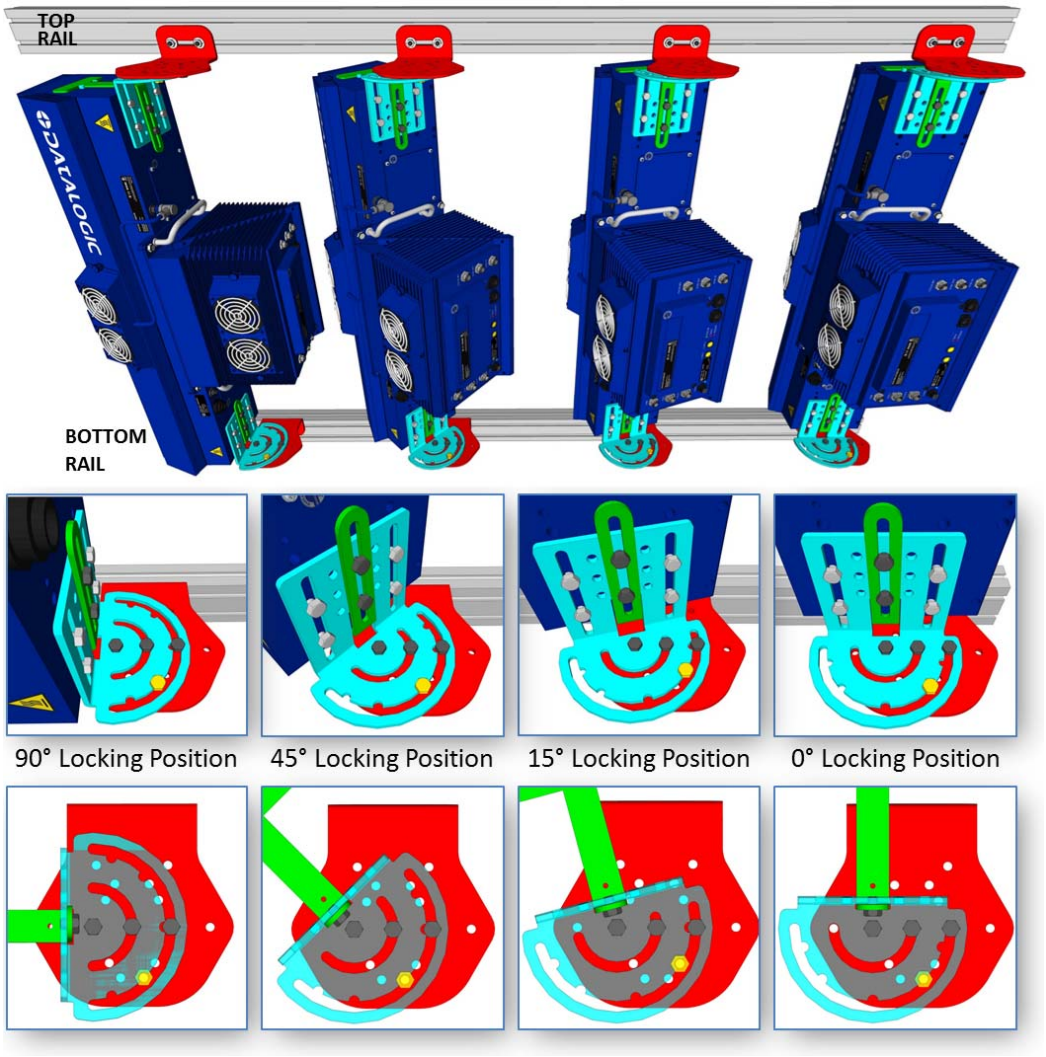
NOTE

In most applications, the viewing angle is created with a deflection mirror and its brackets, and the camera is mounted at 90-degrees.

The “left” and “right” references shown below refer to the ends of the illumination, and not the AV7000’s position on the mounting structure.

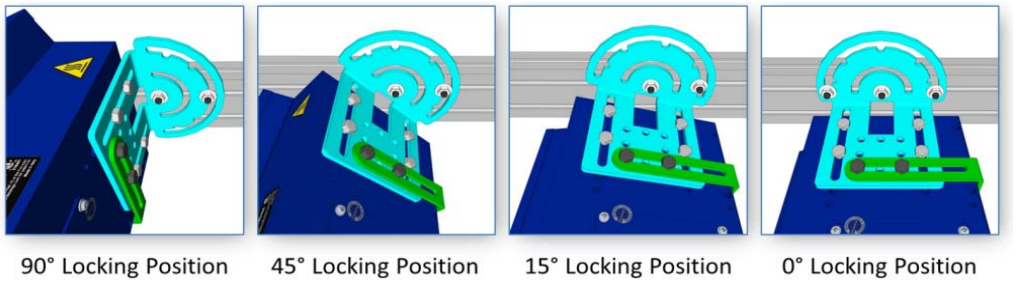

90° Locking Position
45° Locking Position
15° Locking Position
0° Locking Position


RIGHT
LEFT

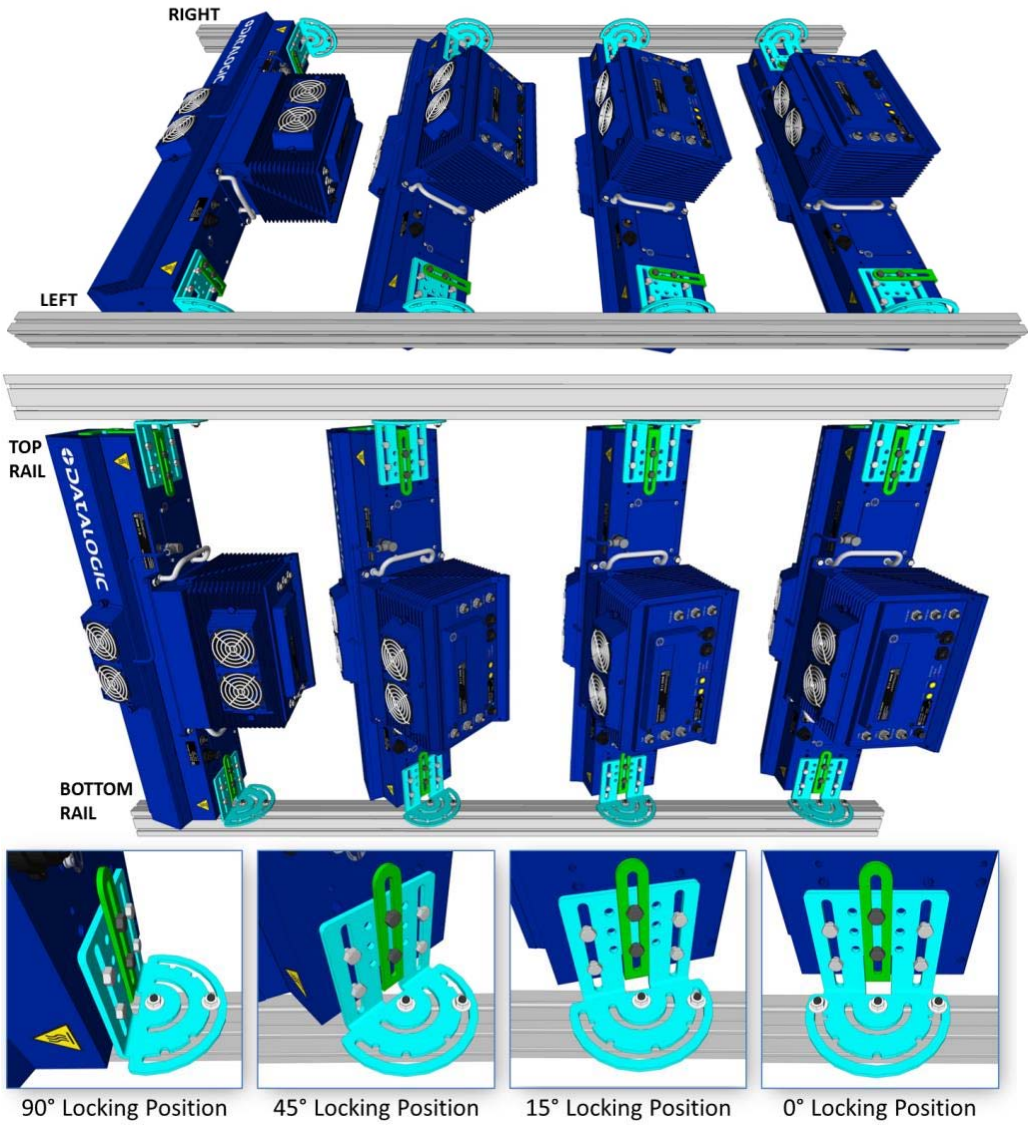

TOP
RAIL
BOTTOM
RAIL
90° Locking Position
45° Locking Position
15° Locking Position
0° Locking Position

Alternative Camera Mounting Between Rails

In some cases when you need to save space, the AV7000 Camera (and deflection mirror) can be mounted directly between the rails, without the use of the Rising Bracket.



90° Locking Position 45° Locking Position 15° Locking Position 0° Locking Position



90° Locking Position 45° Locking Position 15° Locking Position 0° Locking Position

Mounting the AV7000 Camera to the AI7000 Illuminator

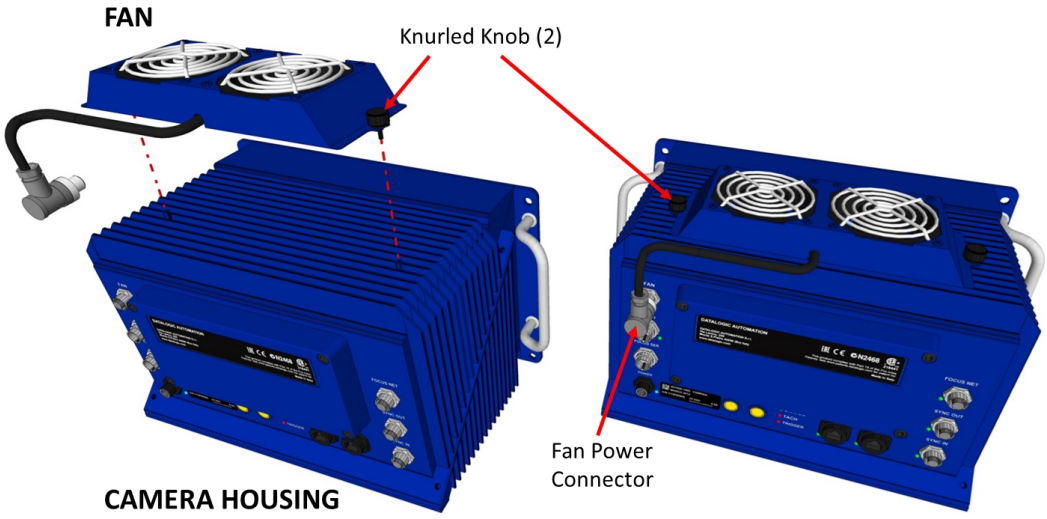
The AV7000 can be installed to operate in any position and the AI7000 Illuminator can be used for any installation; refer to reading diagramsd any application drawings for correct positioning of the camera with respect to the reading zone and camera orientation. Typically, the illuminator is mounted to the system mounting structure, and then the camera is bolted to the illuminator.

Mounting the fan to the camera housing

The AV7000 Camera is shipped without the cooling fan attached to the top of the housing. Before mounting the camera to the illuminator, first mount the fan to the camera housing, as shown below.

To mount the cooling fan to the camera housing:

1. Position the fan over the housing and insert the knurled knobs (bolts).
2. The knurled knobs should be finger tight. Do not over-tighten.
3. Push the fan's power connector into the **FAN** connector on the back of the camera housing, and screw it in place.



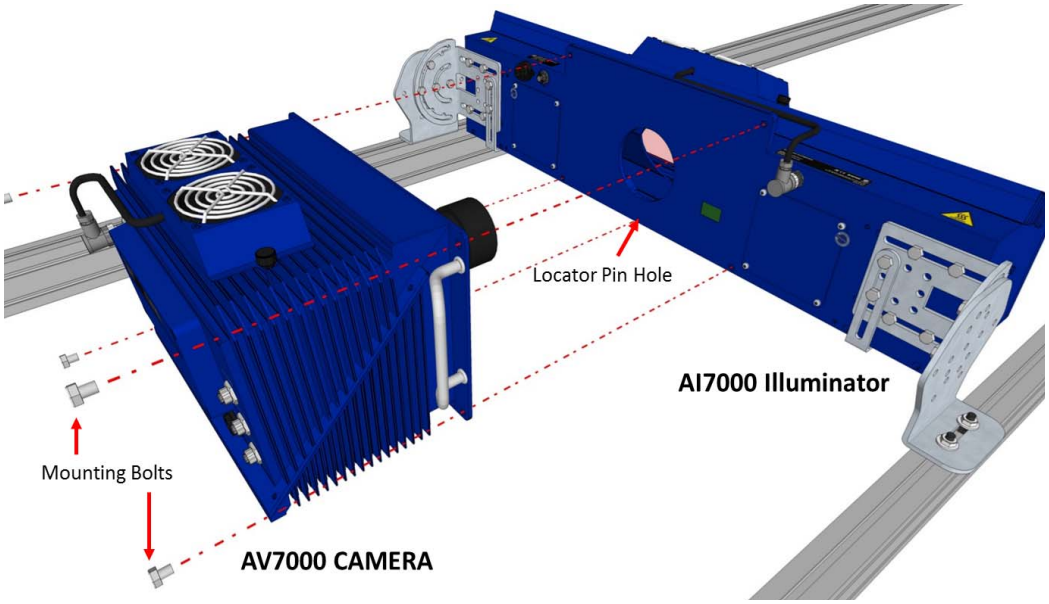
The cooling fan should be plugged into the camera's FAN port before the camera has been powered up. If the cooling fan is plugged into the camera after the camera has been powered up, the camera may not recognize and power the fan until the camera is rebooted.

Mounting the Camera to the Illuminator

After the cooling fan has been installed on the camera housing, the camera can be mounted to the illuminator as follows:

1. Make sure the illuminator is firmly mounted to the mounting structure.
2. Remove the dust cap from the lens access on the back of the illuminator.

3. Lift the camera into place, inserting the lens through the lens hole and the Locater Pin into the Locater Pin Hole. *See illustration below.*



4. Push the camera in place against the back of the illumination and secure it by turning a mounting bolt through the camera housing and into one of the mounting holes in the illuminator. Finger-tighten the bolt for now to secure the camera and prevent it from slipping out of the illumination.

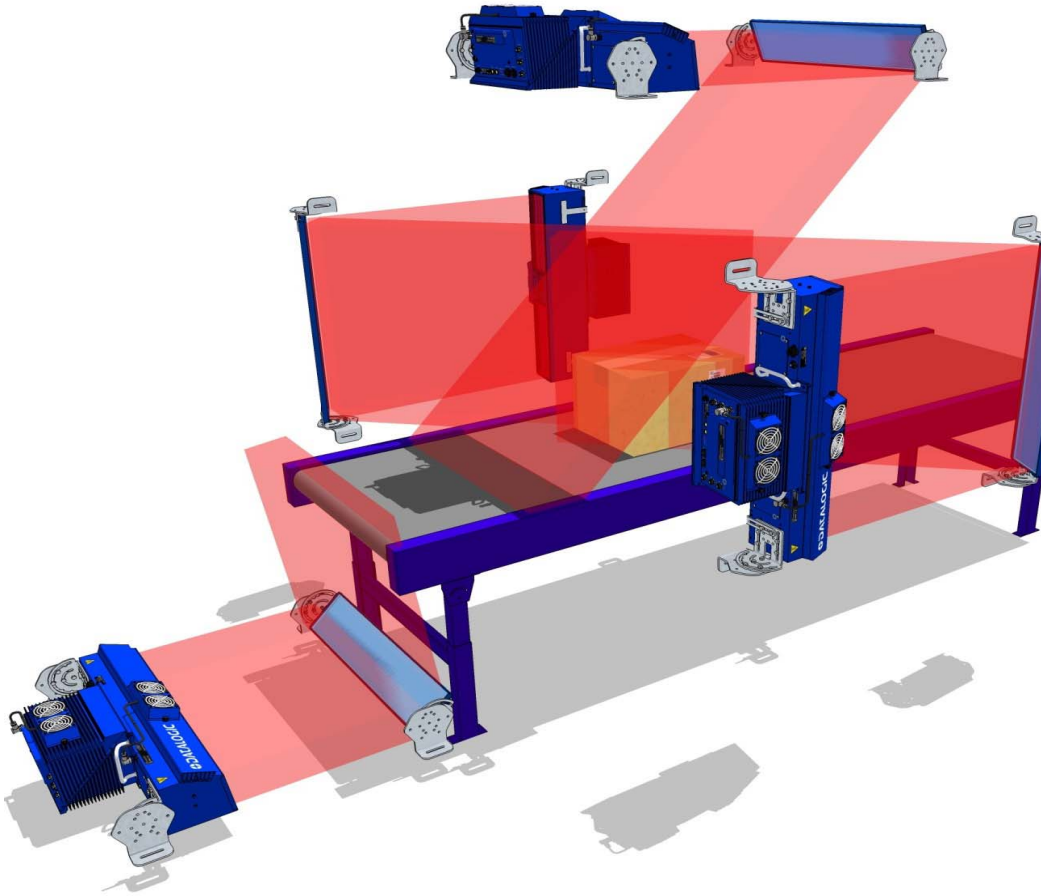
NOTE

The spring-loaded Focus Lock will push against the illuminator creating some resistance. As the bolts are tightened, the Focus Lock is pushed in to release the focusing mechanism.

5. Add the remaining bolts, and securely fasten the camera to the illuminator.

INSTALLING THE DEFLECTION MIRROR

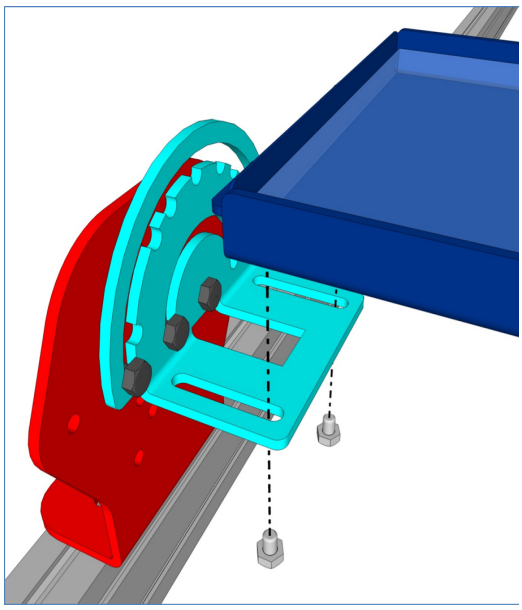
The external deflection mirror allows the AV7000 Camera to be mounted parallel to the conveyor, which can save space while allowing the light from the illuminator and image view to be angled for precise image capture.



Deflection mirrors are mounted much like the illuminations, and use the same Rising Bracket, with a modified Main Bracket. The illustration below shows bracket assembly and mounting positions relative to the mounting structure. The illustration shows mirrors angled for 45-degree reflective angles, except for the bottom-read mirror, which is angled for an 8-degree reflective angle (off vertical).

Deflection Mirror Bracket Angles

Standard deflection mirror bracket angles are shown below. The **YELLOW** bolt indicates the locking position between the Main Bracket (blue) and Rising Bracket (red). The named angles are reflective view angles, and not the physical angle of the bracket, as shown in the illustration below.



NOTE

When mounting top mirrors to the brackets, start with the mirror brackets in the 0-degree position. Then you can set the mirror on the bracket without the fear of it sliding off before you can insert the mounting bolts. Once mounted, loosen the main bracket bolts, and angle the mirror as desired.

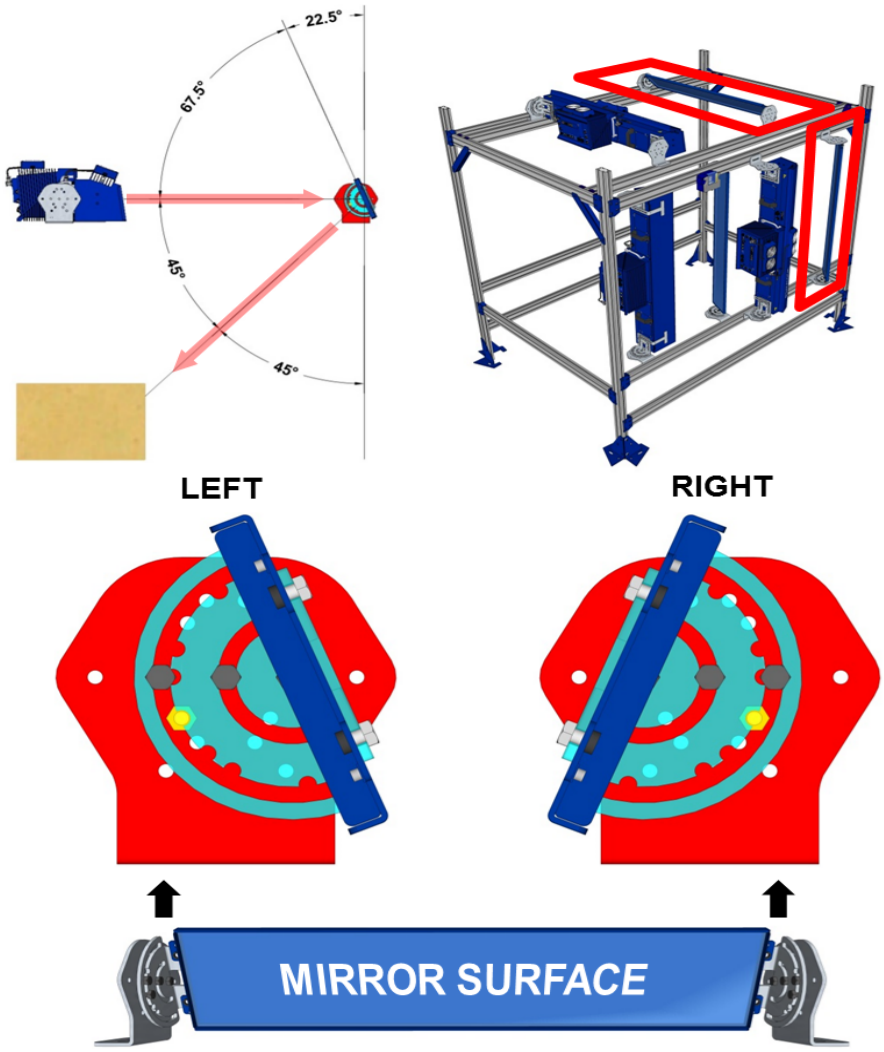
It is critical that the brackets do not stress or flex the mirror, as this will cause focusing and calibration issues.

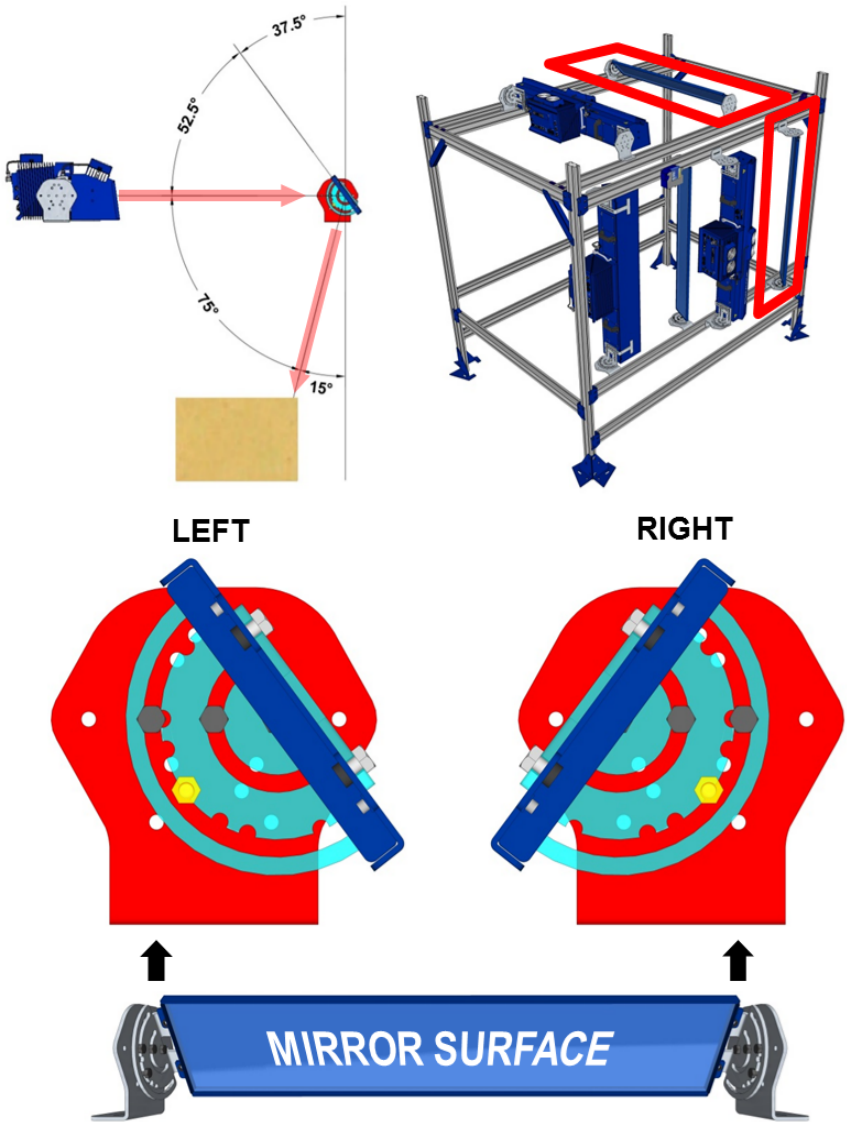
The left and right brackets must be parallel and square to each other.

To Do This:

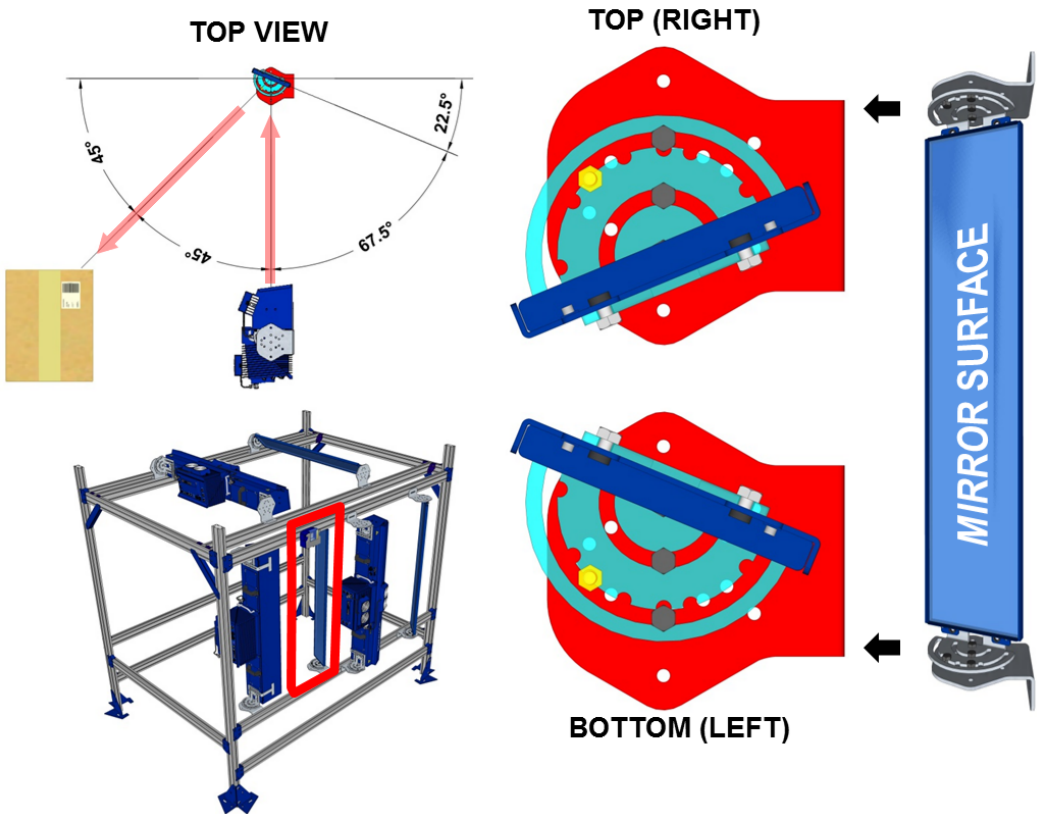
1. Carefully install the mirror as usual, following application specifications.
2. Loosen all the bracket adjustment bolts on the bracket at one end of the mirror to relieve any stress on the mirror.
3. Re-tighten the bolts.

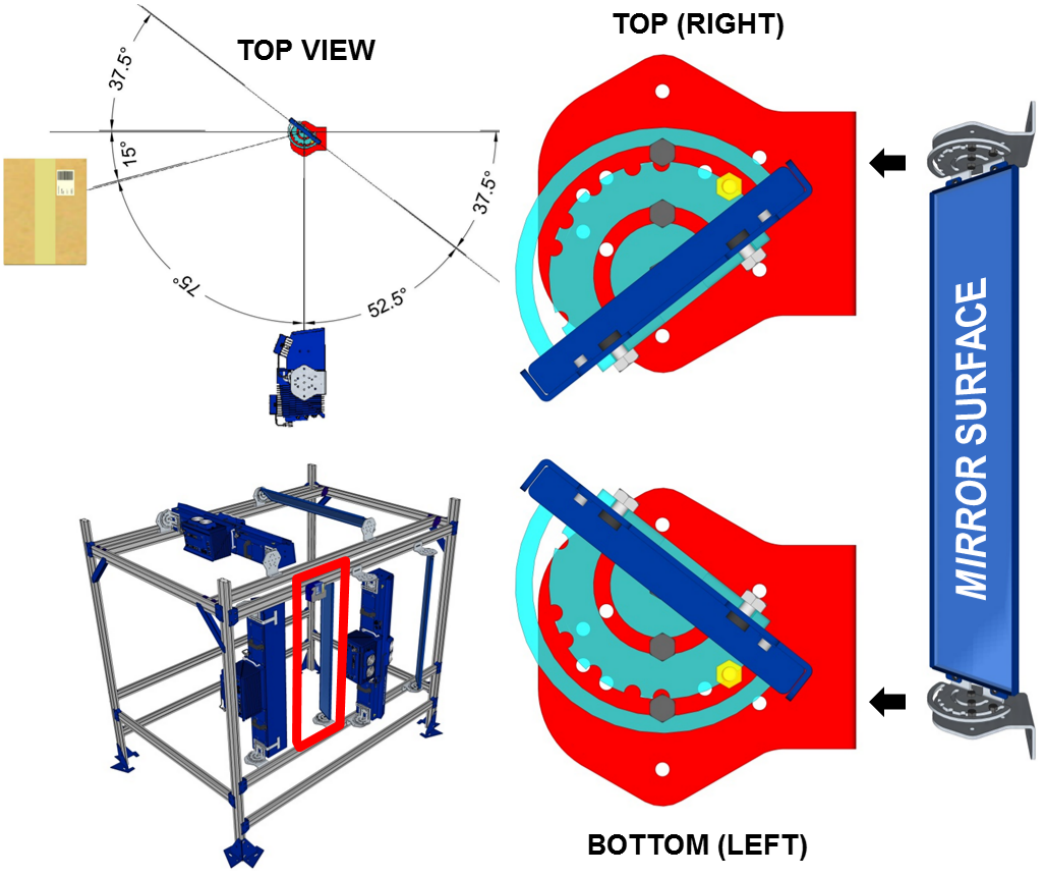
If the mirror still seems to be stressed, loosen and re-tighten the bolts of the opposite bracket. If that doesn't relieve any stress on the mirror, the mounting structure frame may not be square and will need to be adjusted.

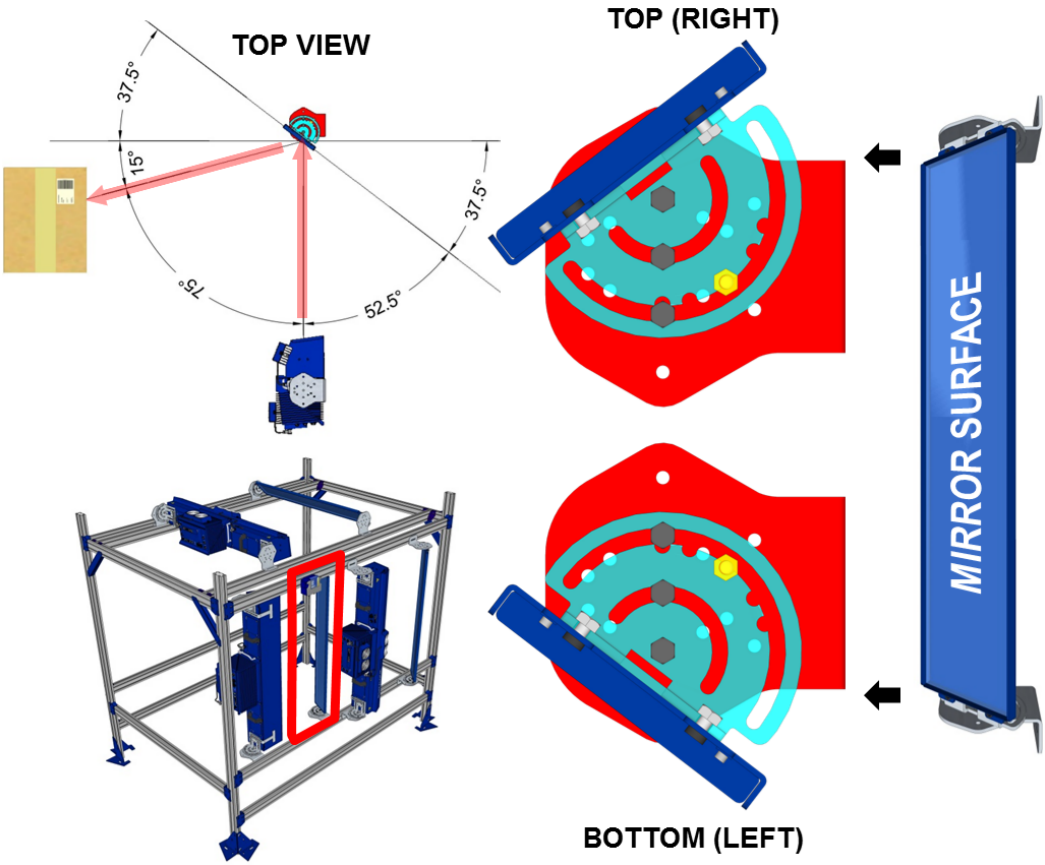

22.5°
67.5°
45°
45°
LEFT
RIGHT
MIRROR SURFACE



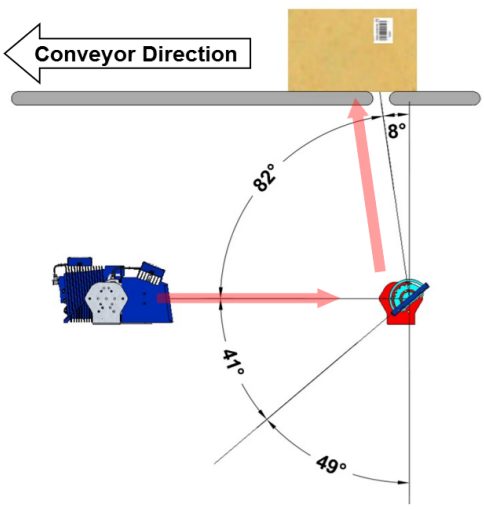
In some cases, it may be necessary to install side mounted AV7000 Cameras and deflection mirrors on the inside of the mounting structure (closer to the conveyor), as shown below. Notice that to achieve a 15-degree locking angle, the mirror must be mounted on the outside of the main bracket.

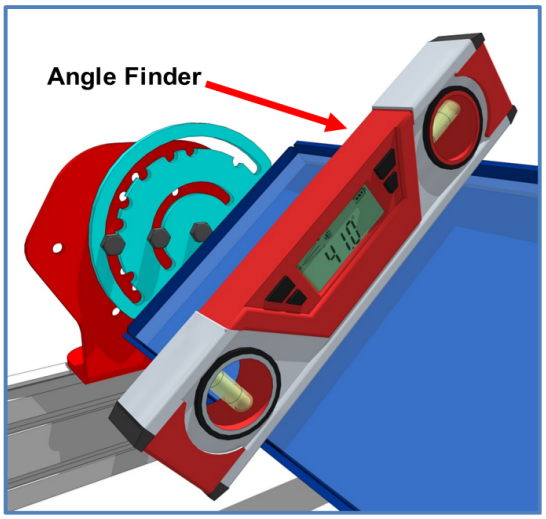

TOP VIEW
22.5°
45°
45°
67.5°
TOP (RIGHT)
MIRROR SURFACE
BOTTOM (LEFT)


TOP VIEW
37.5°
15°
75°
37.5°
52.5°
TOP (RIGHT)
MIRROR SURFACE
BOTTOM (LEFT)



Deflection mirrors for bottom mounted AV7000 Cameras should be mounted to create an 8-degree view angle (from vertical). However, the angle must be set up manually because **there is no locking hole** in the bracket for this angle. Using an electronic angle finder, tilt the mirror 41-degrees off the horizontal, as shown below. Securely tighten the bracket bolts.

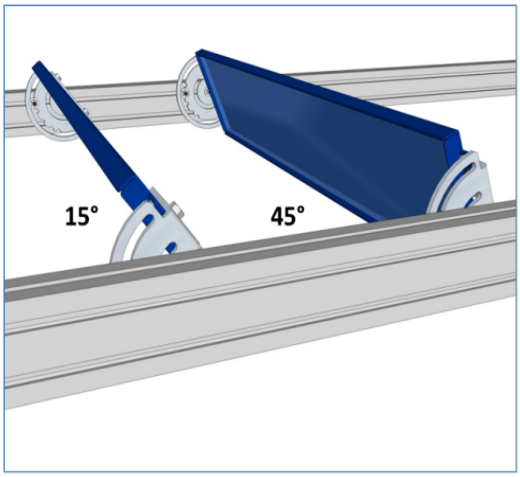


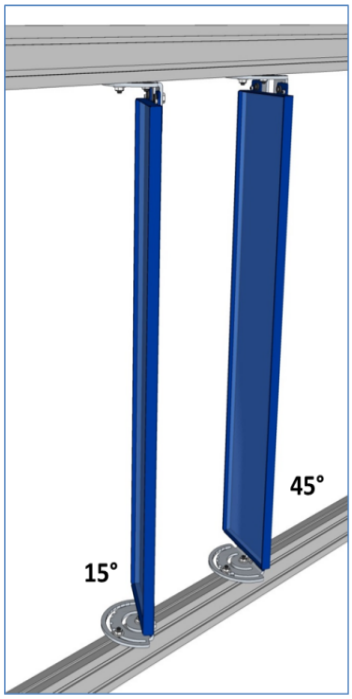


NOTE **A bottom read mirror should be mounted upstream of the gap in the conveyor to minimize debris build up.**

Alternative Deflection Mirror Mounting Between Rails

Like the AV7000 Camera, the deflection mirror can also be mounted between the mounting structure rails, as illustrated below.



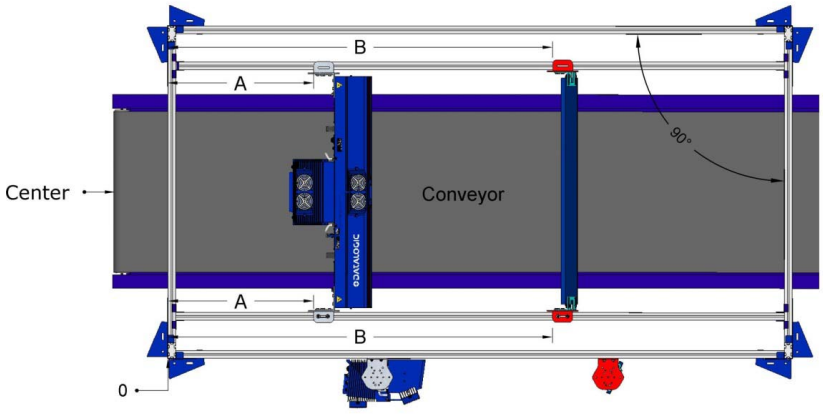


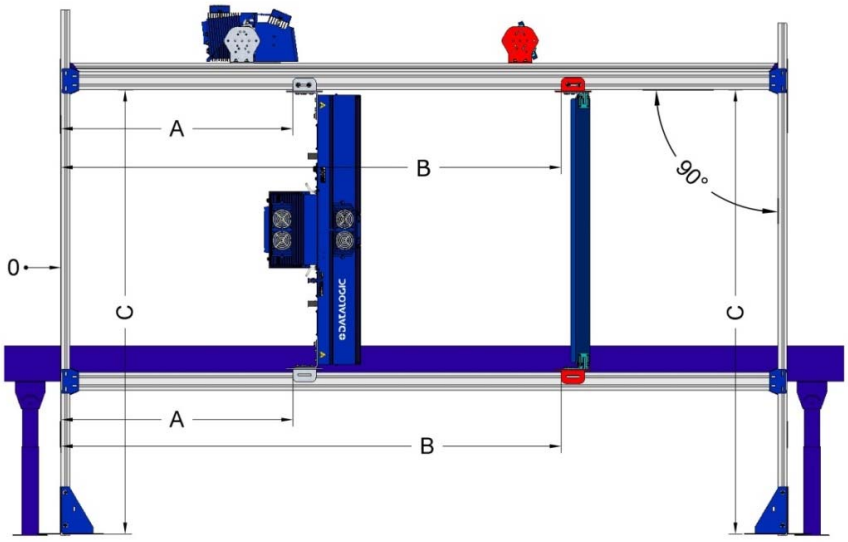
ALIGNING THE AV7000 WITH DEFLECTION MIRRORS

When using deflection mirrors with the AV7000 reader, which is typical, the mirrors must be mounted parallel to the reader and at the correct distance to allow for proper focus and the highest read rate. Reference the system's application drawing for distances **A** and **B** shown in the illustration below. Distances **A** and **B** are measured to the edge of the Rising Bracket base, as shown.

When mounting the readers and mirrors, make sure:

- the structure is centered and squared to the conveyor
- deflection mirrors and readers are perpendicular to the structure rails
- deflection mirrors are parallel to their AV7000
- deflection mirror does not twist when mounted




A
B
90°
0
C
C
A
B

CHAPTER 3
ELECTRICAL INSTALLATION

The AV7000 contain electronics that may be affected by electrostatic discharge (Electrical Installation must be performed by Qualified Service Technicians Only! Procedures may involve exposure to high-voltage. A trained and authorized technician must perform these procedures. Do not attempt to perform any electrical installation procedures unless you are a trained technician.

Electrical Installation must be performed by Qualified Service Technicians Only! Procedures may involve exposure to high voltage. A trained and authorized technician must perform these procedures. Do not attempt to perform any electrical installation procedures unless you are a trained technician.

PREPARING FOR ELECTRICAL INSTALLATION

Before mounting any components, please do the following:

- Read all instructions before beginning your installation.
- Observe all electrical safety requirements discussed in the Introduction to this manual.
- Define and confirm the accuracy of your application's requirements.
- Review all installation-specific drawings.
- Review and plan the power requirements for your application.
- Review and plan the communications requirements for your application.

The content of this manual may be superseded by any customer-specific documentation provided by Datalogic. Before proceeding with any installation procedures, be sure to review ALL documentation, especially content that contains details specific to your installation.

Everything should be MECHANICALLY INSTALLED before performing any ELECTRICAL INSTALLATION. See Chapter 2 **for mechanical installation details.**

Most AV7000 applications are shipped with the CBX connection box and all the necessary cabling required to electrically install the system. If your system requires custom-length cables or other special wiring, documentation specific to these requirements has been provided in your shipment. This special documentation supersedes any contradictory content in this manual.

To reduce the possibility of damage to the unit, check all cabling between the AV7000 camera and other devices for accuracy.

CONNECTING AN AV7000 CAMERA

To install an AV7000, follow this sequence:

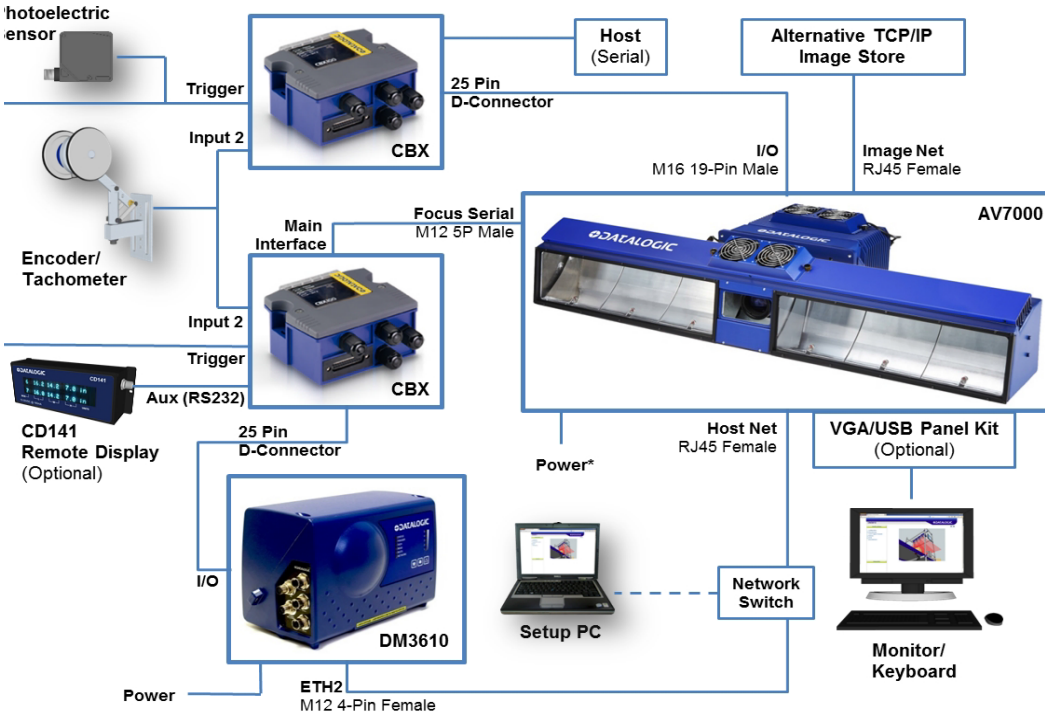
1. Complete mechanical installation *(See "Mechanical Installation" on page 20.)*
2. Complete electrical installation *(See wiring illustrations provided in this chapter.)*
3. Observe all electrical safety requirements outlined in this chapter.
4. Ground the mounting structure to protective earth (PE) ground.
5. If used, wire the photoelectric sensor (or other trigger) and the focusing device (Light Curtain, S80, DM3610 or RangeFinder) to the CBX connection box.
6. Wire the tachometer to the CBX connection box.
7. Wire serial ports to the CBX connection box if needed.
8. Connect the M12 end of the Ethernet cable to the barcode reader's HOST NET port and network switch as required by your application.
9. Wire the Remote Display to the CBX connection box (if used).
10. Connect the AV7000 to its power supply.
11. Connect the power supply to the power source.
12. Setup / check camera operations.

TYPICAL CONNECTION BLOCK DIAGRAMS

In each diagram below a Speed Detector may take the place of the encoder when a tilt-tray or cross-belt conveyance is used.

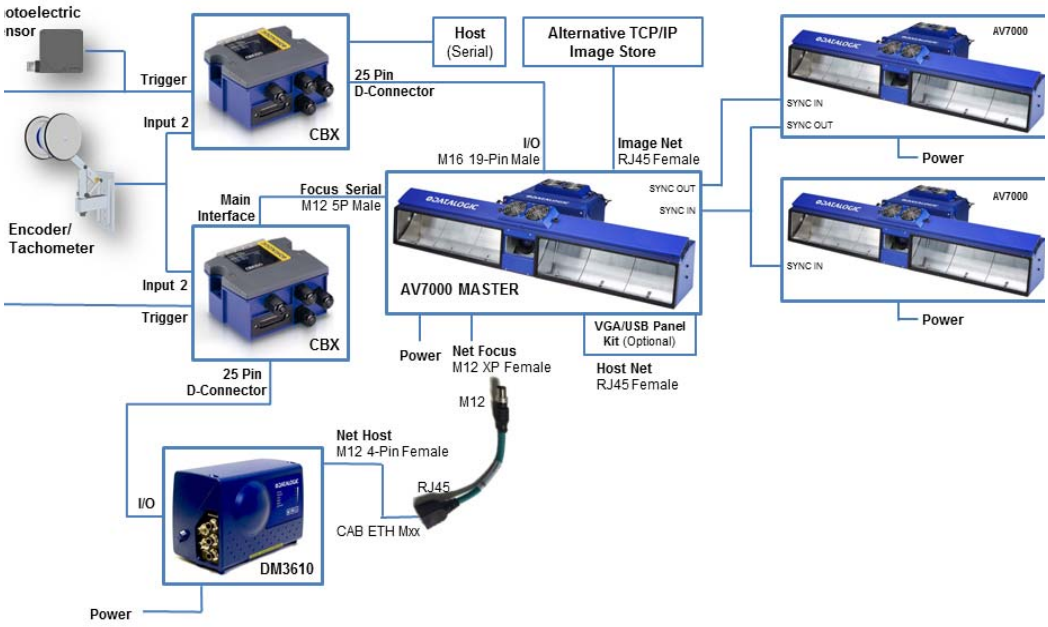
A CBX510 Connection Box can be used in place of the CBX100 Connection Boxes shown in the following block diagrams.

Single Head AV7000 with DM3610

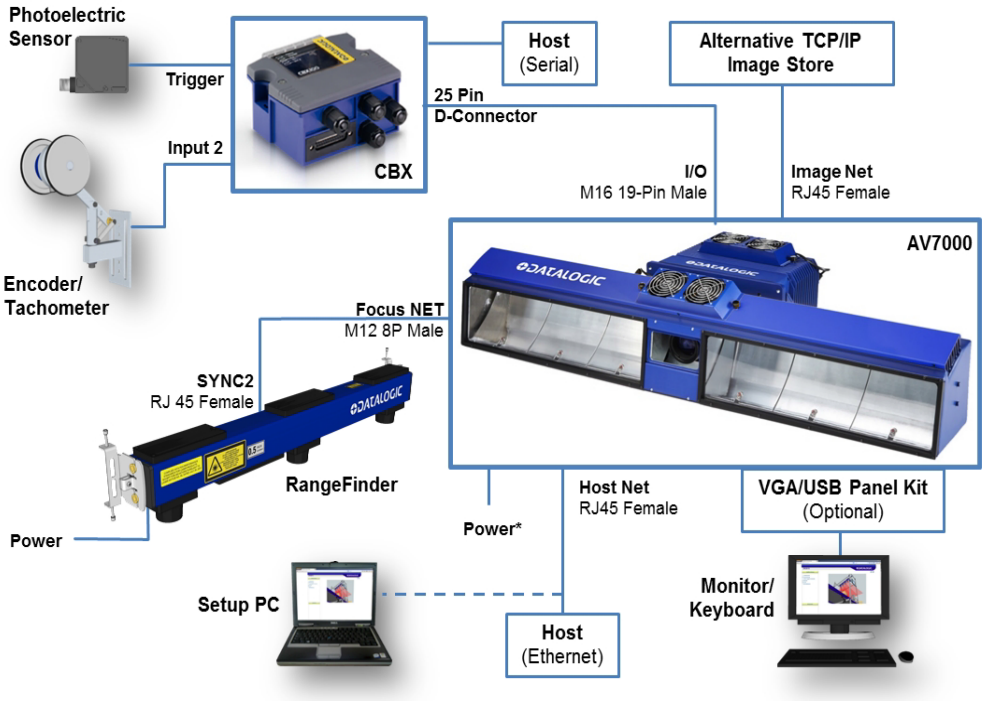


* See section for AV7000 power supply connections.

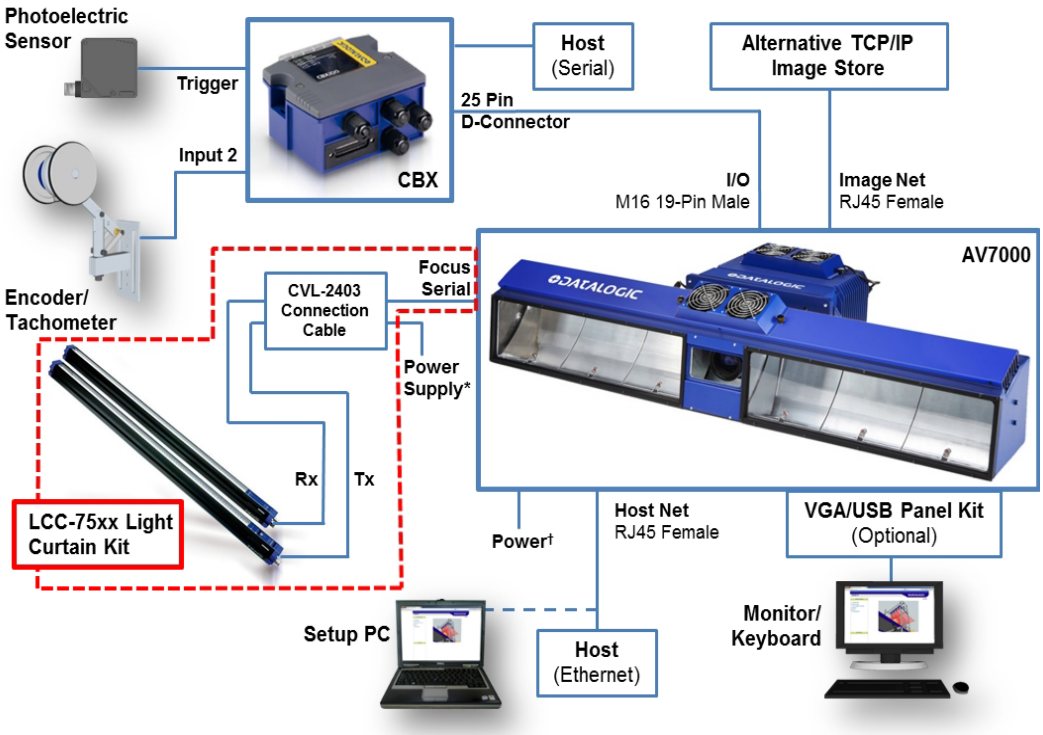
Easy DM3610 and AV7000



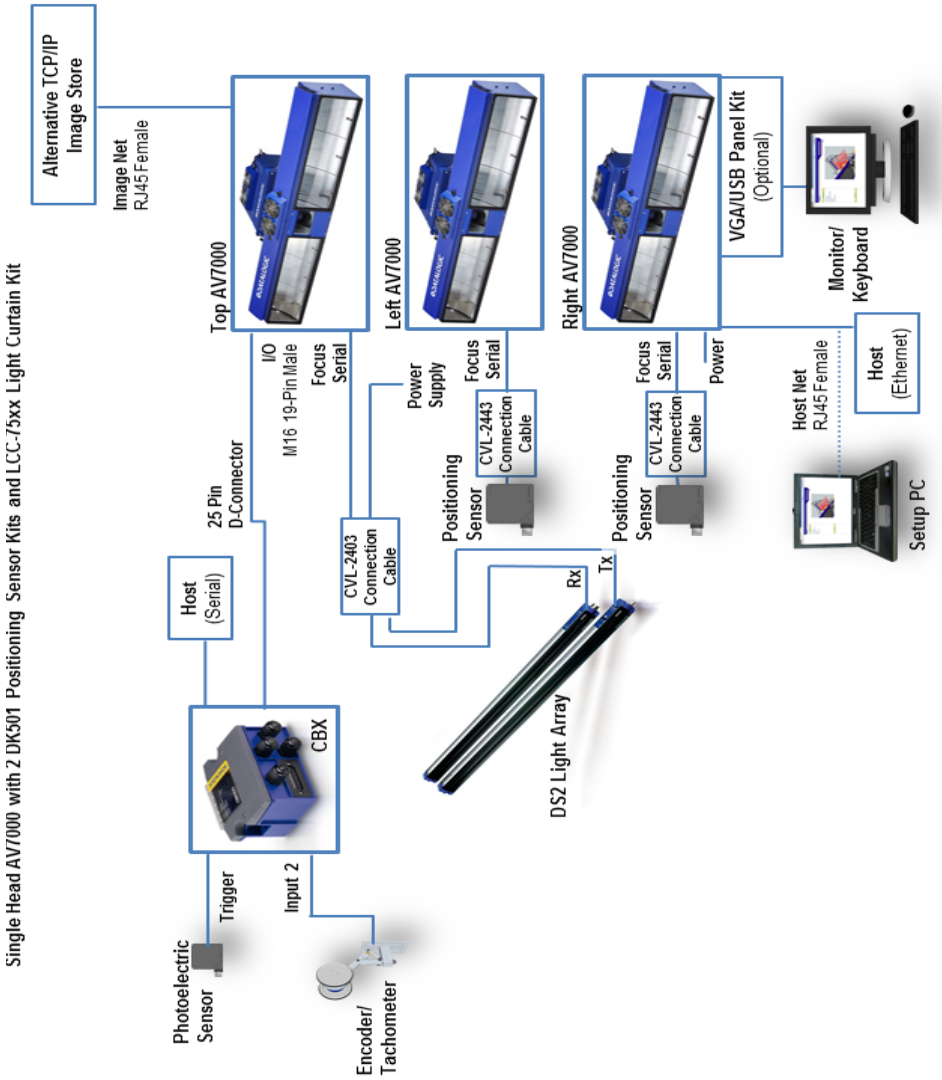
Single Head AV7000 with RangeFinder



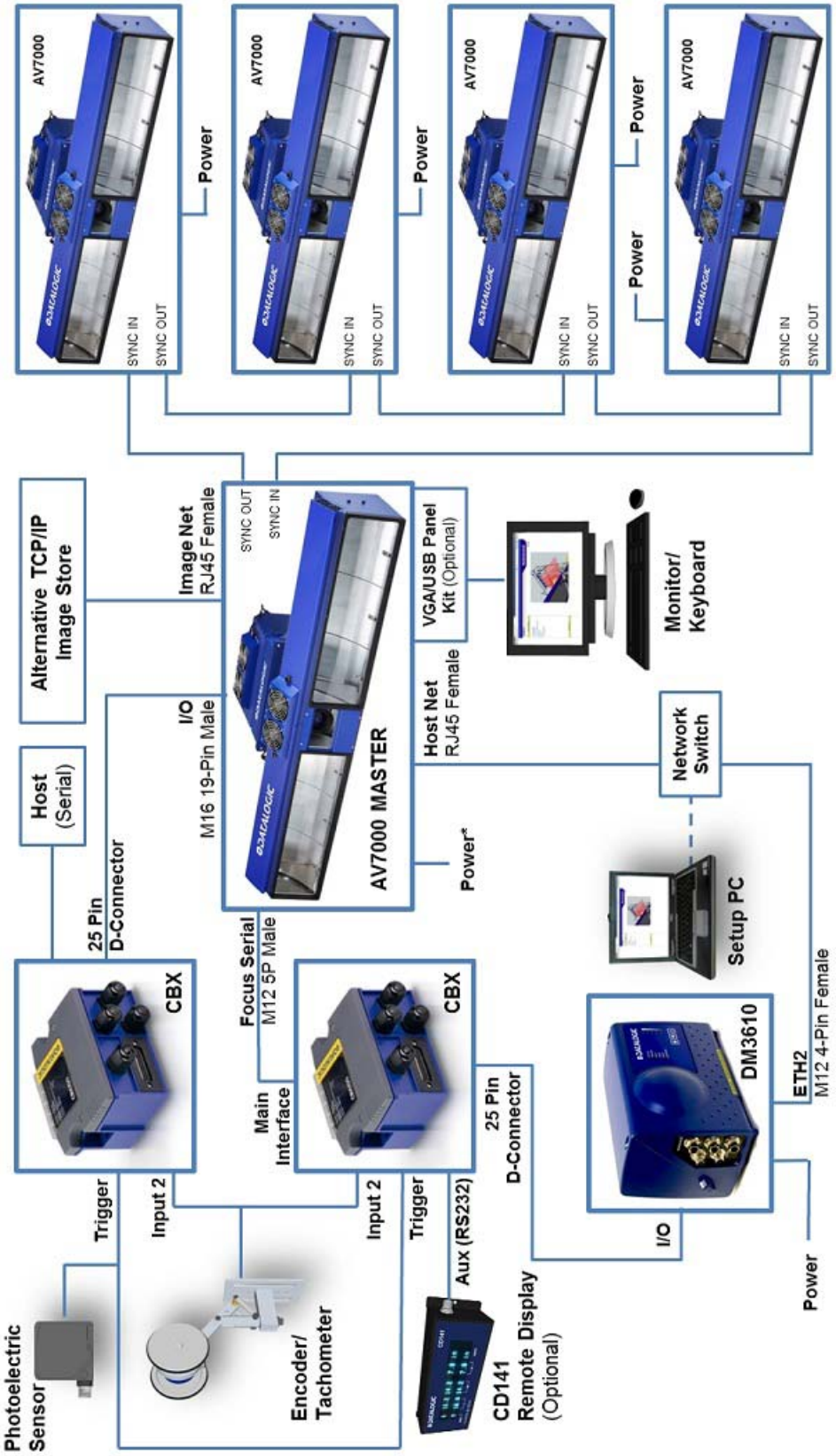
Single Head AV7000 with LCC-75xx Light Curtain Kit



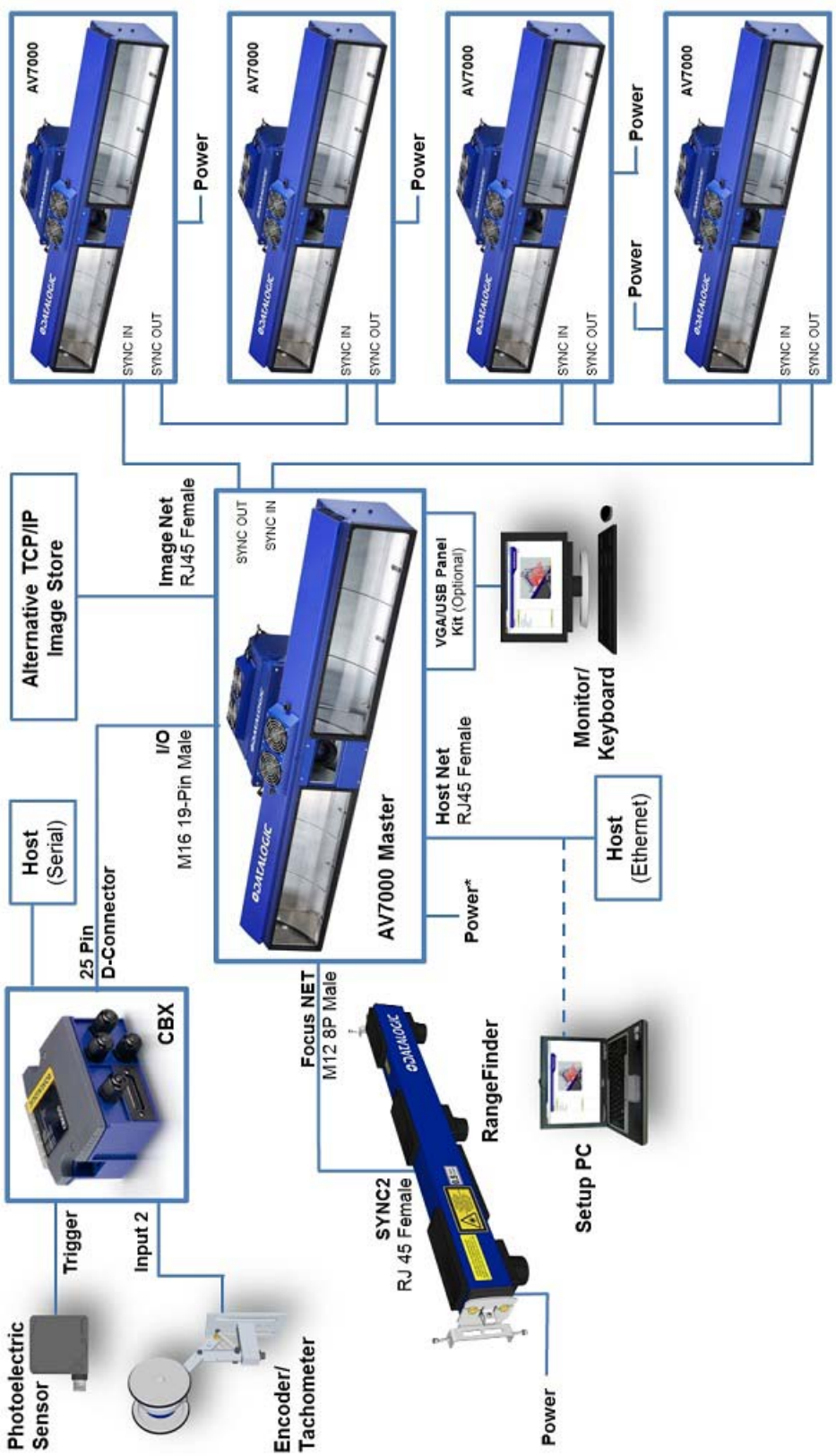
Multi-Head AV7000 with Two DK501 Sensors and LCC-75xx Light Curtain



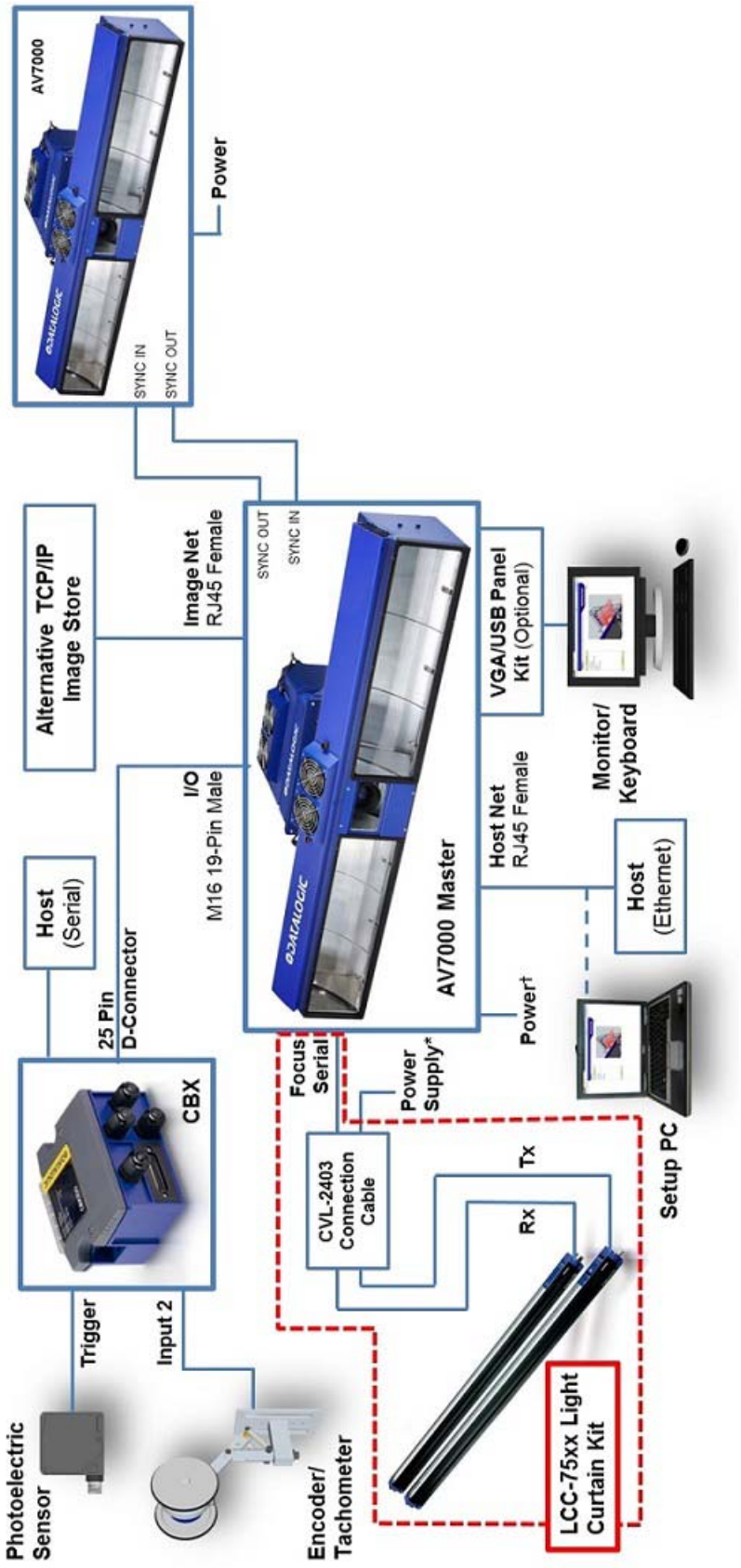
Controller/Client Array with DM3610



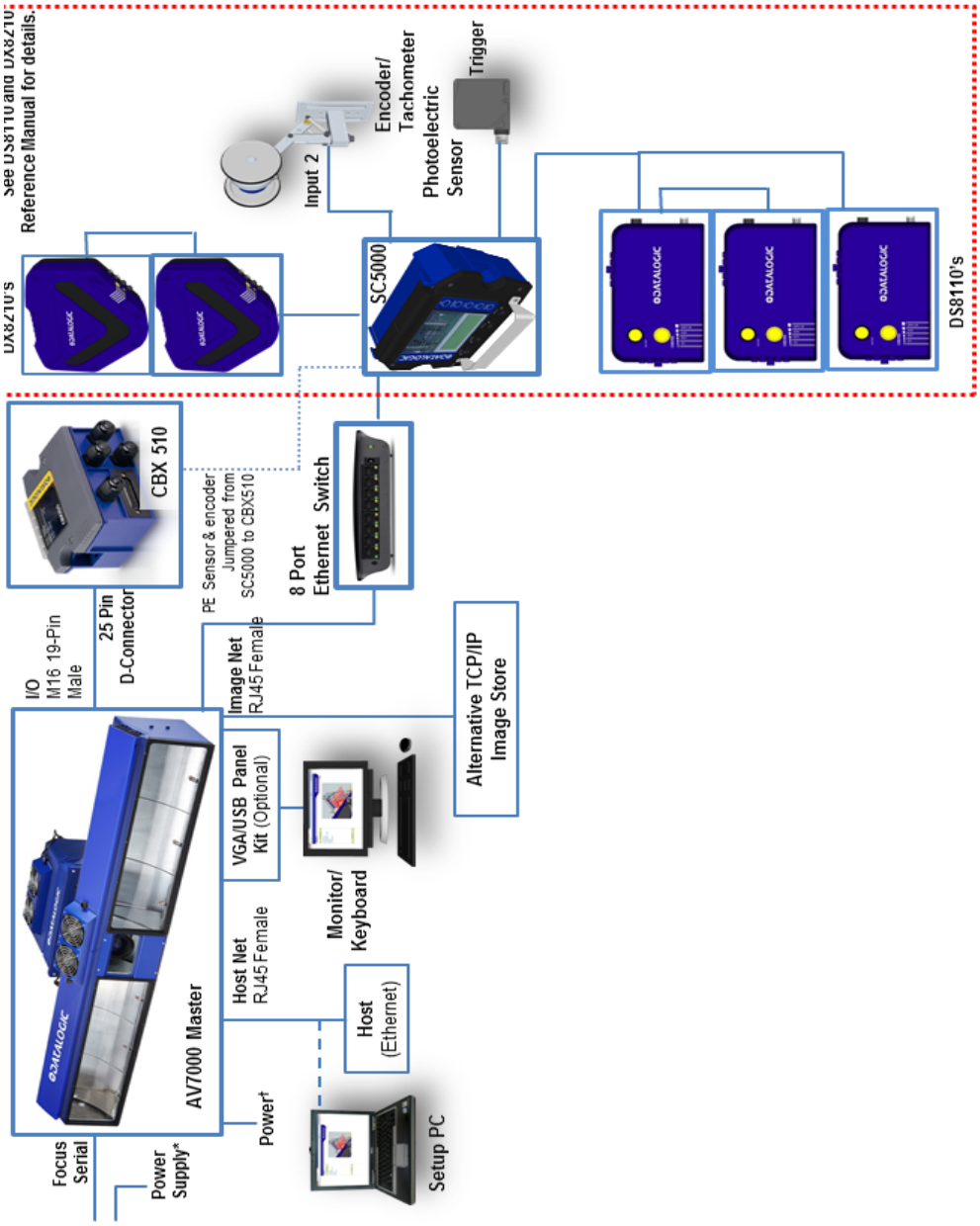
Controller/Client Array with RangeFinder



Controller/Client Array with LCC-75xx Light Curtain Kit



AV7000 in Hybrid Configuration



ELECTRICAL INSTALLATION GUIDELINES

It is important that you follow these general precautions when installing, setting up, operating, maintaining, troubleshooting or replacing any Datalogic products, parts or related equipment.

As you plan and install your barcode reader(s), be sure to keep the following guidelines in mind:

- Determine the camera is in the proper location as outlined in Chapter 2.
- Leave adequate clearances (approximately 300mm [12 in]) for wiring.
- Route wires carefully to reduce or minimize electrical noise.
- When extraneous power and communication wiring must cross, make their intersection perpendicular. Avoid running power and data wiring parallel to each other. If possible, maintain one of the following separations between the power and data wiring:
- 300 mm [12 in] gap
- use steel conduit and 25 mm [1 in] gap
- 6.5 mm [0.25 in] of aluminum.

When planning your installation wiring, remember all power connections must be quick-disconnect. For PERMANENTLY CONNECTED EQUIPMENT a readily accessible disconnect device must be incorporated in the building installation wiring. For PLUGGABLE EQUIPMENT the socket-outlet must be installed near the equipment and must be easily accessible

To assure no ESD damage will occur, be sure to observe the precautions outlined in the Introduction to this manual.

Ground the mounting structure to safety ground (protective earth ground (PE)).

AV7000/AI7000 CONNECTOR PANELS

After completing mechanical installation, use this section to properly wire your cameras for optimal performance in your application. AV7000 wiring connections are made to the connector panel and through the CBX connection box (via the I/O port). In most applications, the cable connections to the barcode reader will include:

AI7000 Illumination

1. **POWER IN** – Main DC power connection for AV7000/AI7000 assembly
2. **POWER OUT** – Supplies DC power via cable to POWER connector on AV7000
3. **FANS** – Supplies DC power to AI7000 illumination fan units

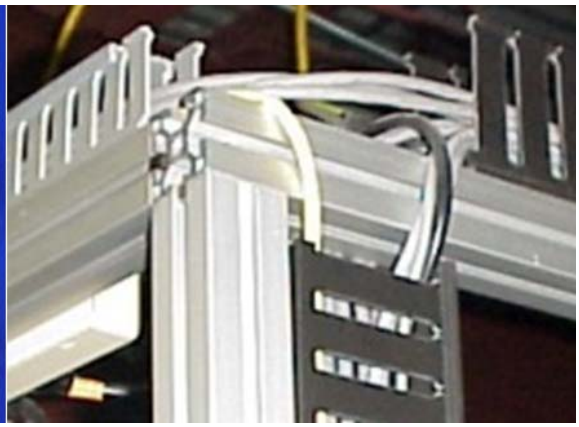
AV7000 Camera

4. **FAN** – Supplies DC power to AV7000 fan unit
5. **I/O** – Provides connection to CBX Connection Box
6. **FOCUS SER** – Provides serial focus data to the camera (ex. light curtain, S80)
7. **POWER** – Connector receiving power from AI7000 POWER OUT
8. **USB1** – OPTIONAL USB Keyboard and Mouse connection
9. **VGA** – OPTIONAL Monitor connector
10. **HOST NET** – Configuration and dimensioning data from the DM3610 if used
11. **IMAGE NET** – Configuration, Remote Monitor application, or image export
12. **SYNC IN** – AV7000 internal data, device network
13. **SYNC OUT** – AV7000 internal data, device network
14. **FOCUS NET** – Network focus data (RangeFinder)

WARNING

If a connector is not in use, it should always be covered with its protective cap.

Route wiring from the barcode reader's connector panel through the wiring channels (if available) on the Datalogic mounting structure when interconnecting cables to other devices.



CONNECTING A PC TO THE AV7000

During initial setup, a PC (laptop) may be connected to the AV7000 with an RJ45 cable. Connect an Ethernet cable from the **HOST NET** or **IMAGE NET** port of the AV7000 to the Ethernet port of your PC. For information on connecting to e-Genius, *see Chapter 4.*

NOTE

Parameters for tunnel are set up in the MASTER AV7000 only.

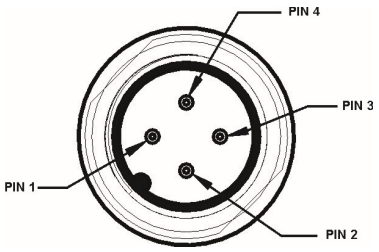
P Address for HOST NET and IMAGE NET are as follows:

HOST NET – 192.168.3.10

IMAGE NET – 10.0.40.20

POWER CONNECTOR PIN-OUT TABLE (CUSTOM POWER SUPPLY)

A recommended power supply and cabling is available for the AI7000 Illumination, which then supplies the AV7000 Camera. However, if your installation requires custom power supply wiring, the pin-outs of the AV7000 camera power connector are provided below.

<table>
<tr><td colspan="2" rowspan="2">24V - - - 4A MAX</td><td colspan="2">POWER Input</td></tr>
<tr><td>Unit Connector (shown)</td><td>Mating cable connector</td></tr>
<tr><td colspan="2"></td><td>4-PIN M12-TYPE MALE</td><td>4-PIN M12-TYPE FEMALE</td></tr>
<tr><td rowspan="5">MALE 4-PIN M12-TYPE
 
</td><td>Pin</td><td>Name</td><td>Function</td></tr>
<tr><td>1</td><td>GND</td><td>Input Power Ground</td></tr>
<tr><td>2</td><td>+24 VDC</td><td>Input Power + 24Vdc</td></tr>
<tr><td>3</td><td>+24 VDC</td><td>Input Power + 24Vdc</td></tr>
<tr><td>4</td><td>GND</td><td>Input Power Ground</td></tr>
</table>

NOTE

When using an AI7000 Illumination and AV7000 Camera, no power supply is required for the CBX connection box. All power and some communication options are fed to the CBX through the AV7000's 19-pin I/O connector to the CBX 25-pin connector using the cable provided.

POWER CONNECTIONS

WARNING

When planning your installation wiring, remember all power connections must be quick-disconnect.

The socket-outlet must be installed near the barcode reader. The outlet must be a readily accessible disconnect device.

Ground the barcode reader to safety ground (protective earth ground (PE)).

While performing the following wiring connection procedures, be sure to follow all safety procedures regarding high-voltage as outlined in the Introduction to this manual. No power should be applied to any device until all wiring is completed and checked for accuracy.

The CBX connection boxes provide flexible connectivity to a range of I/O devices as well as serial hosting. The AV7000 connects to the CBX via its I/O port using a single 19-pin M16 to 25-pin D cable.

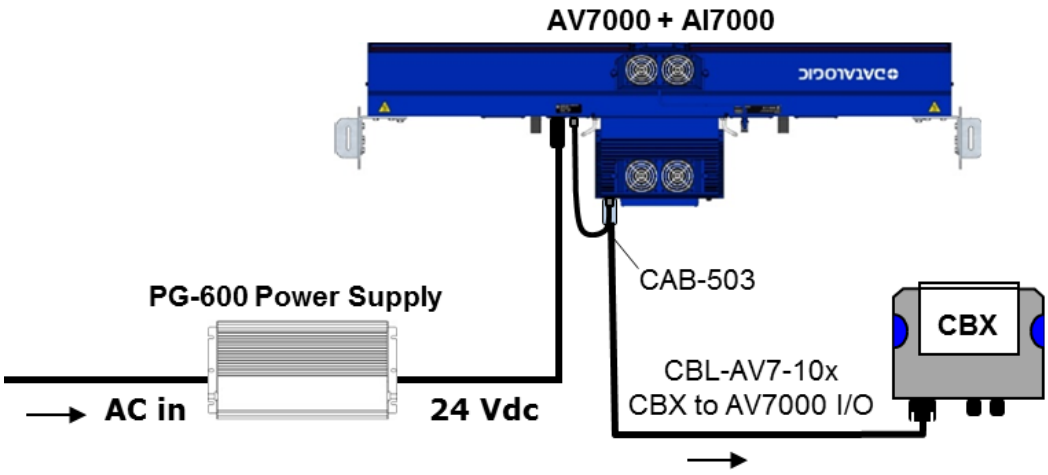
Power Supplies and Supply Capacity When Wiring to AI7000s

There are two Datalogic power supply options.

A **PG-600** is able to power:

One AI7000 illuminator (including the AV7000 camera which is powered via this unit and one CBX510 with all the standard sensors)

The power supply unit is connected to the camera illuminator according to the following diagram (power supply side):



NOTE

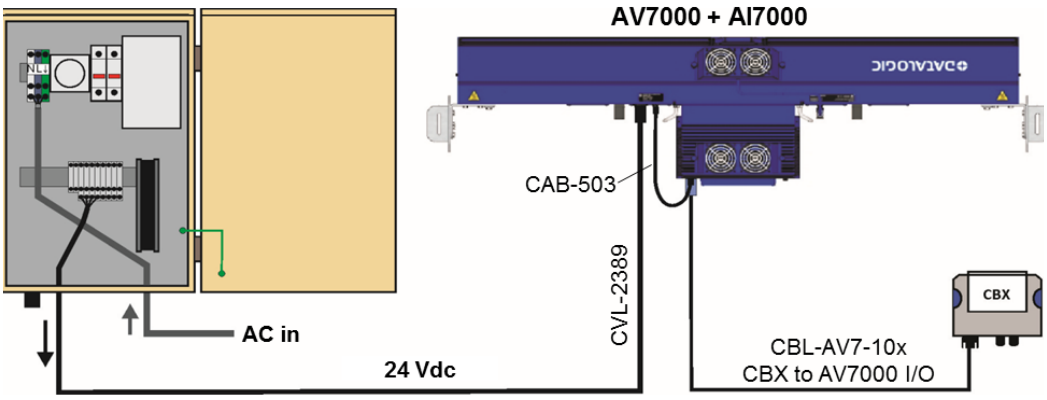
If the PG-600 is mounted further than 1 M [3 ft] from the AV7000/AI7000, use the CVL-2389 power extension cable include in the illuminator package.

The CBX510 connection box receives power through the CBL-AV7-10x from the AV7000 IO connector.

A **PWR-480B** is able to power:

One AI7000 illuminator (including the AV7000 camera which is powered via this unit and one CBX510 with all the standard sensors)

The power supply unit is connected to the camera illuminator according to the following diagram (power supply side):



NOTE

The AI7000 series illuminators are supplied with CVL-2389 extension power cable. Use this cable to connect the PWR-480B power supply by cutting off the cable's male Amphenol connector and connecting the wires to the PWR-480B according to the table below:

CVL-2389 Wire Color or Number (Depending on Source)		Function
White	1	GND
Green	2	+ 24 Vdc
Red	3	+ 24 Vdc
Black	4	GND

The CBX510 connection box receives power through the CBL-AV7-10x from the AV7000 IO connector.

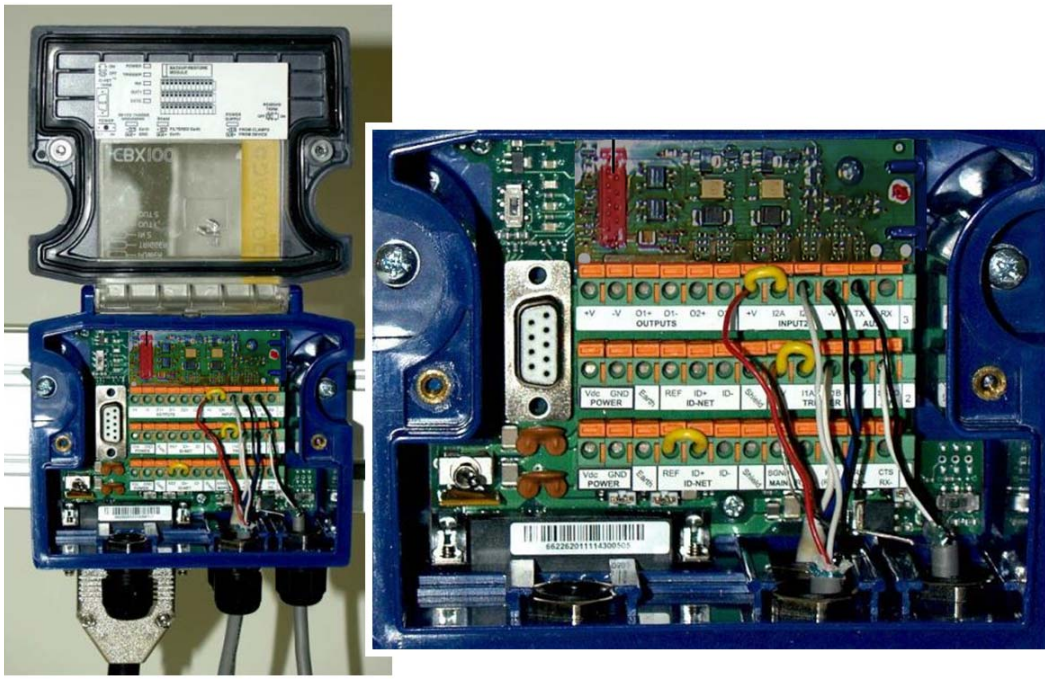
WIRING INTO THE CBX CONNECTION BOX

WARNING

DO NOT connect a separate power source to the CBX connection box. The CBX receives its power through its connection to the AV7000. Connecting a separate power source will be detrimental to the system operation

As shown below, loose-lead cables must pass through the water-tight seals in the base of the CBX connection box (CBX100 shown). Insert the cables allowing enough slack for the individual wires to reach the appropriate pin block connectors. Securely tighten the water-tight seals after the cables have been inserted.

Insulation on individual wires should be removed to expose 13 mm [0.5 in] of bare metal before inserting into the pin block.



WARNING

If you are terminating more than one wire in a single terminal, cut off any tinned ends and twist the wires together before inserting them into the terminal.

Selecting the Correct CBX Connection Box for Your Application

As shown in *section Typical Connection Block Diagrams*, typical applications require a single CBX connection box to connect the trigger and encoder inputs to the master camera. The camera sources power to these devices. Other possible CBX connections are for digital outputs or a serial host.

- **CBX100** - used for slave cameras (and as an alternative for master cameras). It provides general access to digital input/output signals.
- **CBX510** - used for standalone or master cameras. It provides general access to digital input/output signals. It doesn't require special jumpers to set operation or power sourcing.
- **CBX800** - used for Fieldbus communication between standalone or master cameras and a Host. Various Fieldbus modules can be installed in the CBX800. The master camera communicates through its main serial interface to the CBX800 which must be programmed for the specific Fieldbus communication to the Host. It also provides general access to digital input/output signals.

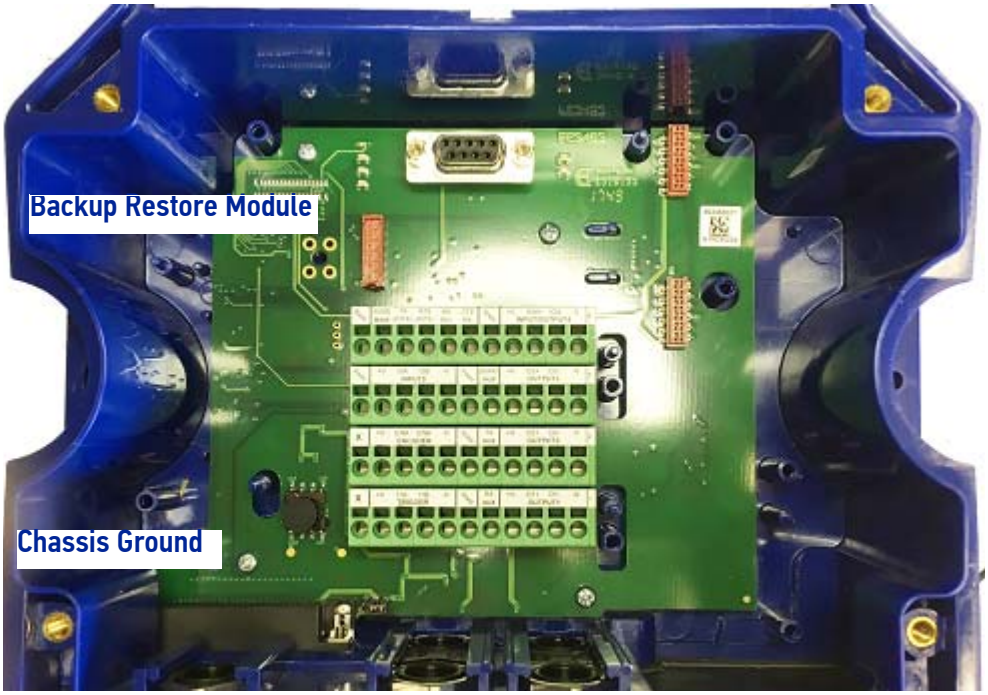
The table below indicates the available options for each recommended CBX Connection Box.

Device	Tach Input	Trigger Input	General Purpose Input	General Purpose Output 1	General Purpose Output 2	Works as a Slave	Works as a Master
CBX100	X	X		X	X	X	with jumper
CBX510	X	X	X	X	X		X
CBX800	X	X	X	X	X	X	with jumper

Although multiple AV7000 cameras can have a CBX box, only one of the CBX boxes in the system can have the Jumper to make it the Master.

CBX100/CBX510/CBX800 INITIAL CONFIGURATION

Complete installation information on these connection boxes is available in the *CBX100,CBX510, and CBX800 Installation Manuals* available at www.datalogic.com.



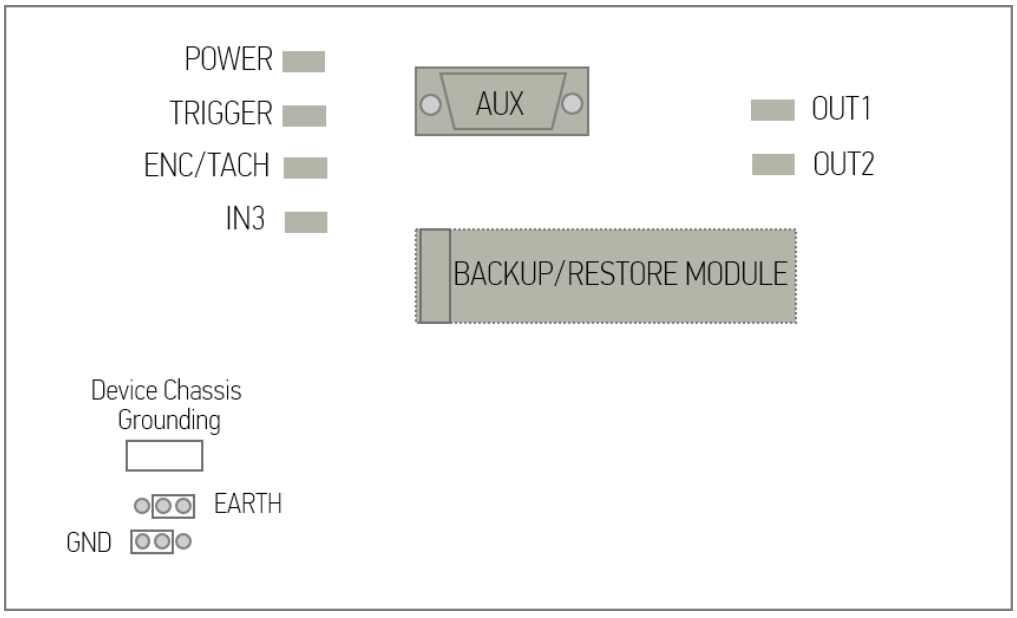
WARNING

If you are terminating more than one wire in a single terminal, cut off any tinned ends and twist the wires together before inserting them into the terminal.

CBX 510 Interior Diagram

NOTE

If you are terminating more than one wire in a single terminal, cut off any tinned ends and twist the wires together before inserting them into the terminal.



Photoelectric Sensor Connections to CBX510

Barcode scanning applications may use a Datalogic photoelectric sensor as a trigger device. The photoelectric sensor is wired directly into the CBX510 terminal block.

If your application uses a trigger other than the one specified by Datalogic, follow the appropriate wiring diagram to assure proper wiring.

WARNING

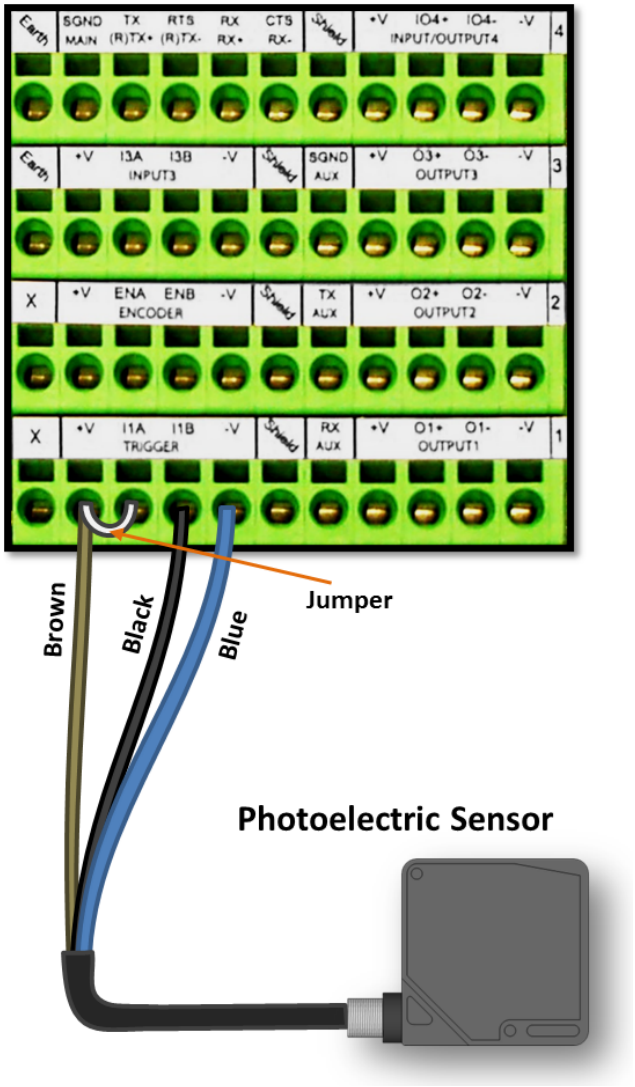
You must use shielded interface cables with this product. To maintain FCC compliance, the cable shield must make a 360-degree connection to the shielded mating connector.

NOTE

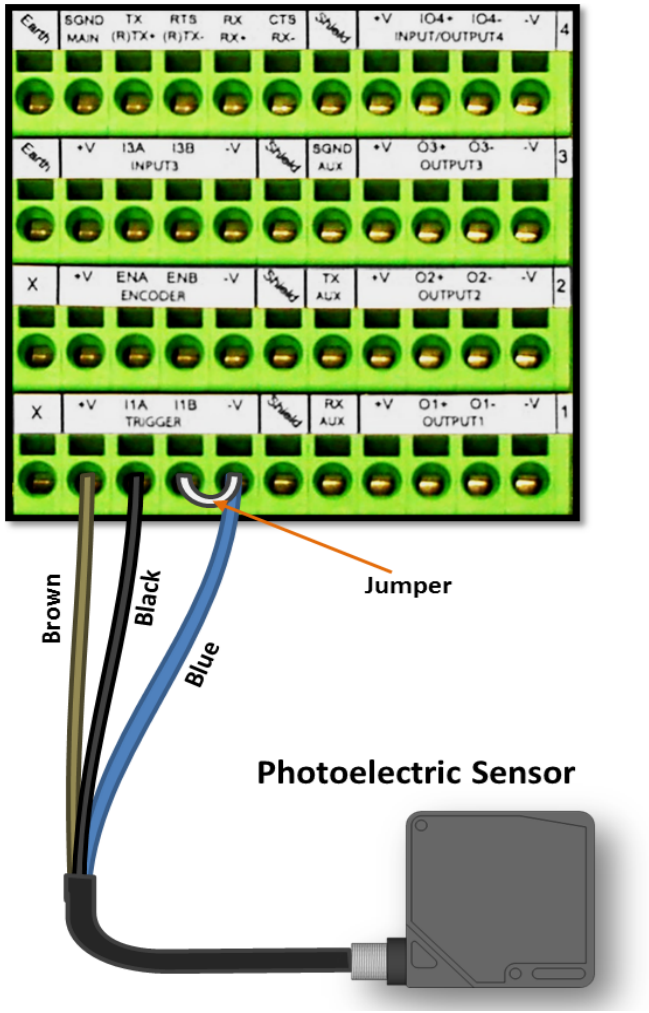
To confirm the photoelectric sensor is functioning properly, watch the TRIGGER LED in the CBX and also on the camera while the photoelectric sensor's beam is blocked. The Datalogic photoelectric sensor also includes a status LED.

The following diagrams illustrate standard recommended wiring of the Photoelectric Sensor to the CBX510 terminal block.

Photoelectric Sensor to CBX510 (NPN)



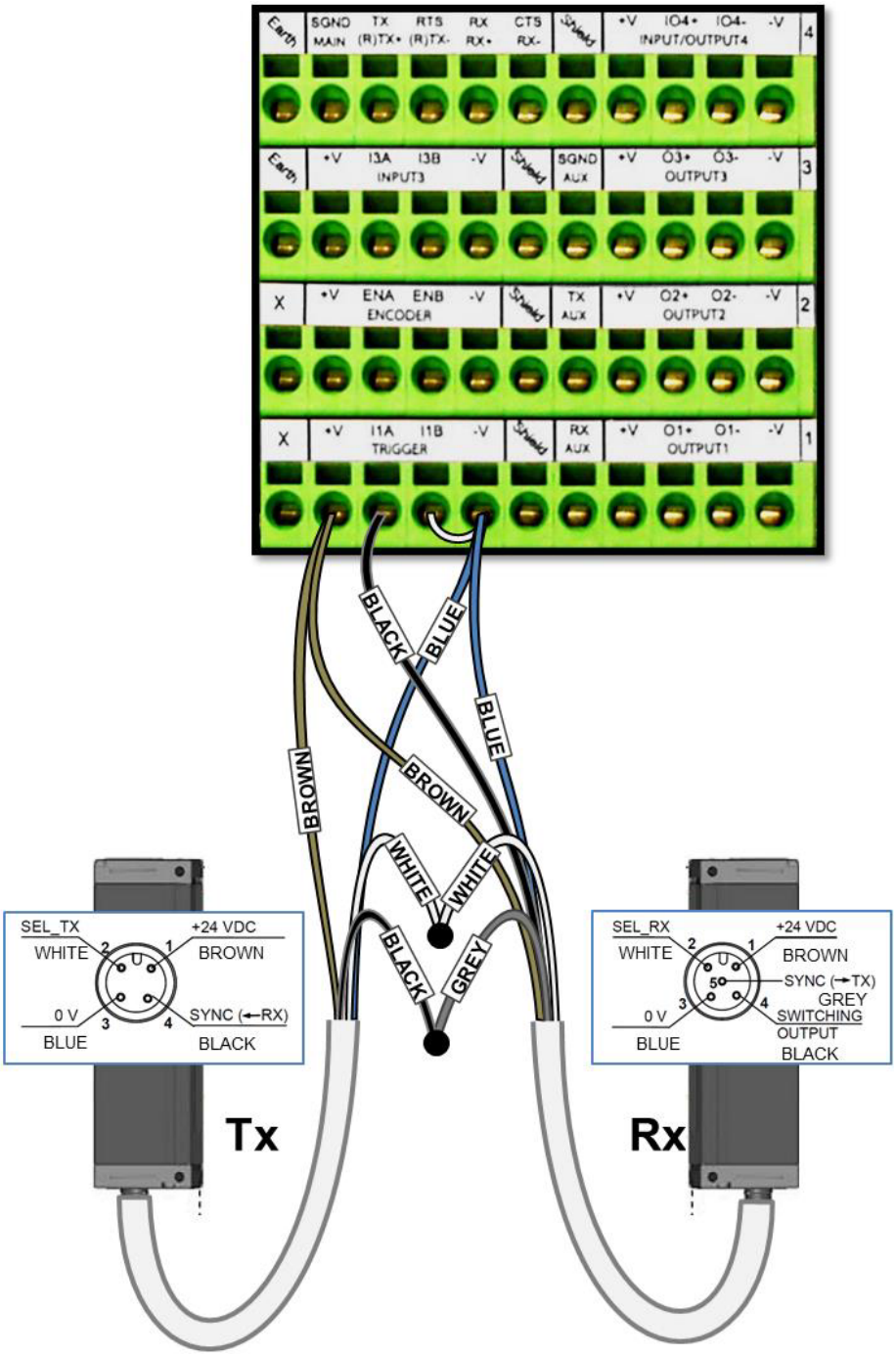
Photoelectric Sensor to CBX510 (PNP)



AS1 Area Sensor to CBX510 Connections

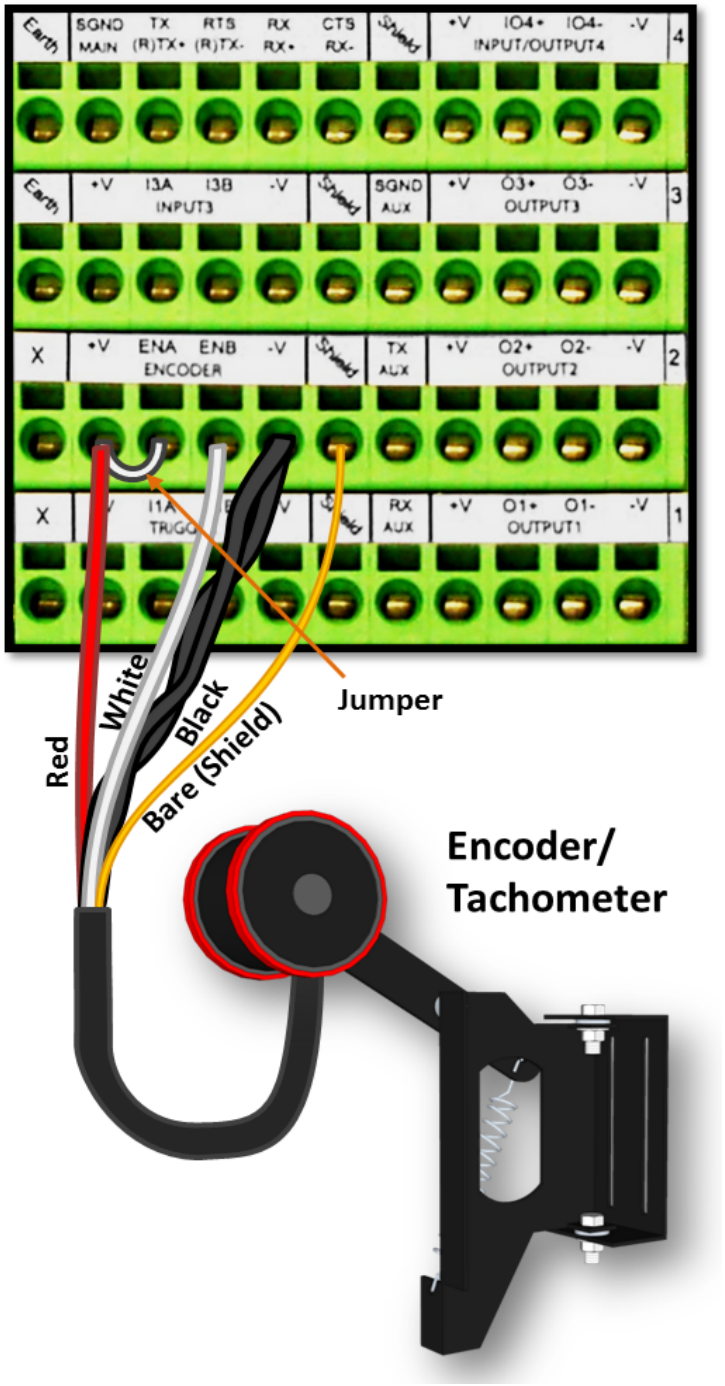
The **AS1** area sensors can detect and provide trigger for very small or irregularly shaped objects.

AS1 Area Sensor (PNP Output)



Encoder/Tachometer Wiring to CBX510

Encoder/Tachometer Wiring for NPN Output to CBX510



NOTE

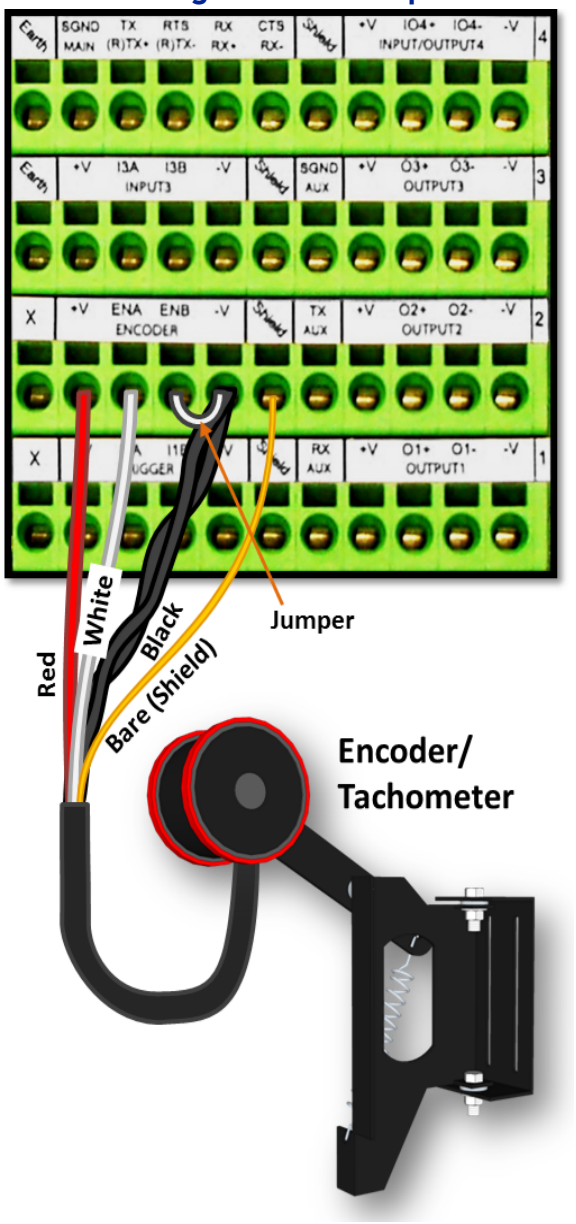
Some Photocraft tachometers may have a different color coding:

(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Encoder/Tachometer Wiring for PNP Output to CBX510



NOTE

Some Photocraft tachometers may have a different color coding:

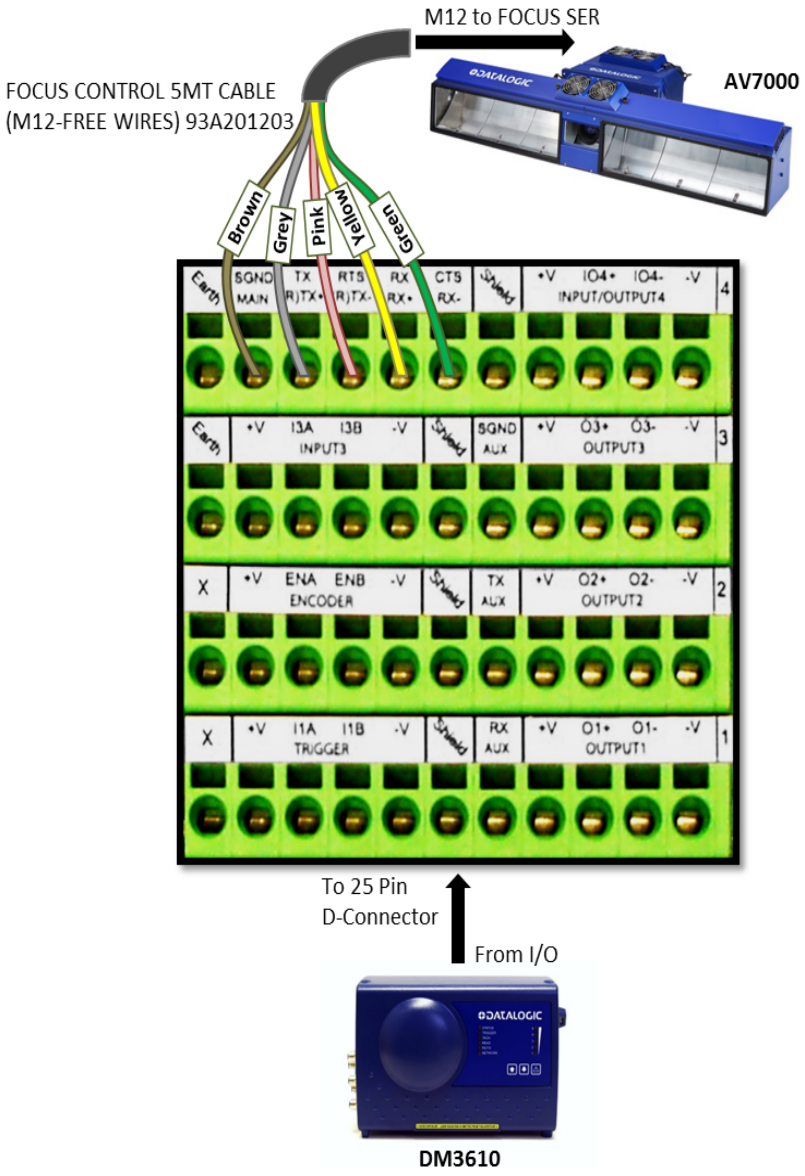
(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Wiring from DM3610 CBX510 to AV7000 FOCUS SER

When using a DM3610 dimensioner for focusing, the DM3610's CBX box must be wired to the focus serial (FOCUS SER) port of the master AV7000 using a flying lead to M12 cable (FOCUS CONTROL 5MT CABLE (M12-FREE WIRES) 93A201203.)

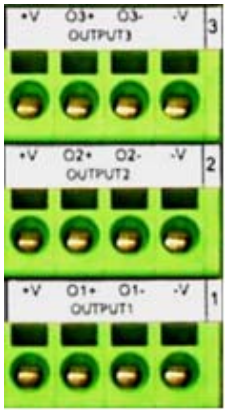


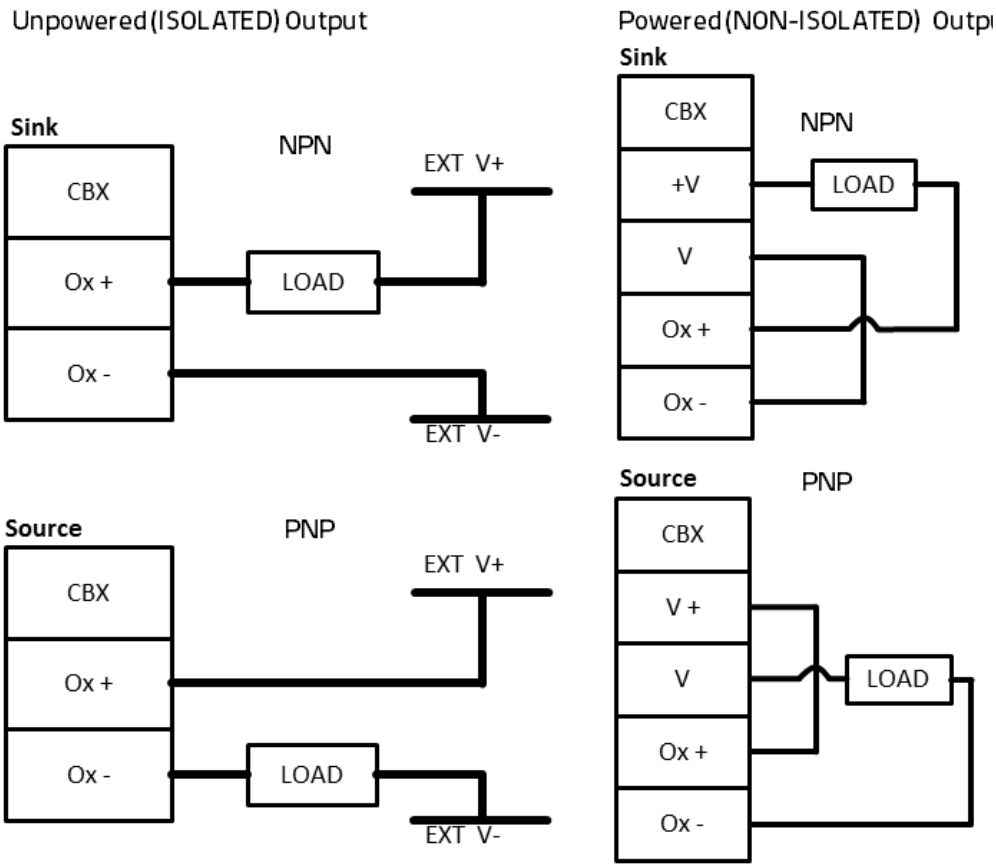
Digital Output Configuration from CBX510

The CBX510 includes an OUTPUTS block for wiring relays as needed for external accessories.

Schematics for Isolated and Non-Isolated digital outputs are provided below.

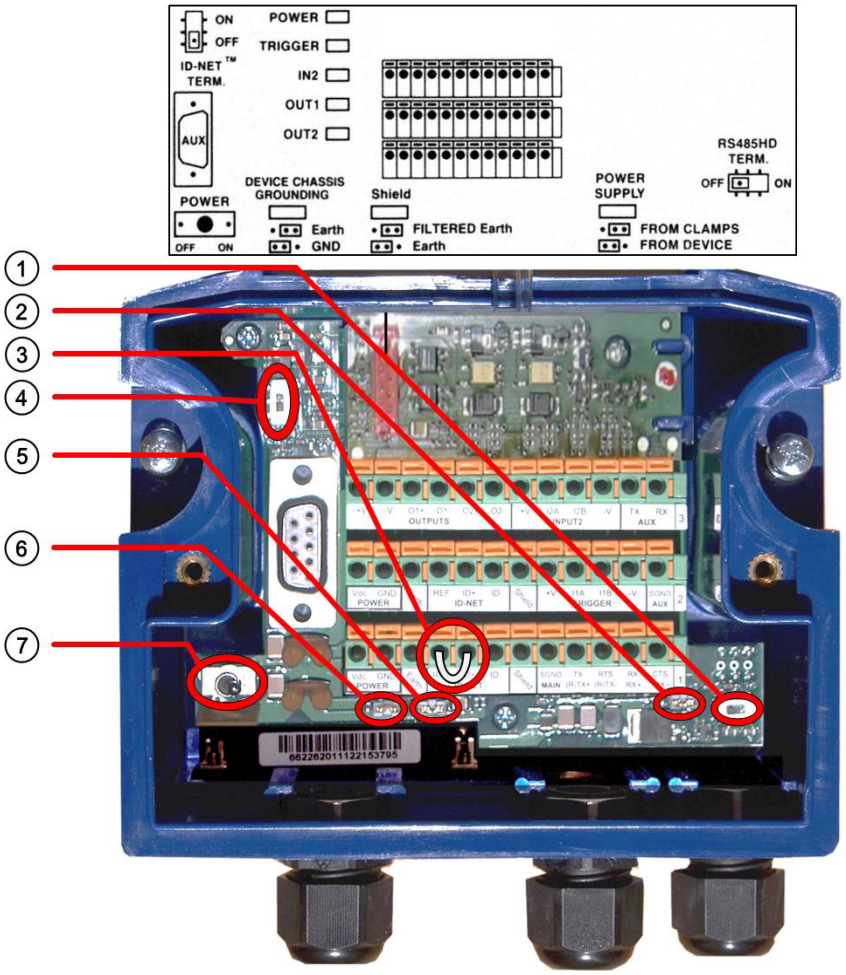
Outputs 1 - 3
Maximum Voltage 30 Vdc
Collector Current (pulse) 130 mA Max.
Collector Current (continuous) 40 mA Max.
Saturation Voltage (VCE) 1 V at 10 mA Max.
Maximum Power Dissipation 90 mW at 50°C (Ambient temperature)





CBX100

Please verify that the CBX100 connection box is configured for the AV7000 application as follows:



Reference the image and diagram above:

1. Set RS422HD TERM switch to OFF.
2. Set POWER SUPPLY jumper to FROM DEVICE.
3. Insert jumper wire in pin block from REF to ID+ (one jumper in either block is sufficient).

NOTE

In order for a standalone or Master AV7000 to initialize properly, it must be connected to a CBX100. On power-up the AV7000 looks for the jumper (item number 3 in the image above) and will assume the responsibility of provided the SYNC Network IP addresses. Slave units in an array/tunnel will receive their SYNC Network IP addresses from the Master.

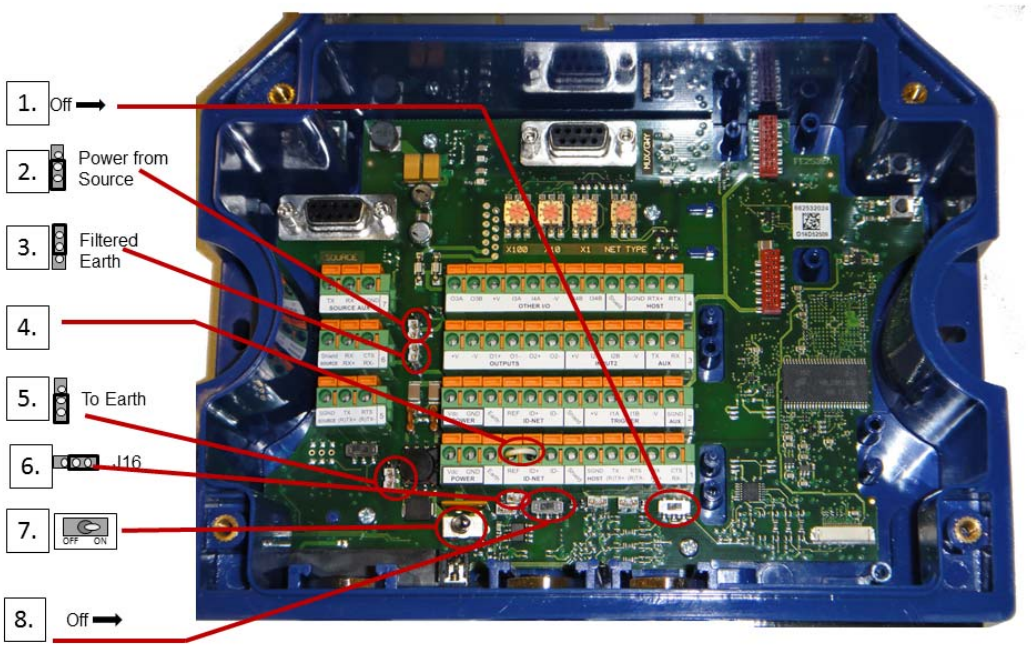
WARNING

Although multiple AV7000 cameras can have a CBX box, only one of the CBX boxes in a multi-camera system can have the jumper to make it the Master.

4. Set ID-NET TERM switch to OFF.
5. Set Shield jumper to FILTERED Earth.
6. Set DEVICE CHASSIS GROUNDING to Earth.
7. Set POWER Switch to ON.

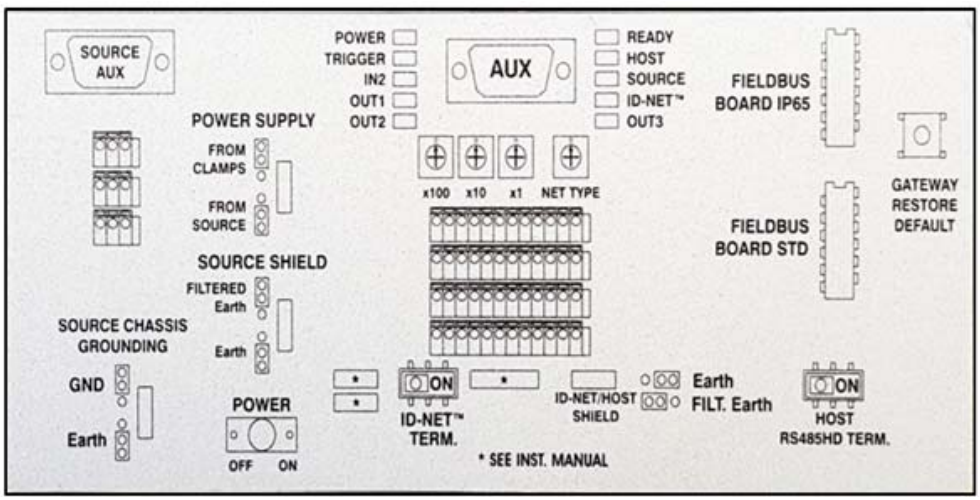
CBX800

Please verify that the CBX800 connection box is configured for the AV7000 application as follows.



1. Set HOST RS485HD TERM switch to OFF.
2. Set Power Source Selector jumper to FROM SOURCE.
3. Set Shield jumper to FILTERED Earth.
4. Insert jumper wire in pin block from REF to ID+ (one jumper in either block is sufficient).
5. Set DEVICE CHASSIS GROUNDING to Earth.
6. Set J16 Jumper 16 to right position.
7. Set POWER switch to ON.
8. Set ID-NET TERM switch to OFF.

Box Interior Diagram



Photoelectric Sensor Connections to CBX100/800

Barcode scanning applications may use a Datalogic photoelectric sensor as a trigger device. The photoelectric sensor is wired directly into the CBX510 terminal block.

If your application uses a trigger other than the one specified by Datalogic, follow the appropriate wiring diagram to assure proper wiring.

WARNING

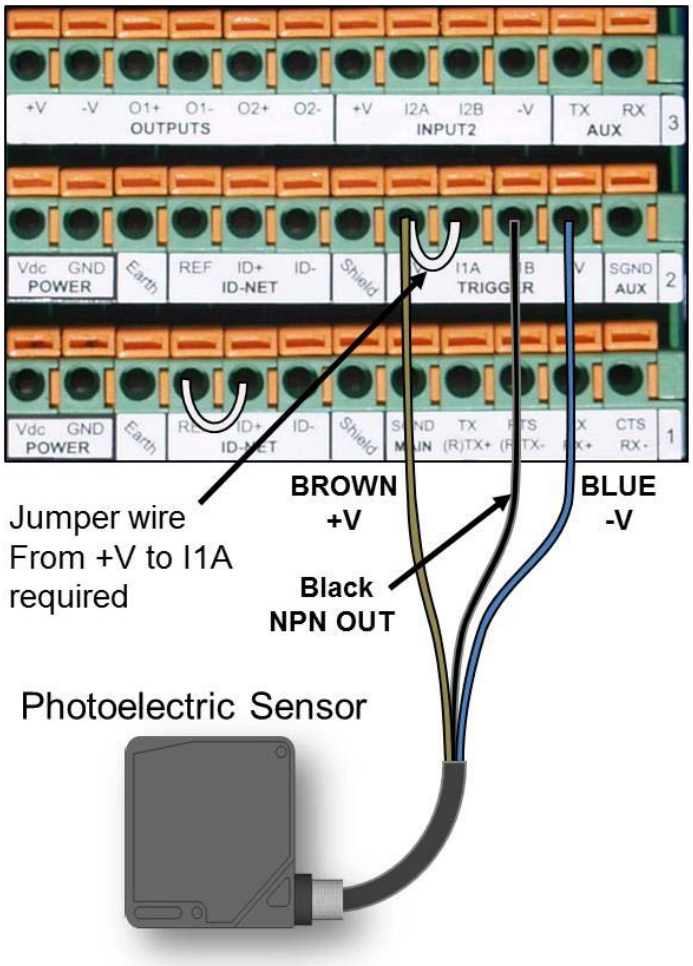
You must use shielded interface cables with this product. To maintain FCC compliance, the cable shield must make a 360-degree connection to the shielded mating connector.

NOTE

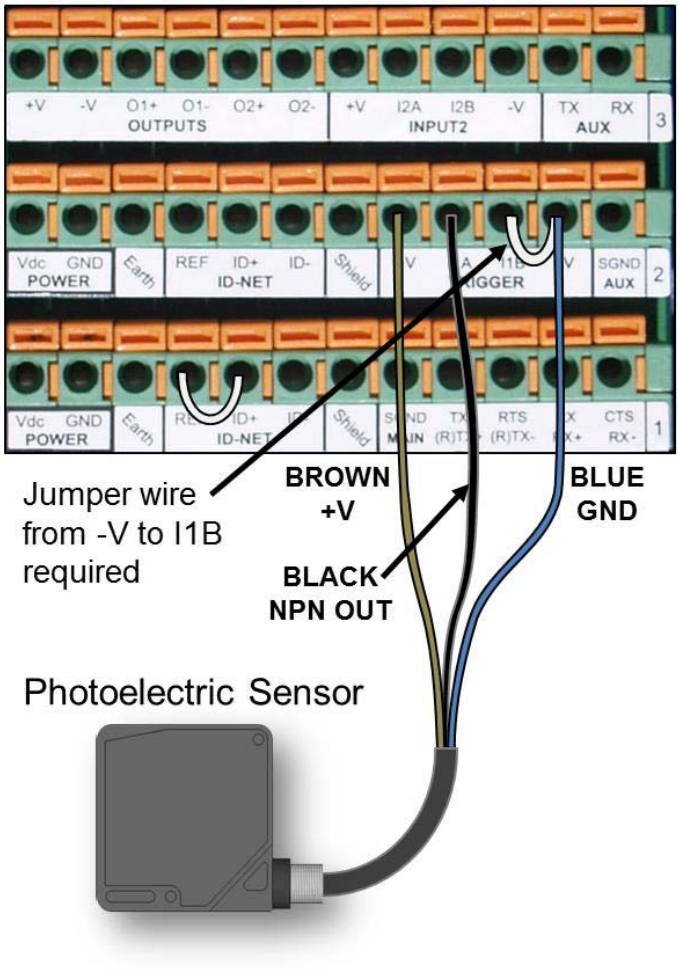
To confirm the photoelectric sensor is functioning properly, watch the TRIGGER LED first in the CBX and also on the camera while the photoelectric sensor's beam is blocked. The Datalogic photoelectric sensor also includes a status LED.

The following diagrams illustrate standard recommended wiring of the Photoelectric Sensor to the CBX510 terminal block.

Photoelectric Sensor to CBX100 and CBX800 (NPN)

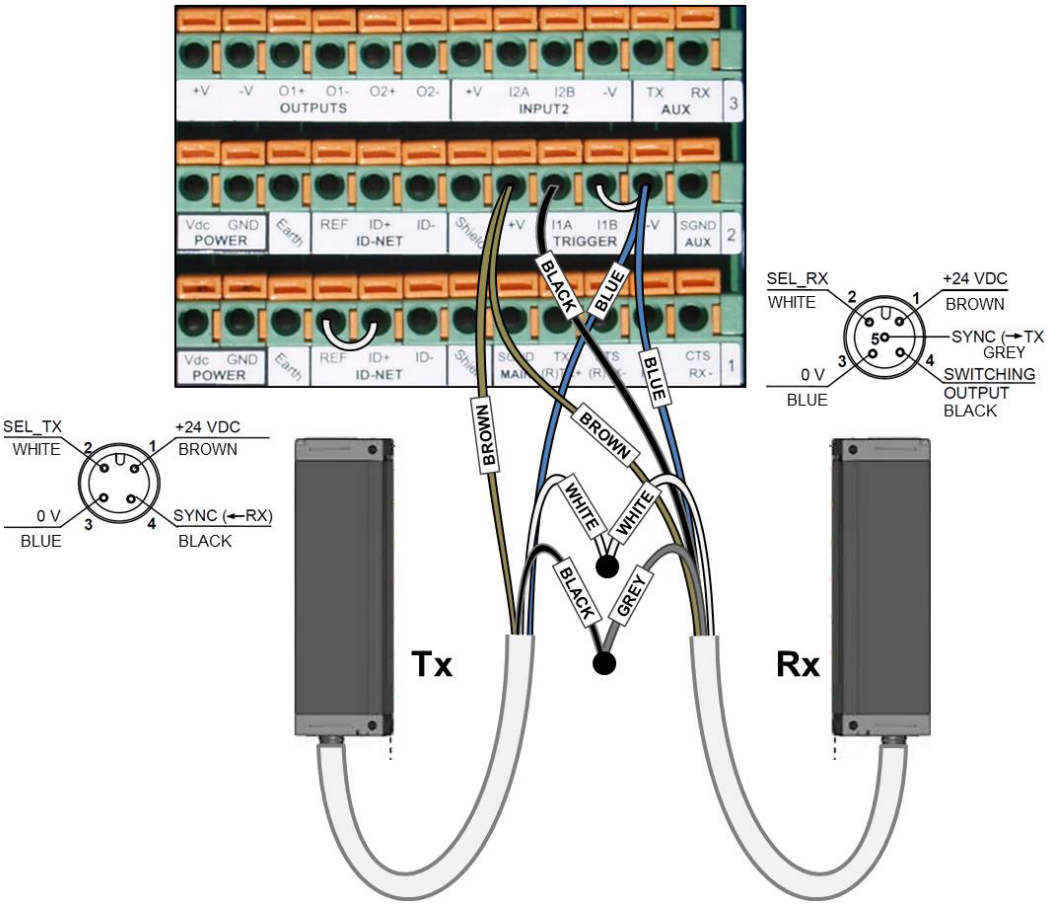


Photoelectric Sensor to CBX100/CBX800 (PNP)



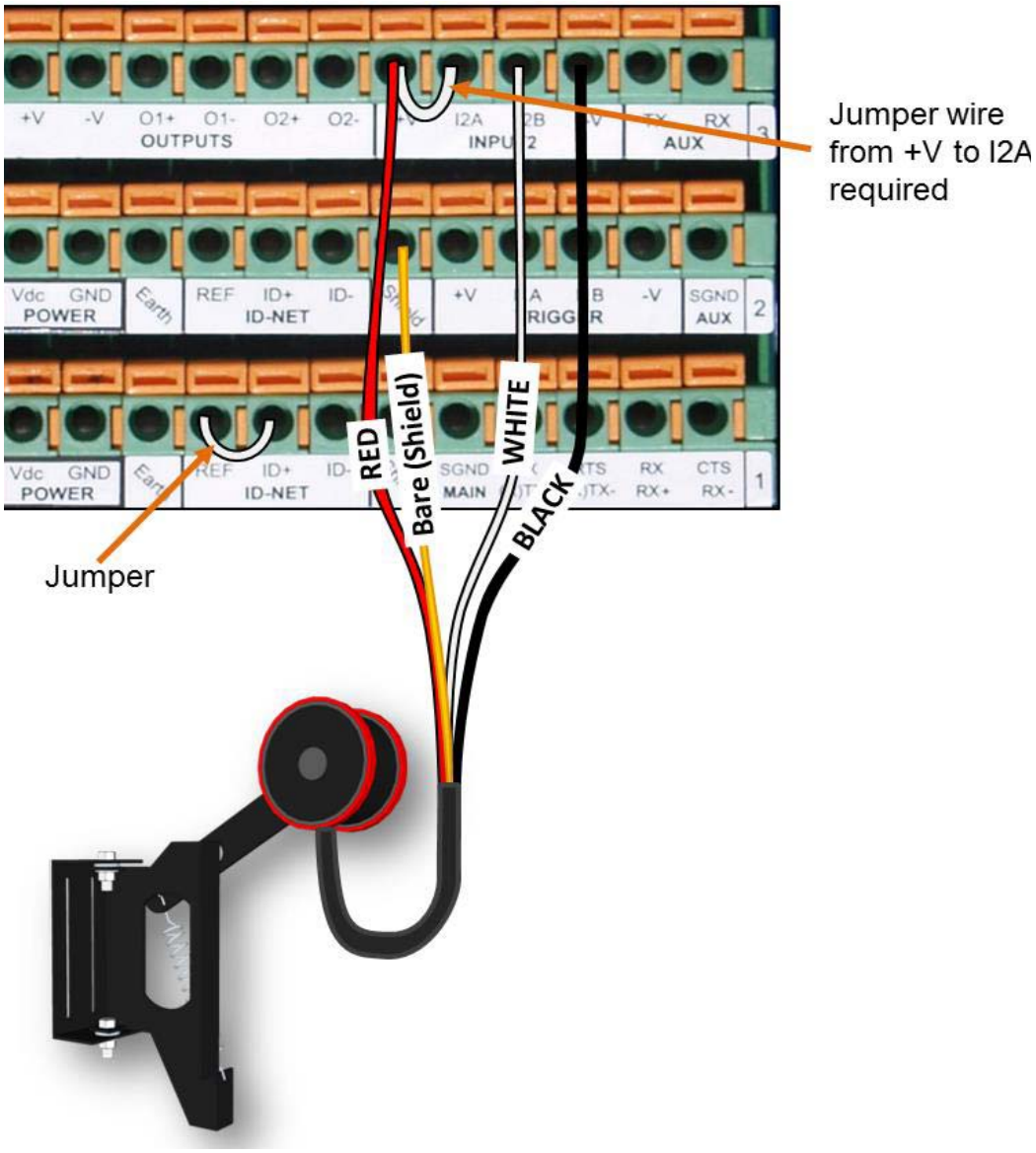
AS1 Area Sensor to CBX100/CBX800 Connections

The **AS1** area sensors can detect and provide trigger for very small or irregularly shaped objects. PNP Output



Encoder/Tachometer Wiring to CBX100/CBX800

Encoder/Tachometer Wiring for NPN Output to CBX100/CBX800



NOTE

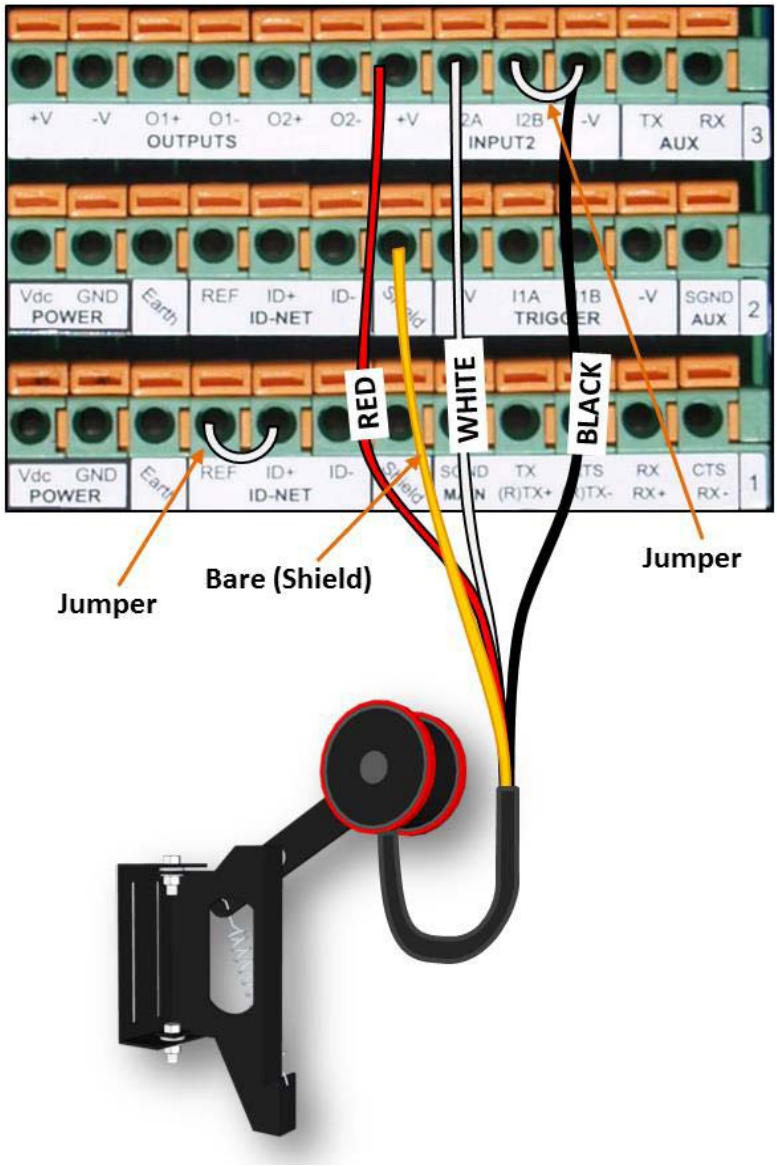
Some Photocraft tachometers may have a different color coding:

(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Encoder/Tachometer Wiring for PNP Output to CBX100/CBX800



NOTE

Some Photocraft tachometers may have a different color coding:

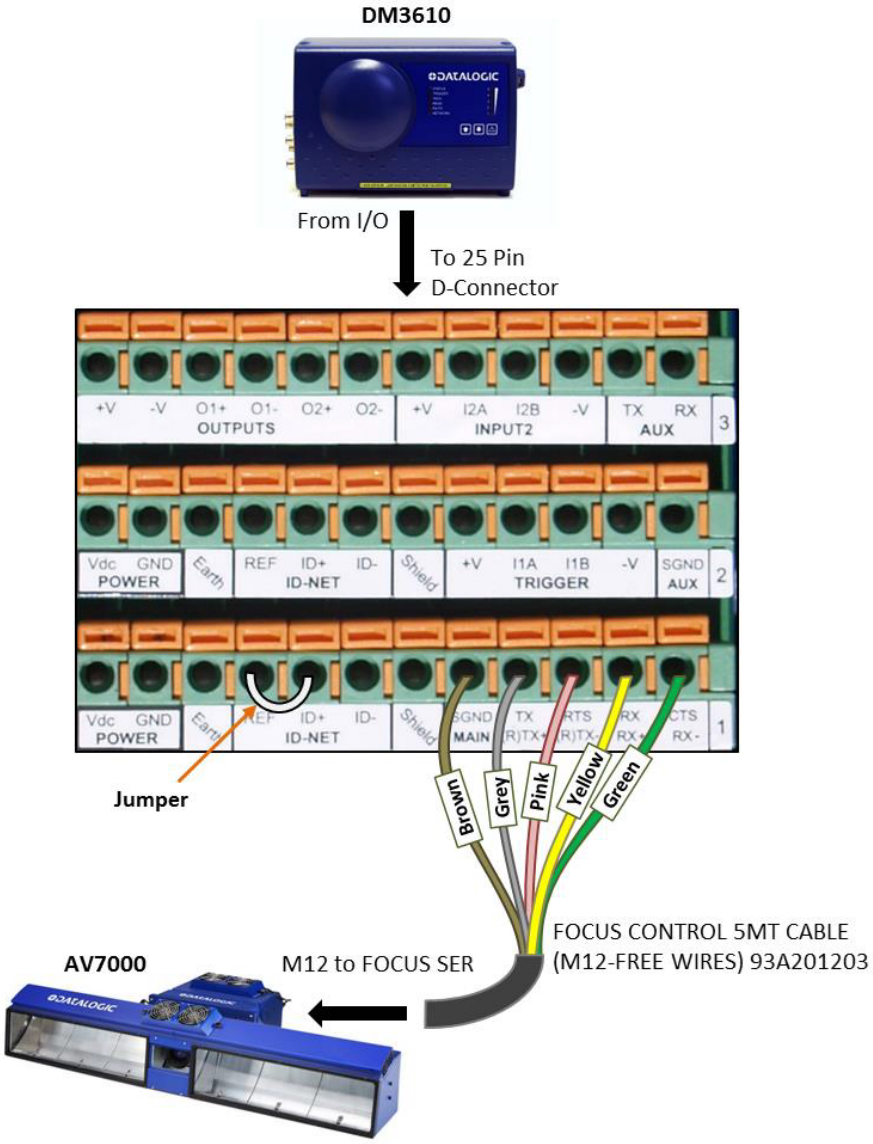
(+V) Red or White/Orange

(Signal) White or White/Blue

(Ground) Black or **Orange/White**

Wiring from DM3610 CBX100/CBX800 to AV7000 Focus Serial

When using a DM3610 dimensioner for focusing, the DM3610's CBX box must be wired to the focus serial (FOCUS SER) port of the master AV7000 using a flying lead to M12 cable (FOCUS CONTROL 5MT CABLE (M12-FREE WIRES) 93A201203.)



Serial Communication Wiring to CBX100/CBX800

The AV7000 provides serial RS232/RS422 communications to other devices through the CBX100/CBX800.

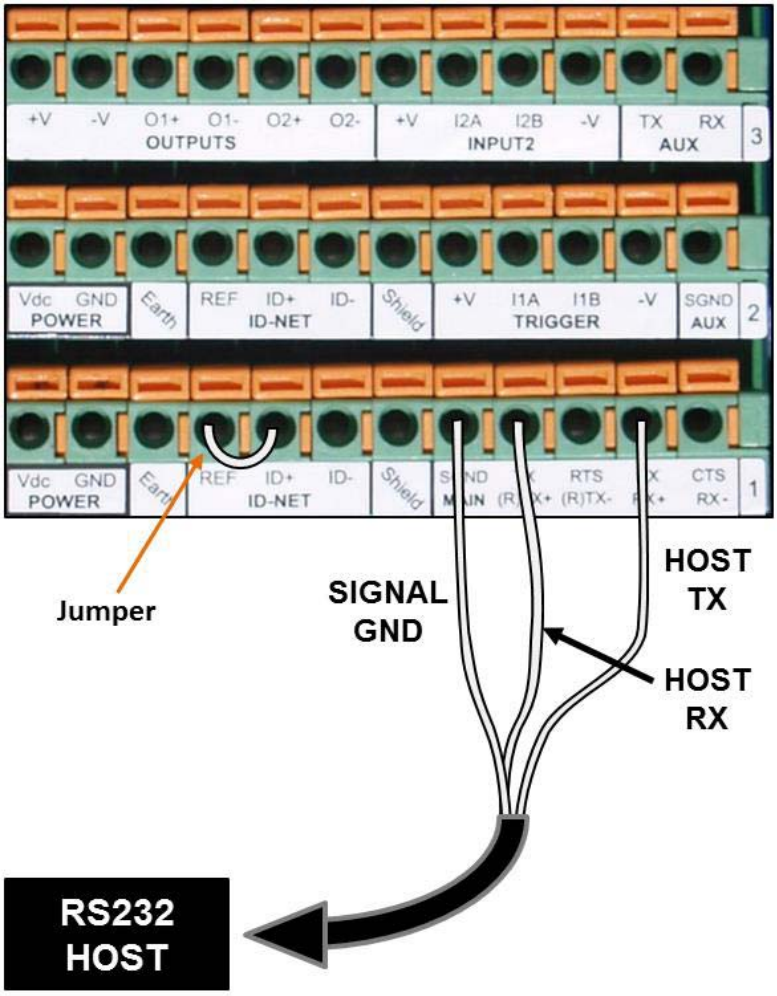
- RS232 provides point-to-point communications at distances up to 15 M [50 ft].
- RS422 provides point-to-point communications at distances up to 1200 M [3940 ft]

The following wiring diagrams illustrate the different types of serial communications available via the CBX100 pin block. It is very important that you make the proper pin connections.

RS232 with No Handshaking

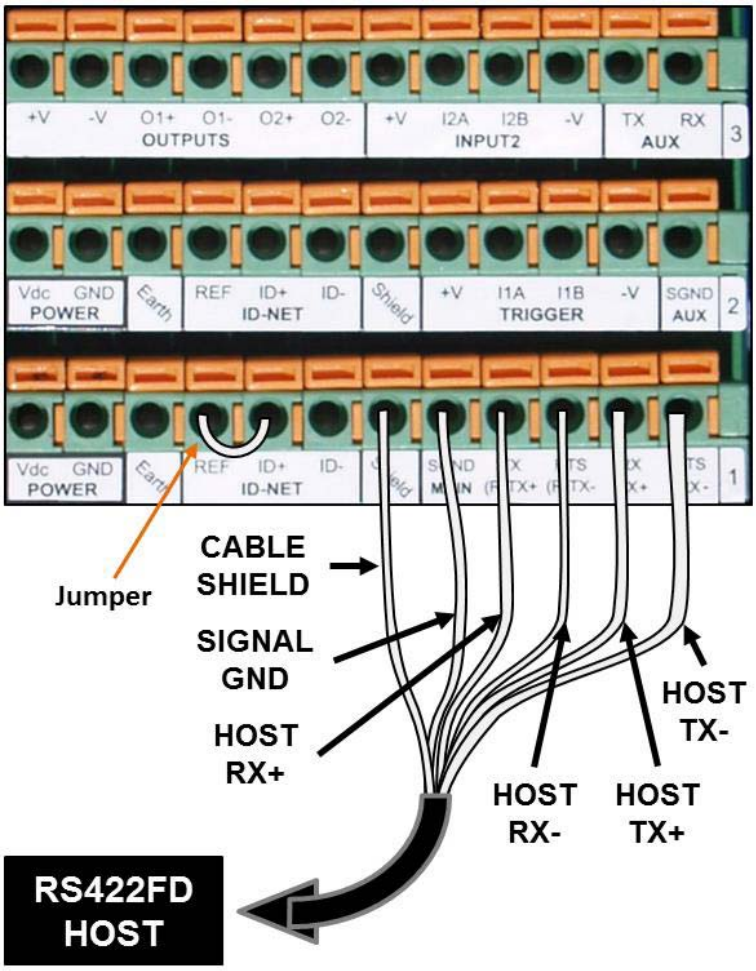
Use RS232 for a direct connection to a controller, personal computer, or other device. RS232 provides point-to-point communications at distances up to 15 M [50 ft]. If longer cable lengths are needed, use RS422.

Use the following illustration as a guide when you want to connect your system to a device using RS232 communication with no handshaking.



RS422FD HOST (Full Duplex)

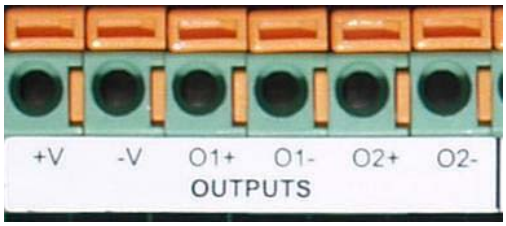
Use RS422 for a direct connection to a controller, personal computer, or other device. RS422 provides point-to-point communications at distances up to 1200 M [3940 ft]. Full duplex wiring supports a four wire, double twisted pair RxD/TxD. The Signal GND and shield cables are also required as shown.



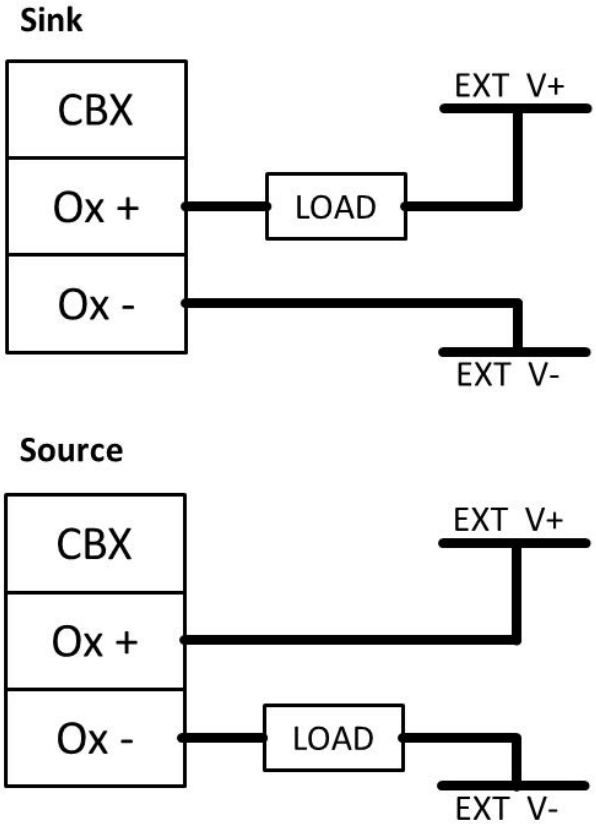
Relay Configuration for CBX100/800

The CBX100/CBX500 includes an OUTPUTS block for wiring relays as needed for external accessories. e-Genius Modify | Relays window includes options for outputs 1 and 2 including Life Light, Trigger Output, Error Light, Ready Light, Good Dim, and No Dim.

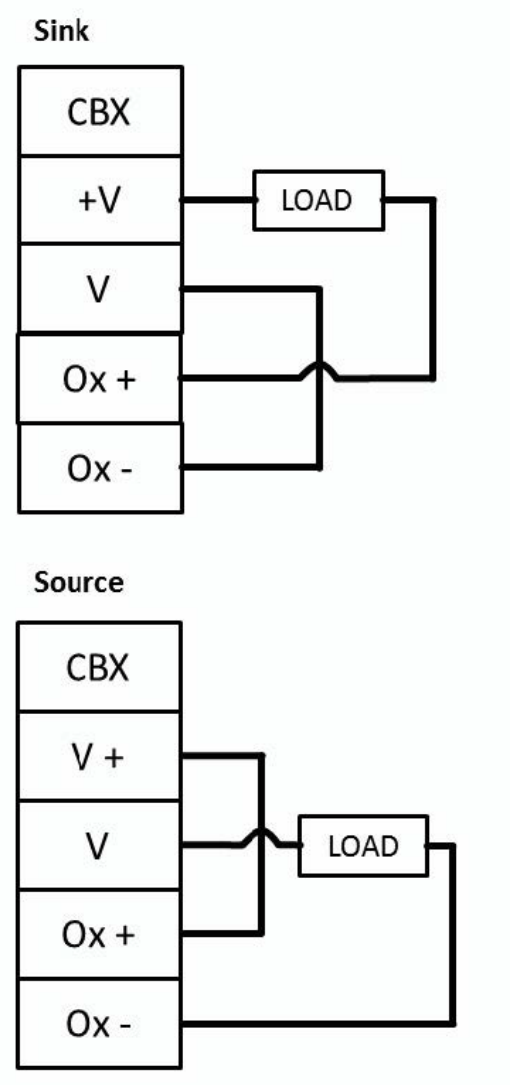
Schematics for Isolated and Non-Isolated relays are provided below.

Outputs 1 and 2	
Maximum Voltage 30V	
Collector Current (pulse) 130 mA Max.	
Collector Current (continuous) 40 mA Max.	
Saturation Voltage (VCE) 1 V at 10 mA Max.	
Max Power Dissipation 90 mW at 50 degrees C (Ambient temperature)	

Unpowered Outputs



Powered Outputs



Grounding

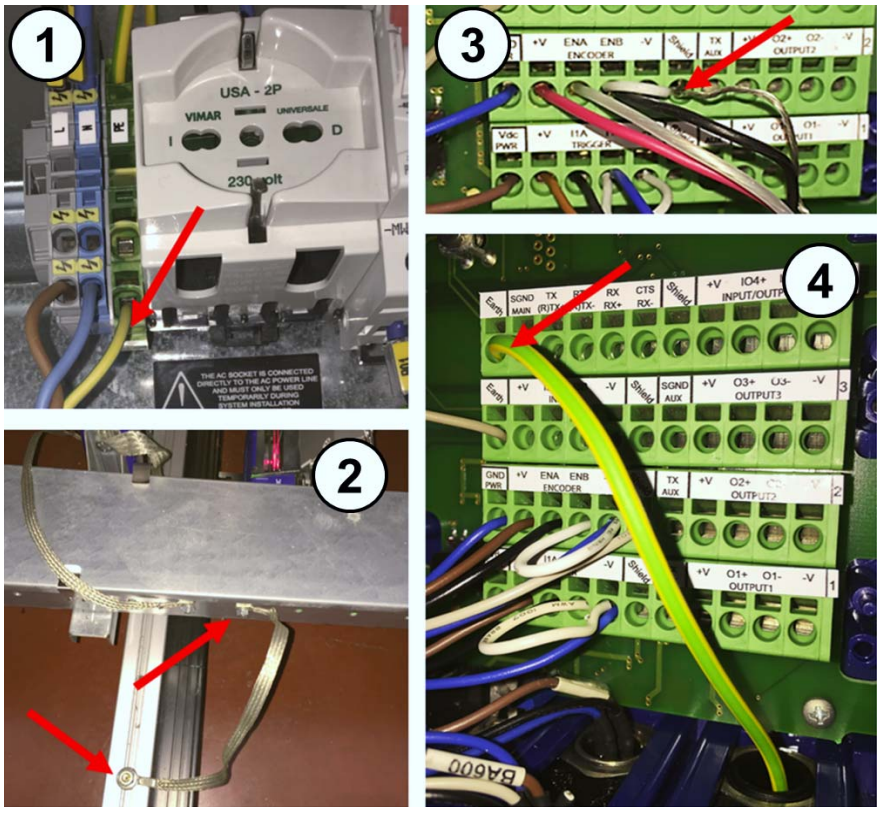
To avoid any problems with electrical noise that could negatively affect system function, make sure that:

1. The AC power cable coming into the PWR box is always provided with a Ground and connected to the proper connector (Protective Earth - PE).

2. The structure where the readers, controllers, encoders/tachometers, and photo-electric sensors are mounted is grounded to the conveyor or to the PE terminal inside the PWR.

3. The Shield wires from the Encoder/Tachometer and photoelectric sensor cables are connected to the proper *Shield* terminal in the CBX box.

4. Normally, steps 1 through 3 will guarantee proper function. In case of problems such as transmission of strange or wrong characters, devices stop working without any reason, or other unexpected behavior, try connecting the CBX or Controller Earth terminal to the PE terminal inside the PWR box.



INSTALLING THE OPTIONAL VGA / USB INTERFACE PANEL KIT

An optional **VGA / USB Interface Panel Kit** (93A201204) replacement panel accessory can be used to attach a monitor, keyboard and mouse to an installed AV7000 camera. In this way, system status and statistics can be monitored local to a scan point or tunnel, and the monitor, keyboard and mouse can be used to change parameters without the need of an external computer.

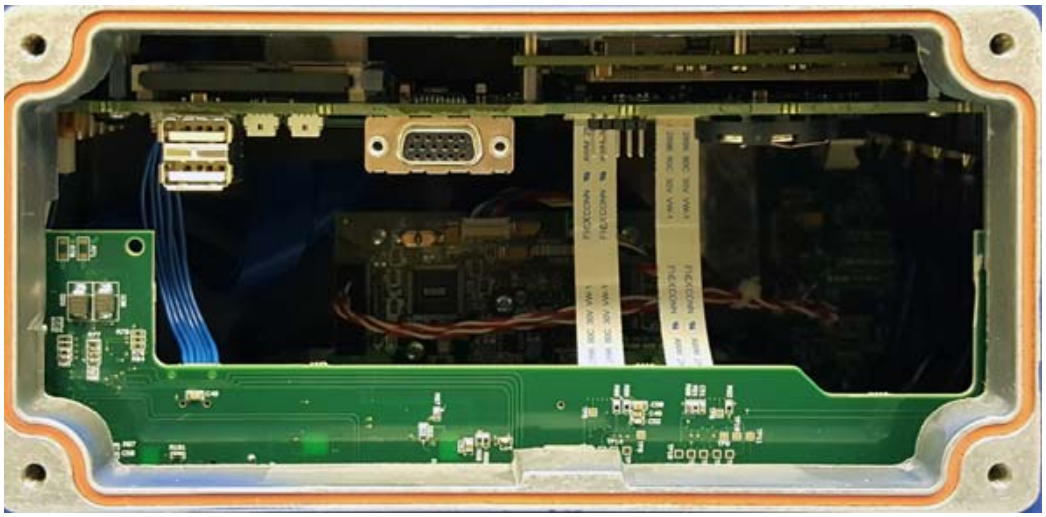
ESD CAUTION

Observe precautions to prevent Electrostatic Discharge (ESD). Use an ESD grounding wrist strap and avoid direct contact with circuit boards, which could be damaged by ESD.

To install the optional VGA / USB Interface Panel Kit:

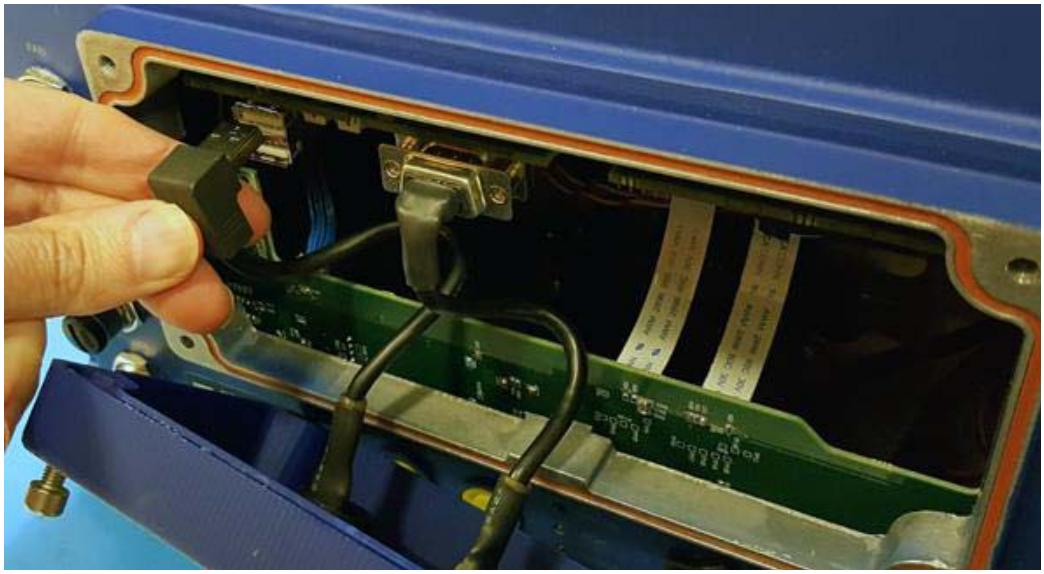
1. Disconnect the power source from the AV7000 camera.
2. Remove the camera's rear access panel by loosening the four screws at its corners.

3. Locate the USB and VGA connectors inside the camera.

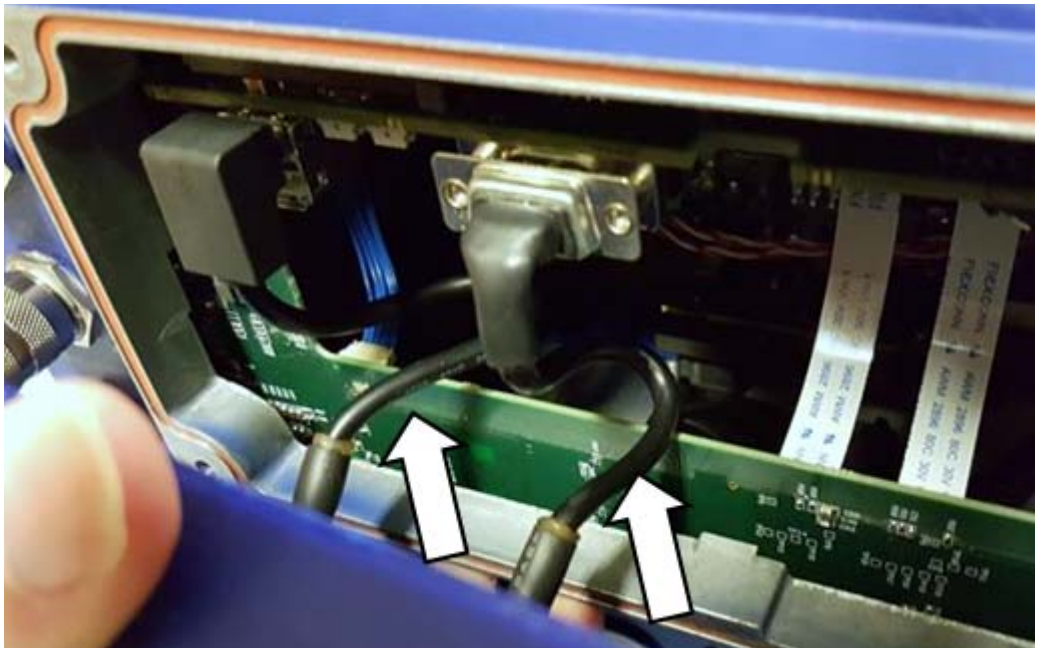


4. Connect the VGA cable on the back of the VGA / USB Interface Panel Kit to the VGA connector inside the back of the camera.

5. Connect the USB cable on the back of the VGA / USB Interface Panel Kit to one of the USB connectors inside the back of the camera.



6. Carefully push the USB and VGA cables into the camera housing above the circuit board as shown below.



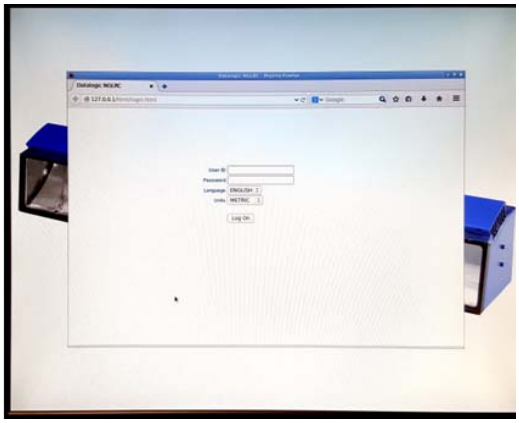
7. Carefully position the VGA / USB Interface Panel Kit cover and tighten the four screws at its corners.

8. Attach the monitor to the VGA port and the combination keyboard/mouse to the USB port (MONITOR/KEYBRD/BRKT/USB HUB KIT, 93ACC0126).

9. Reapply power to the AV7000 Camera.

NOTE

When the camera is powered on, the monitor comes on after several seconds and displays an image of the AV7000 camera system. To access a browser (Firefox), right click with the mouse on the monitor window. A drop-down list appears. Select **Firefox** to open the browser to the e-Genius **Log On** window.



Check AV7000 Installation

After completing the installation, confirm that the AV7000 reader(s) and CBX connection box have been properly installed mechanically and electrically. Use the Installation Sequence at the beginning of this chapter and your application specifications to check your installation.

CHAPTER 4
E-GENIUS

The AV7000 camera imaging system provides fully automated, industrial quality bar-code identification and imaging. E-Genius provides an easy-to-use series of configuration and diagnostics features that enable you to set up your scanning system.

GETTING STARTED

The AV7000 reader uses Datalogic's browser-based user interface (e-Genius), which resides on each camera. You will use e-Genius to define operating parameters, construct output messages, and view diagnostics for the system. The e-Genius enables you to configure, fine-tune, and monitor your scanning system operations.

Please clear the PC's browser cache regularly or set up the browser to disable caching altogether. This is especially important after software upgrades to make sure updates in e-Genius are visible.

Prerequisites

Before setting up your AV7000 or multi-camera barcode reader system, you will need the following:

Computer	Laptop
Browser	Internet Explorer 11 (or later)
	Firefox 30 (or later)
	Chrome 36 (or later)

Do not use auto-select/auto-fill in the web browser to fill in a parameter value.

For proper e-Genius operation, make sure the web browser used is configured to allow pop-ups.

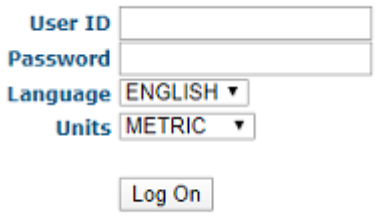
Accessing e-Genius

To access e-Genius:

NOTE

Before starting up or testing the AV7000, it must be connected to a CBX Connection Box depending on the system configuration.

1. Connect your computer to the AV7000 **HOST NET** or **IMAGE NET** port using an RJ45 Ethernet cable.
2. Turn on your laptop computer.
3. Configure your PC's IP Address to be in the same network as the **HOST NET** or **IMAGE NET** port.
4. Open a web browser and enter the IP address for the unit. If the correct IP address is entered, the Log On window will appear.



The default setup IP address for all **AV7000** cameras is 192.168.3.10 (Host), and 10.0.40.20 (Image).

5. Enter the **User ID** (default is *setup*) and **Password (**default is *DLAset*) for your system in the fields provided. Your site administrator may have modified these defaults.
6. Select a language from the Language drop-down list.
7. Select **METRIC** or **IMPERIAL** from the Units drop-down list.
8. Click **Log On.**

If the user name and password are valid, the application enables all functions available to the user and displays the **System Info** window.

If the password is not valid, the application displays a results box with the message, **"Incorrect Password."** Click **OK** to return to the **Log On** window and enter the correct user name and password. If you don't know the password, contact your system manager.

WARNING

The user ID and password shown above provide full setup rights to the user.

If a user only needs to view system information **without saving changes**, the **User ID:** monitor and **Password:** DLAmon should be used.

To change your PC's IP Address:

Windows 7 or 8

1. From the desktop, click the **Start** button, and then select **Control Panel**.

2. Type **adapter** in the search box, and then from the results, under Network and Sharing Center, click **View network connections**.

3. Right-click **Local Area Connection**, and then select **Properties**.

4. Select the **Networking** tab. Under This connection uses the following items, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

5. Select **Use the following IP address**. In the IP address field, type the first 3 octets of the IP address of the unit.

6. For the last octet, type a number that differs from the last octet in the AV7000's IP address. The actual number used is not important as long as it does not match that of the AV7000.

Example: If the camera's IP Address is 192.168.0.145, set your PC's IP Address to 192.168.0.146.

7. In the **Subnet mask field**, type 255.255.255.0

8. Click **Okay**.

Windows 10

1. In the search box, type **Network and Sharing Center**

2. Select **Change adapter settings**

3. Select the Local Area Connection to change, right click and select **Properties.**

4. Select **Internet Protocol Version 4 (TCP/IPv4)** and **Properties**.

5. Select **Use the following IP address.** In the IP address field, type the first 3 octets of the IP address of the unit.

6. For the last octet, type a number that differs from the last octet in the AV7000's IP address. The actual number used is not important as long as it does not match that of the AV7000.

Example: If the camera's IP Address is 192.168.0.145, set your PC's IP Address to 192.168.0.146.

7. In the Subnet mask field, type 255.255.255.0

8. Click **Okay**.

To log out of the e-Genius:

Click  at the upper right corner of the **e-Genius** window to **Log Out**. When logged out, the **Log On** window will appear.

E-GENIUS BASICS

e-Genius Menu Tree

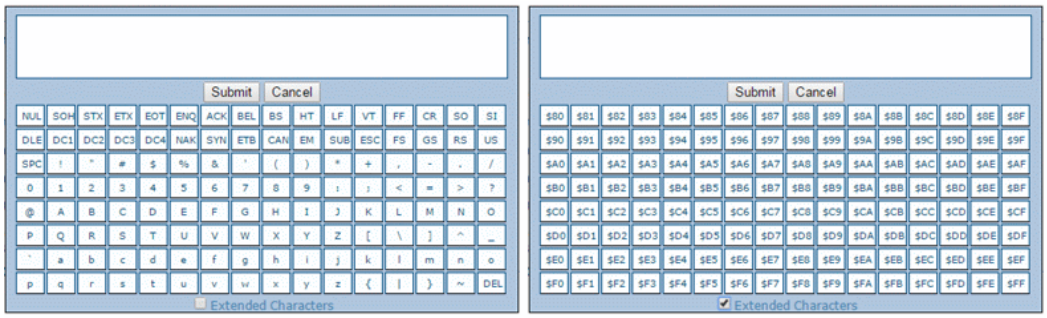
The functions that you can select are displayed in a menu tree on the left–hand side of **e-Genius.** The function list is organized much like the hierarchy of a file system, where you can expand items that are preceded by a box (⊞) to further sub–levels until you find a function of interest.

Sub–levels appear indented below the items from which they are expanded. Clicking the box again collapses that branch of the menu. You can expand no further when an item is not preceded by a box.

The **e-Genius** menu tree appears with no items expanded. Click the folders to display the active window for the setup function and/or expand the folders to view any additional setup features.

Entering Text Using the Text Entry Tool

In cases where text needs to be entered to create message headers, trailer, custom messages, or for other reasons, the **Text Entry Tool** pencil icon " " will be displayed. Click the pencil to open the Text Entry Tool.



NOTE

The Text Entry Tool is needed to enter unprintable characters or characters that cannot be typed. For example, <CR> is a single character presented as a string for easier reading. The character must be entered with the Text Entry Tool, if typed normally it will be recognized as a string and not as a single character.

You can enter text in the text field by typing, or click on the character buttons to create your message. Select the **Extended Characters** check box to reveal a new set of control characters.

Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Getting Help

e-Genius provides complete online help (this document).

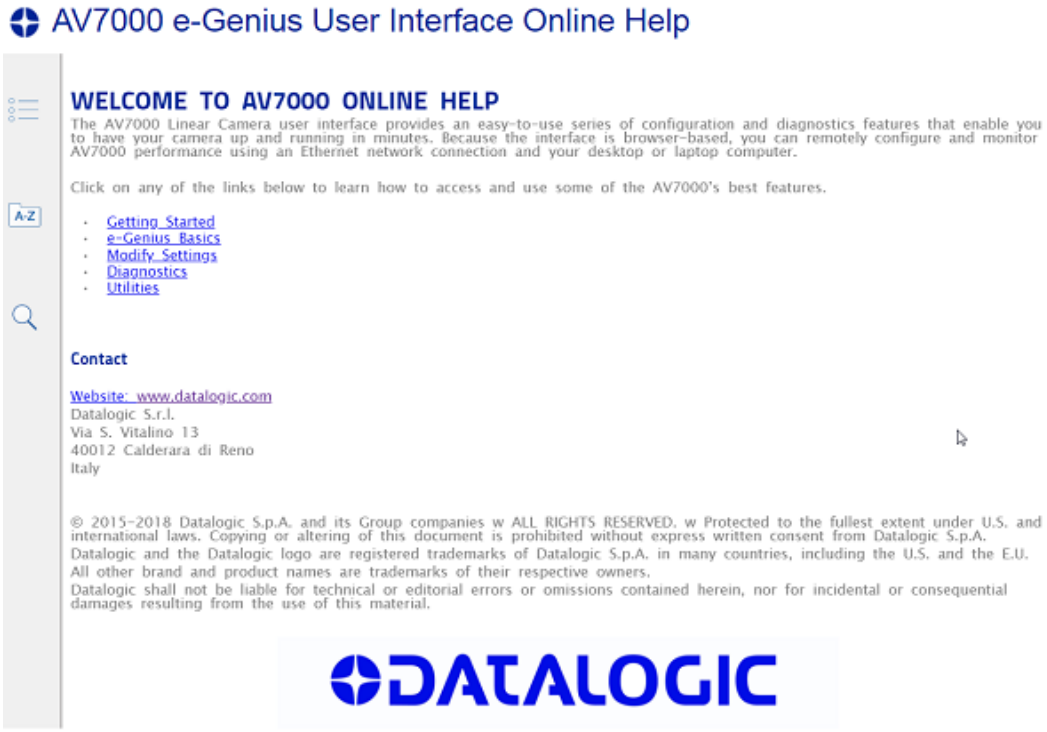
To access the complete help system:

Select **Utilities | Help** in the **e-Genius** menu tree. The help **Welcome** window appears. The **Welcome** page provides important product information as well as three ways to find specific help information: **Contents** and **Search.**

To display contextual help for a current window:

1. Click the **Help** icon displayed at the top right of the screen. A help window appears, providing you with information for that specific page.

2. Click the **Show** link in the upper left corner of the help window to access Contents, Index, and Search options.



MODIFY SETTINGS

Use the **Modify Settings Menu Tree** selections during initial setup to configure your scanning system. If necessary, you can later make modifications to the configuration using the same menu selections, including:

“Modify Settings | System Info” on page 95

“Modify Settings | Global Settings” on page 101

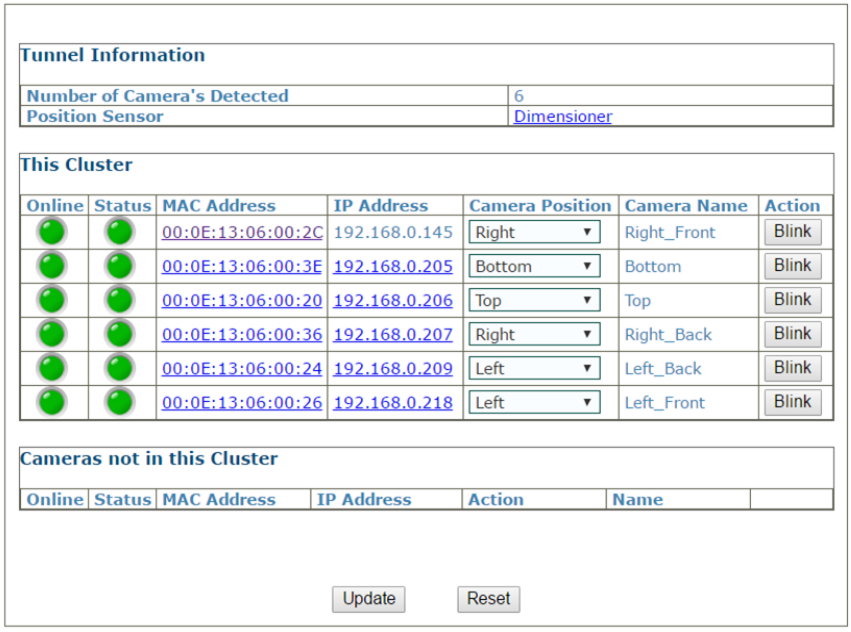
“Modify Settings | Device Settings” on page 189

MODIFY SETTINGS | SYSTEM INFO

Use **System Info** to identify scanning system elements (whether it includes one AV7000 barcode reader or an array), discover the cameras included in the system, and distribute software from the Master to Slave.

To view system information:

1. In the menu tree under **Modify Settings,** click **System Info.** The **System Info** window opens.



2. The information in this form is auto-filled. The fields are described below

System Info

Tunnel Information

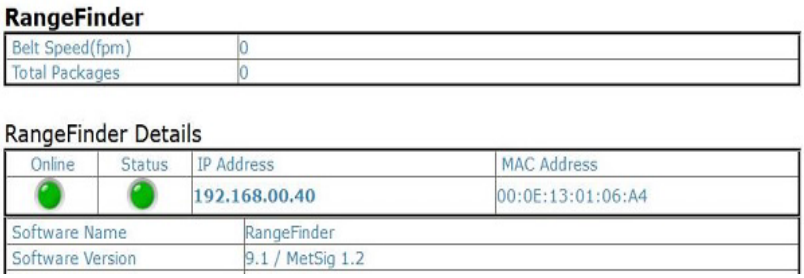
Number of Cameras Detected

Displays the number of cameras found in the system.

Position Sensor Detected

Displays the type of Position sensor. Indicates whether it is a RangeFinder or a Dimensioner that is Detected. Rangefinder or Dimensioner will display and be hyperlinked to the corresponding device setup software.

For example: Click Rangefinder and the following displays:



This Cluster

Online

Green = Online (connected and recognized in the cluster)

Gray = Unit not connected (unit not seen by master)

Yellow = Online, but not assigned to the cluster (shown under Cameras not in this Cluster)

Red = Offline

Status

Green = No errors and ready to read

Gray = Unit not connected (unit not seen by master)

Yellow = Warning present

Red = Error. If you click on the MAC address, it will take you to the status viewer page for more info on the error

MAC Address

Displays the internal MAC Address (Media Access Control Address) of each individual AV7000. The MAC address is the unique number that is used in the XML file which allows each AV7000 to retrieve the parameters specific for its mounting position.

Click the MAC Address link to view details about that specific device (See Device Details below).

IP Address

Displays the Sync network IP address of the unit used for camera-to-camera communication.

Camera Position

Selections are; Not Assigned, Top, Left, Right, or Bottom from the drop-down list.

Camera Name

Displays the camera's name assigned in Modify Settings | Device Settings | <device> | Device Info.

Action

Click Blink. This identifies the camera in the array. When clicked, the camera illumination turns on for around 10 seconds.

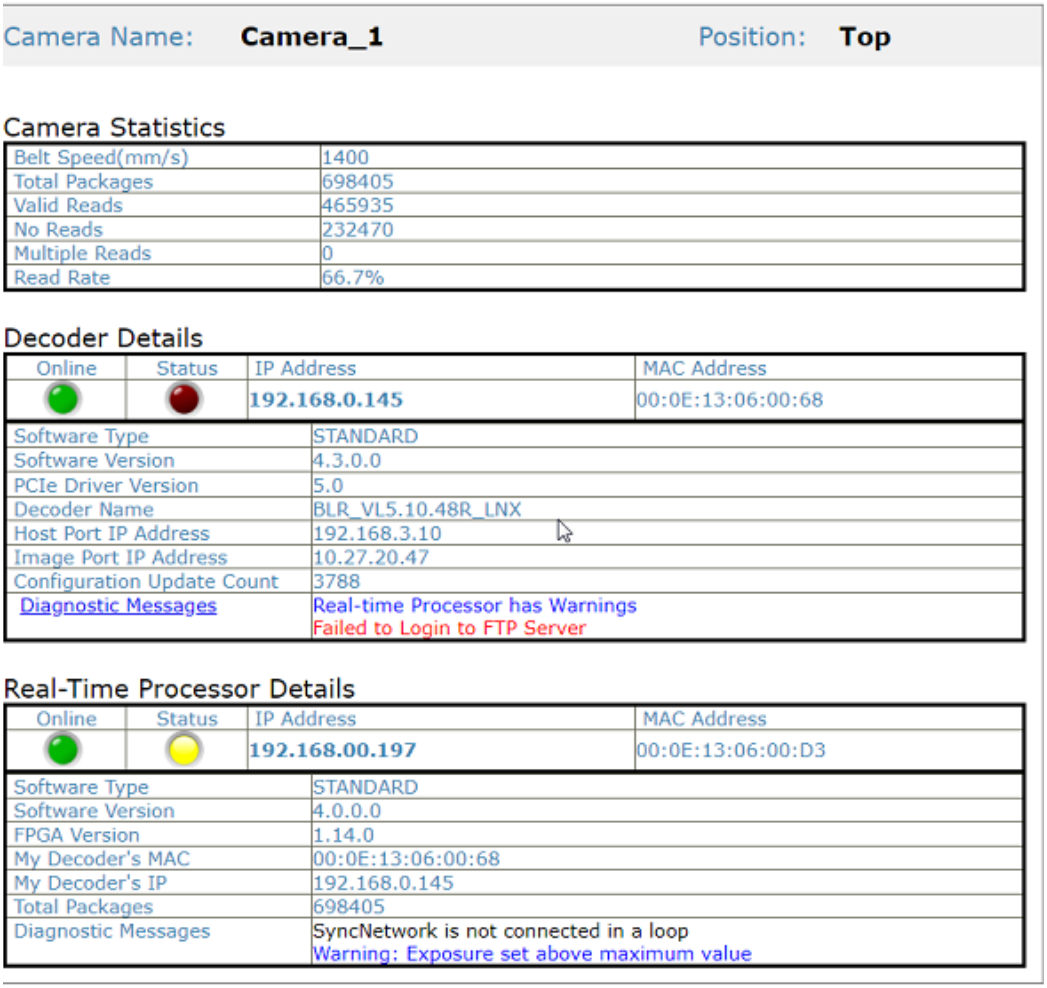
Cameras not in this Cluster

Displays a list of discovered cameras not currently included in the cluster.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

DEVICE DETAILS

From the System info. window, click on a devices's MAC Address to open a window displaying details about that device. The details include statistics, decoder and software version along with processor information.



Camera Name: **Camera_1** Position: **Top**

Camera Statistics

Belt Speed(mm/s)	1400
Total Packages	698405
Valid Reads	465935
No Reads	232470
Multiple Reads	0
Read Rate	66.7%

Decoder Details

Online	Status	IP Address	MAC Address
		192.168.0.145	00:0E:13:06:00:68

Software Type	STANDARD
Software Version	4.3.0.0
PCIe Driver Version	5.0
Decoder Name	BLR_VL5.10.48R_LNX
Host Port IP Address	192.168.3.10
Image Port IP Address	10.27.20.47
Configuration Update Count	3788
Diagnostic Messages	Real-time Processor has Warnings Failed to Login to FTP Server

Real-Time Processor Details

Online	Status	IP Address	MAC Address
		192.168.00.197	00:0E:13:06:00:D3

Software Type	STANDARD
Software Version	4.0.0.0
FPGA Version	1.14.0
My Decoder's MAC	00:0E:13:06:00:68
My Decoder's IP	192.168.0.145
Total Packages	698405
Diagnostic Messages	SyncNetwork is not connected in a loop Warning: Exposure set above maximum value

Camera Statistics

Belt Speed

Displays the speed of the conveyor belt in millimeters per second. Average conveyor belt speed is around 65 fpm (feet per minute) or 19812 mm per minute or 19.8 meters per minute.

Total Packages

The total number of packages detected by the presence sensor, including errors

Valid Reads

The total number of successful code reads achieved by the camera.

No Reads

The total number of unsuccessful code reads for the camera.

Multiple Reads

The total number of the same bar code read by the camera.

Read Rate

The number of good reads divided by the total number of reads.

Decoder Details

Online Indicator

Green = Online (connected and recognized in the cluster)

Gray = Unit not connected (unit not seen by master)

Yellow = Online but not assigned to the cluster

Red = Offline

Status Indicator

Green = Online (connected and recognized in the cluster)

Gray = Unit not connected (unit not seen by master)

Yellow = Warning present, if you click on the MAC address it will take you to the status viewer page for more information on the error

Red = Offline

IP Address

The Internet Protocol address (IP address) is a numerical label assigned to the device connected to a computer network that uses the Internet Protocol for communication.[1][2] An IP address serves two principal functions: host or network interface identification and location addressing.

MAC Address

A media access control address (MAC address) of a device is a unique identifier assigned to a network interface controller (NIC) for communications at the data link layer of a network segment.

Software Type

Describes the type of software on the device. Typically this will indicate STANDARD or a customer name if your software is custom.

Software Version

Identifies the version number of the software

Decoder Name

Identifies the type of decoder. For example, BLR_VL5.10.56R_LNX or EVL 1.1.24.2 (VL VL5.11.00U.50331646.10)

Host Port IP Address

The Internet Protocol address (IP address) of the host port.

Image Port IP Address

The Internet Protocol address (IP address) of the image port.

Configuration Update Count

The number of times the configuration file has been updated.

Diagnostic Messages

Camera_1		Position: Top
Count	Severity	Description
0	Critical	FPGA_RFU1
0	Error	Failed to set space notification
0	Critical	IV Monitor failed to get an image buffer
0	Error	LogManager can't open a log file
0	Error	LogManager can't write to the log file
0	Error	PROCMAN_RFU1
0	Information	Application in startup list does not exist
0	Critical	Application failed to start
0	Information	Application failed to shutdown
0	Critical	Maximum Application restarts
0	Critical	Maximum system resets in one day
0	Information	Decoder load warning (above 80%)
83	**Information**	**Decoder processing aborted**
0	Error	Bad scanline data detected
0	Information	FPGA_RFU1
0	Information	FPGA_RFU2
0	Information	Driver returned an error
0	Error	Configuration not synchronized with cluster
0	Warning	Decoder CPU over temperature
0	Warning	Decoder board over temperature
0	Warning	Decoder rfu1 over temperature
0	Warning	Decoder rfu2 over temperature
0	Critical	Controller Camera is Offline
0	Error	Camera status not understood
1	**Error**	**Expected Camera is Offline**
0	Warning	Unexpected Camera is Online
0	Error	Unable to read Decoder IP address
0	Error	Unable to read Decoder MAC address
0	Error	RangeFinder is not Online
1	**Warning**	**RangeFinder is not Expected**
0	Warning	RangeFinder is not OK
0	Error	RangeFinder status not understood
1	**Critical**	**Real-Time Processor is not Online**
2	**Error**	**Real-Time Processor has Errors**
0	Error	Real-Time Processor status not understood
0	Error	Dimensioner Beacon not understood
0	Error	Far Working Distance Out of Range
0	Error	Fixed Focus Value Out of Range
0	Error	Error Configuring the Decode Engine
2	**Warning**	**Real-time Processor has Warnings**
0	Warning	Bottom Camera Distance to Scanline too Small
0	Warning	Distance to Scanline too small
0	Error	Image Saving Queue is Full. Check Connection Speed
0	Error	Not Saving BMP Image. Request Too Late
0	Error	Failed to Write Image to File System
0	Error	Failed to Login to FTP Server
0	Error	Failed to Write Image to FTP Server
0	Error	Failed to Write Image to Offline Viewer
0	Error	Image Transfer Falling Behind. Check Connection Speed
0	Error	Failed to Read Image from Ramdisk
0	Error	Failed to Allocate Memory for Image Transfer
0	Error	No ACK from Rangefinder after Parameter Update
0	Error	Could Not Save JPEG - Queue is Full
0	Error	Could Not Save JPEG - Compression Failed
0	Error	Could Not Save JPEG - Job Queue is Full
0	Error	Could Not Save JPEG - Waiting for FPGA
0	Warning	Could Not Save JPEG - Image Too Small
0	Warning	Could Not Save JPEG - Image Too Large
0	Warning	IV State Not Sent - Pkg Not Found
0	Warning	Software upgrade in progress
0	Error	Software upgrade failed
0	Warning	Unable to mount SMB/CIFS file share for image saving
0	Error	Camera with different SW version detected
0	Warning	Trigger tach is out of range. No transmit point
0	Error	Factory Reset Performed. Power Cycle Required
0	Information	Dimensioner is not Online
0	Information	Dimensioner IP address not valid for Sync Network
0	Error	More than one camera setup to multicast LC data
0	Error	Expected External Device is Offline
0	Warning	Unexpected External Device is Online

Real Time Processor Details

Online Indicator

Green = Online (connected and recognized in the cluster)

Gray = Unit not connected (unit not seen by master)

Yellow = Online but not in cluster

Red = Offline

Status Indicator

Green = Online (connected and recognized in the cluster)

Gray = Unit not connected (unit not seen by master)

Yellow = Online but errors

Red = Offline

IP Address

The Internet Protocol address (IP address) is a numerical label assigned to the device connected to a computer network that uses the Internet Protocol for communication.[1][2] An IP address serves two principal functions: host or network interface identification and location addressing.

MAC Address

A media access control address (MAC address) of a device is a unique identifier assigned to a network interface controller (NIC) for communications at the data link layer of a network segment.

Software Type

Describes the type of software on the device. Typically this will indicate STANDARD or a customer name if your software is custom.

Software Version

Identifies the version number of the software

FPGA Version

The version of the Datalogic field-programmable gate array (FPGA).

My Decoder's MAC

A media access control address (MAC address) of a device is a unique identifier assigned to a network interface controller (NIC) for communications at the data link layer of a network segment.

My Decoder's IP

The Internet Protocol address (IP address) is a numerical label assigned to the device connected to a computer network that uses the Internet Protocol for communication.[1][2] An IP address serves two principal functions: host or network interface identification and location addressing.

Total Packages

The total number of packages processed.

MODIFY SETTINGS | GLOBAL SETTINGS

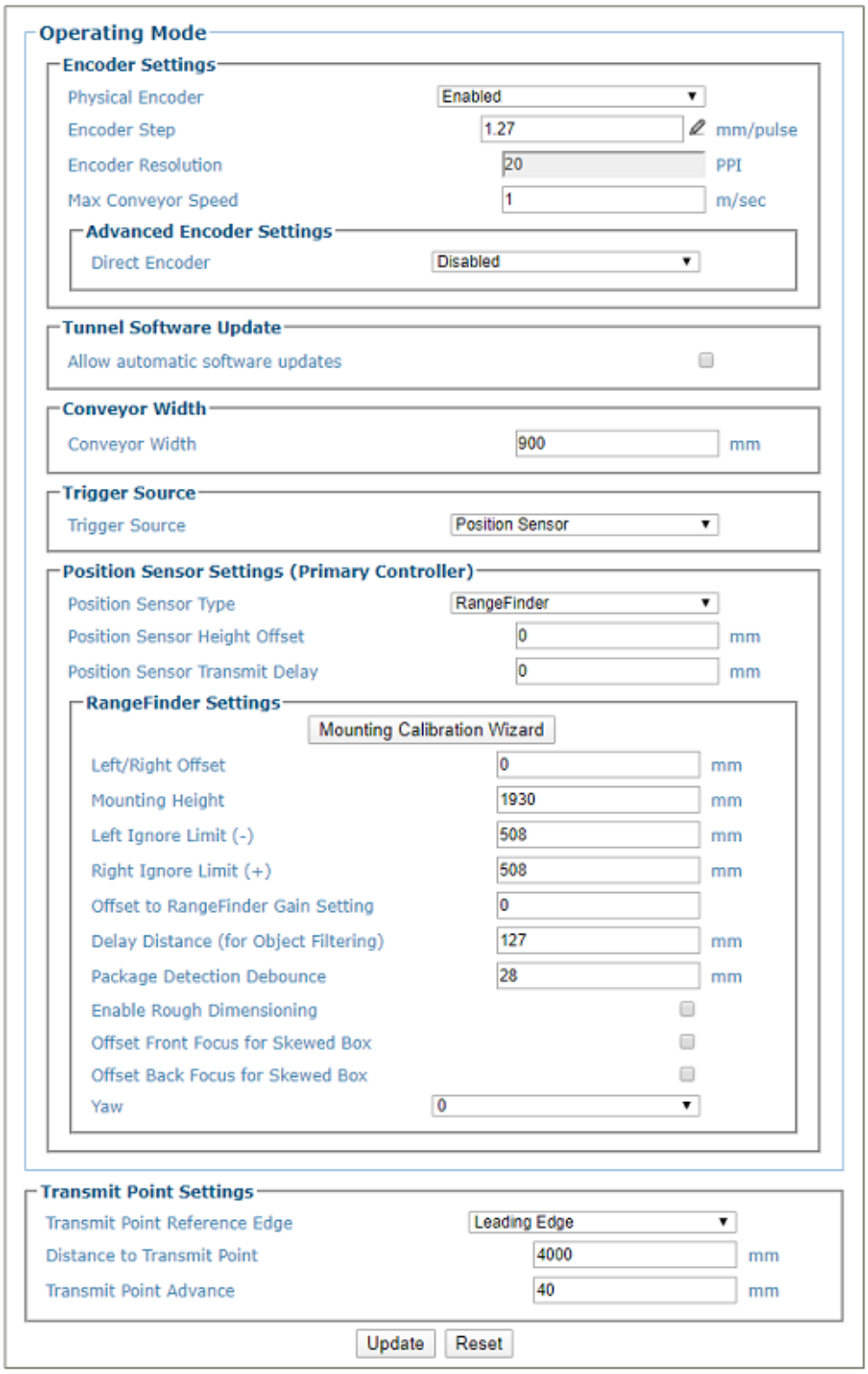
Use the Global Settings selections to configure your camera system. You can later make modifications to the global system settings using the following menu selections:

MODIFY SETTINGS | GLOBAL SETTINGS | OPERATING MODE

Use **Operating Mode** to set up the physical parameters for your system including encoder, trigger, conveyor, and position sensor attributes. In AV7000 systems you may have both a trigger and a position sensor. Operating Mode is where you set this up.

To edit the system Operating Mode:

1. In the menu tree under **Modify Settings,** navigate to **Global Settings | Operating Mode.** The **Operating Mode** window opens.



NOTE **The Operating Mode shown above shows the AV7000 default values, your information may vary.**

2. Enter the appropriate information in the form as described below:

NOTE **See "AV7000 Timing and Distance Diagrams" on page 94**

REDUNDANT CONTROLLER SETTINGS

NOTE **This option appears only if your AV7000 is part of a redundant system.**

Controller Mode: Camera

Select one of the following from the drop-down list:

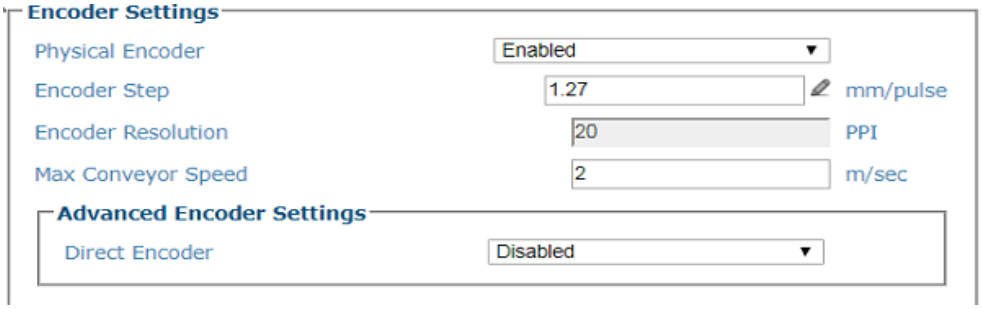
- **Auto-detect**
- **Primary Controller**
- **Secondary Controller**

Encoder Settings

Physical Encoder

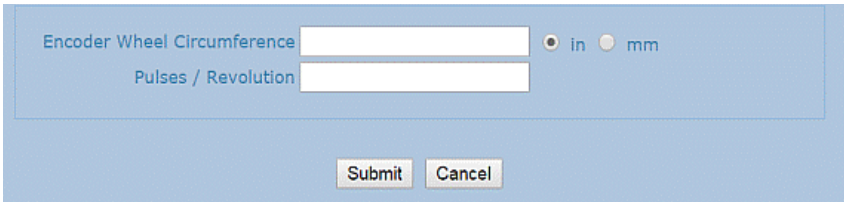
Select **Disable** or **Enable** from the drop-down list:

- **Disable:** External encoder is disabled, and internal encoder is active. If disabled the only option will be to enter the Max Conveyor Speed.
- **Enable:** A physical encoder is connected to the Encoder input and is enabled



Encoder Step (mm/pulse)

Click  to activate the Encoder Step input form. Enter the Encoder Wheel Circumference in the field provided and select the in or mm option. Enter the Pulses / Revolution in the field provided (See the table below for values). Click **Submit** to save the values, or click **Cancel** to return to the Operating Mode window.



Encoder Step Settings Table

Encoder Wheel Circumference	PPR (Pulses Per Revolution)	Encoder Step(mm)	Encoder Step (inch)	Encoder Model
304.8 mm [12 in]	192	1.5875	16	1000019875
304.8 mm [12 in]	240	1.27	20	1000019875
300 mm [11.81 in]	192	1.5625	16	OEK-2 93ACC1770
300 mm [11.81 in]	240	1.25	20	OEK-2 93ACC1770
304.8 mm [12 in]	2400	0.127	200	OEK-3 93ACC0104

Encoder Resolution

Displays the encoder/tachometer resolution in pulses per inch (PPI) based on the Encoder Step calculation. This field cannot be edited.

Max Conveyor Speed (m/sec)

When Physical Encoder is Disabled, enter the conveyor speed in meters per second in the field provided (see formula below).

When Physical Encoder is Enabled, enter the maximum belt speed using the formula below. Setting the belt speed too high will affect image quality; setting it too low will give you an exceeded maximum line rate error when the belt exceeds this setting.

Formula: Max conveyor speed x 1.05

Advanced Encoder Settings

This option is available when Physical Encoder is set to Enabled above.

Direct Encoder

Select Disable or Enable from the drop-down list. Direct encoder is a high-resolution encoder/tachometer used in start/stop applications. o.127 (200 PPI).

Tunnel Software Update

Allow automatic software updates

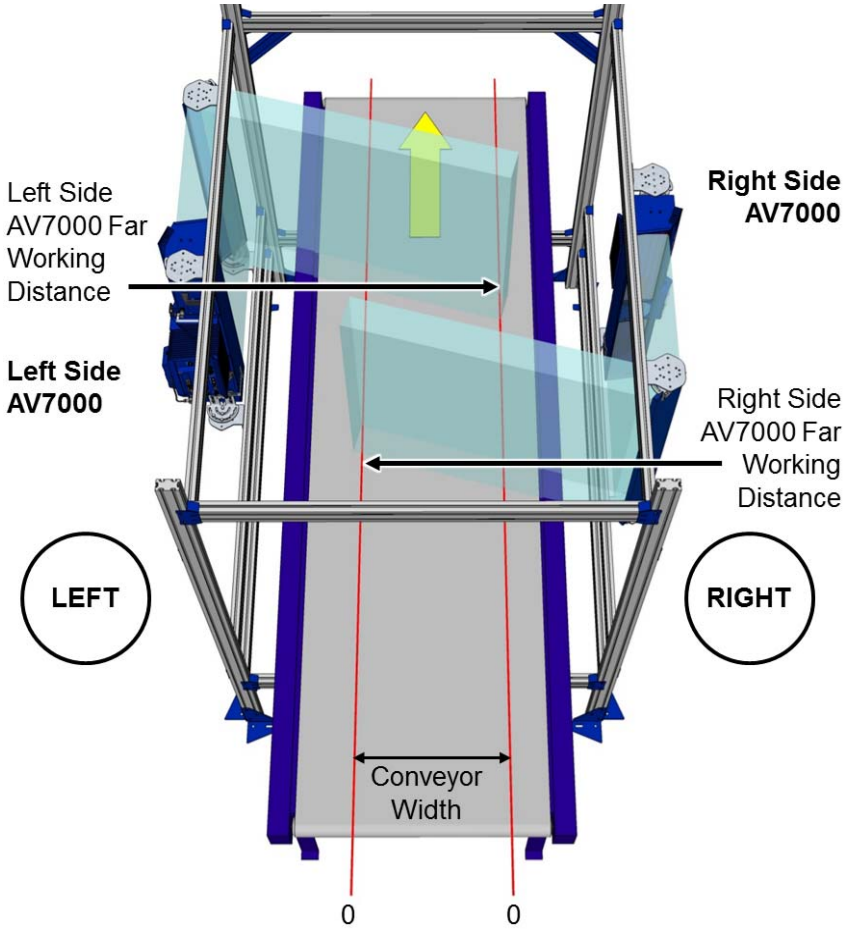
Select the check box to enable all cameras in the tunnel to automatically update when software is loaded to one of the cameras.

This will not update software of different types on individual cameras in the same tunnel.

Conveyor Width

Conveyor Width

Enter width of the scanning area in the field provided. This could be the physical width of the conveyor bed, or it may be smaller depending on the application. In an application with opposing side read cameras, it is the distance from the left side camera's Far Working Distance point to the right side camera's Far Working Distance point measuring across the conveyor.

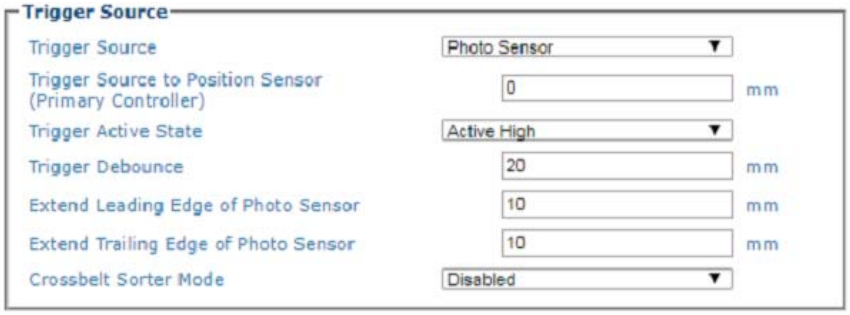


NOTE

Conveyor width must match what is set in the position sensor (RangeFinder or DM3610).

TRIGGER SOURCE

Trigger Source



Select Position Sensor, Photo Sensor, or Photo Sensor and Bottom from the drop-down list.

- **Position Sensor:** triggers when selected position sensor senses a package.
- **Photo Sensor:** triggers when a photoelectric sensor is blocked. Use when there is NOT a bottom camera defined in the tunnel.
- **Photo Sensor and Bottom:** triggers when a photoelectric sensor is blocked and there IS a bottom camera defined in the tunnel.

NOTE

If no Position Sensor is selected as your Trigger Source, the following options are not available.

Trigger Source (if Photosensor or Photosensor and Bottom)

Trigger Source to Position Sensor (Primary Controller)

Enter the physical distance from the trigger (Photo Sensor) to the position sensor.

Trigger Active State

Select Active High or Active Low from the drop-down list. This depends on the active state of the selected photoelectric sensor. If you chose a position sensor, this option is not available.

Selections:

- **Active High:** Object is detected when current is flowing through the trigger input pins.
- **Active Low:** Object is detected when there is NO current is flowing through the trigger input pins.

Trigger Debounce

Enter the Trigger Debounce distance in the field provided.If you chose a position sensor, this option is not available.

This distance must be a positive value and is the minimum distance the photo detector should be blocked for the system to consider an object to scan, reducing false triggers. A typical value is 25mm or 1 inch. This value must be significantly less than the distance from the trigger to read line.

NOTE

These options are used when the product needs to have virtual extensions added.

Extend Leading Edge of Photo Sensor

Enter a distance to extend the leading edge of the photo sensor. If you chose a position sensor, this option is not available.

Extend Trailing Edge of Photo Sensor

Enter a distance to extend the trailing edge of the photo sensor. If you chose a position sensor, this option is not available. This option is used when the product needs to have a virtual extension to its trailing edge.

Crossbelt Sorter Mode

Select Disabled or Enabled from the drop-down.

Disabled: Not in Crossbelt Sorter Mode

Enabled: In Crossbelt Sorter Mode.

POSITION SENSOR SETTINGS (PRIMARY CONTROLLER)

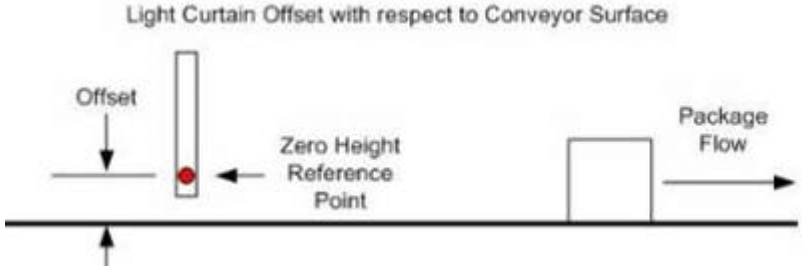
Position Sensor Type

Select from the drop-down list, depending on the specific position sensor used by the system.

- **No Position Sensor**
- **RangeFinder**
- **STI Light Curtain**
- **DL Light Curtain**
- **Dimensioner (Legacy)**
- **Dimensioner (Corner Detection)**
- **S80**
- **S80 with DL Light Curtain**

Position Sensor Height Offset

Enter the distance between the light curtain's (light array's) zero height reference point and the conveyor's surface. This should be set to zero (0) for other, non-light curtain position sensors.



NOTE

This is not an option for the S80 focusing device.

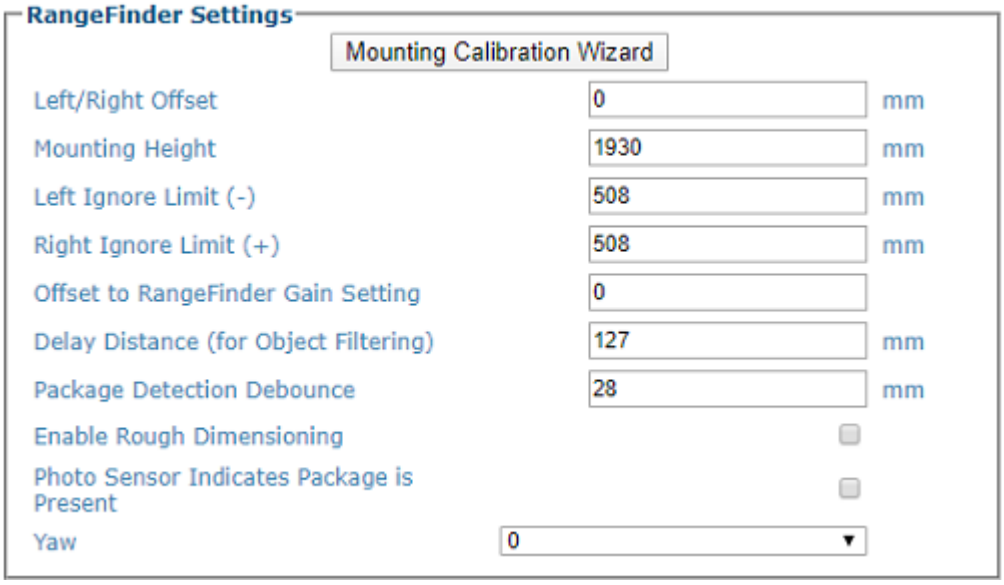
Position Sensor Transmit Delay

Enter the distance (the distance it takes for the Position Sensor to prepare the focusing data for the AV7000's focus). The focus delay value in the DM3610 must match this value. "AV7000 Timing and Distance Diagrams" on page 347

RANGEFINDER AS POSITION SENSOR

RangeFinder Settings (Mounting Calibration Wizard)

These values are entered by the Wizard. For information on RangeFinder installation and calibration, see *"Setting up The RangeFinder" on page 255.*



Left/Right Offset

Enter the offset on the Y axis (across the conveyor) of the RangeFinder. This parameter compensates for the RangeFinder not being centered above the scanning surface. Check if this is X or Y axis.

Mounting Height

Enter the height that the RangeFinder is mounted above the scanning surface (Z axis)

Left Ignore Limit (-)

Enter the usable area on left side of the RangeFinder. This is referenced from the center of the RangeFinder. Any codewords that are beyond the dimension set in this field will be ignored.

Right Ignore Limit (+)

Enter the usable area on right side of the RangeFinder. This is referenced from the center of the RangeFinder. Any codewords that are beyond the dimension set in this field will be ignored.

Offset to RangeFinder Gain Setting

This parameter adjusts the gain value used by the Rangefinder. This is an offset that is applied to the “Factory Gain Setting”. This value can be positive or negative. This value allows you to replace a RangeFinder without having to re-calibrate the gain option. This must match the package edge that the application spec requirements. For leading edge the transmit distance must be greater than the size of the scanning plus the longest box going through the system.

Delay Distance (for Object Filtering)

This specifies the “delay” in transmitting the Rangefinder focus data. The size of this delay helps with the ‘bounding’ of boxes to smooth the data for the sides. Essentially the range used in the ‘bounding’ is about 25 mm [1 in] less than twice this number (in other words, if left at 70 mm [3 in], bounding is performed over approximately 127 mm [5 in]).

This distance is the distance it takes for the Position Sensor to prepare the focusing data for the AV7000 focus. The focus Delay value in the DM3610 must match.

This value cannot be smaller than the minimum box size (minimum box size will be used in that case). It cannot be larger than 200 mm [8 in].

Package Detection Debounce

This specifies the “Distance without height data” that must be observed before the package detection algorithm terminates a box.

Be careful making this value much larger, as that will increase the sensitivity of the RangeFinder to “belt noise”.

Enable Rough Dimensioning

Select the check box to allow the RangeFinder to return rough package dimensions.

Yaw

Select 0 or 180 from the drop-down list. This identifies the RangeFinder mount as Standard or Non-Standard. This option is to assure that the correct focusing data is received for the correct side AV700. If the orientation is incorrect the AV7000 will receive the focusing data meant for the opposing side of the conveyor. The Yaw should either be 0 or 180, 0 being the standard mount where the two indicator laser dots are upstream from the RangeFinder scan line. When set to 180-degrees, the two indicator laser dots are downstream from the RangeFinder scan line

DL Light Curtain as Position Sensor Settings

Connected to

Select a camera in the system to which the light curtain is connected.

Multicast LC Focus Data

Select Disable or Enable from drop-down.

Dimensioner (Legacy) as Position Sensor Settings

Place Dimensioning Results Based on Tach

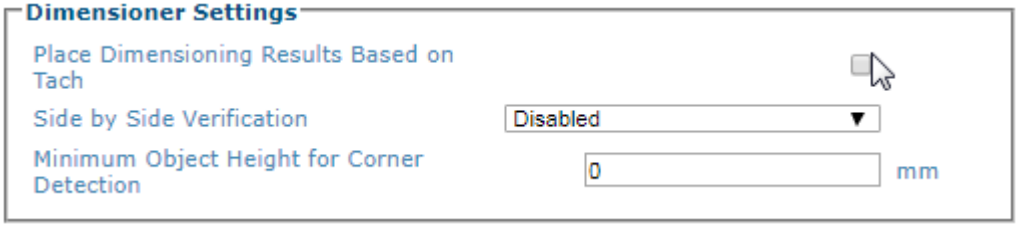
Click the checkbox to enable the DM3610 to send dimensioning results based on a defined tach value.

Side by Side Verification

Select **Enabled** or **Disabled** from the drop-down.

In a “singulated” material handling system, parcels are separated by at least the minimum spacing distance along the direction of travel; there is at most one parcel across the conveyor at a time; therefore there is only one parcel present during a trigger cycle. A trigger is typically generated by a photoeye or a hardware signal from the sorter. In a singulated system, a Side-by-Side (SBS) is an error condition in which these conditions are violated. The end-user wants to know when this happens (when their parcel flow has inadvertently become “non-singulated”), and Datalogic systems can tell them this by means of an SBS indicator in the Serial or Ethernet “host message.”

DIMENSIONER (CORNER DETECTION) AS POSITION SENSOR SETTINGS



Place Dimensioning Results Based on Tach

Click the checkbox to enable the DM3610 to send dimensioning results based on a defined tach value.

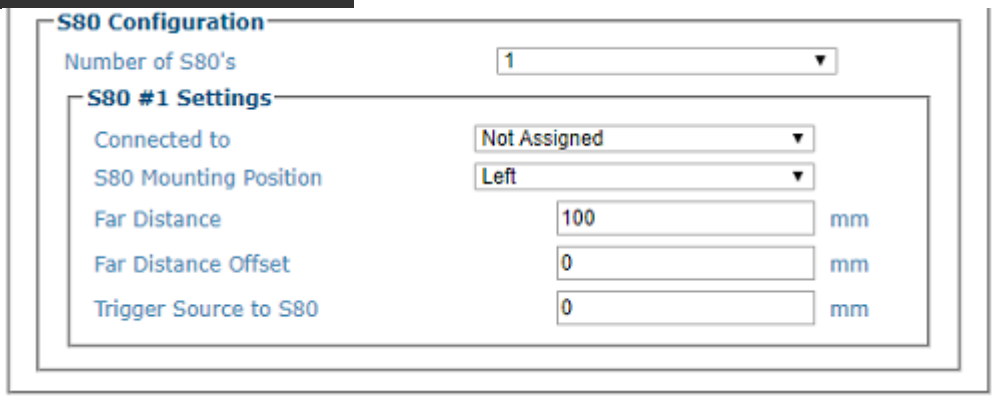
Side by Side Verification

In a “singulated” material handling system, parcels are separated by at least the minimum spacing distance along the direction of travel; there is at most one parcel across the conveyor at a time; therefore there is only one parcel present during a trigger cycle. A trigger is typically generated by a photoeye or a hardware signal from the sorter. In a singulated system, a Side-by-Side (SBS) is an error condition in which these conditions are violated. The end-user wants to know when this happens (when their parcel flow has inadvertently become “non-singulated”), and Datalogic systems can tell them this by means of an SBS indicator in the Serial or Ethernet “host message.”

Minimum Object Height for Corner Detection

Enter a value in mm or inches. This value along with Transmit Point Distance and Reference Edge is used to help determine the corner of packages for possible printer applicator label placement or other system needs.

S80 AS POSITION SENSOR SETTINGS



S80 Configuration

Number of S80’s

Select None or 1 from the drop-down to specify the number of S80’s in your AV7000 system.

S80 #1 Settings

Connected to

Select Not Assigned or a camera in the system to which the S80 is connected.

S80 Mounting Position

Select Top, Left or Right to specify the S80 position.

Far Distance

Enter the S80 Far Distance in mm.

Far Distance Offset

Enter the S80 Far Distance Offset in mm.

Trigger Source to S80

Enter the distance from Trigger Source to the S80 in mm.

TRANSMIT POINT SETTINGS

Transmit Point Reference Edge

Select Leading Edge or Trailing Edge from the drop-down list to reference the leading or trailing edge of the package. This must match the package edge that the application specifies. For the leading edge the transmit distance must be greater than the size of the scanning plus the longest box going through the system.

Distance to Transmit Point

Enter the distance from the location of the trigger source to the host transmit point in the field provided.

Transmit Point Advance

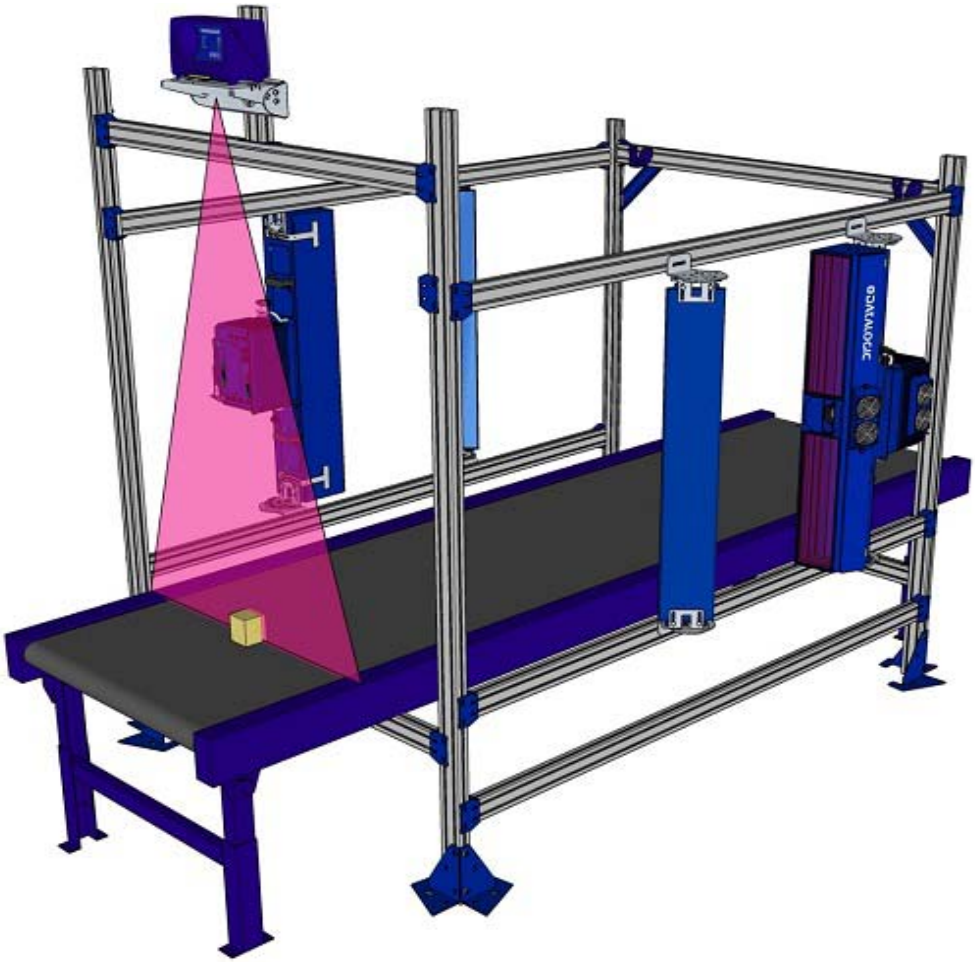
Enter the distance in the field provided. This is the distance upstream of the transmit point where the camera will stop decoding the image data. This will help eliminate processing errors.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

AV7000 TIMING AND DISTANCE DIAGRAMS

This document identifies the distance/timing between the photo sensor, position sensor, and AV7000 camera. It includes:

- Distance from trigger source to position sensor
- Distance from position sensor to AV7000
- DM3610/Dual Headed scan line to DM3610 focus data transmit point
- AV7000 look-ahead distance for corner search

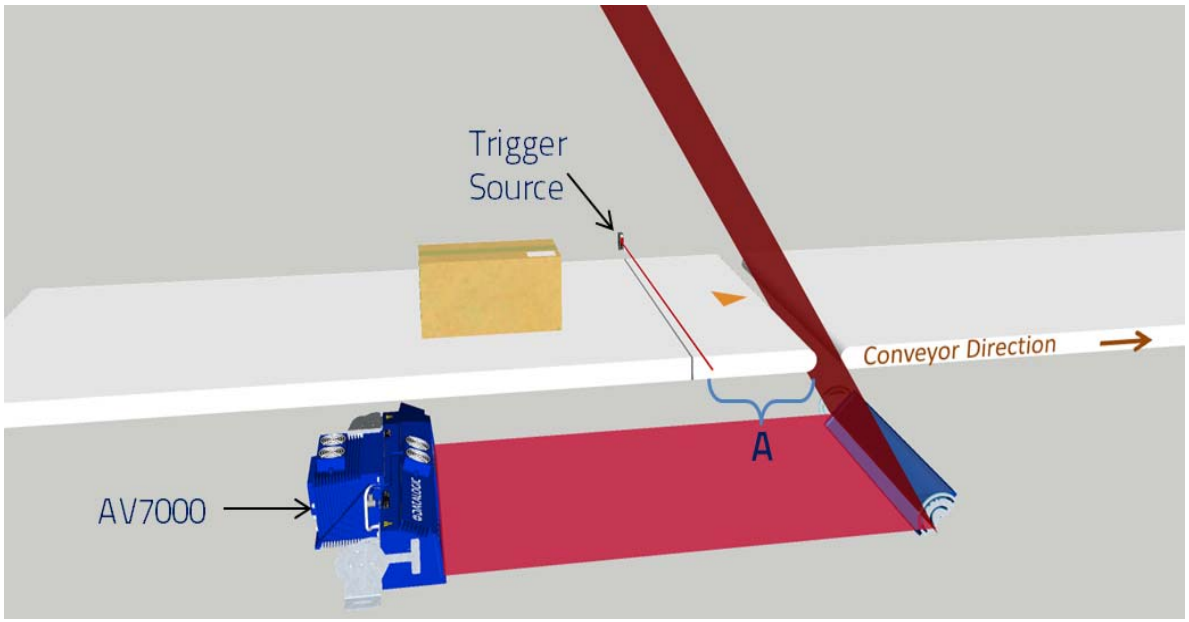


All configurations use a photo sensor as the trigger source. The position sensors identified in the document include:

Bottom Upstream AV7000 Configuration

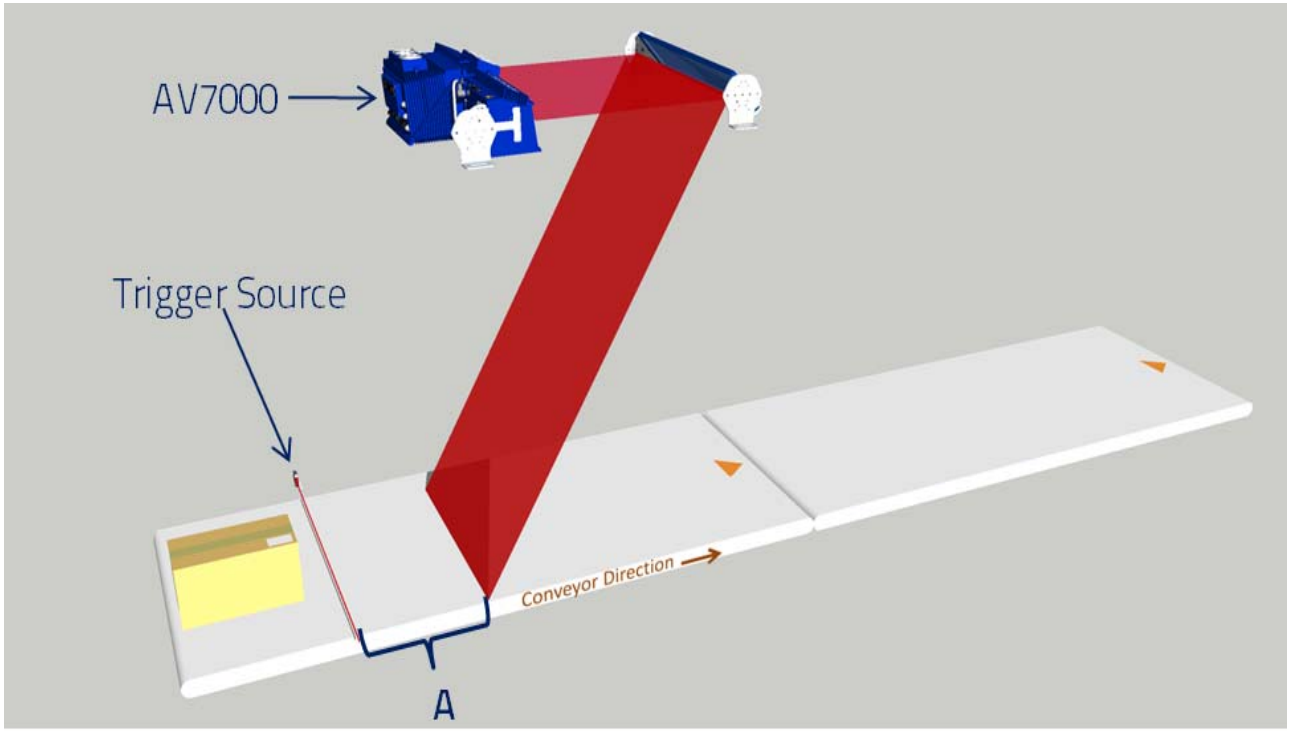
In a bottom mounted AV7000 the camera and mirror must be mounted so that the beam is reflected by the mirror through a space between conveyors.

Identifier	Item 1	Item 2	Distance		Time	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	AV7000	10	254		



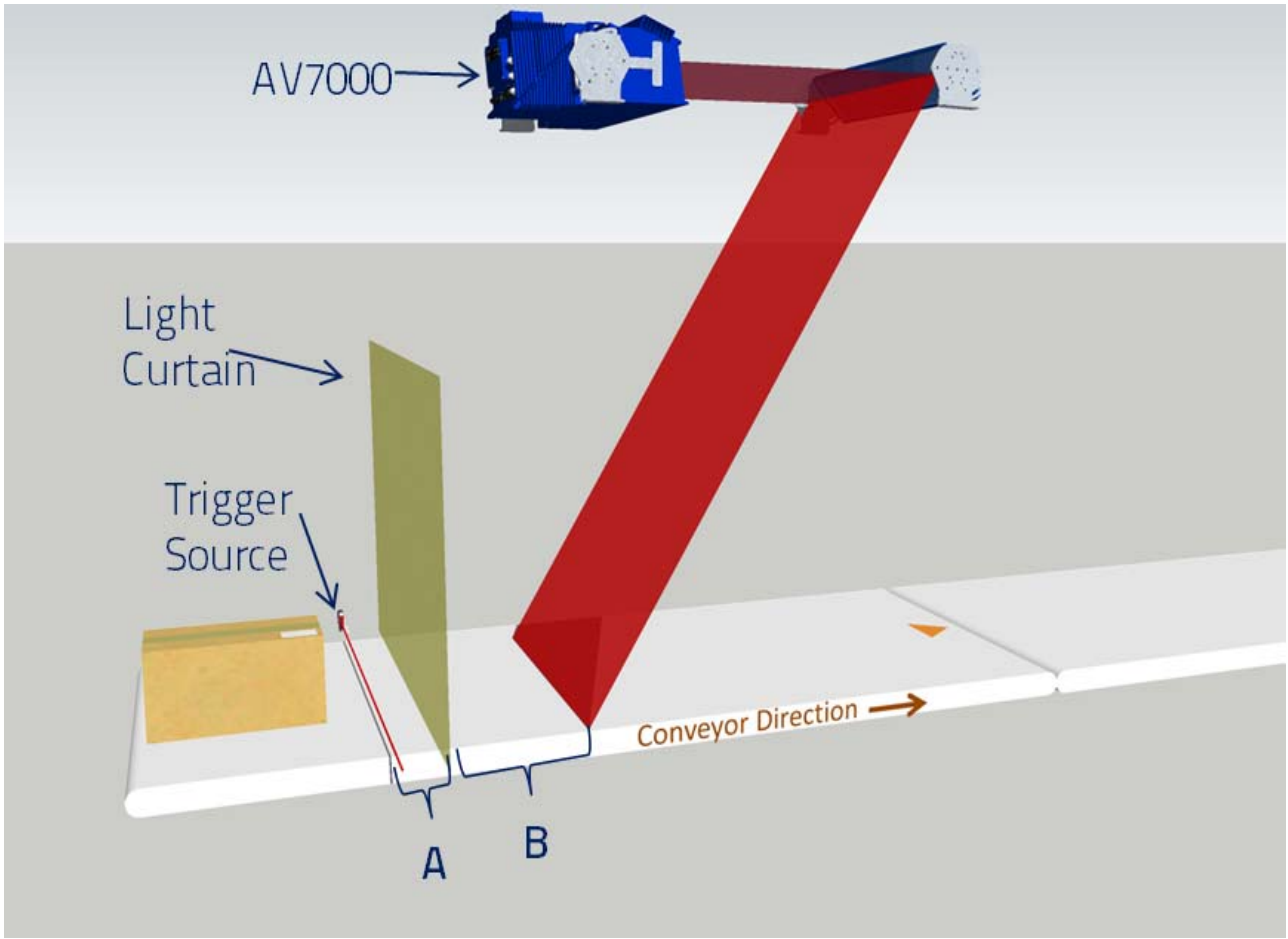
Fixed Focus (NONE)

Identifier	Item 1	Item 2	Distance		Time	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	AV7000	5 or 10			



Focusing with a Light Curtain

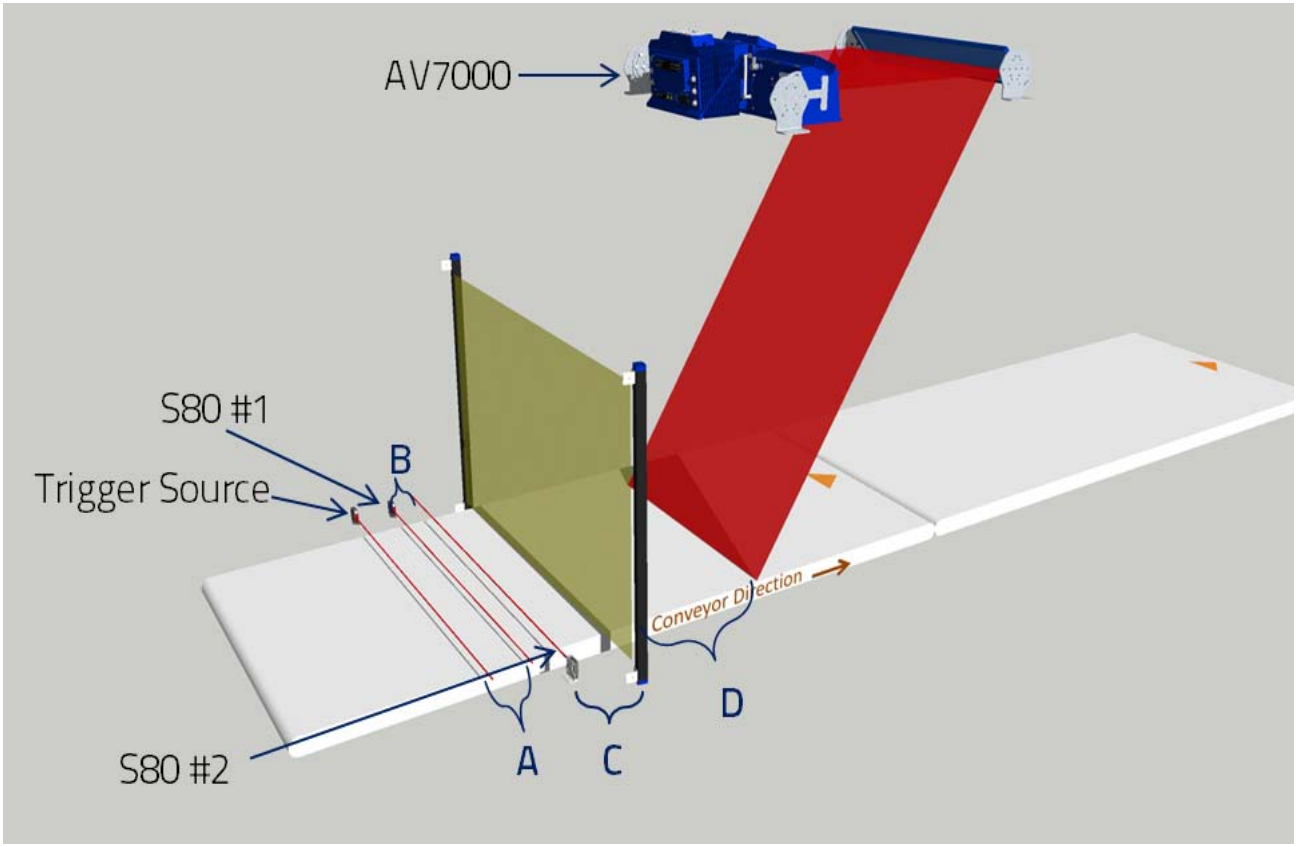
Identifier	Item 1	Item 2	Distance		Time	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	Light Curtain	5	127		
B	Light Curtain	AV7000	12	305		



Focusing with a Light Curtain and S80

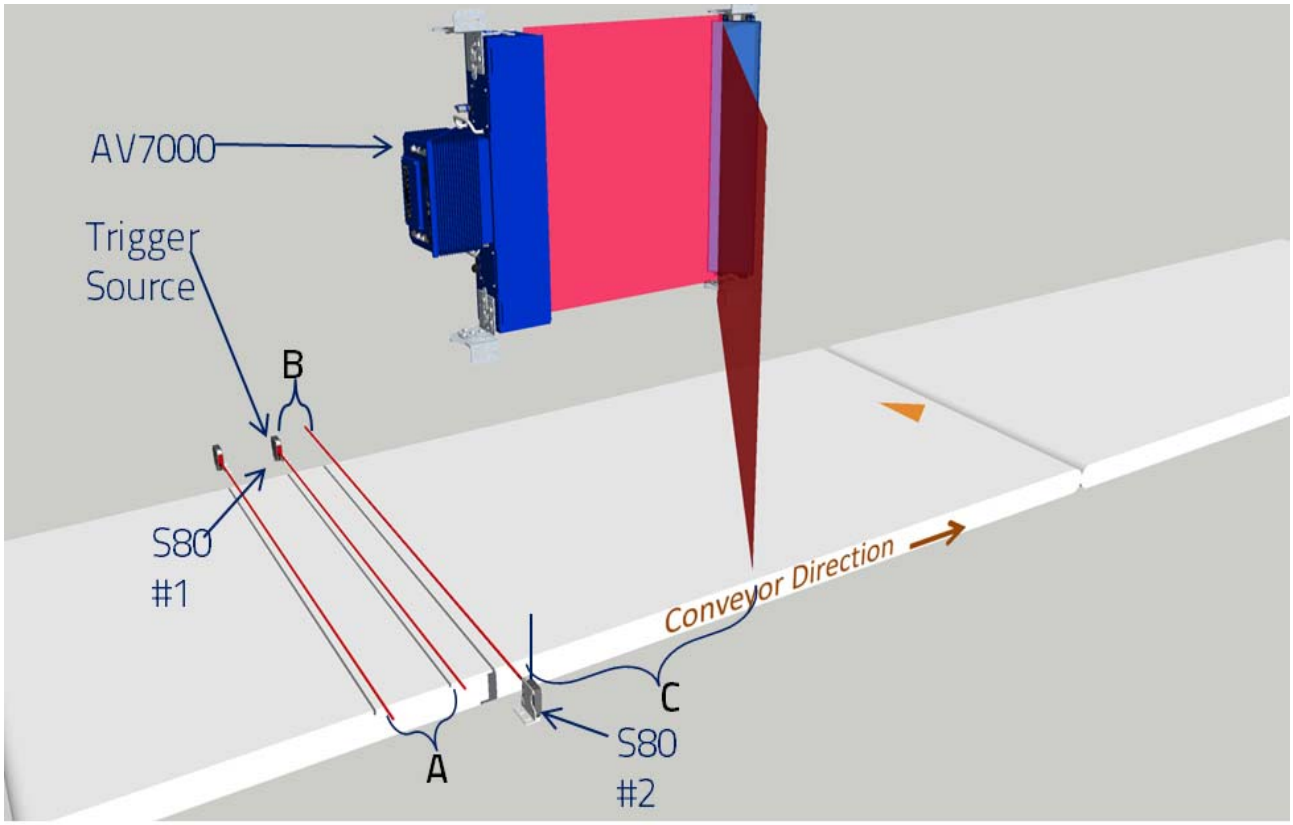
(Software version 2.16.0.0 or later)

Identifier	Item 1	Item 2	Distance		Speed	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	S80 #1	5	127		
B	S80 #1	S80 #2	5” or 127mm			
C	S80 #2	Light Curtain	No distance required			
D	Light Curtain	AV7000	12	305		
Position Sensor Delay				127		



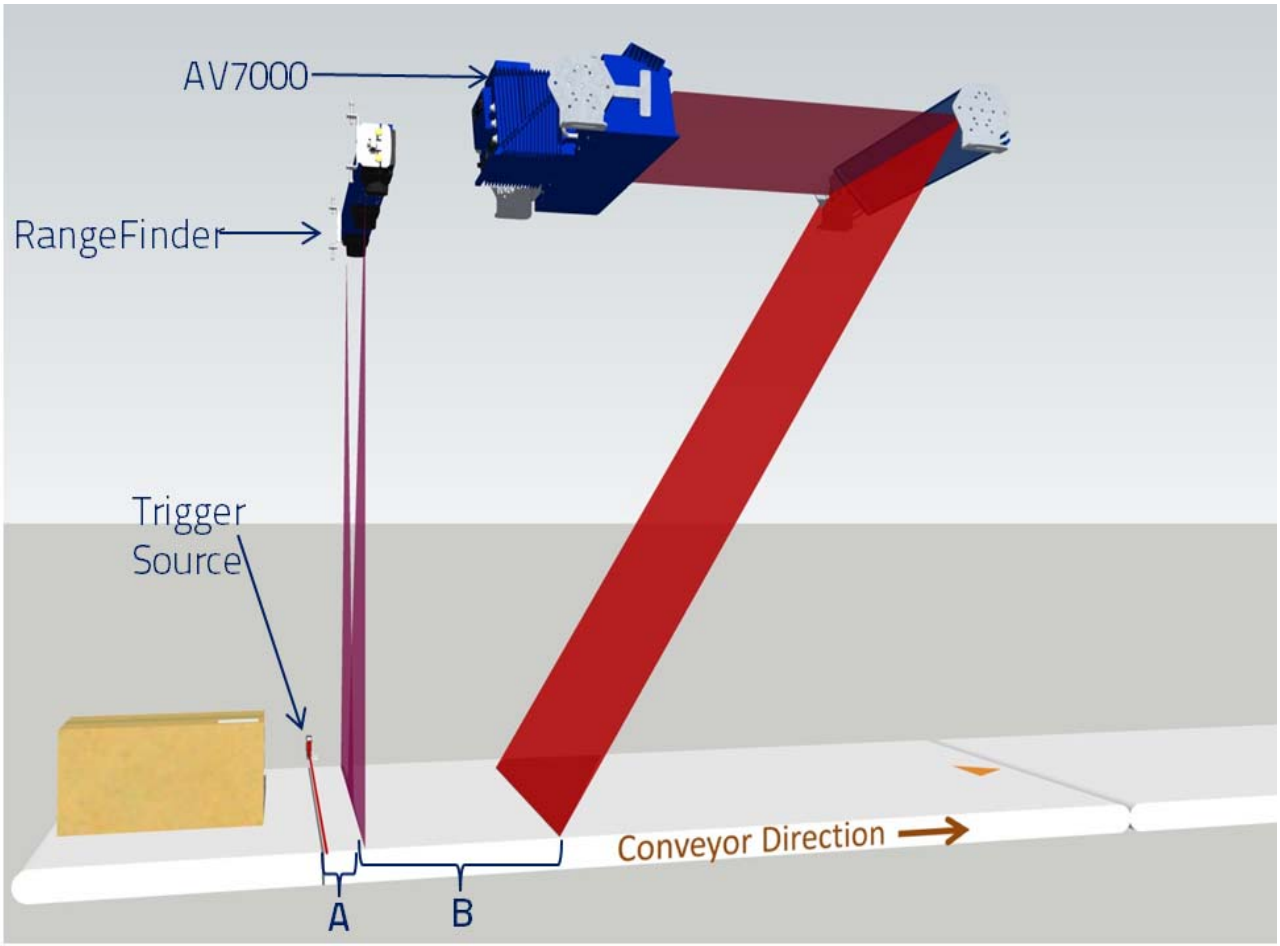
Focusing with an S80

Identifier	Item 1	Item 2	Distance		Speed	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	S80 #1	5	127		
B	S80 #1	S80 #2	1	25.4		
C	S80 #2	AV7000	12	305		



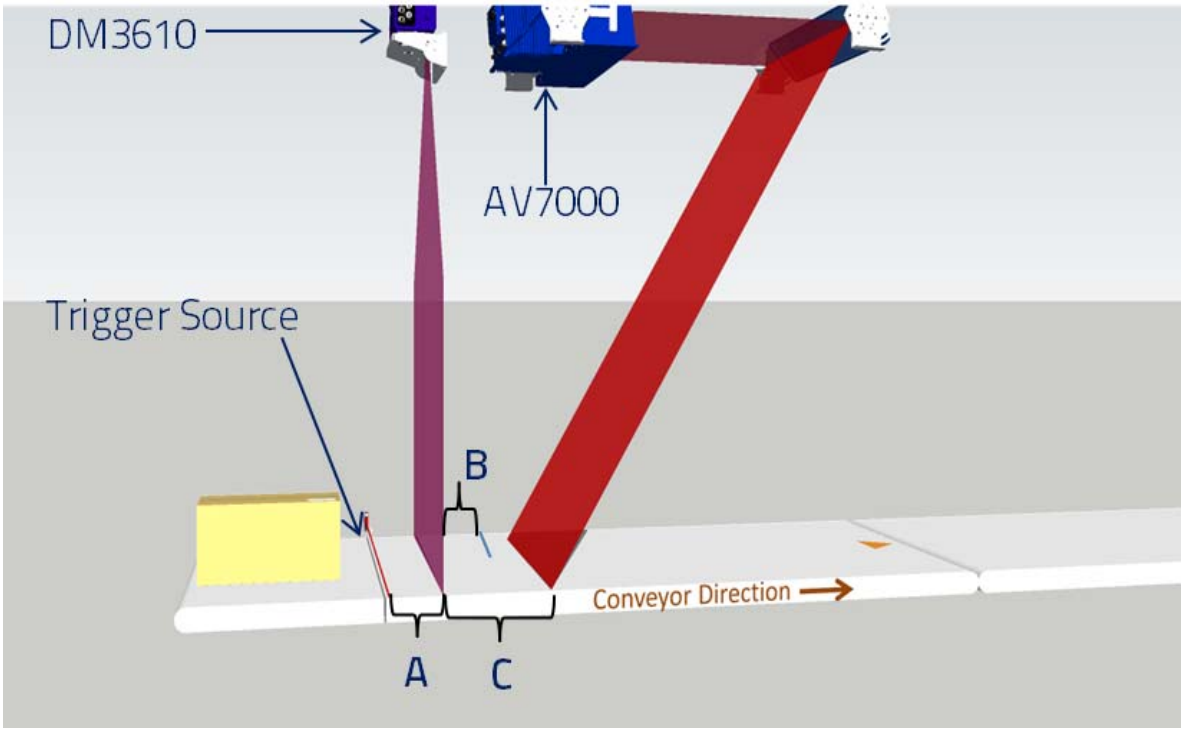
Focusing with a RangeFinder

Identifier	Item 1	Item 2	Distance		Speed	
			Standard (in.)	Metric	m/s	f/m
A	Trigger Source	RangeFinder	5	127		
B	RangeFinder	AV7000	17	432		



Focusing with a Single DM3610

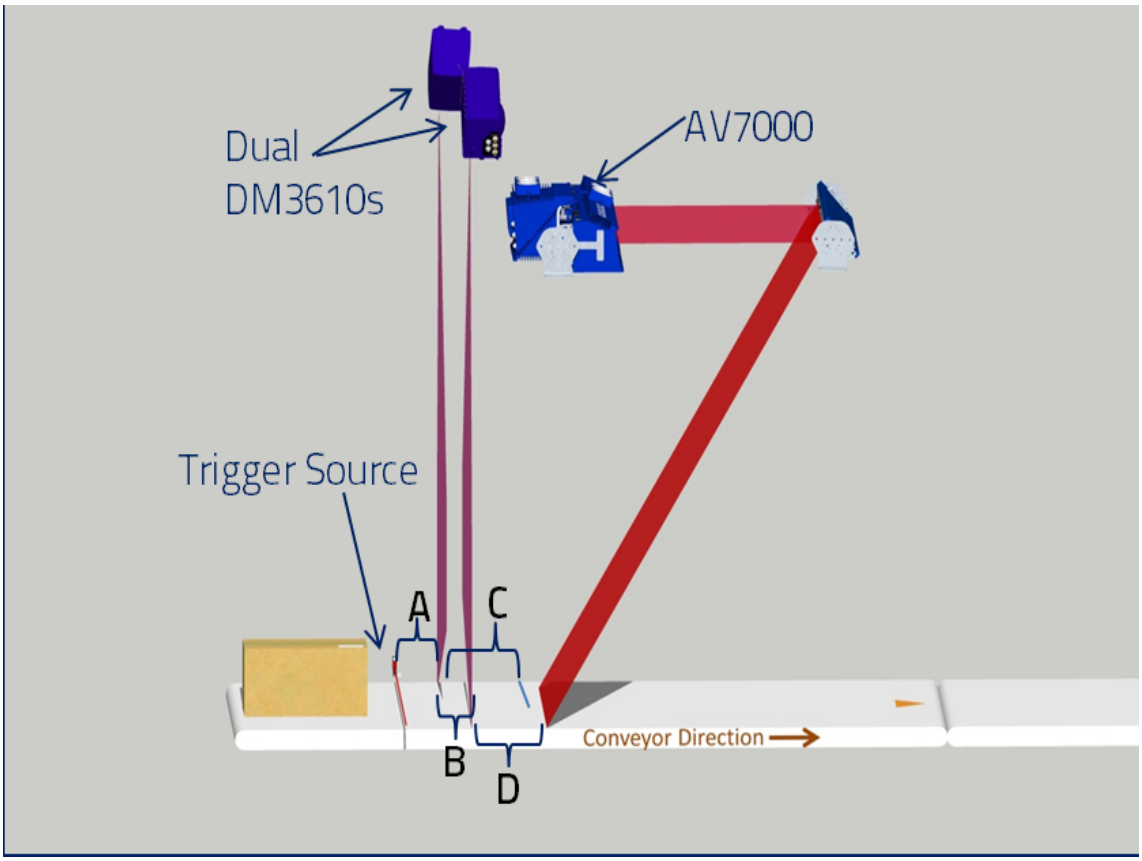
Identifier	Item 1	Item 2	Minimum Distance	
			[in]	[mm]
A	Trigger Source	DM3610	5	127
B	DM3610 Scanline	Focus Xmit Point	5	127
B note:	The “B” distance number is inserted into the **Focus Transmit Point** in the DM3600 and the **Position Sensor Transmit Delay** in the AV7000			
C	DM3610 Scanline	AV7000		
		Speed [ft/min]	**Minimum Distance**	
			[in]	[mm]
		300	15.4	391
		400	17.7	450
		500	20.0	508
		600	22.3	566



Focusing with a Dual DM3610 System

Identifier	Item 1	Item 2	Minimum Distance	
			[in]	[mm]
A	Trigger Source	DM3610 #1	5	127
B	DM3610 Scanline #1	DM3610 #2	1.5 to 10	38 to 254
C	DM3610 Scanline #1	Focus Xmit Point	B + 10	B + 254
C note:	The “C” distance number is inserted into the **Focus Transmit Point** in the DM3600 and the **Position Sensor Transmit Delay** in the AV7000			
D	DM3610 Scanline #2	AV7000		

	Speed [ft/min]	Minimum Distance	
		[in]	[mm]
	300	20.4	518
	400	22.7	577
	500	25.0	635
	600	27.3	693



Modify Settings | Serial | Main

Baud Rate

- 600
- 1200
- 2400
- 4800
- 9600
- 19200
- 38400
- 57600
- 115200

Data Bits

- 7 Bits
- 8 Bits

Stop Bits

- 1 Bits
- 2 Bits

Parity

- None
- Even
- Odd

Mode

- RS-232
- RS-422

Message Format

Camera Focus — Focus messages for Datalogic cameras

AV7000/AV6010 — Model

12.0 — Focus Transmit Point (in)

5 — Focus Transmit Interval (ms)

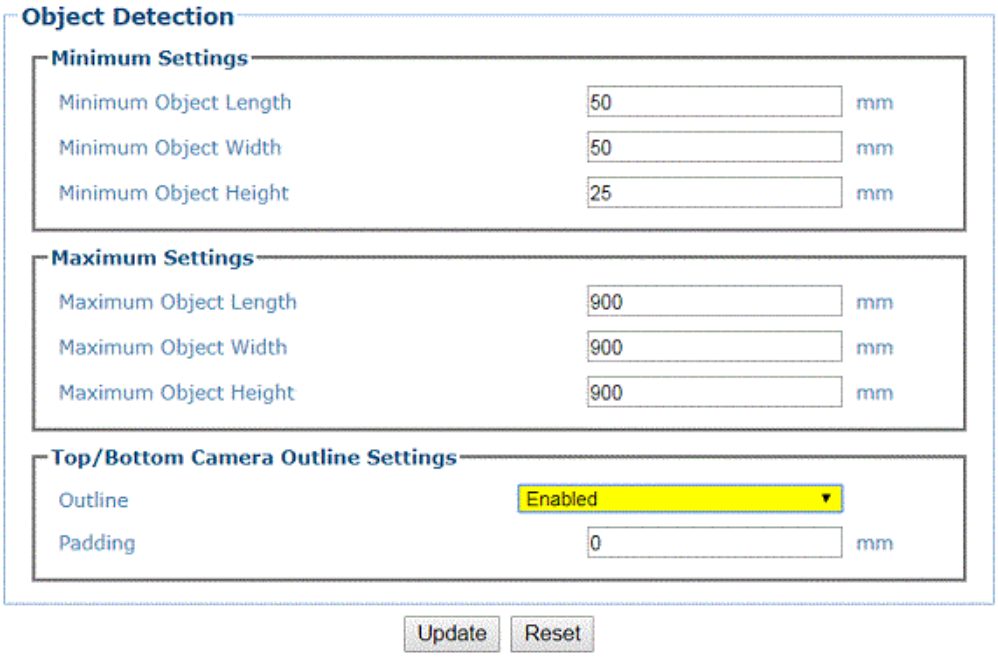
Update | Reset

MODIFY SETTINGS | GLOBAL SETTINGS | OBJECT DETECTION

Use **Object Detection** to set the minimum and maximum size parameters for objects (packages) in your system.

To edit the system Object Detection:

1. In the menu tree under **Modify Settings**, navigate to **Global Settings | Object Detection**. The **Object Detection** window opens.



NOTE

Default values are shown in the screen capture above.

2. Enter the minimum and maximum detection size settings for object length (mm [in]), width, and height in the fields provided.
3. Select **Disabled** or **Enabled** from the **Outline** drop-down. If this is enabled a package bounding box is produced.
4. If **Enabled** is selected, enter the **Padding** (mm [in]). This defines the padding used to pad the bounding box.
5. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | GLOBAL SETTINGS |BARCODE SETTINGS

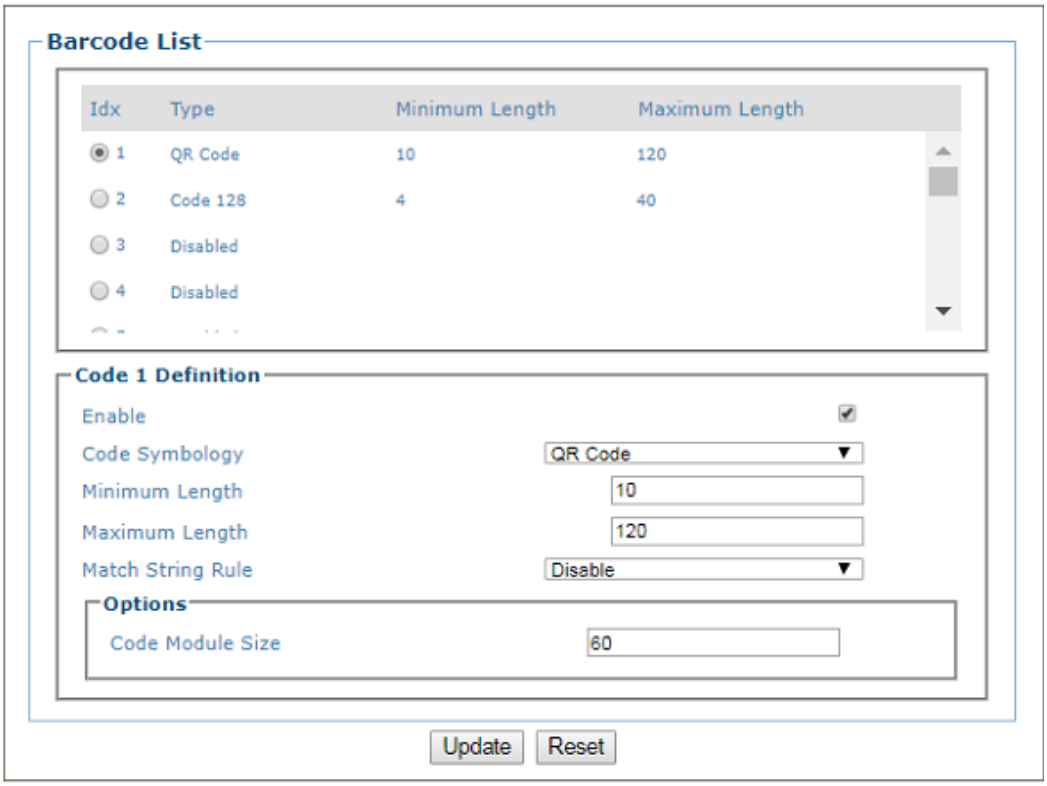
Use Barcode Settings options to define the barcodes to be read by the system. Make modifications to the system barcode settings using the menu selections, including (click on the menu item to access that help window):

MODIFY SETTINGS | GLOBAL SETTINGS | BARCODE SETTINGS | BARCODE SETTINGS TABLE

Use the **Barcode Settings Table** to select and configure barcodes to be read by your application. Different configuration options are available based on the barcode type selected.

To edit the Barcode Settings Table:

1. In the menu tree under **Modify Settings,** navigate to **Global Settings | Barcode Settings | Barcode Settings Table**. The **Barcode Settings Table** window opens.



2. Enter the appropriate information in the form as described below:

Top Panel

Displays a list of barcodes that have been added to the system with the following columns:

Idx

Select an option button for the row/barcode you wish to edit.

- If a barcode type is displayed in the selected row, its configuration can then be edited.
- If a row displaying disabled is selected, a barcode type can be selected and configured for that row.

Type

Displays the name of the barcode symbology for that index. If no symbology has been added for a row, disabled is displayed.

Minimum Length

Displays the minimum barcode character length for that row's symbology.

Maximum Length

Displays the maximum barcode character length for that row's symbology.

Code n Definition

NOTE

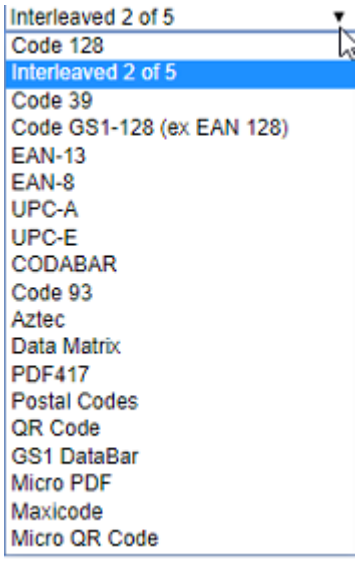
Input fields will vary depending on the selected symbology.

Enable

Select the Enable check box to activate the selected barcode. Deselect the Enable check box to disable the selected barcode. When the check box has been selected, configuration and code type options are displayed.

Code Symbology

Select a barcode symbology from those available in the Code Symbology drop-down list.



Code N Definition

Add On (EAN and UPC Codes only)

Select No Add On, 2 digits Add On, or 5 digits Add On from the Add On drop-down list.

No Add On

2 digits Add On: Adds this many digits as a supplement to the barcode

5 digits Add On: Adds this many digits as a supplement to the barcode

EAN is the acronym for International Article Number, previously known as European Article Number.

Minimum Length (Not shown on EAN and UPC)

Enter the minimum character length for the selected barcode.

Maximum Length (Not shown on EAN and UPC)

Enter the maximum character length for the selected barcode.

Match String Rule

Select Disable, Match, or Do Not Match from the drop-down list. This parameter defines the matching rule, according to which a code can be transmitted.

- **Match:** All codes matching the Pattern Match String will be transmitted
- **Do Not Match:** All codes not matching the Pattern Match String will be transmitted

Pattern Match String (max. 200 chars)

Click to activate the Text Entry Tool and create a pattern match string.

A Pattern Match String allows the user to check for a sequence of characters in a group of barcodes. The string can be made up of a sequence of alpha numeric characters combined with Regular Expression Syntax.

The regular expression algorithms allow checking for conditional barcode information based on specific expression functions (see below). A pattern matching string is programmable for each barcode used in the system, and if the barcodes read do not match the defined string, a No Read Event will be returned.

It is possible to define the matching string by inserting Regular Expressions, including but not limited to the following:

. – (dot) Matches any character

* - (asterisk) Matches 0 or more of the preceding character.

+ - (plus) Matches 1 or more of the preceding character.

\d - Matches any single digit

\w - Matches any word character (alphanumeric & underscore).

[XYZ] - Matches any single character from the character class.

[XYZ]+ - Matches one or more of any of the characters in the set.

$ - Matches the end of the string.

[^a-z] - When inside of a character class, the ^ means NOT; in this case, match anything that is NOT a lowercase letter.

Examples:

Match a code starting with 123 string and followed by any string of characters:

Match String = 123.*

Example Code = 123aC53

Match a code ending with 123 string preceded by any string of characters:

Match String = .*123

Example Code = 41pO123

Match a code having 123 string in any position: 0)

Match String = .*123.*

Example Code = 41pO123253

NOTE

For Codabar codes the start/stop characters must be considered in the match conditions.

For all codes which use check digits, if the Check Digit is transmitted, it must be considered in the match conditions.

Input fields will vary depending on the selected symbology.

OPTIONS

Code 128

Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Transmit Start / Stop Char(s)

Select the check box to enable transmission of start and stop characters.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Interleaved 2 of 5

Use Check Digit

Select the check box to include the Check Digit in the code transmitted Check digits can improve decoding safety: it is generally the last digit aligned to the right of the code and verifies the validity of the preceding digits. The calculation technique and number of check digits depend on the code selected.

It is advised to enable the check digit whenever correct code identification is difficult.

Transmit Check Digit

Select the check box to enable transmission of the Check Digit.

NOTE

For all codes which use check digits, if the Check Digit is transmitted, it must be considered in the match conditions.

A check digit is a character that is transmitted at the end of the data. It is the remainder of an equation that uses all data in the bar code. The same algorithm is used at the host and to ensure that the data from the AV7000 is completed.

Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Code 39

Use Check Digit

Select the check box to include the Check Digit in the code transmitted

Transmit Check Digit

Select the check box to enable transmission of the Check Digit.

NOTE

For all codes which use check digits, if the Check Digit is transmitted, it must be considered in the match conditions.

A check digit is a character that is transmitted at the end of the data. It is the remainder of an equation that uses all data in the bar code. The same algorithm is used at the host and to ensure that the data from the AV7000 is completed.

Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

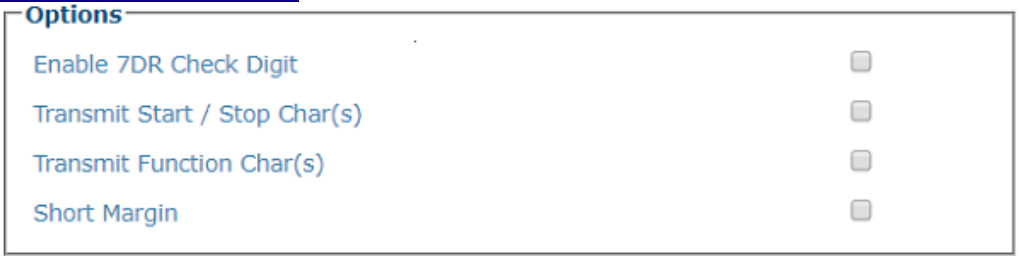
Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Full ASCII

Select the check box to enable full ASCII. This pertains to Code 39 only.

Code GS1-128 (ex EAN 128)



Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Transmit Start/Stop Char

Select Disabled, Lower Case, or Upper Case from the drop-down list. This parameter is available only for Codabar code symbologies. It allows transmitting the code start character:

- **Disabled:** The character is not selected;
- **Lower Case:** The character is transmitted in lower case;
- **Upper Case:** The character is transmitted in upper case.

Transmit Function Char(s)

Select the check box to enable transmission of functional characters.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

EAN-13, EAN-5, UPC-A

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Quiet Zone

Specify the quiet zone in the field provided.

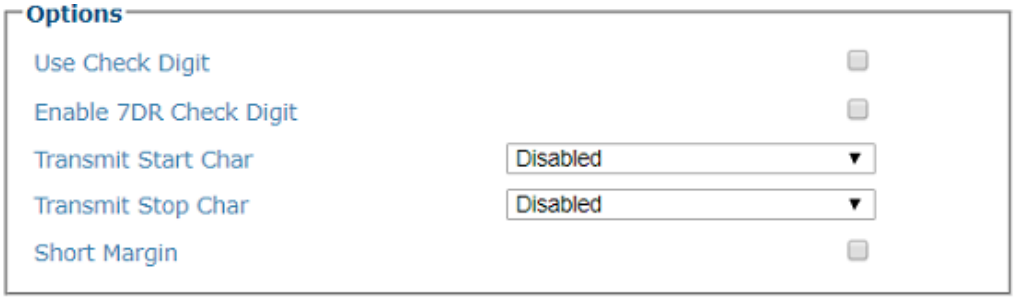
This defines the minimum quiet zone (white margins) measured in narrowest module width. This option may be symbology dependent.

UPC-E

UPCE Expand

Select the check box to enable conversion of a full-length UPC (UPC-A) UPC-E. Excess zeros will be suppressed.

CODABAR



Use Check Digit

Select the check box to include the Check Digit in the code transmitted

Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Transmit Start/Stop Char

Select Disabled, Lower Case, or Upper Case from the drop-down list. This parameter is available only for Codabar code symbologies. It allows transmitting the code start character:

- **Disabled:** The character is not selected;

- **Lower Case:** The character is transmitted in lower case;
- **Upper Case:** The character is transmitted in upper case.

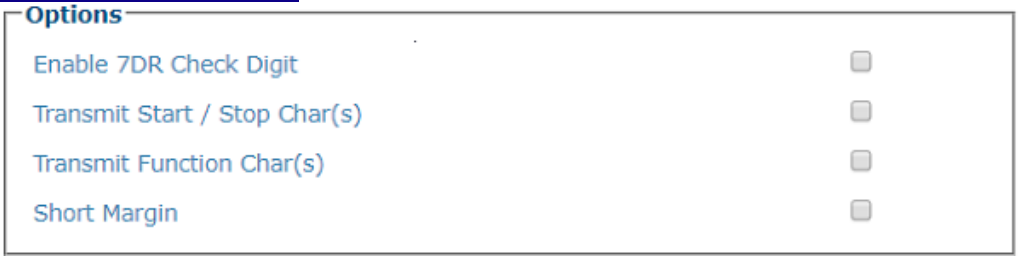
Transmit Function Char(s)

Select the check box to enable transmission of functional characters.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Code GS1-128 (ex EAN 128)



Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Transmit Start/Stop Char

Select Disabled, Lower Case, or Upper Case from the drop-down list. This parameter is available only for Codabar code symbologies. It allows transmitting the code start character:

- **Disabled:** The character is not selected;
- **Lower Case:** The character is transmitted in lower case;
- **Upper Case:** The character is transmitted in upper case.

Transmit Function Char(s)

Select the check box to enable transmission of functional characters.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

For Codabar codes the start/stop characters must be considered in the match conditions.

Code 93

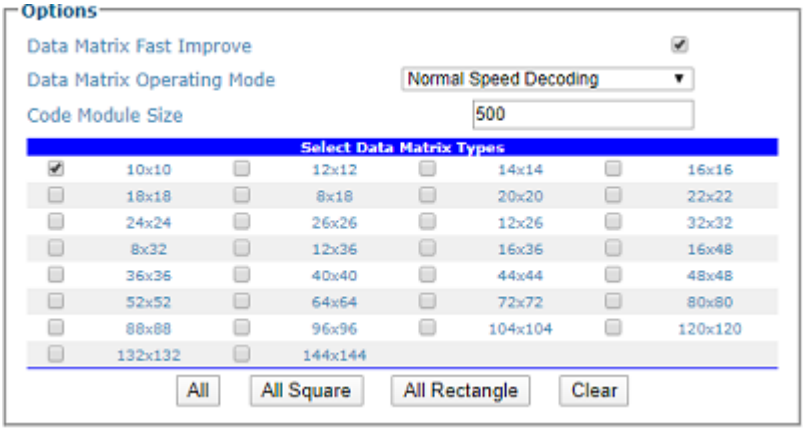
Enable 7DR Check Digit

Select the check box to enable 7DR Check Digit.

Short Margin

Select the check box to enable. Available for Code 128, Code GS1-128, Interleaved 2 of 5, Code 39, Code GS1-128, EAN, UPC, CODABAR, and Code 39. This option deals with an illegal quiet zone.

Data Matrix Options



Data Matrix Fast Improve

Select the check box to enable the Data Matrix options available via the table shown below. Select the Data Matrix Fast Improve check box and the check box next to the Data Matrix type codes required from the provided table.

These options are identified by counting the number of elements on the horizontal and vertical rows of the code to be read.

- Select All to select all of the Data Matrix codes listed.
- Select All Square to select all of the Data Matrix square codes.
- Select All Rectangle to select all of the Data Matrix rectangular codes.
- Select Clear to clear the table of any selections.

Data Matrix Operating Mode

Click the drop-down and select from the following:

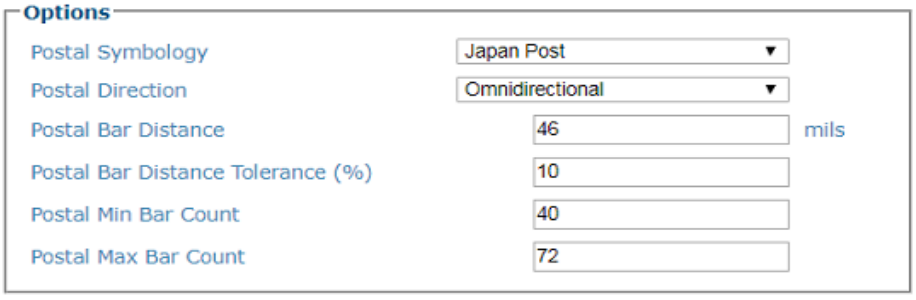
- **Normal Speed Decoding:**
- **Maximum Speed Decoding:**

Code Module Size

Enter the number of code modules in the field provided. This field defines the size in micrometers of a single module or element in a 2D code. There must be at least three pixels per module, therefore the minimum module size depends on the camera's resolution and the application. Use the following formula to calculate your module size.

$$\frac{3 * 25400}{\text{DPI}}$$

Postal Codes



Select a symbology from the drop-down list, and then define its parameters including:

- **Postal Direction:** Select Omnidirectional, Horizontal, Vertical, or Horizontal/ Vertical from the drop-down list.
- **Postal Bar Distance:** Enter the bar distance in the field provided.
- **Postal Bar Distance tolerance (%):** Enter a percentage of tolerance for the bar distance of postal codes.
- **Postal Min Bar Count:** Enter the minimum number of bars in the field provided.
- **Postal Max Bar Count:** Enter the maximum number of bars in the field provide

QR Code

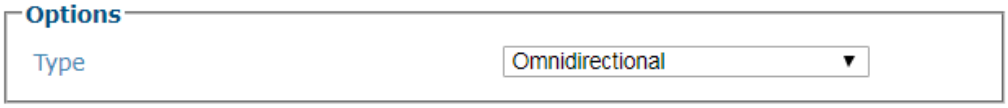
Code Module Size

Enter the number of code modules in the field provided. This field defines the size in micrometers of a single module or element in a 2D code. There must be at least three pixels per module, therefore the minimum module size depends on the camera's resolution and the application. Use the following formula to calculate your module size.

3 * 25400

DPI

GS1 DataBar

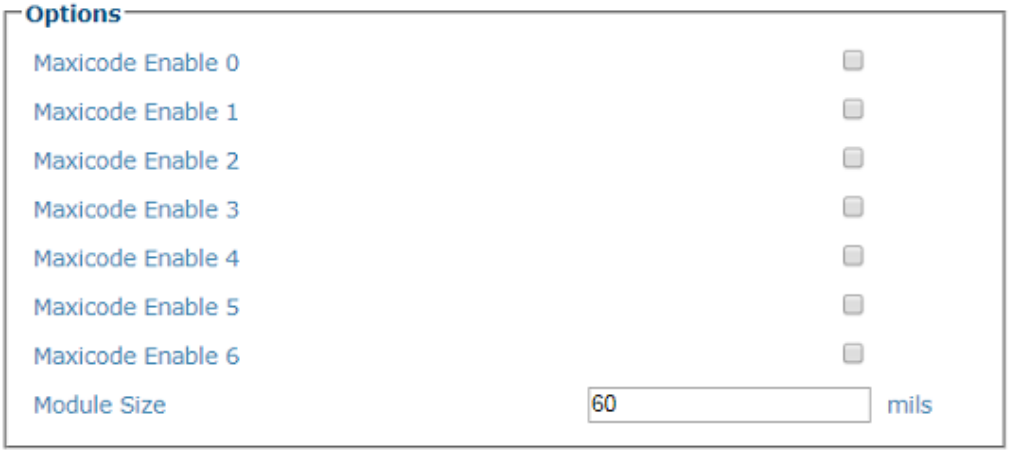


Type

Select Omnidirectional, Expanded, Limited, Expanded Stacked, or Stacked from the drop-down list.

These options are available when reading GS1 DataBar stacked type barcodes, this parameter can be enabled to apply a fixed safety margin to the decoding process in terms of decoding time (number of scans). This parameter is particularly useful in applications that read tall stacked type codes or on slow moving conveyors.

Maxicode



Maxicode Enable n

Select the check box corresponding to the Maxicode(s) to enable.

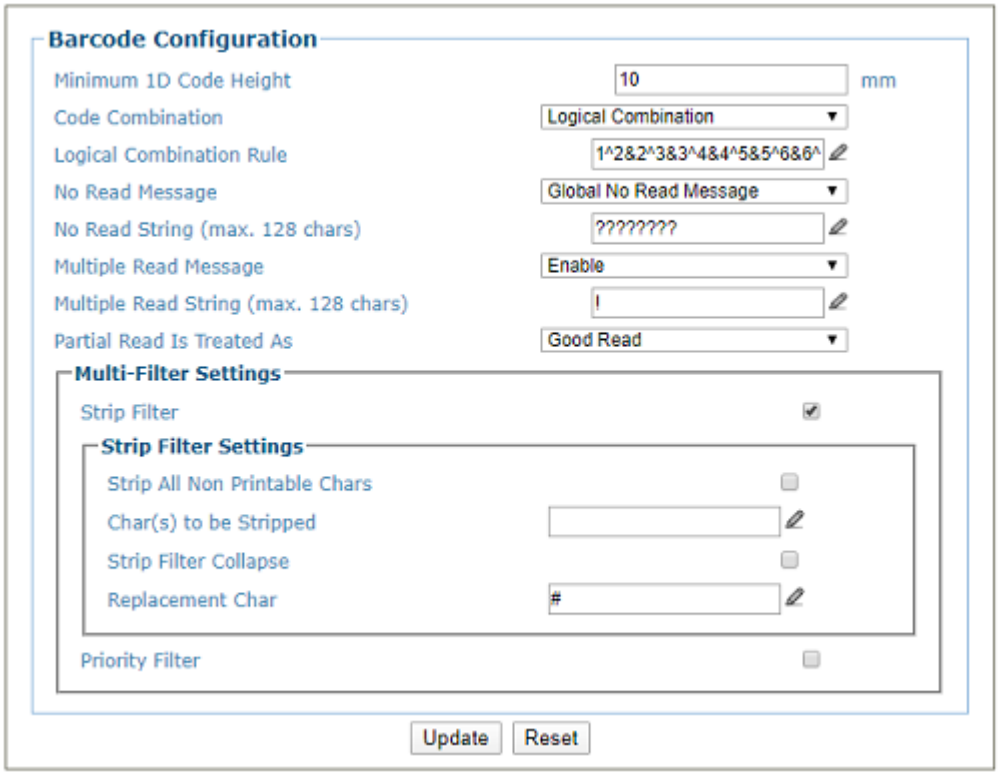
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | GLOBAL SETTINGS | BARCODE SETTINGS | BARCODE SETTINGS CONFIGURATION

Barcode Configuration is used to define the relationship of barcodes and how they are grouped together for transmitting to the host. It also defines the formatting of no read, multiple read, partial read and duplicate messages.

To edit the Barcode Configuration:

1. In the menu tree under **Modify Settings,** navigate to **Global Settings | Barcode Settings | Barcode Configuration.** The **Barcode Configuration** window opens.



2. Enter the appropriate information in the form as described below:

Minimum 1D Code Height

Enter the minimum height of codes. This parameter defines the minimum height of the barcode the AV7000 will read.

Code Combination

Select **Single Label, Standard Multi Label, Logical Combination**, or **Code Collection** from the drop-down list. The Code Combination parameter selects the decoding mode for the barcode reader.

- **Single Label:** In Single Label mode only one barcode can be read in each reading phase; however it can be determined automatically from up to 50 enabled codes. The barcode reader stops decoding as soon as a code is read. See **"Barcode Configuration |Single Label" on page 133.**

NOTE

If there are multiple barcodes within the barcode readers read area during a trigger cycle, the first barcode decoded will be the data transmitted to the host.

- **Standard Multi Label:** In Multi Label mode the barcodes selected (up to 10), will all be read in the same reading phase. If the reading phase terminates before all the codes are read, a Global No Read message will be produced, unless it is disabled, in which case a Local No Read will be produced. See **"Barcode Configuration |Standard Multi-Label" on page 135**

In case of Multi Label, the codes will be distinguished EITHER by their symbology, OR by their contents. If two (or more) codes share the same symbology and content, the bar-code reader will perceive them as a unique code.

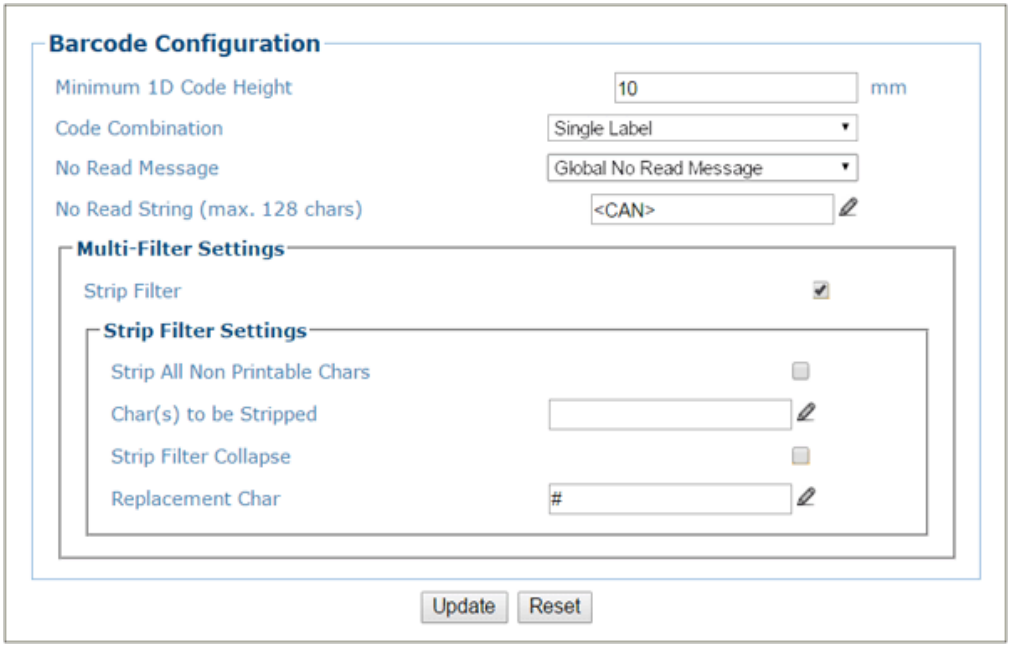
- **Logical Combination:** In Logical Combination mode the codes of the groups defined by the Logical Combination Rule are read in the same reading phase. See **"Barcode Configuration | Logic Combination" on page 137.**
- **Code Collection:** In Code Collection mode expected codes are collected within a single reading phase in the order in which they are read. The No Read message is produced only if none of the codes are read. Up to 50 codes can be collected. See **"Barcode Configuration | Code Collection" on page 144.**

Based on your code combination selection, different fields will become available. See the following sections for the details of your code combination.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

BARCODE CONFIGURATION |SINGLE LABEL

When **Single Label** has been selected from the **Code Combination** drop-down list, the **Barcode Configuration** window reveals related input fields.



1. Enter the appropriate information in the form as described below:

Minimum 1D Code Height

Minimum Code Height

Code Combination

Single Label

No Read Message See "Understanding Barcode Configurations" on page 130

Select **Disable No Read Message, Global No Read Message,** or **Local No Read(s) Message** from the drop-down list. The **No Read** condition occurs whenever a code cannot be read or decoded.

- **Disable No Read Message:** The No Read Message is not transmitted.
- **Global No Read Message:** The No Read String will be sent if the barcode reader is unable to decode one or more barcodes in the reading phase. When multiple codes are enabled in the **Barcode Settings Table,** and not all of the codes are read within a trigger cycle, a single **Global No Read** message is transmitted to the host.
- **Local No Read(s) Message:** This option is used when Standard Multi Label or Code Collection is selected. A Local No Read message is a configurable No Read message associated with each individual code enabled in the Barcode Settings Table.

No Read String (max. 128 chars)

Click to activate the Text Entry Tool and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list.

Multi-Filter Settings

Strip Filter

Select the check box to display the **Strip Filter** options. This filter, when enabled, allows the elimination of characters not managed by the host.

Strip All Non Printable Chars

Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).

Char(s) to be Stripped

Click to activate the **Text Entry Tool** and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Strip Filter Collapse

Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.

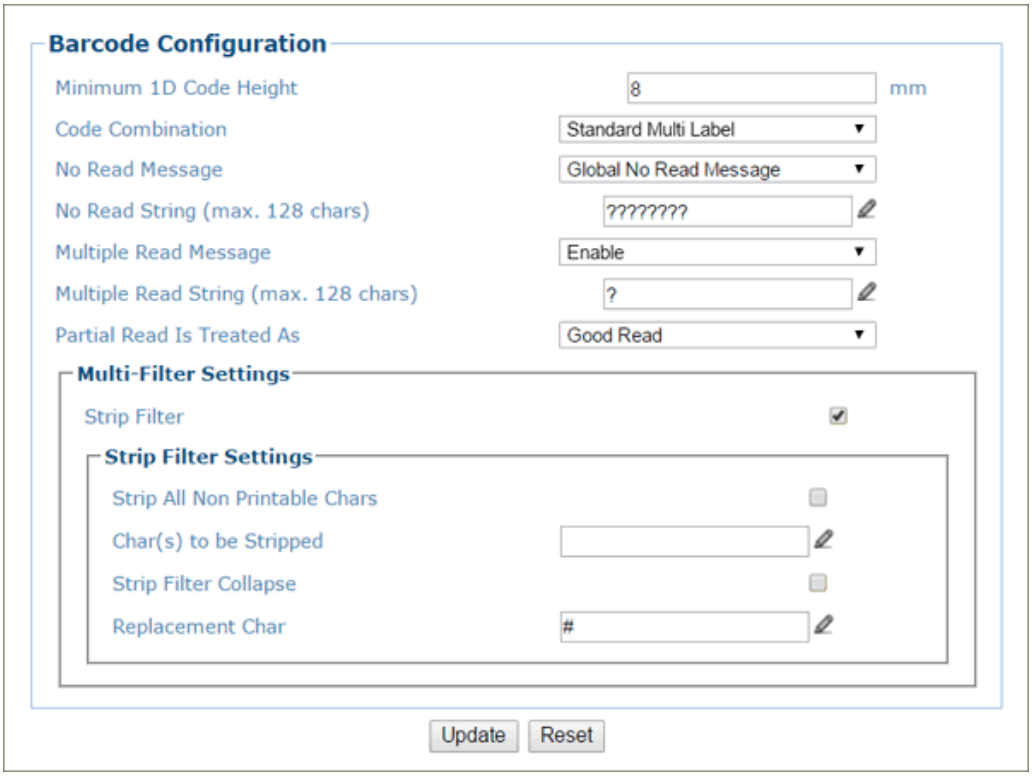
Replacement Char

Click to activate the **Text Entry Tool** and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Barcode Configuration |Standard Multi-Label

When **Standard Multi Label** has been selected from the **Code Combination** drop-down list, the **Barcode Configuration** window reveals related input fields.



NOTE

In case of Multi Label, the codes will be distinguished EITHER by their symbology, OR by their contents. If two (or more) codes share the same symbology and content, the bar-code reader will perceive them as a unique code.

1. Enter the appropriate information in the form as described below:

Minimum 1D Code Height

Enter the minimum code height in the field provided (mm [in])

Code Combination

Standard Multi Label has been selected.

No Read Message See “Understanding Barcode Configurations” on page 130

Select **Disable No Read Message, Global No Read Message**, or **Local No Read(s) Message** from the drop-down list. The No Read condition occurs whenever a code cannot be read or decoded.

Disable No Read Message: The No Read Message is not transmitted.

Global No Read Message: The No Read String will be sent if the barcode reader is unable to decode one or more barcodes in the reading phase.

Local No Read(s) Message: This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set.

No Read String (max. 128 chars)

Click ✎ to activate the Text Entry Tool and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Multiple Read Message

Select **Disable** or **Enable** from the drop-down list. This string will be sent if, during the reading phase, the barcode reader reads more than the number of the expected barcodes set by the configuration parameters.

Multiple Read String (max. 128 chars)

Click to activate the Text Entry Tool and create a string to be displayed in case of **Multiple Read Message**. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

This parameter is only available when **Multiple Read Message** is enabled and the **No Read Message** selection is different from Local **No Read(s) String**. It is possible to select either the ASCII or HEX value. If disabled, the barcode reader transmits the first code read.

Partial Read Is Treated As

Select **No Read, Good Read**, or **Partial Read** from the drop-down list.

A **Partial Read** is a condition when multiple barcodes are enabled, but not all barcodes are read during a trigger cycle.

Multi-Filter Settings

Strip Filter

Select the check box to display the **Strip Filter Settings** options. This is a second level filter that when enabled allows eliminating characters not managed by the host.

Strip All Non Printable Chars

Select the check box to remove all non- printable ASCII characters from the code.

Char(s) to be Stripped

Click to activate the Text Entry Tool and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Strip Filter Collapse

Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.

Replacement Char

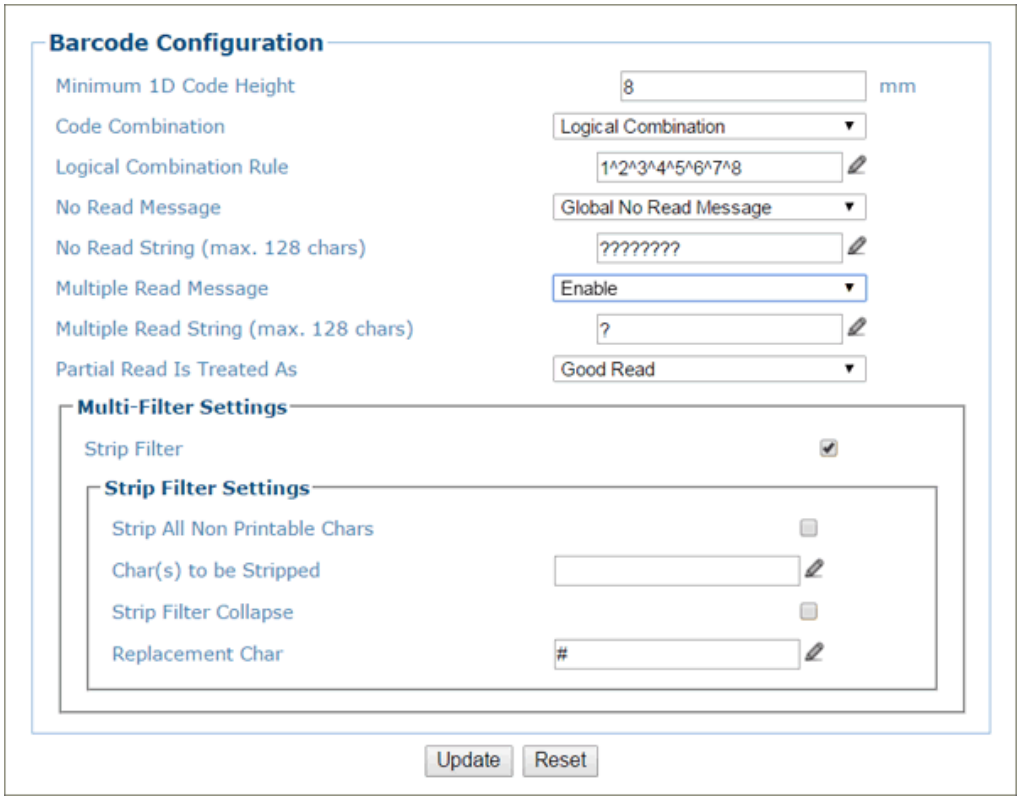
Click to activate the **Text Entry Tool** and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Barcode Configuration | Logic Combination

When **Logical Combination** has been selected from the **Code Combination** drop-down list, the **Barcode Configuration** window reveals related input fields.

The Logical Combination option is only available when more than one code is enabled in the Barcode Settings Table.



1. Enter the appropriate information in the form as described below:

Minimum 1D Code Height

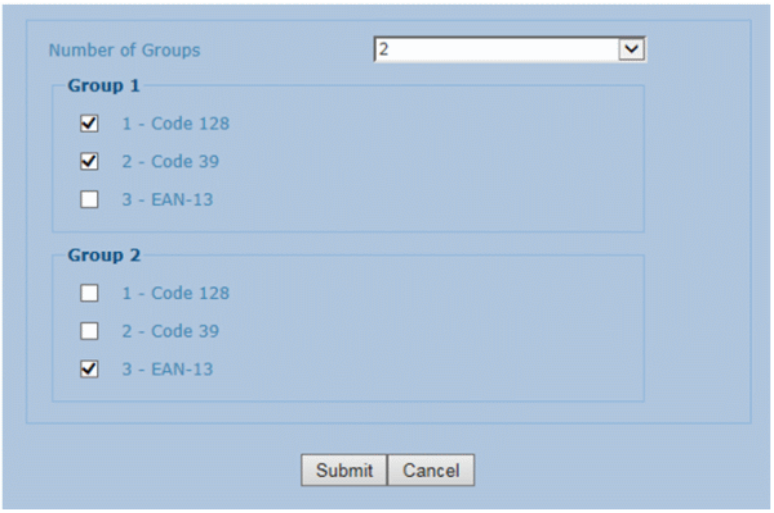
Enter the minimum code height in the field provided (mm [in])

Code Combination

Logical Combination has been selected.

Logical Combination Rule

Click to activate the Code Group selection dialog box.



Select the number of groups you wish to use from the Number of Groups drop-down list. Then select the check box next to the Group/Code you wish to define. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Groups and their order define the output message format, while each group identifies an expected code.

When editing the logical combination rule, proceed as follows:

- Define the Barcode Settings indicating the type of expected code labels. It is possible to define up to 10 different code types;
- Define how many code types (groups) are expected by editing the combination rule through the following logical operators. Each group may include one or more selected code types.

The maximum number of groups to be defined for each rule string is 15.

If Local No Read Message is selected from the No Read Message drop-down list, the Group No Read Messages parameter group is displayed requiring the definition of a Local No Read String for each group.

Example

If three barcodes are enabled and barcode 1 and 2 are read successfully but barcode 3 is a no read, the message could look like this:

<STX>12345678xxx,12345678xxx,noread <CR><LF>

No Read Message

Select Disable No Read Message, Global No Read Message, or Local No Read(s) Message from the drop-down list. The No Read condition occurs whenever a code cannot be read or decoded.

Disable No Read Message: The No Read Message is not transmitted.

Global No Read Message: The No Read String will be sent if the barcode reader is unable to decode one or more barcodes in the reading phase.

Local No Read(s) Message: This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set by the configuration parameters are read.

No Read String (max. 128 chars)

Click to activate the Text Entry Tool and create a string to be displayed when Global No Read Message is selected from the No Read Message drop-down list. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Multiple Read Message

Select Disable or Enable from the drop-down list. This string will be sent if, during the reading phase, the barcode reader reads more than the number of the expected barcodes set by the configuration parameters. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Send all Multiple Read Labels

Select Disable or Enable from the drop-down list.

Multiple Read String (max. 128 chars)

Click to activate the Text Entry Tool and create a string to be displayed in case of Multiple Read Message. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

This parameter is only available when Multiple Read Message is enabled and the No Read Message selection is different from Local No Read(s) String. It is possible to select either the ASCII or HEX value. If disabled, the barcode reader transmits the first code read.

Partial Read Is Treated As

Select No Read, Good Read, or Partial Read from the drop-down list.

A Partial Read is a condition when multiple barcodes are enabled but not all barcodes are read during a trigger cycle.

Group No Read Messages

Define a no read message for each group.

Group Multiple Read Messages

Define a string for each group's multiple read string.

Multi-Filter Settings

Strip Filter

Select the check box to display the Strip Filter Settings options. This filter, when enable, allows eliminating characters not managed by the host.

Strip All Non Printable Chars

Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).

Char(s) to be Stripped

Click to activate the Text Entry Tool and enter specific characters to be stripped from the code. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Strip Filter Collapse

Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.

Replacement Char

Click to activate the Text Entry Tool and enter the substitution character to replace all the stripped ones. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Priority Filter Settings

Select the check box to display the Priority Filter options. This function allows the user to prioritize barcodes.

Example:

If there is a message with a field that should contain one of multiple code types (for example, Code128, Code39 and I2of5). In this field, the user wants:

If Code 128 is read, it goes in the field (any code39 and I2of5 are ignored)

If Code 128 is not read – if Code39 is read, it goes in the field (and I2of5 is ignored)

If Code 128 and Code30 are not read – if i2of5 is read, it goes in the field.

Group List

Enter the Group List in the field provided. This field defines the specific Logical Combination groups to which the Priority Filter will apply. The groups are numbered according to the order in which they are listed (from left to right) in the Logical Combination Rule parameter.

Format: Group Number(s) separated by the comma character

Example:

1,3 means the Priority Filter is applied to Logical Groups 1 and 3. Logical Group 2 will not have the Priority Filter applied, however it will follow the normal rules of code analysis, and if selected, the Strip Filter parameters will apply.

Filter Type

Select **Normal** or **Advanced** from the drop-down list.

NORMAL: Uses the Logical Combination Rule string to define the priority

When the Priority Filter Type is set to Normal, the operators used in the Logical Combination Rule string have the following meaning:

& = AND operator which separates a group from the previous/following one;

^ = The priority is given to the code label indicated to the left of the operator. If this code is read, the group is in Good Read independent from any other code in the same group.

Example:

Logical Combination Rule = 1^2&5^3^4&6^7 (3 groups)

Results Without Priority Filter:

Group 1 - read either code 1 or 2 = Good Read; read both code 1 and 2 = Multiple Read

Group 2 - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read

Group 3 - read either code 6 or 7 = Good Read; read both code 6 and 7 = Multiple Read

Results With Priority Filter:

Filter Enabled on Groups = 1,2

Group 1 - read code 1 = Good Read independent from reading code 2

Group 2 - read code 5 = Good Read independent from reading code 3 or 4; read code 3 = Good Read independent from reading code 4

Group 3 - read either code 6 or 7 = Good Read; read both code 6 and 7 = Multiple Read

Advanced: Uses the Priority Filter Advanced String to define the priority. Advanced type allows the priority filter to essentially take "priority" over the Logical Combination Rule string.

ADVANCED

When the Priority Filter Type is set to Advanced, the Priority Filter Advanced String applies to the Logical Combination Groups. This string must correspond to the order of the groups defined in the Logical Combination Rule string.

The following operators can be used:

& = Code group separator. This operator separates a group from the previous/following one;

^ = The priority is given to the code label indicated to the left of this operator. If this code is read, the group is in Good Read independent from any other code in the same group.

| = Equal priority operator (vertical line). Codes separated by this operator have the same priority and if both codes are read a Multiple Read will result.

The only difference from the implicit pattern string of the Normal (default) case when the Logical Combination Rule string is used, is the Equal Priority operator.

Example:

Logical Combination Rule = 1^2&5^3^4&8^6^7 (3 groups)

Results Without Priority Filter:

Group 1 - read either code 1 or 2 = Good Read; read both code 1 and 2 = Multiple Read

Group 2 - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read

Group 3 - read either code 8 or 6 or 7 = Good Read; read any combination = Multiple Read

Results With Priority Filter:

Filter Enabled on Groups = 1,3

Filter Type =Custom

Custom Filter Pattern String = 1^2&8^6|7 (2 groups)

Group 1 - read code 1 = Good Read independent from reading code 2

Group 2 - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read

Group 3 - read code 8 = Good Read independent from reading code 6 or 7; no read on code 8 and read either code 6 or 7 = Good Read; no read on code 8 and read both code 6 and 7 = Multiple Read

Advanced Filter String

Enter the character string (see above).

2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

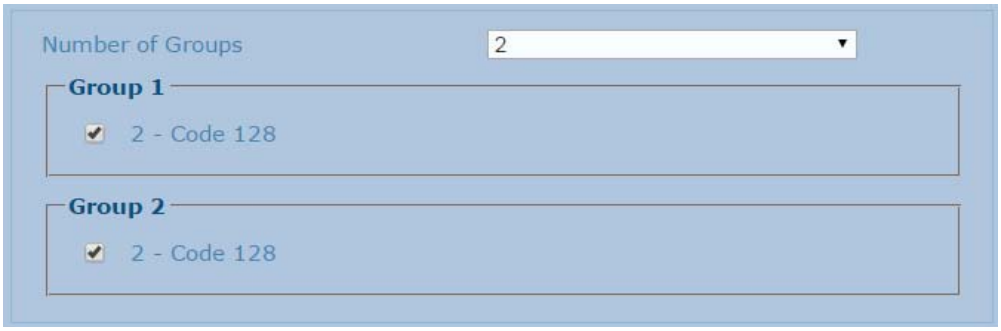
Barcode Configuration | Logical Combination Rule

The following are examples of rules used with Logical Combination selection in Barcode Configuration. For all the following examples the No Read Message parameter is set to Global No Read Message.

Example 1:

- Code label setting#1 = Code 128
- Logical Combination Rule = 1&1
- Defines 2 groups, each of them expecting a **Code 128** label.

Decoded Code Symbology		**Output Message**
First Label #1	Second Label #1	
---	---	<Header><Global No Read Message><Terminator>
X	---	<Header><Global No Read Message><Terminator>
---	X	<Header><Global No Read Message><Terminator>
X	X	<Header><Code 128 data><Data Packet Separator><Code 128 data><Terminator>



If Multiple Read Message is enabled and a third label belonging to the Code 128 symbology is decoded, the Multiple Read string will be transmitted instead. If the Multiple Read Message is disabled, the third code label is ignored and only the first two codes are transmitted.
For advanced formatting, if the Send All Multiple Read Labels parameter is enabled, then all three labels are sent in the output message; the multiple read label is separated by its own Multiple Read Label Separator String which should be different from the Data Packet Separator (DPS).

Example 2

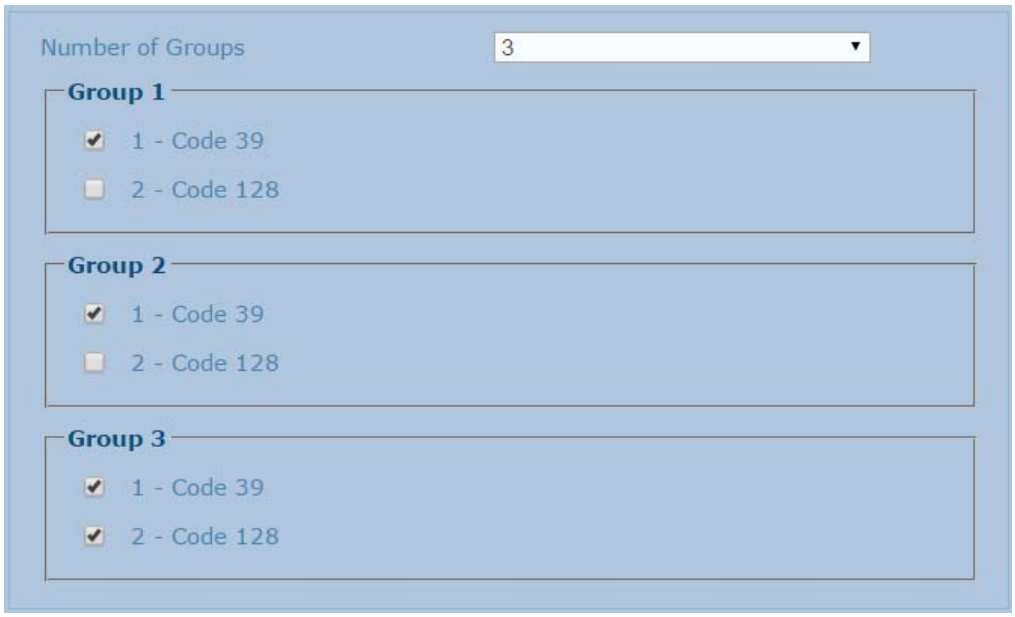
- Code label setting#1 = Code 39
- Code label setting#2 = Code 128
- Logical Combination Rule = 1^2
- Defines a single group expecting a **Code 39** label OR a **Code 128** label.

Decoded Code Symbology		**Output Message**
Label #1	Label #2	
---	---	<Header><Global No Read Message><Terminator>
X	---	<Header><Code 39 data><Terminator>
---	X	<Header><Code 128 data><Terminator>
X	X	<Header><First decoded code/Multiple Read Message string ><Terminator>

Example 3

- Code label setting#1 = Code 39
- Code label setting#2 = Code 128
- Logical Combination Rule = 1&1&1^2
- Defines three different groups. The first two groups expect a **Code 39** label while the third one expects a **Code 39** label OR a **Code 128** label.

Decoded Code Symbology				**Output Message**
First Label #1	Second Label #1	Third Label #1	Label #2	
---	---	---	---	<Header><Global No Read Message><Terminator>
X	---	---	---	<Header><Global No Read Message><Terminator>
---	X	---	---	<Header><Global No Read Message><Terminator>
---	---	X	---	<Header><Global No Read Message><Terminator>
---	---	---	X	<Header><Global No Read Message><Terminator>
X	X	X	---	<Header><Code 39 data><DPS>< Code 39 data><DPS>< Code 39 data><Terminator>
X	X	---	X	<Header><Code 39 data><DPS><Code 39 data><DPS><Code 128><Terminator>
X	X	X	X	<Header><Code 39 data><DPS><Code 39 data><DPS><First decoded code/Multiple Read Message string><Terminator>



Example 4

- Code label setting#1 = Interleaved 2/5
- Code label setting#2 = Code 128
- Code label setting#3 = Code 39
- Code label setting#4 = UPC-A

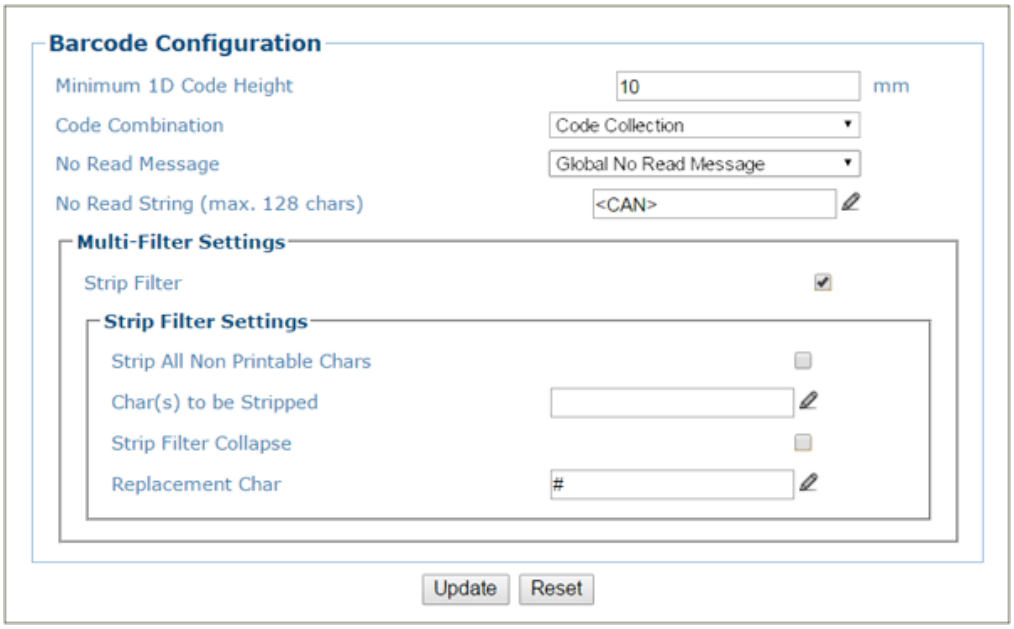
•Logical Combination Rule = 1^2&3^4

•Defines 2 groups, each of them expecting one of the defined code types. The first group may expect an **Interleaved 2 of 5** label or a **Code 128** label. The second group may expect a **Code 39** label or a **UPC-A** label.

Decoded Code Symbology				**Output Message**
Label #1	Label #2	Label #3	Label #4	
---	---	---	---	<Header><Global No Read Message><Terminator>
X	---	---	---	<Header><Global No Read Message><Terminator>
---	X	---	---	<Header><Global No Read Message><Terminator>
---	---	X	---	<Header><Global No Read Message><Terminator>
---	---	---	X	<Header><Global No Read Message><Terminator>
X	X	---	---	<Header><Global No Read Message><Terminator>
X	---	X	X	<Header><Code93><DPS>< First decoded code/Multiple Read Message string><Terminator>
X	X	X	---	<Header><First decoded code/Multiple Read Message string><DPS><EAN 8 data><Terminator>
---	X	X	X	<Header>< Interleaved 2/5 data><DPS>< First decoded code/Multiple Read Message string ><Terminator>
X	---	X	---	<Header><Code 93 data><DPS><EAN 8 data><Terminator>
X	---	---	X	<Header><Code 93 data><DPS><UPC-A data><Terminator>
---	X	X	---	<Header><Interleaved 2/5 data><DPS><EAN 8 data><Terminator>
---	X	---	X	<Header><Interleaved 2/5 data><DPS><UPC-A data><Terminator>
X	X	X	X	<Header><First decoded code/Multiple Read Message string><DPS>< First decoded code/Multiple Read Message string ><Terminator>

Barcode Configuration | Code Collection

When **Code Collection** has been selected from the **Code Combination** drop-down list, the **Barcode Configuration** window reveals related input fields.



1. Enter the appropriate information in the form as described below:

Minimum 1D Code Height

Enter the minimum code height in the field provided (mm [in]).

Code Combination

Code Collection has been selected.

No Read Message

Select Disable No Read Message, Global No Read Message, or Local No Read(s) Message from the drop-down list. The No Read condition occurs when no barcodes are read during the trigger cycle.

- **Disable No Read Message:** A No Read Message is not transmitted.
- **Global No Read Message:** A No Read String will be sent if the barcode reader is unable to decode one or more barcodes in the reading phase.
- **Local No Read(s) Message:** This allows the user to define a specific no read message for each enabled symbology. This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set by the configuration parameters are read.

No Read String (max. 128 chars)

Click to activate the Text Entry Tool and create a string to be displayed when Global No Read Message is selected from the No Read Message drop-down list.

Multi-Filter Settings

Strip Filter

Select the check box to display the Strip Filter options. This filter, when enabled, allows eliminating characters not managed by the host.

Strip All Non Printable Chars

Select the check box to remove non- printable ASCII characters from the code (000-020 and 127).

Char(s) to be Stripped

Click to activate the Text Entry Tool and enter specific characters to be stripped from the code. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Strip Filter Collapse

Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.

Replacement Char

If strip filter is not enabled, click to activate the Text Entry Tool and enter the substitution character to replace all the stripped ones. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

2. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

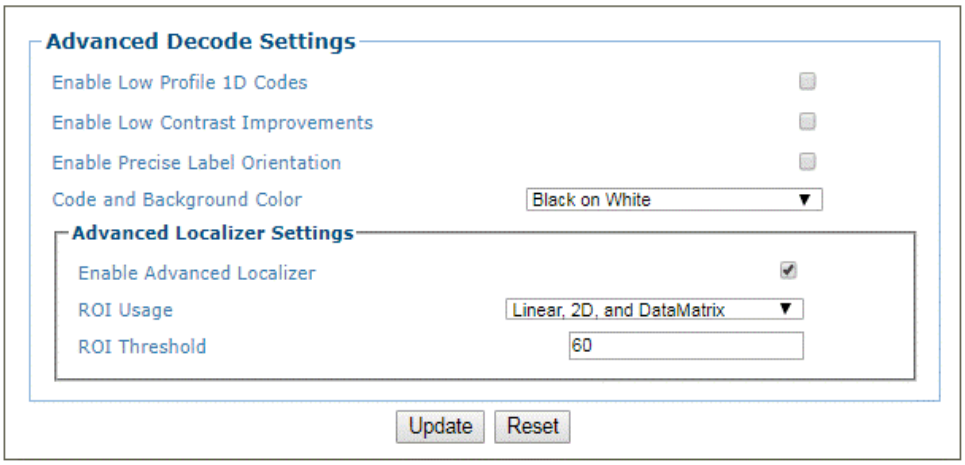
Modify Settings | Global Settings | Barcode Settings | Advanced Decode

Use **Advanced Decode** to set up and enable advanced code settings.

To edit the Advanced Decode Settings:

1. In the menu tree under **Modify Settings,** navigate to **Global Settings | Advanced Decode.** The **Advanced Decode** window opens.

NOTE **It is best to use Advanced Decode only when necessary and under the guidance of Datalogic Tech Support.**



NOTE **Changing these parameters may have negative effects on decode processing time.**

2. Enter the appropriate information in the form as described below:

Enable Low Profile 1D Codes

Select the check box to enable reading of low profile 1D barcodes. The AV7000 can read bar codes with 1/4 inch (6.36 mm) bar height.

Enable Low Contrast Improvements

Select the check box to enable automatic contrast improvements.

Enable Hight Resolution Codes

Select the check box to enable high resolution codes. This is recommended if the element size of your bar code is less than 10 mil.

Enable Precise Label Orientation

Select the check box to enable precise label orientation.

Code and Background Color

Select Black on White, White on Black, or Both from the drop-down list to match the kind of barcodes read by the system.

Advanced Localizer Settings

WARNING **DO NOT change this parameter unless directed by Datalogic Support.**

Enable Advanced Localizer

Select the check box to enable the advanced localizer options. DO NOT change this parameter unless directed by Datalogic Support.

ROI Usage (Region of Interest)

Select a code profile from the drop-down list to match the type of barcodes read by the system. Do not change this parameter unless directed by Datalogic Support.

ROI Threshold

The ROI Threshold factor in the field provided. To improve decode time, this allows for the restriction of the decoding region of interest. The default value is 60. Do not change this parameter unless directed by Datalogic Support. Lowering this value narrows the area of data that is sent to the decode engine. Setting this number too low may cause the filter to truncate the bar code data, resulting in no reads. Setting the value too high causes more data to be sent to the decode engine possibly causing processing time errors.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Communications

Use Communications options to enable and setup the following communication outlets:

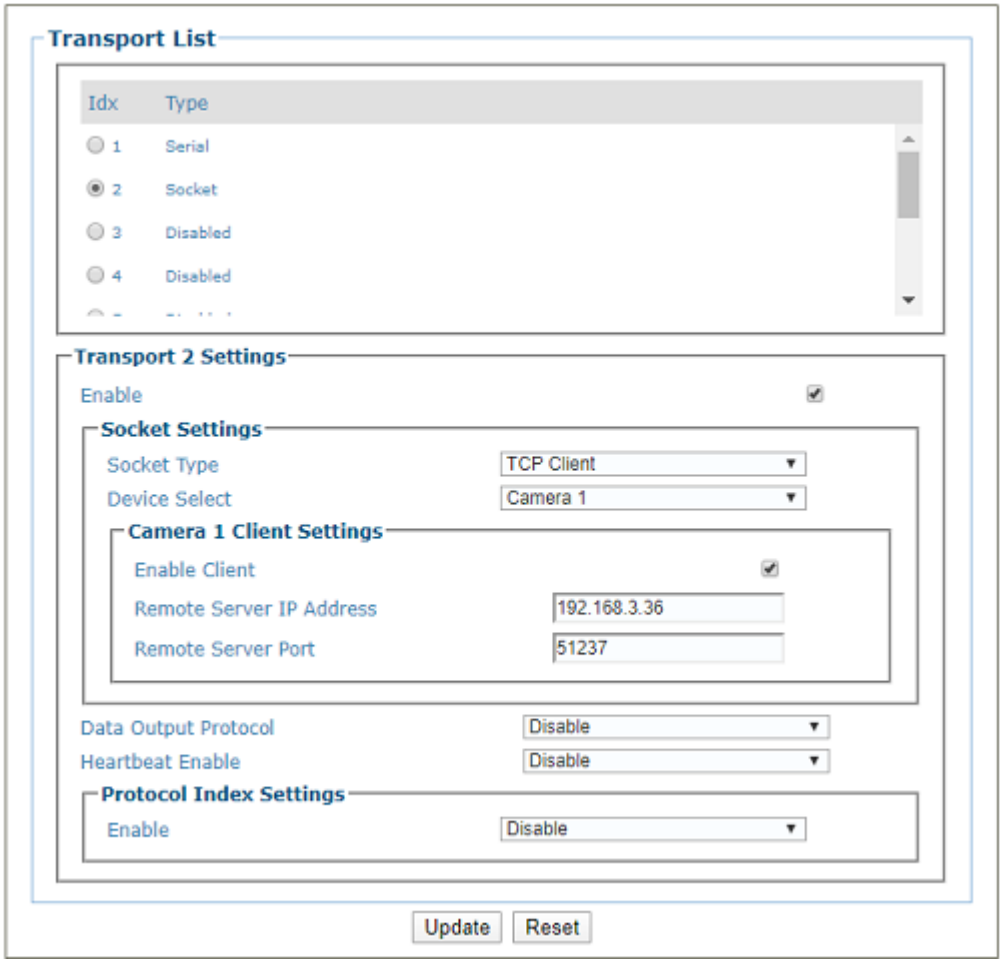
Communications | Transports

Use the Transports window to setup, edit, and configure numbered user sockets or serial ports for your scanning system. User sockets are another interface available for Ethernet communication.

For example, transport parameters are used to setup the serial or Ethernet configuration to match the transmit/receive parameters of the external interface.

To edit the Transports settings:

1. In the menu tree under **Modify Settings**, navigate to **Global Settings | Communications | Transports**. The **Transports** window opens.



2. Enter the appropriate information in the form as described below:

Transport List

Select an Idx option button in the list at the top of this window to create a new item, or to edit an existing one.

Serial: Transport n Settings

Enable

Select the check box to reveal the related configuration options.

Use Global Configuration

Select the check box to reveal the global configuration options. When Global Configuration is selected any of the AV7000's in the tunnel will use this transport. When not selected, a drop-down allows you to select a particular AV7000.

This is only available for transport 1, the only serial transport option.

Device Select

If not using Global Configuration, select a listed named device from the drop-down list.

Data Output Protocol

Select from the drop-down list. Once selected, the input options for that selection are revealed. Current options for Data Output Protocol are:

- **Disable**
- **Standard**
- **Advanced**
- **Crisplant**
- **Beumer**
- **Custom 1-5**

These five custom options are used by Datalogic programming when other options do not meet customer requirements. They will be name to identify customer needs.

STANDARD

See “Protocol Index Settings” on page 152.

ADVANCED

Advanced Formatter Index

Select an index number from the drop-down list. This selection is available when **Data Output Protocol > Advanced** is selected.

See “Protocol Index Settings” on page 152.

CRISPANT

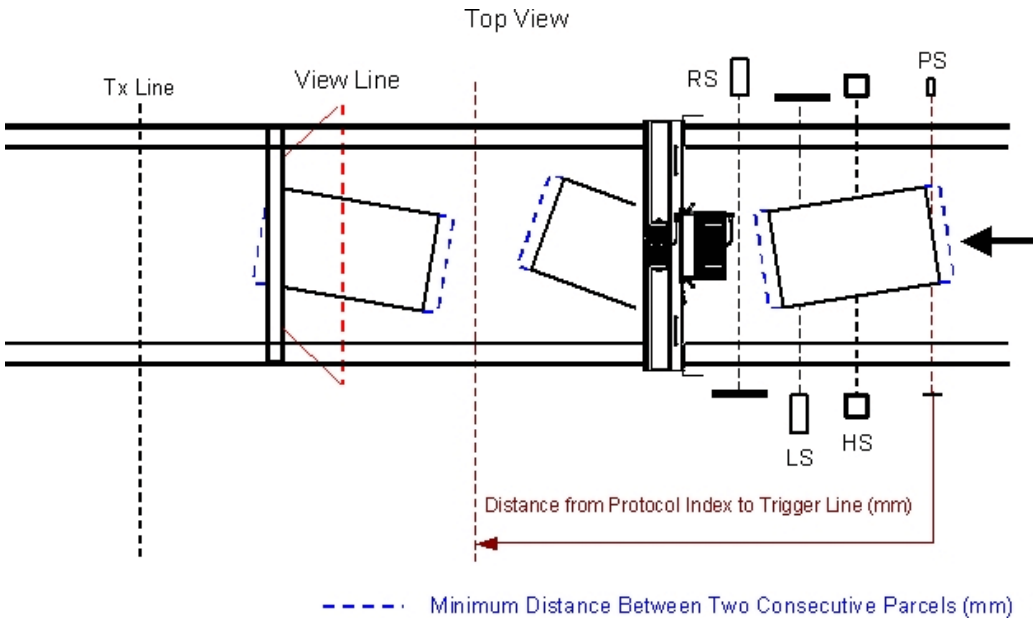
Delay Request Message

When unchecked, the request message gets sent at start of trigger. Select this check box and the request message will be delayed by the Reference Edge and Distance to Trigger Line specified here. This is available only if **Use Global Configuration** is selected.

Distance to Trigger Line

Enter the distance from the receiving point of the Protocol Index to the trigger line in the field provided.

This parameter specifies the distance from the physical Trigger Line (i.e. Trigger Source) to the expected receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.



Distance to Trigger Line State

Select Upstream or Downstream. This parameter specifies if the distance from the physical Trigger Line is required Upstream or Downstream (i.e. Trigger Source) To the expect receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.

Crisplant Settings

Crisplant Protocol Type

Select P10, CSC, or CMC from the drop-down list.

- SORTERCMC P10
- The Protocol Index message syntax is fixed according to the Crisplant P10 message specifications.
- S2000-CSC
- The Protocol Index message syntax is fixed according to the Crisplant CSC message specifications.
- S2000-CMC
- The Protocol Index message syntax is fixed according to the Crisplant CMC message specifications.

Scanner ID

Select Datalogic NVS9000/AV7000, Accu-Sort 4800, Accu-Sort 55/70, Accu-Sort Quad-X. Available if Crisplant has been selected.

Heartbeat Enable

Select the check box to enable heartbeat messages.

Heartbeat Timeout

Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Include Code Type in message

Select the check box to include the Code Type in the message.

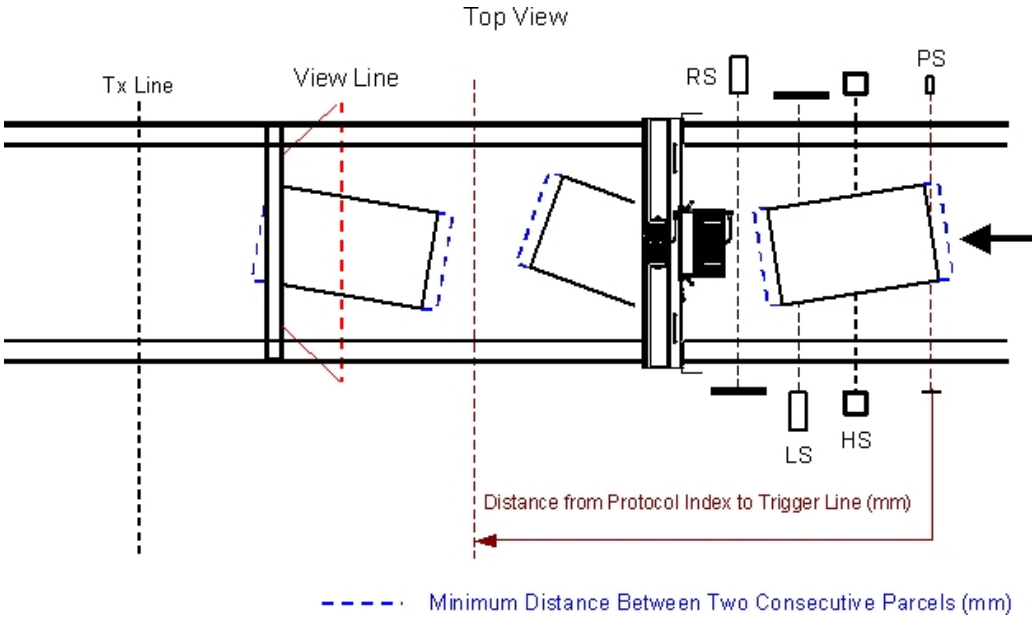
BEUMER

Delay Request Message

When unchecked, the request message gets sent at start of trigger. Select this check box and the request message will be delayed by the Reference Edge and Distance to Trigger Line specified here.

Distance to Trigger Line

Enter the distance from the receiving point of the Protocol Index to the trigger line in the field provided. This parameter specifies the distance from the physical Trigger Line (i.e. Trigger Source) to the expected receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.



Distance to Trigger Line State

Select Upstream or Downstream. This parameter specifies if the distance from the physical Trigger Line is required Upstream or Downstream (i.e. Trigger Source) To the expect receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.

Beumer Settings

Heartbeat Timeout

Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Scan Data Max Length

Enter a maximum length value in the field provided.

Filler

Click to activate the Text Entry Tool and create a filler character(s).

Profibus Terminator

Click to activate the Text Entry Tool and create a filler character(s) to terminate a Profibus message.

Custom 1 – 5

Five Custom Data Output Protocol options are available.

See "Protocol Index Settings" on page 152

Heartbeat Enable

Select Disable, Unconditioned, or Conditioned from the drop-down list. This parameter is available when Disable, Standard, Advanced, or Custom is selected from the Data Output Protocol drop-down list. It enables/disables the transmission of the Heartbeat message signaling that the device is still active.

- **Disable:** The Heartbeat message is not transmitted
- **Unconditioned:** The Heartbeat message is always transmitted, even if communication is still active
- **Conditioned:** The Heartbeat message is transmitted only when there is no communication

Heartbeat Settings

Timeout

Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Header and terminator must match the external product or the AV7000 will not recognize the message.

Header

Click to activate the Text Entry Tool and create heartbeat header text to signal the beginning of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used.

Terminator

Click to activate the Text Entry Tool and create Terminator text to signal the end of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used.

Counter Modulus

Select Disable, 10, 100, 1000, 10000 or Custom from the drop-down list.

This parameter enables a counter to track the number of Heartbeat messages.

- Disable No counter field in the Heartbeat message
- 10 Counts cyclically from 0 to 9
- 100 Counts cyclically from 0 to 99
- 1000 Counts cyclically from 0 to 999
- 10000 Counts cyclically from 0 to 9999
- Custom Allows defining a custom counter start/stop range from 0 to 10000.

Counter Starting Value

Enter a counter start value in the field provided.

For the Custom Counter Module this parameter selects the starting counter value.

Selections: a number from 0 to 9999

Counter Direction

Select Up or Down from the drop-down list to set the counter direction.

Diagnostic Message

Select the check box to include a diagnostic field in the heartbeat message.

Separator

Click to activate the Text Entry Tool and create a separator character(s) to set the Diagnostic Message apart from the heartbeat message.

Protocol Index Settings

See “Protocol Index Setup Example” on page 157.

Enable

Select Disable, Without Request Message, or With Request Message from the drop-down list.

Header

Click to activate the Text Entry Tool and create a Header (up to 128 bytes) to be defined and transmitted as a block preceding the Protocol Index string sent by the Host. Use characters from NUL (00H) to ~ (7EH).

Click Submit to save your changes, or click Cancel to return to previous window.

Terminator

Click to activate the Text Entry Tool and create a Terminator to be defined and transmitted as a block following the Protocol Index string sent by the Host. Use characters from NUL (00H) to ~ (7EH).

Click Submit to save your changes, or click Cancel to return to previous window.

Length Type

Select Variable Length, Length in Message, or Fixed Length from the drop-down list.

- **Variable Length:** The length of the Protocol Index string sent by the Host is variable.
- **Length in Message:** The first byte of the barcode reader output message indicates the length of the Protocol Index string sent by the Host.
- **Fixed Length:** The Protocol Index string has a fixed length from 3 to 12 characters.

No Index String

Click to activate the Text Entry Tool and create a No Index String. Click Submit to save your changes, or click Cancel to return to previous window.

This parameter defines the string to be transmitted instead of the Protocol Index within the output message when no Protocol Index string has been associated to the package.

Request Message

Click to activate the Text Entry Tool and create a Request Message. Click Submit to save your changes, or click Cancel to return to previous window.

This parameter defines the request message which will be sent to the Host by the decoder when the presence of a package is detected.

Delay Request Message

When unchecked, the request message gets sent at start of trigger. Select this check box and the request message will be delayed by the Reference Edge and Distance to Trigger Line specified here.

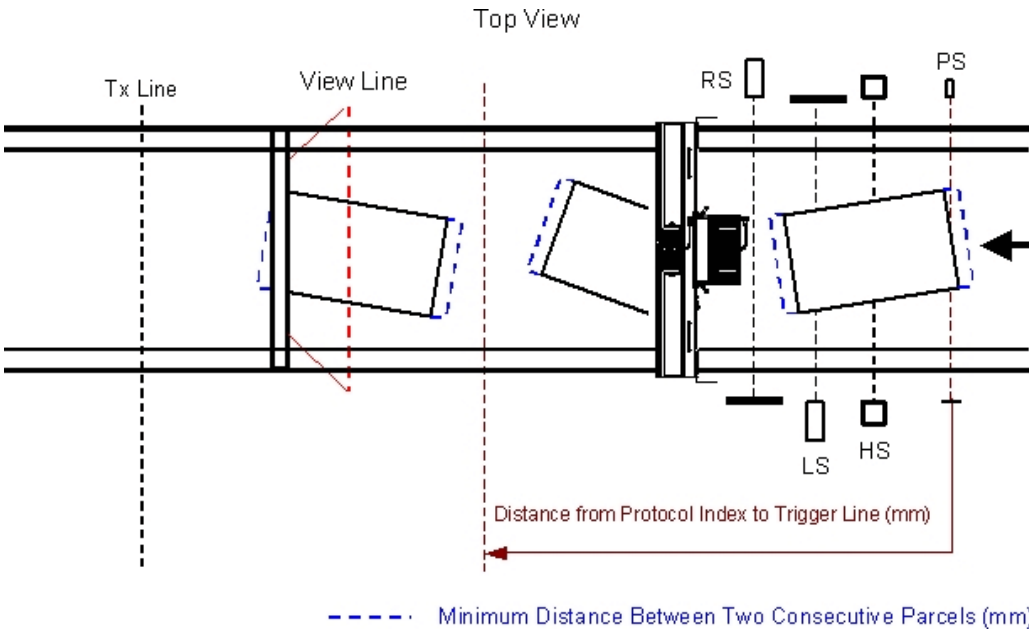
Reference Edge

Select Leading or Trailing from the drop-down list.

Distance to Trigger Line

Enter the distance from the receiving point of the Protocol Index to the trigger line in the field provided.

This parameter specifies the distance from the physical Trigger Line (i.e. Trigger Source) to the expected receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.

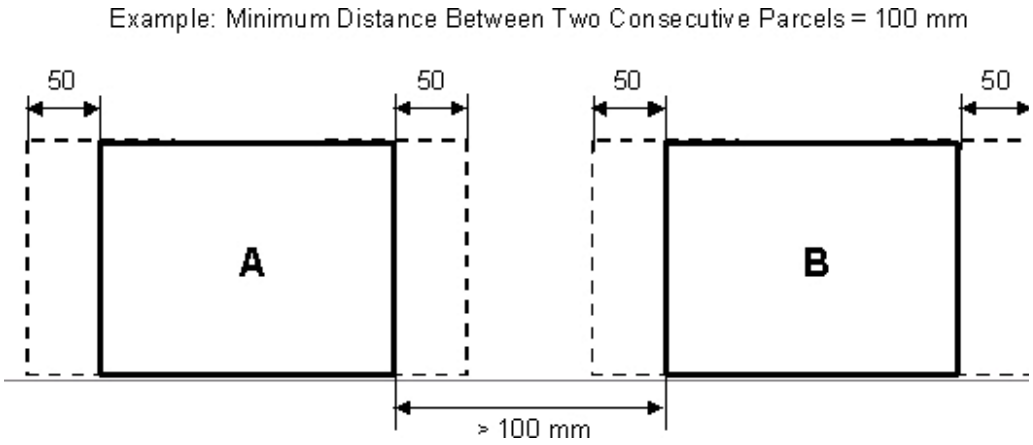


Distance to Trigger Line State

Select Upstream or Downstream. This parameter specifies if the distance from the physical Trigger Line is required Upstream or Downstream (i.e. Trigger Source) To the expect receiving point of the Protocol Index, measured in mm. It is used together with the Minimum Distance Between Two Consecutive Objects (below) parameter to assign the Protocol Index information to the correct package.

Min Distance Between Two Consecutive Objects

Enter the smallest possible distance between system packages in the field provided. This specifies the minimum distance (in mm) between two consecutive packages. It is used to compensate for imprecision in the Distance from Protocol Index to Trigger Line parameter by virtually lengthening the package. This parameter implies that if two consecutive packs are placed on the conveyor at a distance less than the minimum, a Protocol Index assignment error will occur.



Log Type

Select Disable, Standard, or Advanced from the drop-down list. Advanced Logging is used during calibration or troubleshooting to confirm that the protocol index message is solidly found on the correct box.

Socket: Transport n Settings

Enable

Select the check box to enable User Sockets and reveal the related configuration options.

Socket Settings

Socket Type

Select TCP Server, TCP Client, UPD, or UDP Multicast from the drop-down list.

Device Select

Select a listed named device from the drop-down list. Select the AV7000 in the tunnel that will provide the multi-cast message.

NOTE

When using the UDP protocol:

The User Socket Client Port is bound to the Server Port.

The maximum size for maintaining a whole datagram is 1436 bytes, messages exceeding this value will be fragmented.

Device Client Settings

TCP Client / UDP/ UDP Multicast

Enable Client

Select the check box to enable the client and reveal Client Settings options.

Remote Server IP Address

Enter the IP address in the field provided. IP Address provided by the user's system administrator.

Remote Server Port

Enter the remote server port number in the field provided. Port number provided by the user's system administrator.

Data Output Protocol

Select Disable, Standard, Advanced, Crisplant, Beumer, or Custom1-5, Web Sentinel, Video Coding, or SC5000 from the drop-down list. Once selected, the input options for that selection are revealed.

See Protocol Specialized Settings above.

WebSentinel Settings

Extended Parcel

Click the check-box to enable Extended Parcel. This check-box should be selected if you wish to receive image and dimension information.

Image Saving Index Number

Select from the drop-down one of the available index numbers.

Monitor Settings

Conveyor Speed Check Type

Select Percentage or Absolute from the drop-down list to determine how the conveyor speed is evaluated.

This parameter allows selecting if the speed check error will be calculated as percentage change or absolute value change between two consecutive time intervals

Max Conveyor Speed Percent Error

In the text field provide, enter the percentage of discrepancy allowed in the conveyor speed before an error is sent to the WebSentinel. This option is available when Percentage is selected from the Conveyor Speed Check Type drop-down list.

Max Conveyor Speed Absolute Error

In the text field provide, enter the amount in mm/sec of discrepancy allowed in the conveyor speed before an error is sent to the WebSentinel. This option is available when Absolute is selected from the Conveyor Speed Check Type drop-down list.

Video Coding Settings

Tunnel Identifier

Enter at character string used to identify the AV7000 Tunnel/Array; usually a number.

Index Type

Select Short Parcel Identifier, Extended Parcel Identifier, or Parcel Protocol Index from the drop-down list, to indicate the type of identifier used to tag a package in communication between the AV7000 System, Video Coding System and Host.

- Short Parcel Identifier: A string representing the package reference number n n n (max 3 digits from 0 to 255)
- Extended Parcel Identifier: A string representing the package reference number (max 3 digits from 0 to 255) appended to the Timestamp: Y Y M M D D H H M M S S M M M n n n

Parcel Protocol Index: The Protocol Index string received from the Host through the enabled Protocol Index communication channel. See section for Example Protocol Index configuration.

Max transmit Distance from System Ref Point

Enter the maximum distance in the field provided. The AV7000 System sends information regarding a parcel to the Video Coding System as soon as it is available. This information for each image includes the address where it has been saved, and the value and position of each decoded label found on that image. If images become available at different times (typically on multisided AV7000 Systems) more than one message is sent to the Video Coding System. The last one is explicitly flagged. If this Max Distance from the Trigger is reached for a parcel before all the expected images are saved, the last message is sent to force the closure of the parcel transaction.

Image Saving Index Number

Select a number from the drop-down list. These numbered selections are defined in Image Savings | Images Settings.

Diagnostic Timeout

Enter an amount of seconds.

Include Dimension Data

Select this check box to include packages dimension data with your image.

Include Parcel Surface Coordinates

Select this check box to include package surface coordinates with your image.

SC5000

Heartbeat Timeout

Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

SMStart Position

When the SC5000 is used as a multiplexor, this identifies which camera the barcode data is being received from.

Image Saving Index Number

Select a number from the drop-down list. These numbered selections are defined in Image Savings | Images Settings.

Protocol Index Settings

See Protocol Index Settings above. Also see section for Example Protocol Index configuration.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Protocol Index Setup Example

The Protocol Index is used to get a message from third party equipment such as a scale or sorter, which is then attached to the barcode message output from the system.

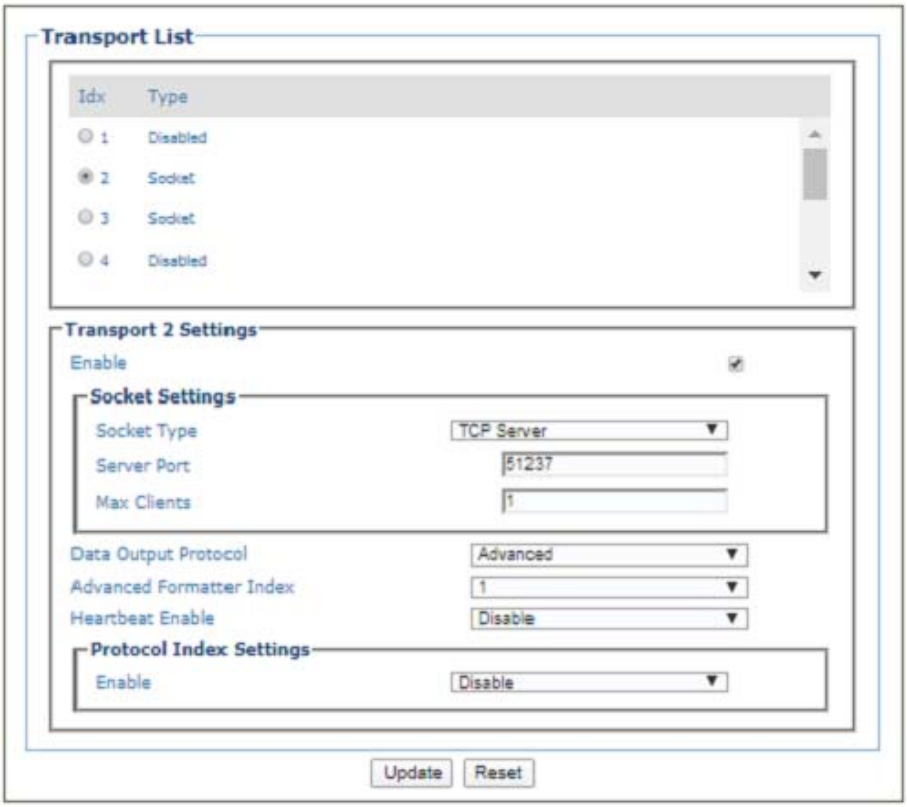
In the following example, a message from a third party scale needs to be attached to a barcode relating to a package.

Protocol Index Setup Example:

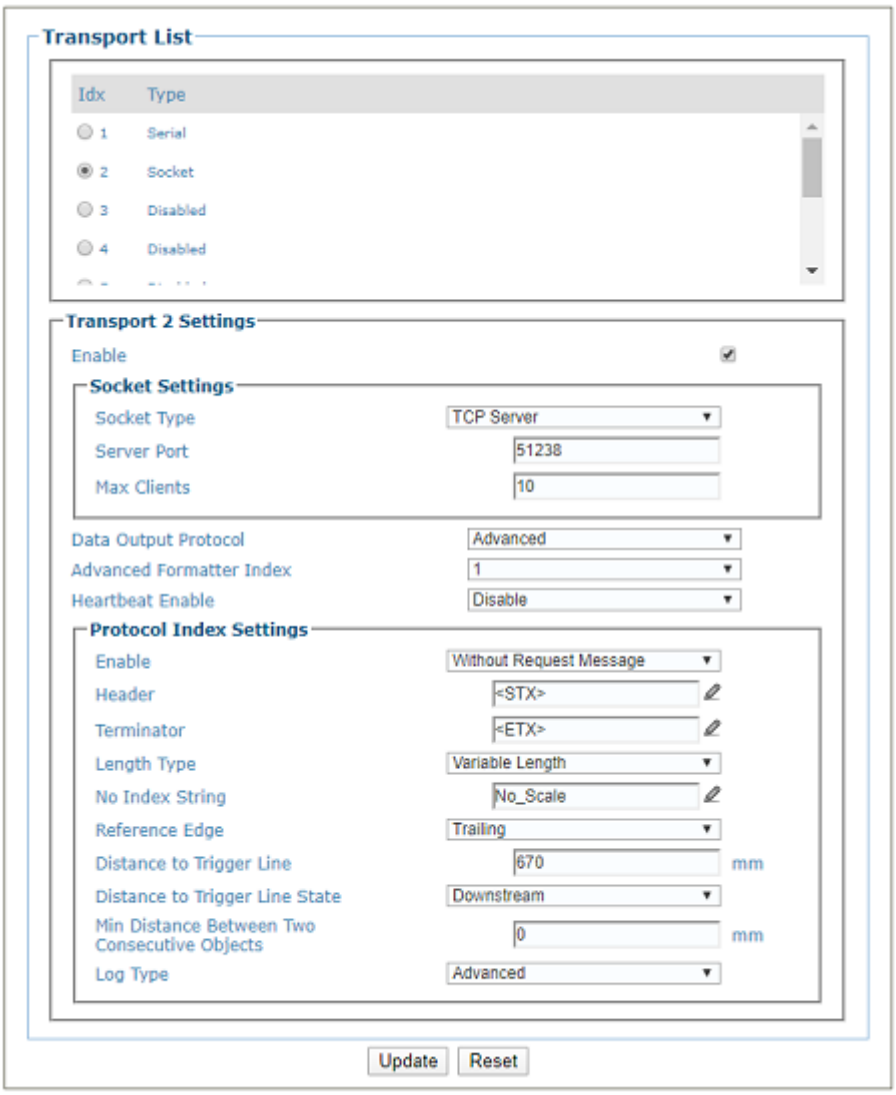
Configure the transport connections in **Global Settings | Communications | Transports**.

1. Navigate to **Global Settings | Communications | Transports.**
2. Select a transport for the **outgoing** Host message. In this example, transport number **2** is selected.

3. **Enable** Transport 2 Settings.
4. Make sure **TCP Server or Client** is selected from the **Socket Type** drop-down list.



5. Enter the shared **Server port #** of the unit generating the protocol index information.



6. Under **Data Output Protocol**, select one of the Advanced options.

7. Under the **Protocol Index Settings** section of the screen, select **Without Request Message** from the **Enable** drop-down list. Associated parameters appear.

8. Enter a **Header** and **Terminator** for the incoming message from the scale in the fields provided. Use the Text Entry Tool to create the Header and Terminator, in this example <STX> and <ETX>.

NOTE **The header and terminator must match the Protocol Index source structures.**

9. Select a length for the message from the **Length Type** drop-down list. In this example **Variable Length** is selected.

10. Use the Text Entry Tool to create the **No_Scale** for the **No Index String** drop-down. This means “No_Scale” will be attached to the outgoing host message if nothing was received from the scale.

11. Select **Trailing** from the **Reference Edge** drop-down list. This indicates the back/trailing edge of the box is the reference point. Trailing is the normal setting for a message from scale.

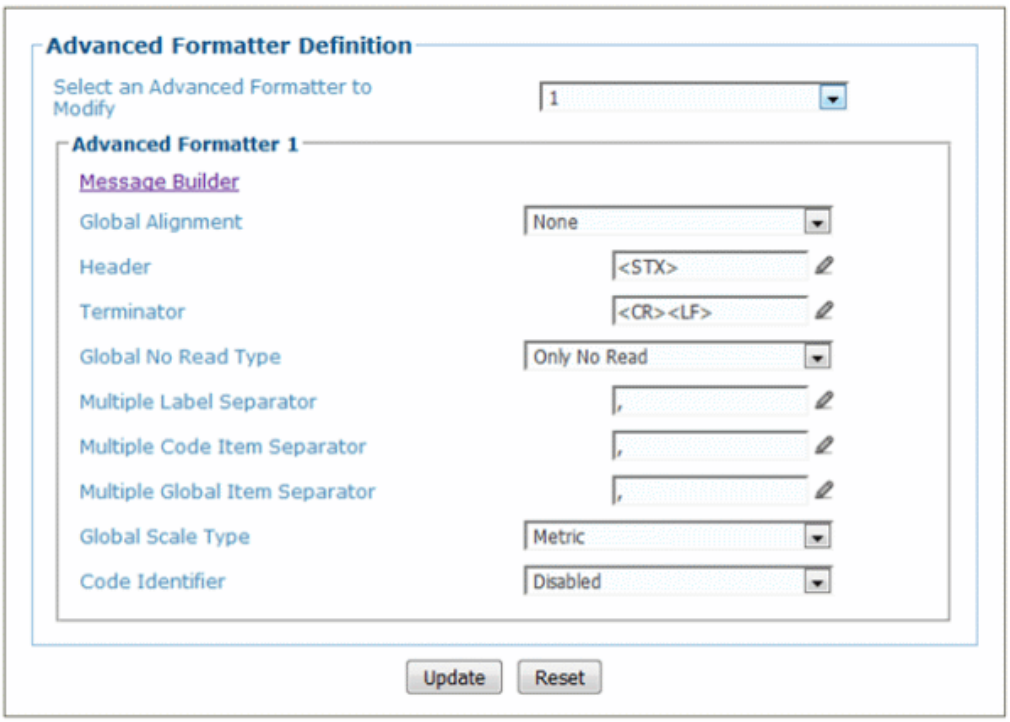
12. In the **Distance to Trigger Line**, enter the measured distance from the trigger to the expected scale transmission location on the conveyor belt. Measure distance for AV7000 trigger to the transmission point from the scale will have been set up in the scale configuration. This parameter specifies the distance from the Trigger Line (Trigger Source) to the expected receiving point of the Protocol Index. It is used together with the Minimum Distance between Two Consecutive Parcels parameter to assign the Protocol Index information to the correct pack.

13. Enter a distance in the Min Distance between Two Consecutive Objects text field. This specifies the minimum distance (in mm) between two consecutive packages. It is used to compensate for imprecision in the Distance from Protocol Index to Trigger Line parameter by virtually lengthening the package.

14. Select **Advanced** from the **Log Type** drop-down list. Next, navigate to **Modify Settings | Global Settings | Output Format | Advanced Formatter**. The Advanced Formatter window opens.

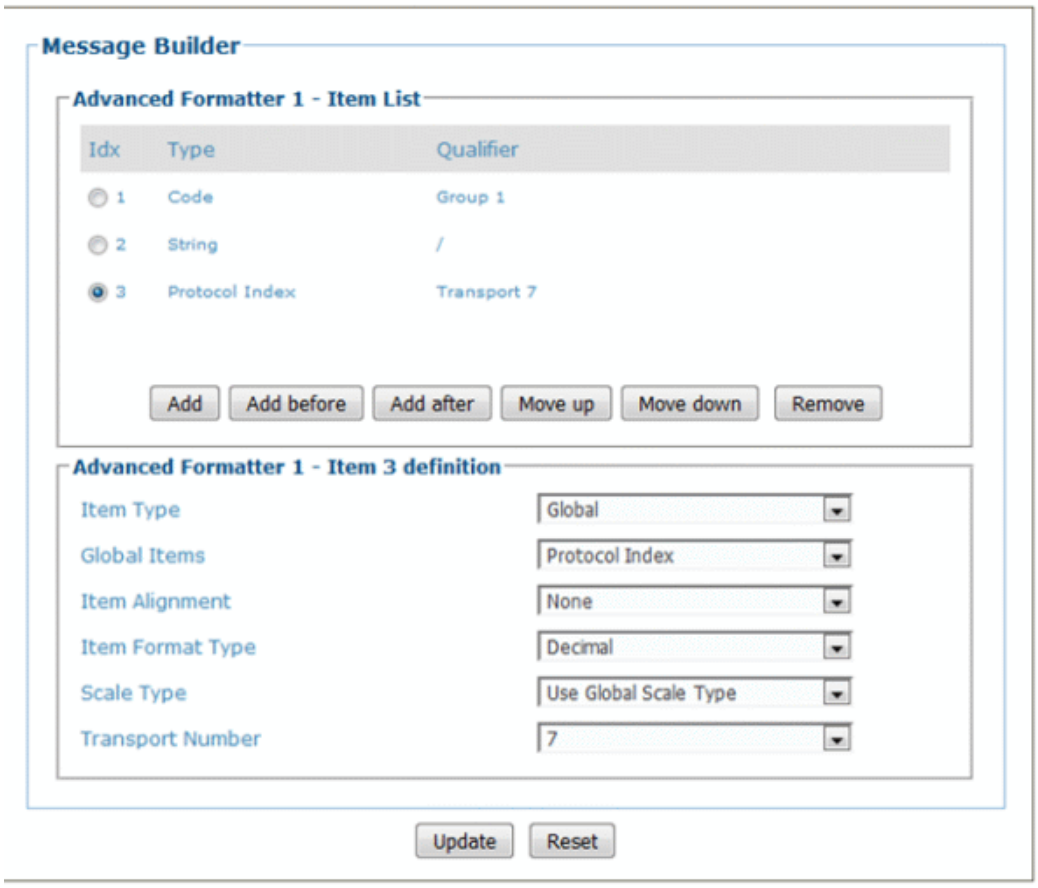
Setting Scale Data via Protocol Index

Navigate to **Modify Settings | Global Settings | Output Format | Advanced Formatter**. the **Advanced Formatter** window opens.



1. From the **Advanced Formatter** window, select **1** from the **Select an Advanced Formatter to Modify** drop-down list. This is the outgoing host message that will combine the barcode data and scale (protocol index) message.

2. Click on the **Message Builder** link. The **Message Builder** window opens.



3. Set up a Code (system barcode), and a delimitter to fall between the barcode data and protocol index data from the scale.

4. To add in the scale message (Protocol Index), click **Add.**

5. Select **Global** from the Item Type drop-down list.

6. Select **Protocol Index** from the Global Items drop-down list.

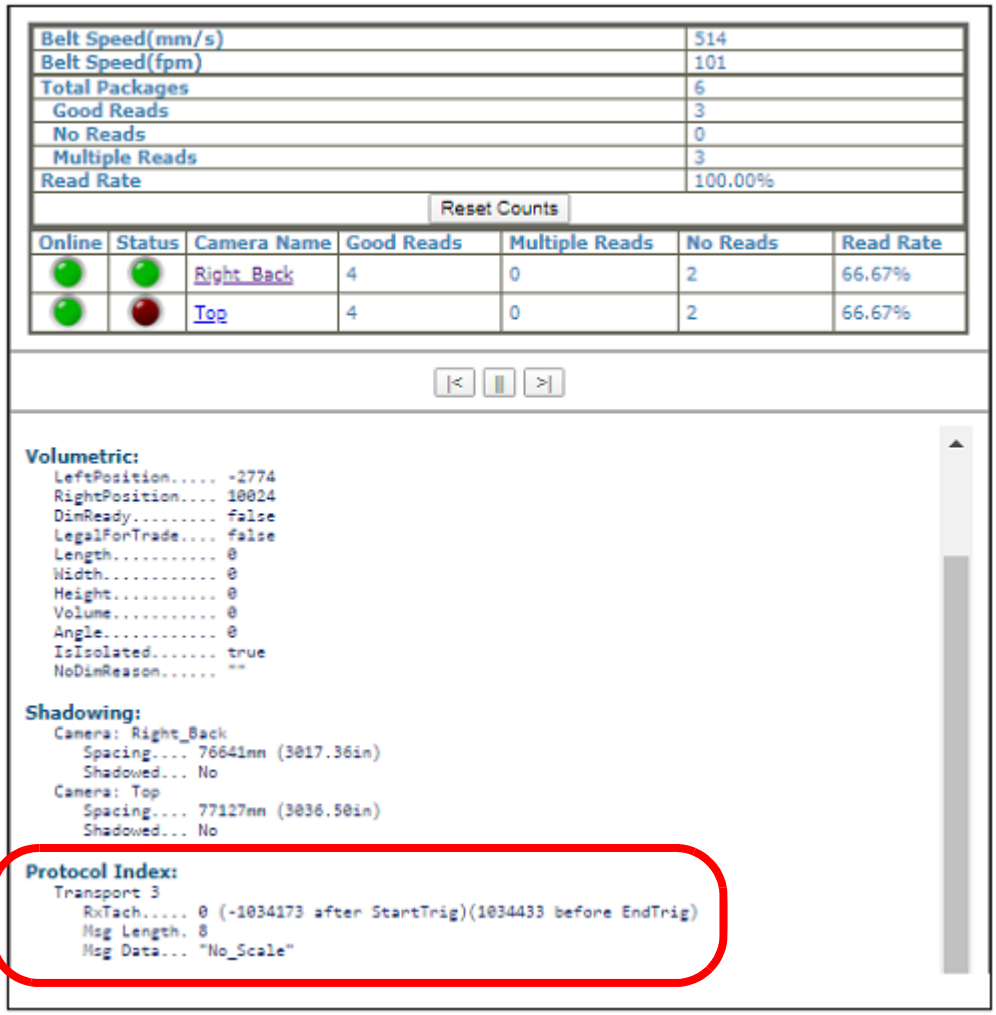
7. Select 2 (in this example) from the Transports drop-down list. This was selected as the **Idx #** in **Global Settings | Communications | Transports** *(see above).*

Finally, test the Protocol Index Output

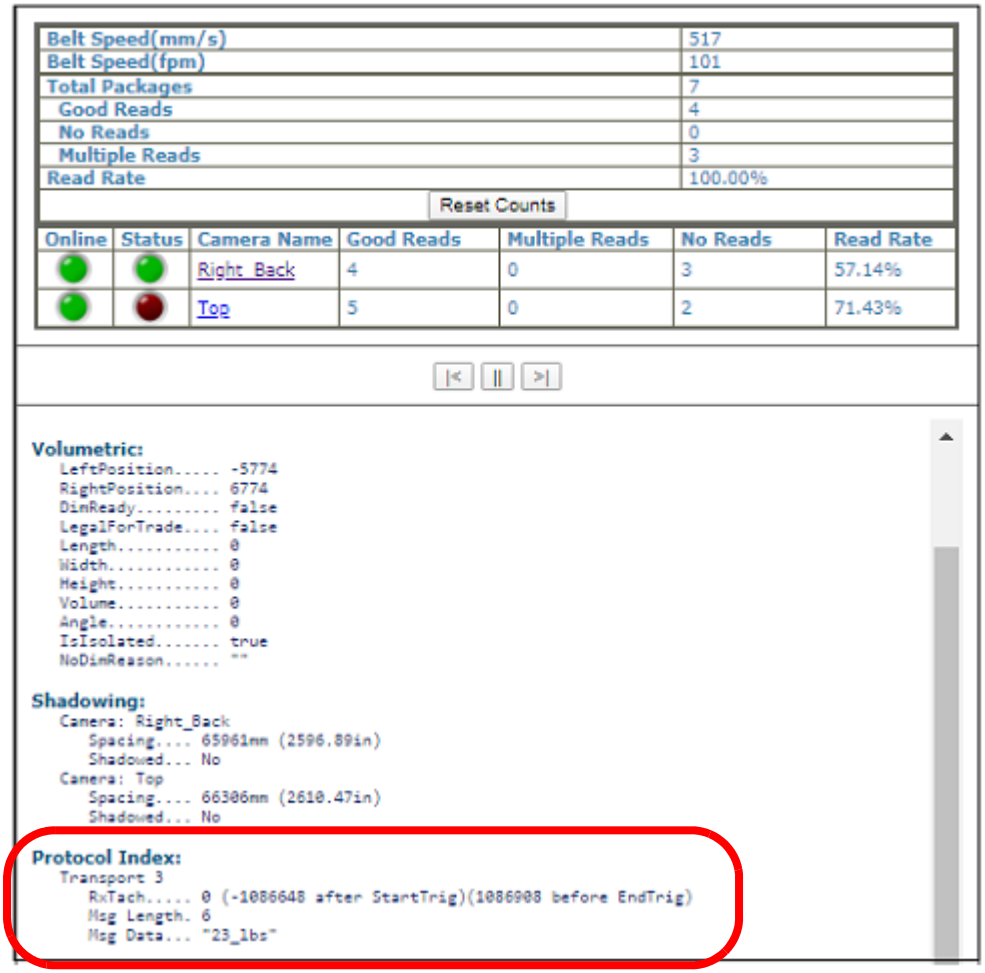
1. Navigate to **Diagnostics | Conveyor View**. The **Conveyor View** window opens.

2. Run a small package through the system and view the results on the **Conveyor View.**

3. In e-Genius, navigate to **Diagnostics | System Status**. The **System Status** window opens. In this example **No _Scale** has been received because no scale data had been received.



4. Again, run the small package through the system.



5. In this view the scale information has been received and your **package weights 23 lbs.**

Modify Settings | Global Settings | Output Format

Use Output Format to format messages:

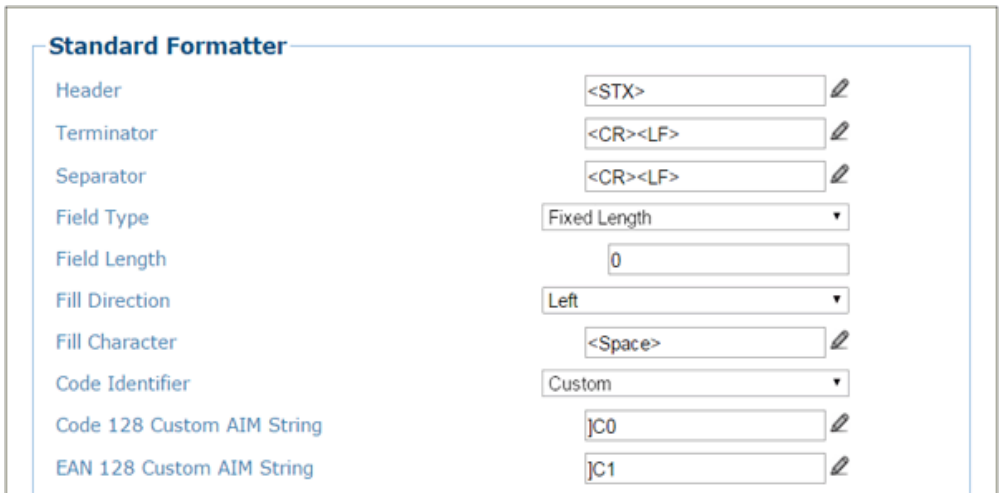
- “Output Format | Standard Formatter” on page 164
- “Output Format | Advanced Formatter” on page 167
- “Protocol Index Setup Example” on page 157
- “Advanced Formatter Message Building Examples” on page 172

Output Format | Standard Formatter

Use the **Standard Formatter** to set up standard code parameters for output messages.

To edit the Standard Formatter settings:

1. In the menu tree under Modify Settings, navigate to **Global Settings | Output Format | Standard Formatter.** The **Standard Formatter** window opens.



2. Enter the appropriate information in the form as described below:

Header

Click to activate the Text Entry Tool and create a header string. Headers (up to 128 bytes) can be defined and transmitted as a block preceding the barcode(s). Characters from NUL (00H) to ~ (7EH) can be used.

Terminator

Click to activate the Text Entry Tool and create a terminator string. Terminators (up to 128 bytes) can be defined and transmitted as a block following the barcode(s). Characters from NUL (00H) to ~ (7EH) can be used.

Separator

Click to activate the Text Entry Tool and create a separator string. Separators (up to 128 bytes) can be defined. Characters from NUL (00H) to ~ (7EH) can be used.

The Data Packet Separators (up to 128 bytes) are used to separate barcodes in the reading phase. For this reason, it is very useful when the Multi Label parameter has been enabled. If selected, they occur within the Code Field and are transmitted after each decoded code.

Multiple Label Separator

Click to activate the Text Entry Tool and create a separator string. Separators (up to 128 bytes) can be defined. Characters from NUL (00H) to ~ (7EH) can be used.

The Data Packet Separators (up to 128 bytes) are used to separate barcodes in the reading phase. For this reason, it is very useful when the Multi Label parameter has been enabled. If selected, they occur within the Code Field and are transmitted after each decoded code

Field Type

Select **Variable Length** or **Fixed Length** from the drop-down list. The code field length can be (in number of characters/digits) can be specified in order to be accepted for decoding:

- **Variable Length:** All possible code field lengths (in number of characters/digits) allowed for the code selected are accepted.
- **Fixed Length:** Only the length defined by the Code Field Length parameter is accepted.

Field Length

Enter a length value in the filed provided. Only for fixed length format.

Fill Direction

Select **Left** or **Right** from the drop-down list. Only for fixed length format.

Fill Character

Click to activate the Text Entry Tool and create a fill character. Only for fixed length format.

Code Identifier

Select Disabled, AIM, or Custom from the drop-down list. This parameter allows enabling/disabling the transmission of the code ID in the output data format.

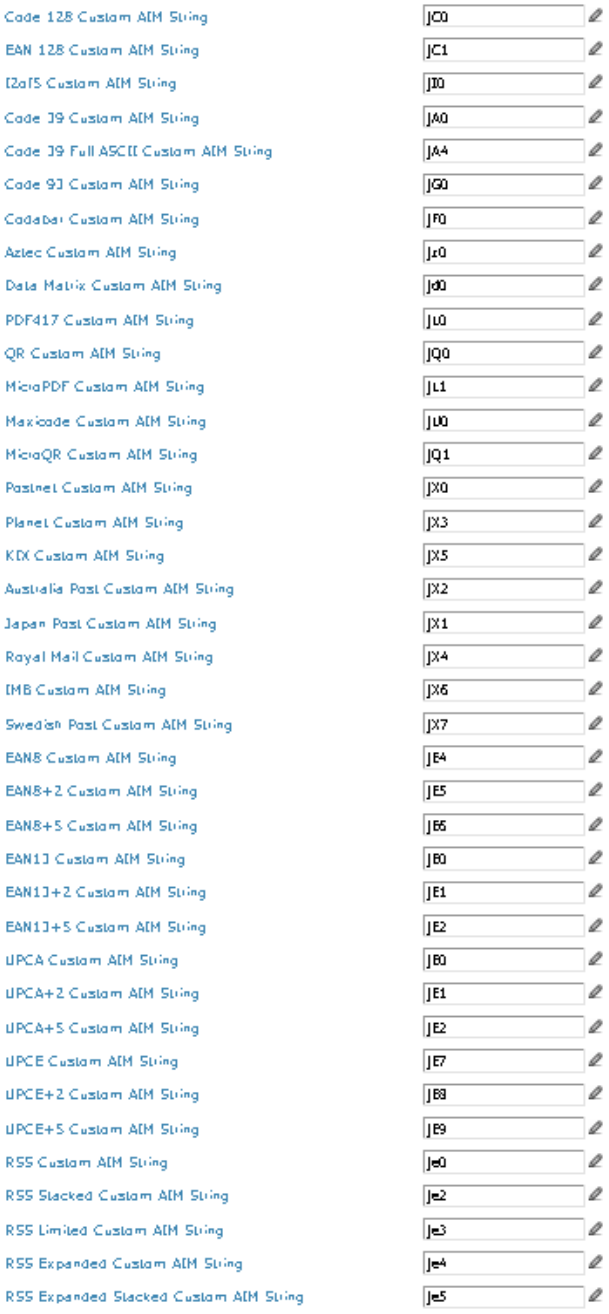
- **Disable:** No code identifier is included in the output message
- **AIM:** The AIM standard identifier is included in the output message
- **Custom:** This selection activates a list of Custom Code ID strings, allowing the user to define an identifier string for each code symbology. The string will be included in the output message.

When Custom is selected, the AIM's industry standard strings are displayed with each code type. These can then be modified.

In each code string option, click to activate the Text Entry Tool and create a character string.

List of Code Types

This list appears when Custom is selected from the Code Identifier drop-down list. For each code type, click to activate the Text Entry Tool and create a Code Identifier characters.



3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

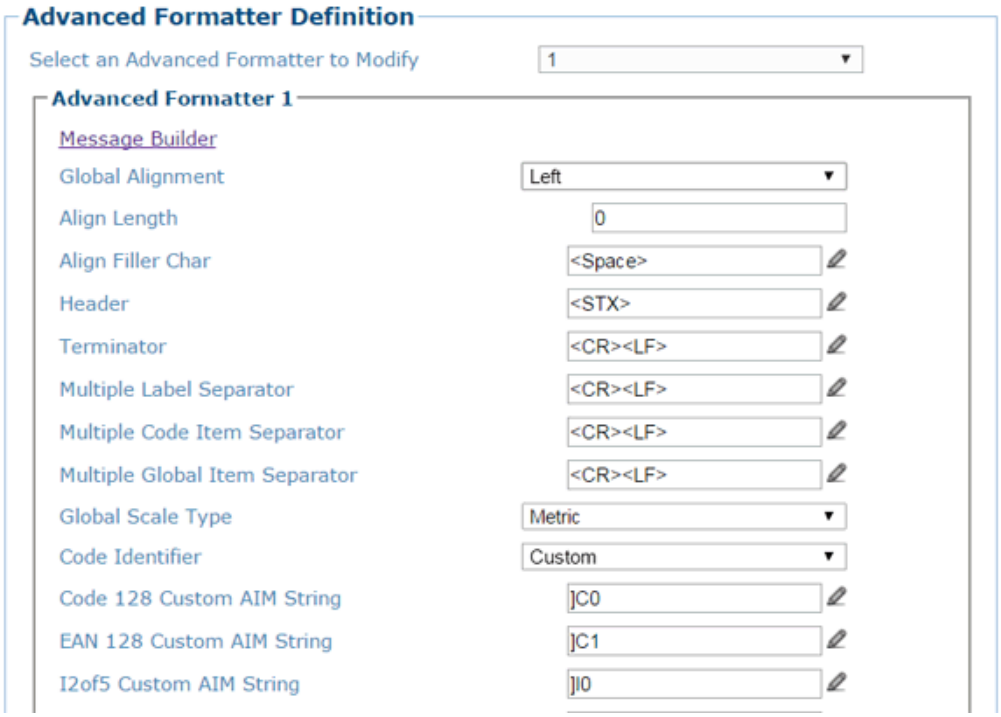
Output Format | Advanced Formatter

Use the **Advanced Formatter** to set up a selection of advanced code parameters for output messages.

The Advanced Formatter allows you to configure up to 6 different message structures. The Advanced Formatter item can be assigned to the transport located in Mod Settings > Communication > Transports.

To edit the Advanced Formatter settings:

1. In the menu tree under Modify Settings, navigate to Global Settings | Output Format | Advanced Formatter. The **Advanced Formatter** window opens.



2. Enter the appropriate information in the form as described below:

Select an Advanced Formatter to Modify

Select a numeric Advanced Formatter item to modify from the drop-down list. The advanced formatter provides the customer with the option of configuring up to six different message structures and can be assigned to the Transport via Modify **Settings>Communications>Transports**.

Message Builder

Click on this link to open the Message Builder“Advanced Formatter Message Building Examples” on page 172 window.

Global Alignment

Select None, Left, or Right from the drop-down list.

When you activate Global Alignment you are choosing to add characters (padding) to the leading and/or trailing edge of the transmitted message. Left refers to the leading part of the message, and Right refers to the trailing part of the message.

Align Length

Enter a length in the field provided.

This defines the number of characters added to the leading (Left) or trailing (Right) sides of the message.

Align Filler Char

Click to activate the Text Entry Tool and create a filler character. These are the characters used leading (Left) or trailing (Right) the message.

Header

Click to activate the Text Entry Tool and create a header string. Headers (up to 128 bytes) can be defined and transmitted as a block preceding the barcode(s). Characters from NUL (00H) to ~ (7EH) can be used.

Terminator

Click to activate the Text Entry Tool and create a terminator string. Terminators (up to 128 bytes) can be defined and transmitted as a block following the barcode(s). Characters from NUL (00H) to ~ (7EH) can be used.

Multiple Label Separator

Click to activate the Text Entry Tool and create a separator string. Separators (up to 128 bytes) can be defined. Characters from NUL (00H) to ~ (7EH) can be used.

Multiple Code Item Separator

Click to activate the Text Entry Tool and create a separator string. Separators (up to 128 bytes) can be defined. Characters from NUL (00H) to ~ (7EH) can be used.

Multiple Global Item Separator

Click to activate the Text Entry Tool and create a separator string. Separators (up to 128 bytes) can be defined. Characters from NUL (00H) to ~ (7EH) can be used.

Global Scale Type

Select Metric, Imperial or Encoder Units from the drop-down list.

- **Metric:** Metric length units are used
- **Imperial: I**mperial length units are used

Code Identifier

Select Disabled, AIM, or Custom from the drop-down list. This parameter allows enabling/disabling the transmission of the code ID in the output data format.

- **Disable:** No code identifier is included in the output message
- **AIM:** The AIM standard identifier is included in the output message
- **Custom:** This selection activates a list of Custom Code ID strings, allowing the user to define an identifier string for each code symbology. The string will be included in the output message.

In each code string option, click to activate the Text Entry Tool and create a character string.

List of Code Types

This list appears when Custom is selected from the Code Identifier drop-down list. For each code type, click to activate the Text Entry Tool and create Code Identifier characters.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

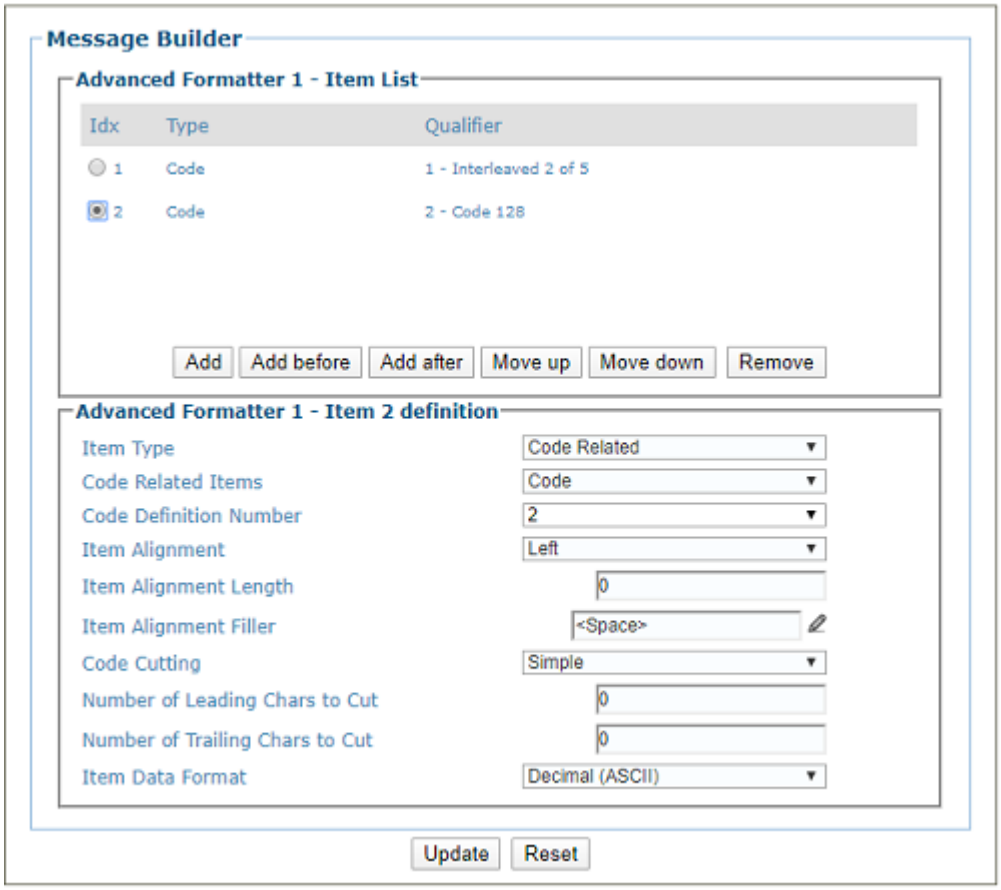
Message Builder

Use the **Message Builder** window to configure **Standard** or **Advanced** system messages.

This option allows for the defining of each field in the host message. When **Message Builder** is activated, Its settings apply to the **Advanced Formatter *n*** Item that was being modified in the **Advanced Formatter Definition** window.

To Use the Message Builder:

1. Click on the Message Builder link in the **Advanced Formatter** window. The **Message Builder** window opens.



2. Enter the appropriate information in the form as described below:

Advanced Formatter Index

The number displayed represents the Advanced Formatter n Item that was being modified in the Advanced Formatter Definition window.

Message n Item List

The Items in this list are the fields in the message being transmitted.

Idx

Displays the index number of the messages.

Item Type

Displays the message type including various Code Related Item, String, or Global Item messages.

Qualifier

Displays relevant qualifiers for the message item if needed.

Advanced Formatter n - Item List Buttons

Add

Click to add a new message item to the bottom of the list. The type of message added is based on the Item Type selected in the Item n Definition section of the window (see below).

Add before

Click to add a new message item above the currently selected message.

Add after

Click to add a new message item below the currently selected message.

Move up

Click to move the selected message item up one level in the list.

Move down

Click to move the selected message item down one level in the list.

Remove

Click to remove the selected message item.

Item n Definition

Item Type

Select String, Code Related, or Global from the drop-down list. Each selection reveals a unique set of options.

Code Related Items

Select a code related item from those available in the drop-down list. This option is available when Item **Type > Code Related** has been selected. The Code Related items can be associated to a specific programmed code or group label depending on the Code Combination selection.

Selections Include:

- **Code:** Barcode data
- **Length:** Number of characters in code
- **Read Mask:** In tracking mode - 32-bit mask indicating which barcode reader in the network has read the code (when character <1> is present in the related position). In On Line mode - 32-bit mask indicating the lowest unit number barcode reader in the network that read the code (when character <1> is present in the related position).
- **Total Read Count:** Indicates how many times the code has been read by all barcode readers present in the network during the same reading phase.
- **X Position:** X coordinate for the code that was read
- **Y Position:** Y coordinate for the code that was read
- **Z Position:** Z coordinate for the code that was read
- **Code Identifier:** Indicates type of code that was read
- **Encoder Value:** Encoder Value identifies the tachometer count that the bar code was found at
- **Code Orientation Angle:** Identifies the orientation of the barcode

Global Item

Select a package related item from those available in the drop-down list. This option is available when Item **Type > Global** has been selected.

Selections Include:

- **Total Read Mask:** Indicates the complete reading mask related to all codes read during the reading phase
- **Total Read Count:** Indicates the sum of all Code-related Total Reading Counts of each code read during the reading phase
- **Sequence Number:** Indicates the sequential number assigned to the package
- **Hours:** Indicates hour the code was scanned
- **Minute:** Indicates minute the code was scanned
- **Seconds:** Indicates second the code was scanned
- **Day:** Indicates day of the month the code was scanned
- **Month:** Indicates month the code was scanned
- **Year:** Indicates year the code was scanned
- **Protocol Index:** Indicates the programmed protocol index string data
- **Parcel Length:** Indicates the approximate length of the package

- **Parcel Width:** Indicates the approximate width of the package
- **Parcel Height:** Indicates the approximate height of the package
- **Parcel Volume:** Indicates the approximate volume of the package
- **Parcel Orientation Angle:** Indicates the angle of the package
- **Parcel Isolated:** indicates it is not a side-by-side condition as detected by the Dimensioning system
- **Image Filename:** Includes the filename of the image

Code Definition Number

Select a **Code Definition Number** from those available in the drop-down list. This option is available when **Item Type > Code Related** has been selected.

This number relates to the group defined under **Barcode Settings > Barcode Configuration** when Logical Combination is selected and the Groups are defined in Logical Combination Rule field.

Text String: Options

Link to Code

Select Disabled, Previous Code, or Next Code from the drop-down list.

- **Disabled:** A code will not be linked to this text string
- **Previous Code:** The text string will be linked to the previous generated code
- **Next Code:** The text string will be linked to the next generated code

Code Related Item: Options

Item Alignment

Select None, Left, or Right from the drop-down list.

Item Alignment Length

Enter an Item Alignment Length in the field provided.

Item Alignment Filler

Click  to activate the Text Entry Tool and create filler text. Click Submit to save your text to the origin window text field, or click Cancel to return to origin window without transferring text.

Code Cutting

Select **None**, **Simple** or **Pattern** from the drop-down list.

Number of Leading Chars to Cut

If Simple was selected, Enter the number of characters to cut from the leading edge of the barcode.

Number of Trailing Chars to Cut

If Simple was selected, Enter the number of characters to cut form the trailing edge of the barcode.

Item Data Format

Select Decimal (ASCII), Hexadecimal (ASCII), Bitmap (ASCII), or Numeric (Binary) from the drop-down list.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values

Advanced Formatter Message Building Examples

As an example, here are two messages that could be created:

Message #1 will be an Ethernet message on port number 4004.

<STX>(2 character sequence #)xx-(code128 barcode)-(code39 barcode)-(parcel length mm)xxxx<CR><LF>

Example message: 01-123456789000-450

Message #2 will be a serial message.

<STX>(string of six Xs [xxxxxx] followed by last 4 digits of the barcode),hh:mm:ss<ETX>

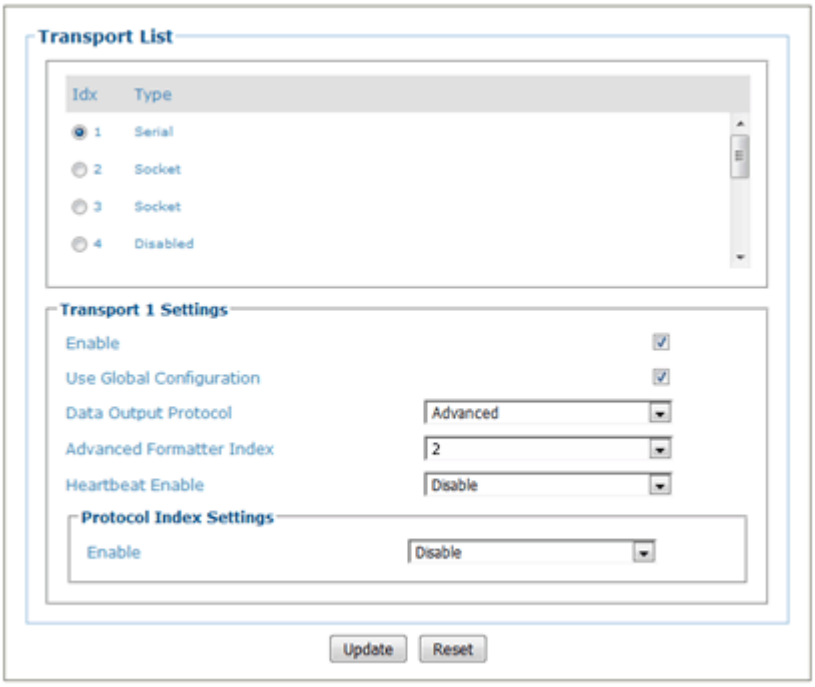
Example message: xxxxxx8900,12:59:59

NOTE

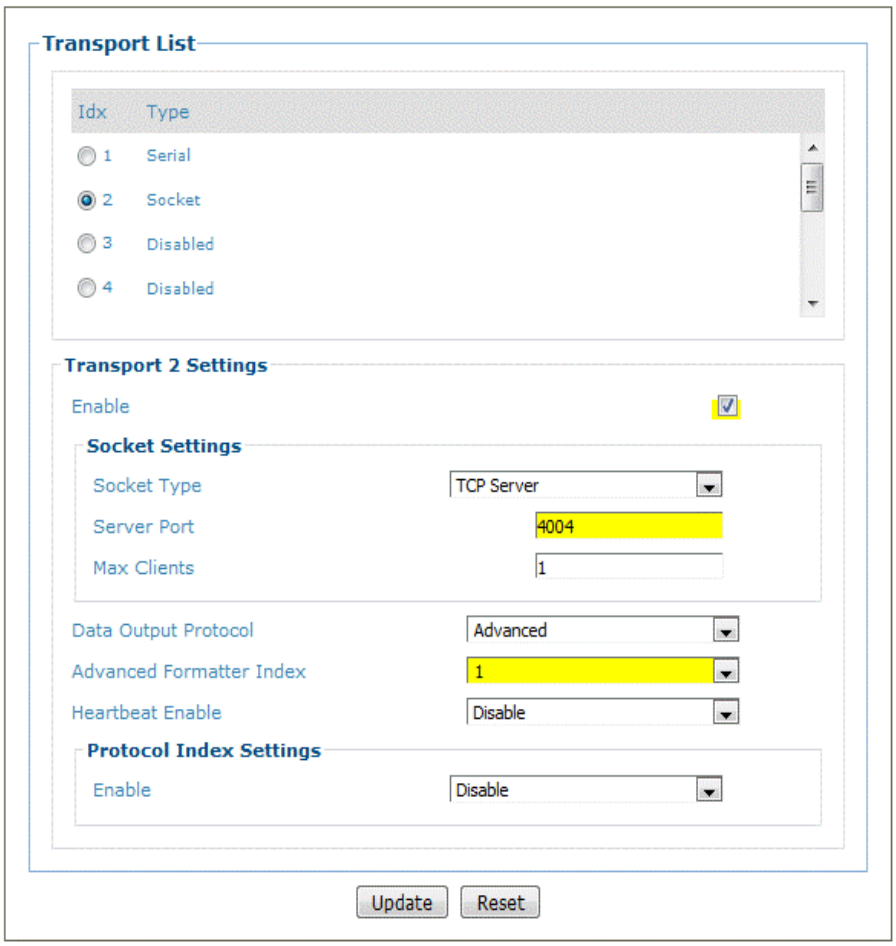
In this example the Barcode Settings Table is set up to read code 1 as a code128 4-40 characters barcode, code 2 is set up as a code39 10 character barcode, and the Code Combination selection is set for Logical Combination. The Logical Combination rule equals 1&2. Local No Read(s) Message is selected for the No Read Message.

Start by setting up serial and Ethernet connections for three messages:

1. Navigate to **Modify Settings | Global Settings | Communications | Transports.** The **Transports** window opens.



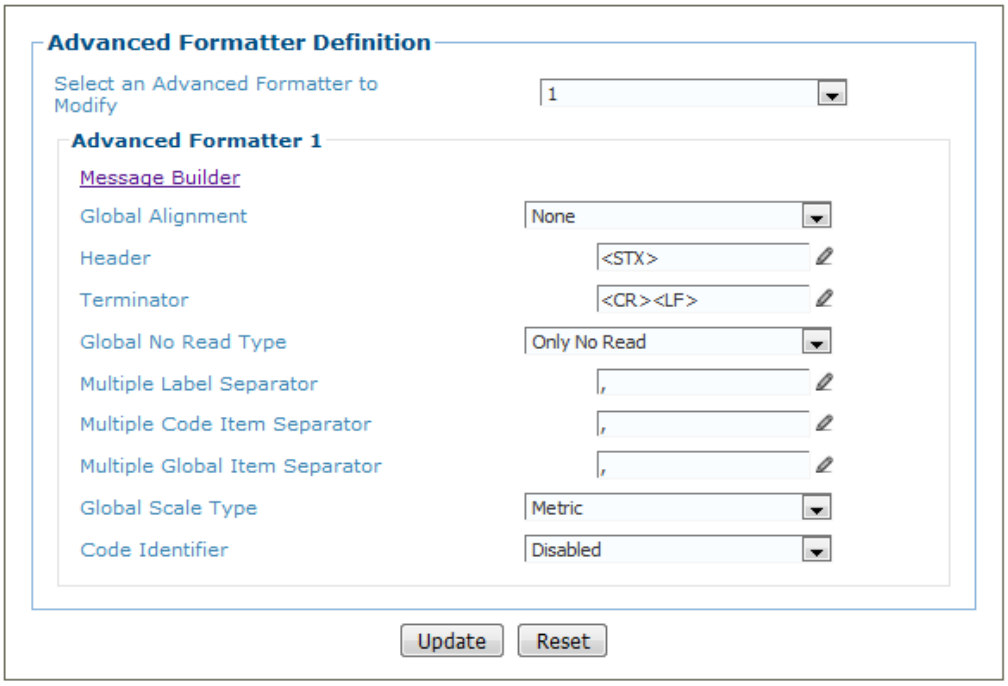
2. Select the **Serial** option button #1.
3. Select the **Enable** check box.
4. Select **Advanced** from the **Data Output Protocol** drop-down list.
5. Select an index number from the **Advanced Formatter Index**. In this example 2 is selected.
6. Select the **Socket** option button #2 at the top of the **Transports** window.



7. Select the **Enable** check box.
8. Select **TCP Server** from the **Socket Type** drop-down list.
9. Enter a **Server Port i**n the field provided (4004 in this example).
10. Enter **Max Clients** or the number of devices this Transport will be communicating to (1 in this example).
11. Select **Advanced** from the **Data Output Protocol** drop-down list.
12. Select an index number from the **Advanced Formatter Index.** In this example 1 is selected.
13. Click **Update** to save the changes.

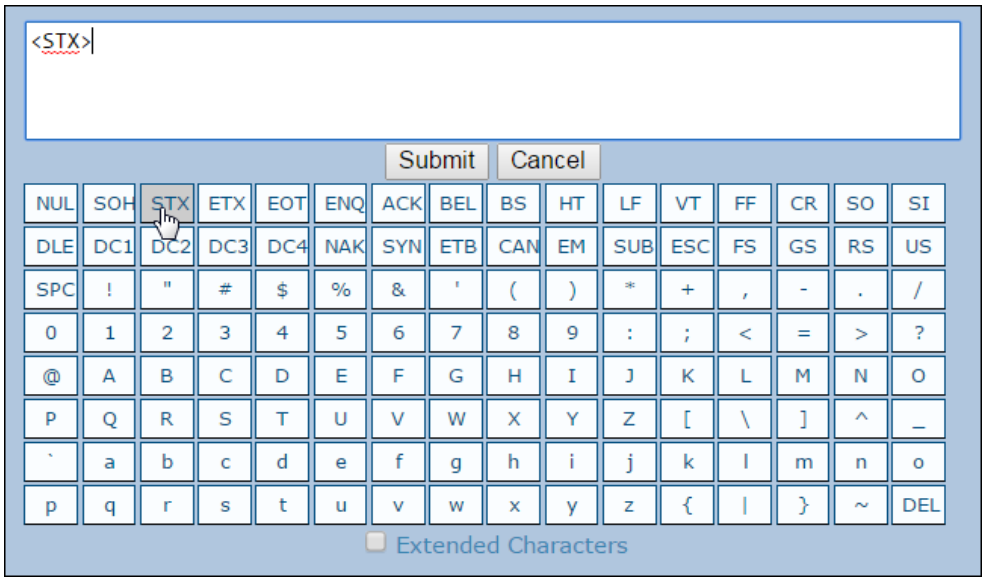
Create Message #1 (<STX>(2 character sequence #)xx-(code128 barcode)-(code39 barcode)-(parcel length mm)xxxx<CR><LF>**):**

1. Navigate to **Modify Settings | Global Settings | Output Format | Advanced Formatter.** The Advanced Formatter window opens.



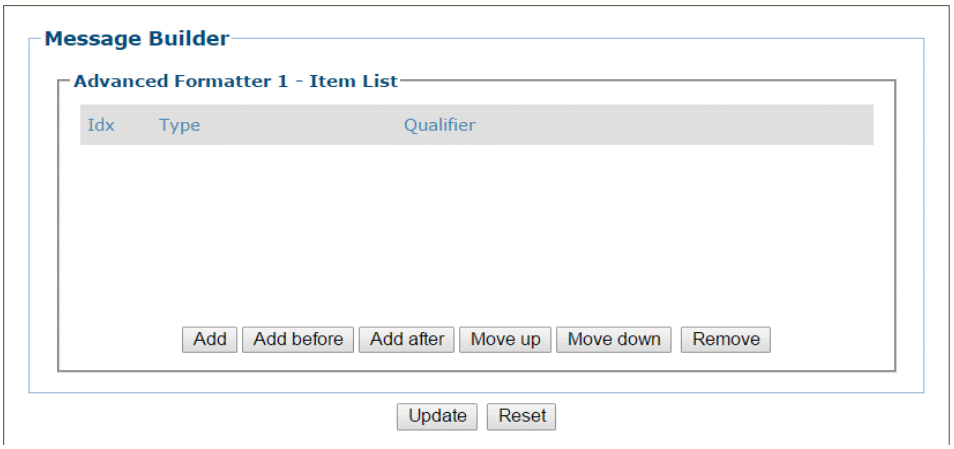
2. Select **1** (to build **Message #1)** from the **Select an Advanced Formatter to Modify** drop-down list. This was set in the **Transports** window **Advanced Formatter Index** selection in the previous steps.

3. For the **Header,** click to activate the **Text Entry Tool** and select **STX** (Start of Text), and click Submit.

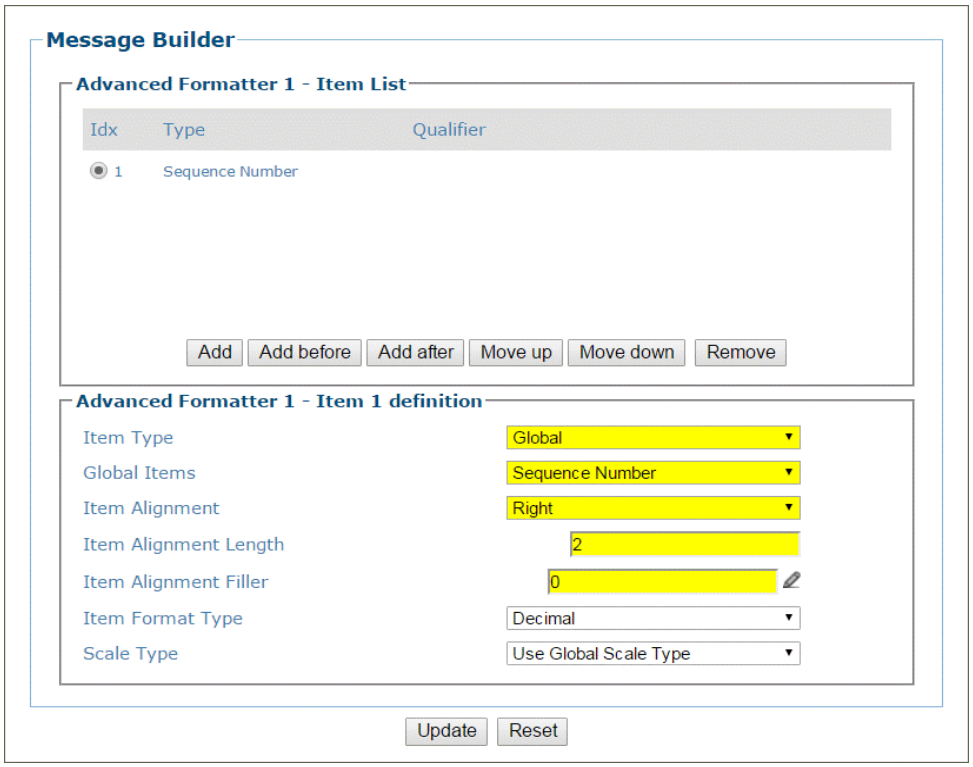


4. For the **Terminator** (Trailer), click to activate the **Text Entry Tool** and select **CR** and **LF**, and click **Submit.**

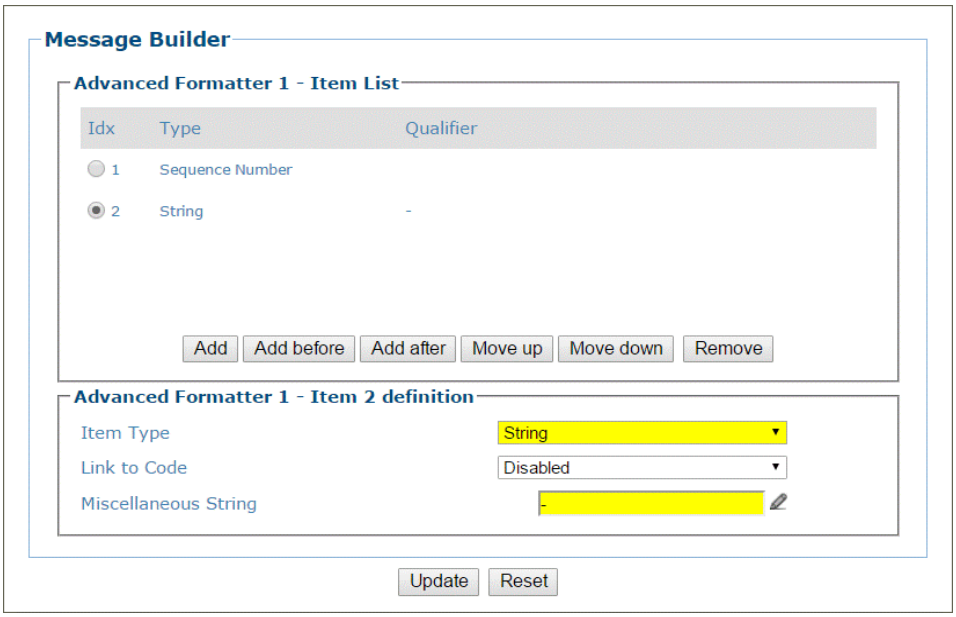
5. Click **Message Builder.** The **Message Builder** window opens.



6. Click **Add.**



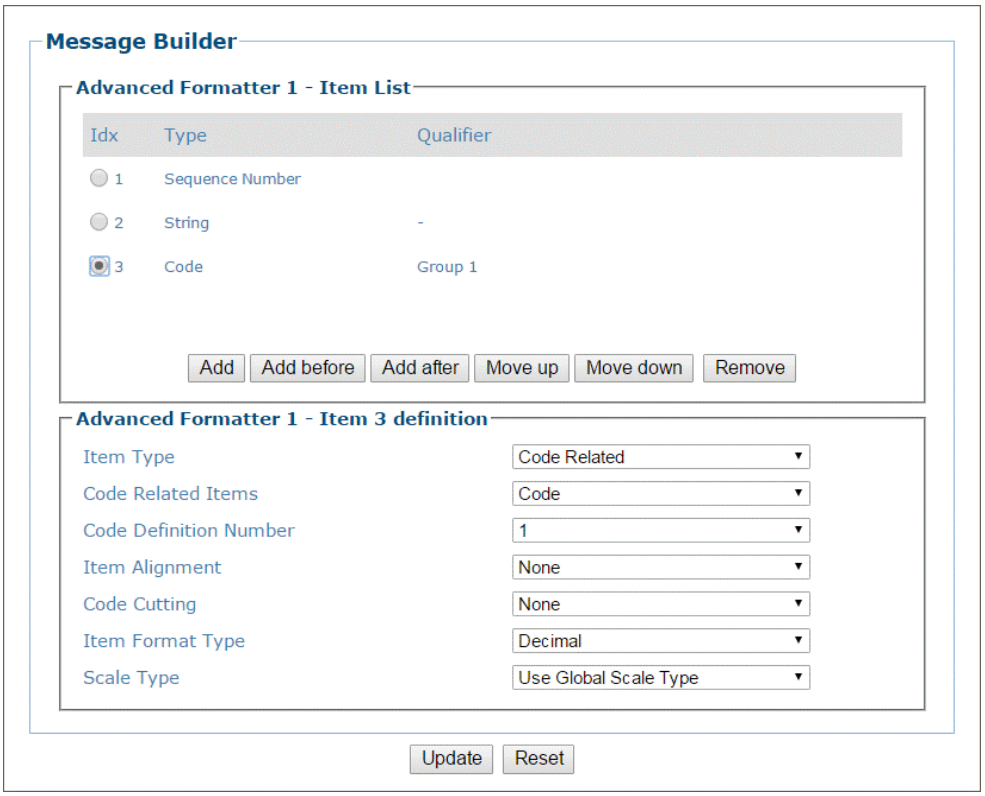
7. Select **Global** from the **Item Type** drop-down list.
8. Select **Sequence Number** from the **Global** Item drop-down list.
9. Select **Right** from the Item **Alignment** drop-down list.
10. Enter 2 in the Item **Alignment Length** text field.
11. Click **Add**.



12. Select **String** from the **Item Type** drop-down list.

13. To create a hyphen separator, click to activate the **Text Entry Tool,** select the hyphen (-), and click Submit.

14. Click **Add**.



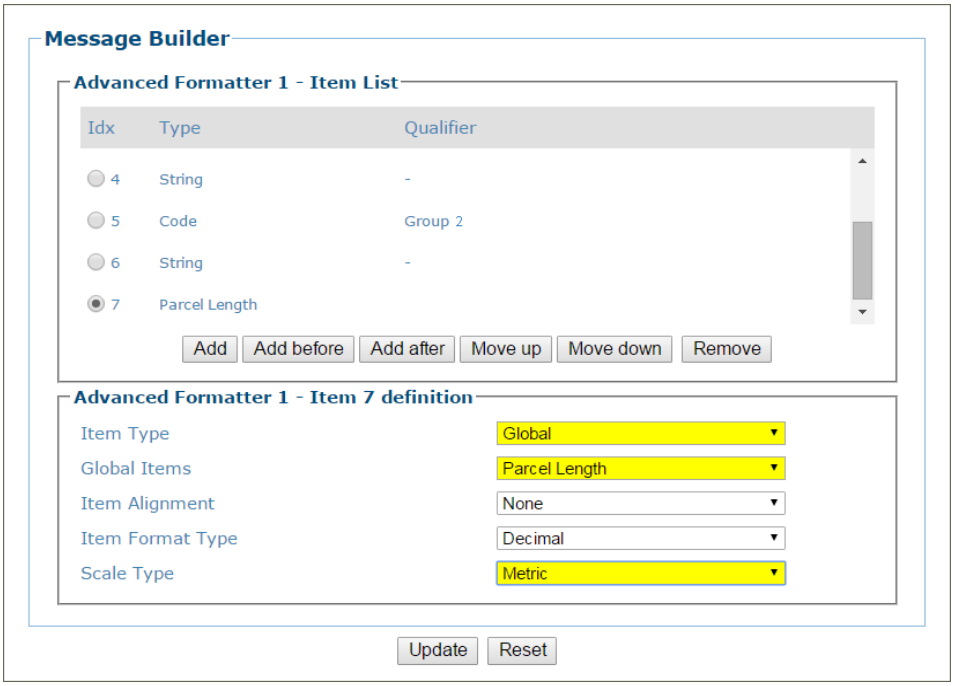
15. Select **Code Related** from the **Item Type** drop-down list.

16. Select **Code** from the **Code Related** Item drop-down list.

17. Select **1** from the **Code Definition Number** drop-down list (in this example representing code128).

18. Click **Add**.

19. Select **String** from the **Item Type** drop-down list.
20. To create a hyphen separator, click to activate the **Text Entry Tool,** select the hyphen (-), and click **Submit.**
21. Click **Add**.
22. Select **Code Related** from the **Item Type** drop-down list.
23. Select **Code** from the **Code Related Item** drop-down list.
24. Select **2** from the **Code Definition Number** drop-down list (in this example representing code39).
25. Click **Add**.
26. Select **String** from the **Item Type** drop-down list.
27. To create a hyphen separator, click to activate the Text Entry Tool, select the hyphen (-), and click Submit.
28. Click **Add.**



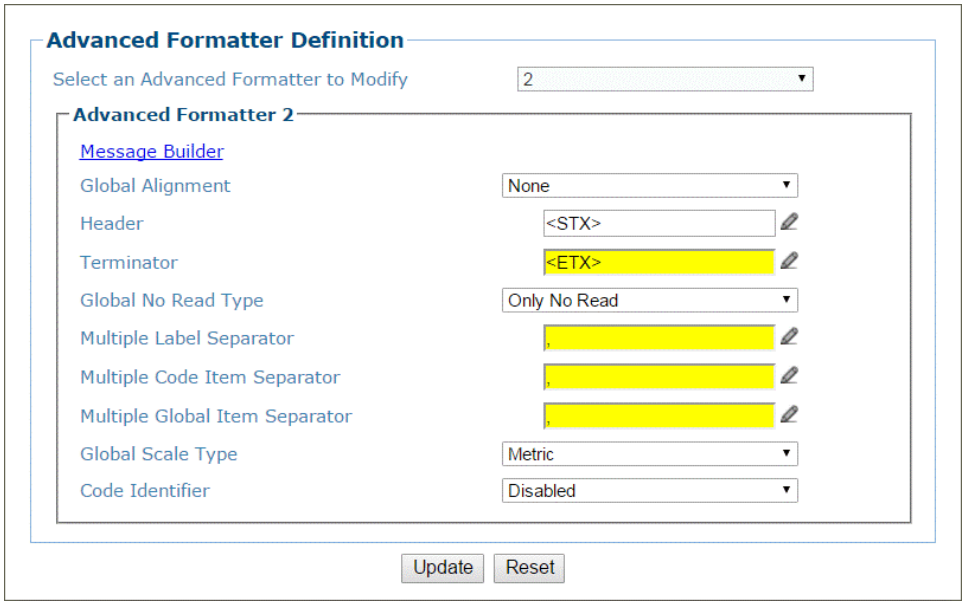
29. Select **Global** from the **Item Type** drop-down list.
30. Select **Parcel Length** from the **Global Item** drop-down list.
31. Select **Metric** from the **Scale Type** drop-down list.

The resulting Item List should look like this:

32. **Click Update** to save your changes.

Create Message #2 (<STX>(string of six Xs [xxxxxx] followed by last 4 digits of the bar-code),hh:mm:ss<ETX>**):**

1. Navigate to **Modify Settings | Global Settings | Output Format | Advanced Formatter.** The Advanced Formatter window opens.

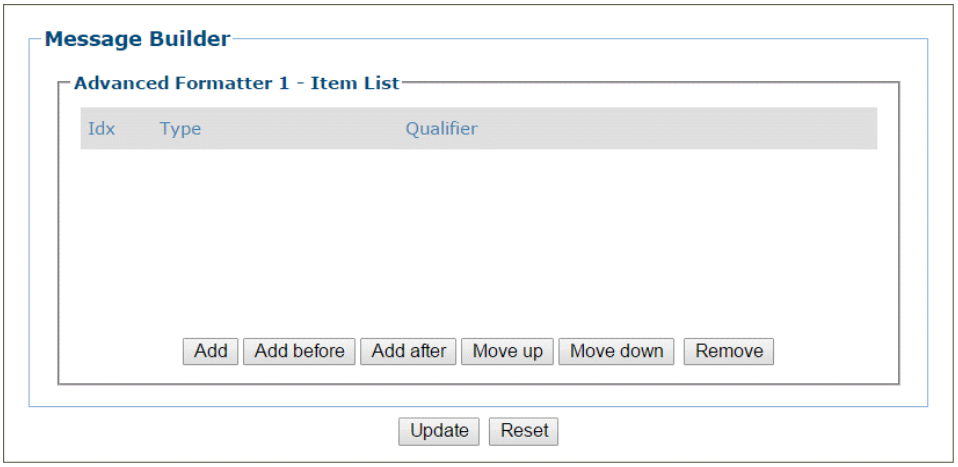


2. Select **2** (to build **Message #2)** from the **Select an Advanced Formatter to Modify** drop-down list. This was set in the **Transports** window **Advanced Formatter Index** selection in the previous steps.

3. For the **Header,** click to activate the Text Entry Tool and select STX (Start of Text), and click Submit.

4. For the **Trailer**, click to activate the Text Entry Tool and select ETX (End of Text),

5. Click **Message Builder**. The **Message Builder** window opens.



6. Click **Add.**
7. Select **String** from the **Item Type** drop-down list.
8. In the **Miscellaneous String** field, click to activate the **Text Entry Tool** and enter 6 Xs (xxxxxx).
9. Click **Submit.**
10. Click **Add.**
11. Select **Code Related** from the **Item Type** drop-down list.
12. Select **2** from the **Code Definition Number** drop-down list.
13. Select **Simple** from the **Code Cutting** drop-down list.
14. Enter 6 in the **Number of Leading Chars to Cut** text field.
15. Click **Add.**
16. Select **String** from the **Item Type** drop-down list.
17. To create a comma separator, click to activate the **Text Entry Tool,** select the comma (,) and click Submit.
18. Click **Add**.
19. Select **Global** from the **Item Type** drop-down list.
20. Select **Hours** from the **Global Item** drop-down list.
21. Enter **2** in the **Item Length (Number of Characters)** field.
22. Click **Add**.
23. Select **String** from the Item Type drop-down list.
24. To create a **colon separator**, click to activate the **Text Entry Tool,** select the colon (:) and click Submit.
25. Repeat steps 18-24 two more times substituting Minutes and Seconds for Hours to create hh:mm:ss (do not add a colon after the seconds).

The resulting Item List should look like this:

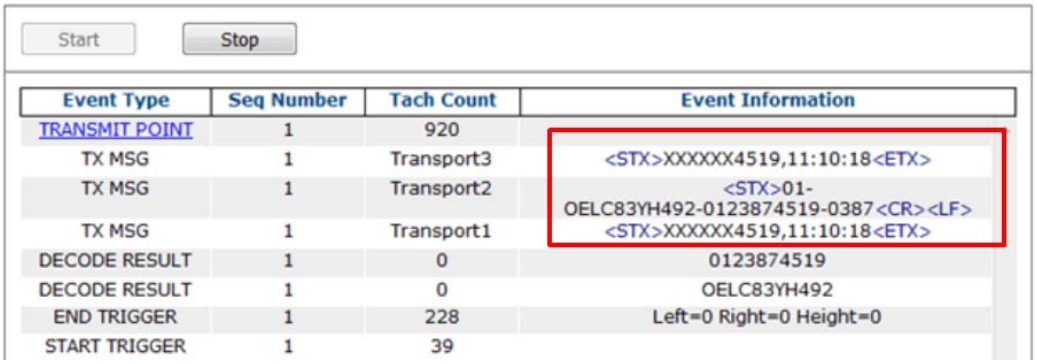
26. Click **Update** to save your changes.

Verify Message Format

1. Prepare a box with barcodes matching those to be read by your system. Int his example the system is set up to read two barcodes, code 1 ad Code 128 4-40 character barcode, and code 2 is set up as a Code 39 10 character barcode.

2. In e-Genius navigate to Diagnostics | Device Tracking. The Device Tracking window opens.

3. Run the box through the system. Look at the Event Information for transports 1, 2, 3 and verify that the information returned is what you intended.



Modify Settings Global | Global Settings | Image Saving

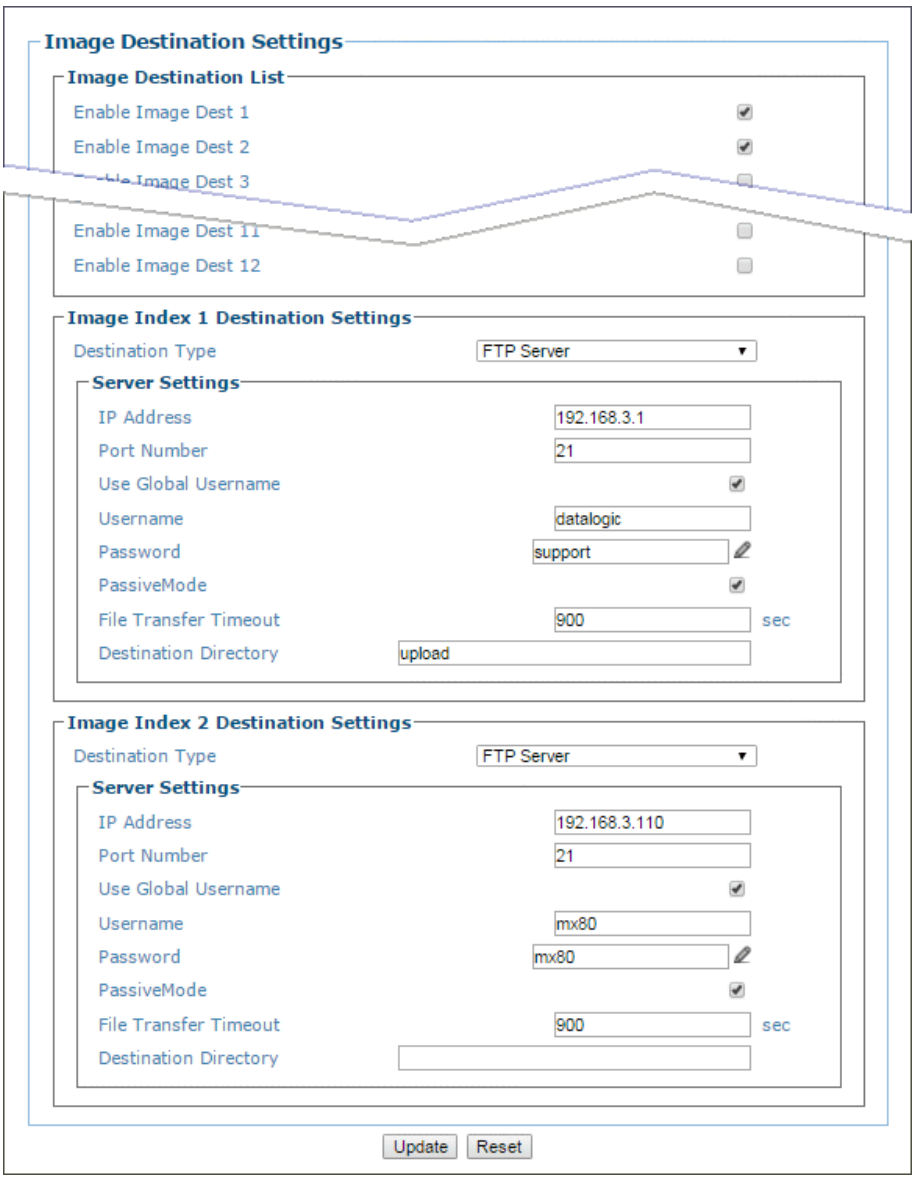
Usage Image Saving options to configure how images are saved:

Image Saving | Destination Settings

Use **Destination Settings** to configure how and where system images are saved. There are four configurable image destinations available.

To edit the Destination Settings:

1. In the menu tree under Modify Settings, navigate to **Global Settings | Image Saving | Destination Settings.** The **Destination Settings** window opens.



2. Enter the appropriate information in the form as described below:

Image Destination List

Select the check box(es) corresponding to the numbered image destination to enable setup. Image Index n Destination Settings inputs will appear for the image destinations selected.

Destination Type

Select File System, FTP Server, External Viewer, or On Camera from the drop-down list to save to a remote file system server.

- **Network Files System:** Reveals options for saving to an external file system folder
- **FTP Server:** Reveals options for save to an FTP server
- **External Viewer:** Provides a field for the Destination IP Address of the viewer. The External Viewer is only used as a diagnostic and calibration tool
- **On Camera:** Provides options to store images on the camera

File System Options

Server Path

Enter the file path for an existing destination directory folder.

Example: \\mymachine\dirname

Username

Enter a **username** for the server.

Password

Enter a **password** for the server.

Images from Different Cameras Saved to:

Select Same Directory or Different Directory.

Same Directory: All cameras will copy images into the same folder.

Different Directory: Each camera will create a sub-folder using its camera name as its sub folder name.

Destination Directory

Enter the path and name of the destination directory.

Directory Splitting

Enable

Select the check box to enable directory splitting. Enabling this parameter causes the destination directory to be split into subdirectories containing a number of images not greater than the defined Split Destination Max File Number (see below). The subdirectories of the Saving Path are numbered consecutively: 1, 2, 3, etc.

Max Number of Files per Directory

Enter the number of files allowed in each subdirectory.

FTP Server Settings

IP Address

Enter the address of the **FTP server**.

Port Number

Enter the **port number** of the FTP server.

Use Global Username

Select the check box to enable an FTP username field, or deselect the check box to enable the individual camera user name.

Username

The User Name for logon to the FTP server. **Default = anonymous.**

Camera N Username

When Use Global Username is NOT checked, enter a username for the numbered camera.

Password

The Password for logon to the FTP server. **Default = anonymous**.

Passive Mode

Select the check box to enter passive mode.

File Transfer Timeout

Enter a time out value in seconds. This sets the polling cycle in seconds for sending the keep alive signal to the Server so that the connection is maintained even if no data is sent.

Destination Directory

Enter the path of the FTP server directory as follows: **\datalogic\images**, without indicating any volume, because the FTP connection already points to the correct volume (for example: D:\).

External Viewer

Destination IP Address

Enter the IP address of the external PC on which the image viewer is installed, in the field provided.

On Camera Directory Splitting

Enable

Select the check box to enable directory splitting. Enabling this parameter causes the destination directory to be split into subdirectories containing a number of images not greater than the defined Split Destination Max File Number (see below). The subdirectories of the Saving path are numbered consecutively: 1, 2, 3, etc.

Max Number of Files per Directory

Enter the number of files allowed in each subdirectory.

Destination Directory Maintenance

Enable

Select the check box to enable maintenance of the saving folder based on the options presented.

Max Number of Files

Enter the maximum number of files allowed in the saving folder. When this number is exceeded, the older files are deleted.

Max Total Size

Enter the maximum amount of disk space allowed in the saving folder. When this number is exceeded the older files are deleted.

Set the parameter to 0 to disable.

Max File Age

Enter the maximum age of a file allowed. When this number is exceeded the older files will be deleted.

Set the parameter to 0 to disable.

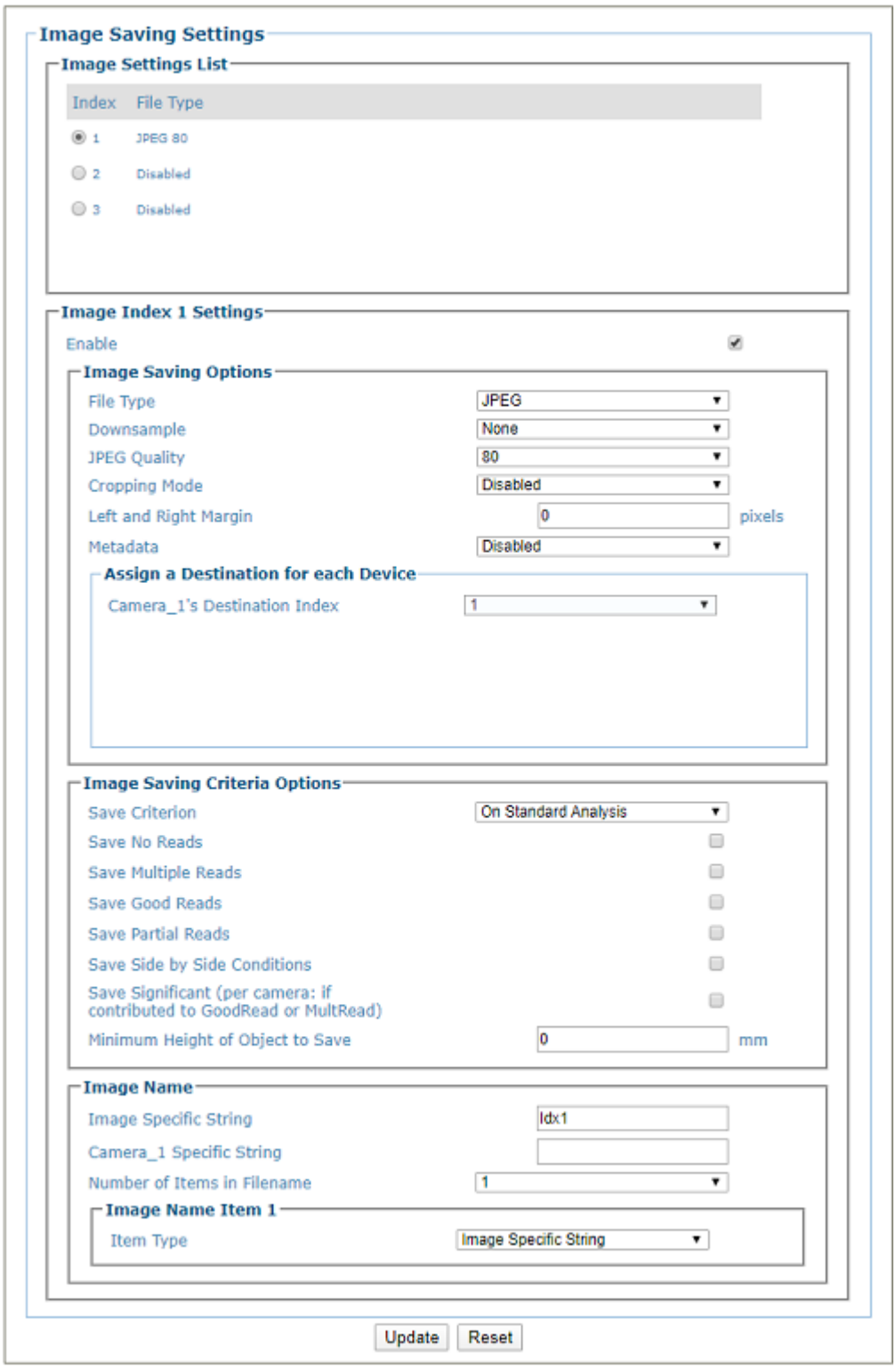
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Image Saving | Image Settings

Use the **Image Settings** window to configure where and how images are saved.

To edit the Image Settings:

1. In the menu tree under **Modify Settings**, navigate to Global Settings | Image Saving | Image Settings. The **Image Settings** window opens.



2. Enter the appropriate information in the form as described below:

Image Settings List

Select the option button adjacent to the item you wish to create or modify.

Image Index n Settings

Enable

Select the check box reveal the image settings options.

Image Saving Options

File Type

Select JPEG, Bitmap, or TIFF from the drop-down list. Specifies the type of image to save as.

Downsample

Select None, 2, 4, 8, or 16 from the drop-down list.

JPEG Quality

Only available when JPEG is selected. Select a quality percentage from the drop-down list.

Quality defines the compression, by the Hoffman algorithm, in JPG images: 100 means maximum quality and minimum compression, lower values mean lower quality but higher compression. Valid values are in the range from 15 to 100.

Cropping Mode

Select **Disabled** or **Crop to Object** from the drop-down list.

The standard option provides cropping on the start and stop edges of the parcel image. The Crop to Object option is used for full cropping: not only on the start and stop edge of the parcel but also on both parcel sides. This is possible only when the distance sensors are available.

Left and Right Margin

Specify the left and right margins in pixels to be cropped. You can also add a negative to increase margin, For example -100 adds 100 pixels.

Metadata

Select Disabled, Embedded, or External File from the drop-down list.

- **Disabled:** Metadata not used
- **Embedded:** Metadata is embedded with the image
- **External File:** Metadata is saved to an external file.

Assign a Destination for Each Device

Camera n's Destination Index

Select Disabled or a destination index number from the drop-down list. The destination index number refers to the Image Destination List in **Modify Settings | Global Settings | Image Saving | Destination Settings.**

Image Saving Criteria Options

Save Criterion

Select On Standard Analysis, All, or On Custom Analysis from the drop-down list.

- **On Standard Analysis:** Allows you select the image criterion from the options below.
- **All:** Sends out all images.
- **On Custom Analysis:** Allows you select the image criterion from the options below as well as defining the transport through which it is sent.

This is only available when custom software is being used and custom analysis may be required.

Custom Analysis Host Transport

Select a host transport number from the drop-down list. These are the configured transport options created in Modify Settings | Global Settings | Communications | Transports.

Save No Reads

Select the check box to save no read images.

Save Multiple Reads

Select the check box to save multiple read images.

Save Good Reads

Select the check box to save good read images.

Save Partial Reads

Select the check box to save partial read images.

Save Side by Side Conditions

Select the check box to save an image that has resulted in a Side by Side Condition.

Save Significant (per camera: if contributed to GoodRead or MultRead)

Select the check box to save an image only if it has contributed to the result. This helps cut down on the amount of storage used.

Example: If the parcel is GOOD-READ or MULTI-READ, at least one barcode must have been decoded in an image for it to be considered “significant.”

Minimum Height of Object to Save

Enter a minimum package height from which images will be saved. This is used to avoid saving images of various objects or debris caused by false triggers.

Image Name

These options relate to the image file naming conventions.

Any characters in the image file name that are not allowed in Linux or Windows will be replaced with an underscore (_). Characters that can be considered safe for both operating systems include alphanumeric values, dash (-), period (.), and underscore (_).

Image Specific String

Enter a string to be assigned to all camera image file names.

Camera n Specific String

Enter a string to be included identifying the specific camera name (example: top).

Number of Items in Filename

Select a number from 1 to 16 from the drop-down list.

Image Name Item n

Item Type

Select an Image Name item type from the drop-down list, including:

- **Parcel ID:** Uses the parcel ID as the Image Name
- **Image Specific String:** Uses the image string entered above
- **Date:** Uses the current date (yyyymmdd)
- **Time:** Uses the image scan time (hhmmss)
- **Analysis Result:** Adds read analysis code to the image naming convention
- **Protocol Index:** Uses the protocol index data, as defined in the following options.
- **String:** Uses a character string entered below.
- **Camera Specific String:** appends the specified string to the image filename
- **Code:** See “Code” on page 187
- **Counter:** See “Counter: Uses a counter as described below” on page 187

Transport Number

Select a transport number from the drop-down list

Cutting Mode

Select Disabled or Simple from the drop-down list. When Simple is selected from the options below are revealed.

Number of Leading Characters to Cut

Enter a number indicating the number of characters to cut from the leading part of the message.

Number of Trailing Characters to Cut

Enter a number indicating the number of characters to cut from the trailing part of the

message.

String uses the character string entered below

Item String (Max 16 Chars.)

Identified in image name above.

Camera Specific String appends the specified string to the image file name.

Code

Code Group Index

Logical combination group number as specified in Barcode Settings | Barcode configuration

Cutting Mode

Select Disabled or Simple from the drop-down list. When Simple is selected from the options below are revealed.

Number of Leading Characters to Cut

Enter a number indicating the number of characters to cut from the leading part of the message.

Number of Trailing Characters to Cut

Enter a number indicating the number of characters to cut from the trailing part of the message.

Counter: Uses a counter as described below

Counter Module

Enter the number maximum for the counter before it turns over to start at 1 again.

Alignment

Select None, Left, or Right from the drop-down list. When Left or Right is selected the options below are revealed.

Align Length

Enter the number of characters to fill with the Align Filler Character.

Align Length is the number of characters to fill if the counter value if less than the maximum number. Its main purpose is to make the field length consistent no matter what the counter value.

Example:

Counter Max Number (Counter Module) = 10000

Counter Current Value = 500

Align Filler Char = X

Counter shown in Image Name = XX500 (Left Alignment) or 500XX (Right Alignment)

Align Filler Char

Enter a filler character to use with Align Length.

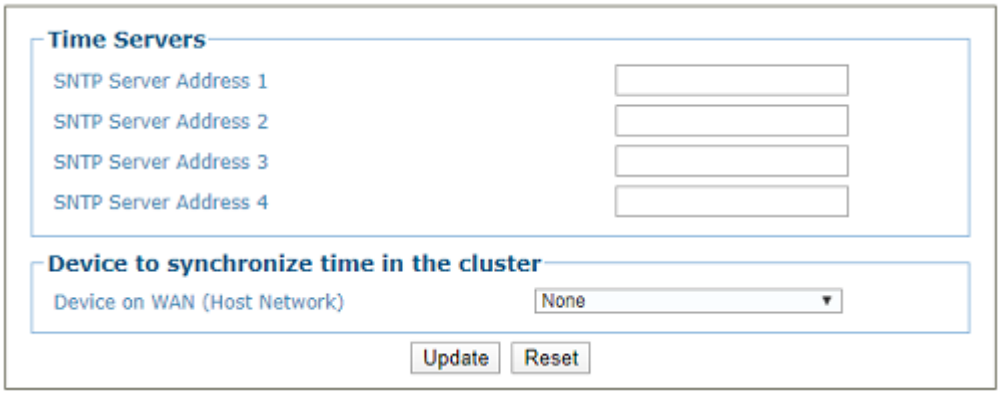
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Global Settings | Time Synchronization

Use Time Synchronization to synchronize system time between the system devices. Time must be synchronized for accurate tracking and logging. This feature allows all units within an organization to have the same time stamp. For example, product located on the west coast can have the message stamped with east coast time. It synchronizes equipment with a PC server located on the east coast.

To view and edit Time Synchronization settings:

1. In the menu tree under **Modify Settings,** navigate to **Global Settings | Time Synchronization.** The **Time Synchronization** window opens.



2. Enter the appropriate information in the form as described below:

Time Servers

SNTP Server Address N

Enter the **IP address** for the servers you wish to synchronize.

Device to synchronize time in the cluster

Device on WAN (Host Network)

Select None or the camera name from the drop-down list of the camera whose host network is connected to the network with the time server. All the devices in the system will synchronize to the selected device.

NOTE

All time references (timestamps, logging, etc.) are in UTC time.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

MODIFY SETTINGS | DEVICE SETTINGS

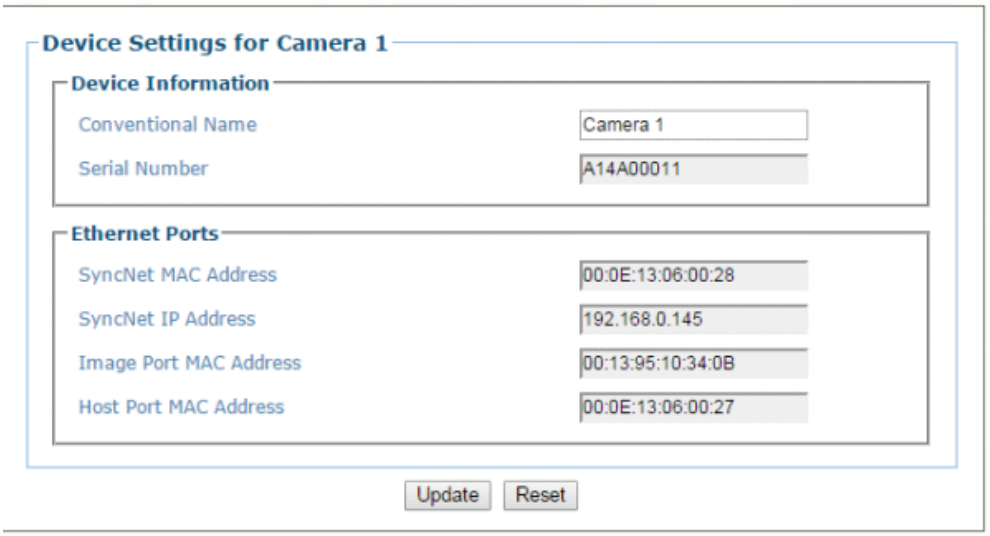
Use the Device Settings during initial setup to configure device specific settings. If necessary, you can later make modifications to the device settings using the same menu selections, including:

Modify Settings | Device Settings | <Camera Name> | Device Info

Use the **Device Info** window to view information about each device in the system including description, serial number, and address.

To view the Device Info window:

1. In the menu tree under Modify Settings, navigate to **Device Settings | <Camera Name> (if applicable) | Device Info.** The **Device Info** window opens.



2. View the following camera information:

Camera Name

Enter a unique name for the camera.

Once changed, this name will appear in the System Info page and the Device Settings menu tree.

NOTE

The following characters may NOT be used in the camera name: # % & { } \ > * ? / (space) $! ' " : @ + ` | =

Serial Number

Displays the serial number sent by the device.

Ethernet Ports

(These fields are not editable)

SyncNet MAC Address

Displays the MAC (media access control) address of the device.

SyncNet IP Address

Displays the IP address sent by the device.

Image Port MAC Address

Displays the Image Port MAC Address sent by the device.

Host Port MAC Address

Displays the Host Port MAC Address sent by the device.

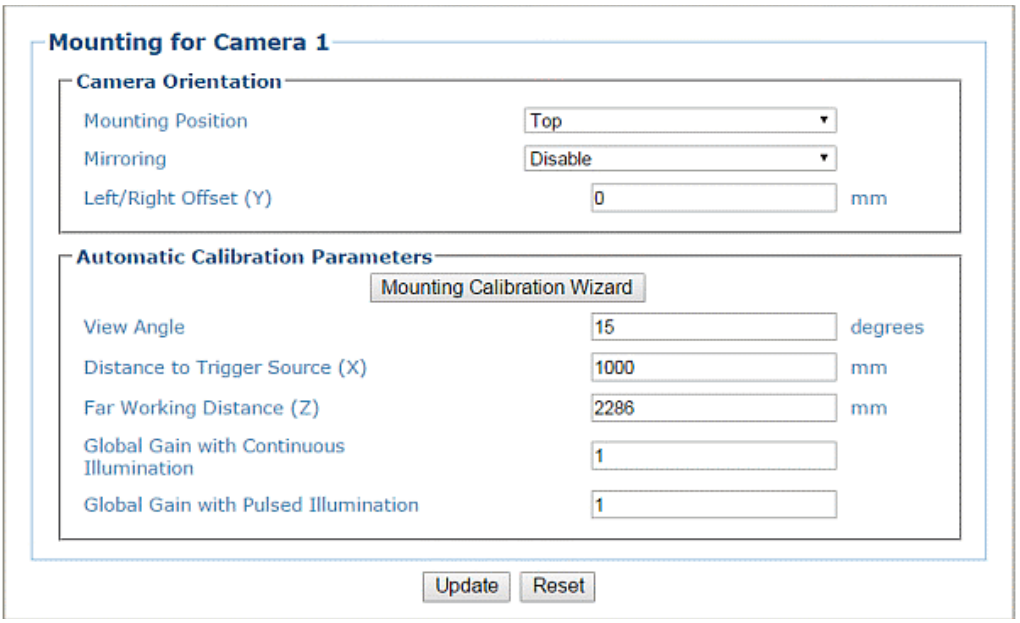
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Device Settings | <Camera Name> | Mounting

Use the **Mounting** window when installing and calibrating the camera.

To view the Mounting window:

1. In the menu tree under Modify Settings, navigate to **Device Settings | <Camera Name> | Mounting.** The **Mounting** window opens.



2. View the following barcode reader information

Camera Orientation

Mounting Position

Select **Top, Left, Right,** or **Bottom** from the drop-down list depending on where the camera is mounted.

This parameter allows defining the installation position of the camera in multi-camera tunnel installations according to the code reading on the conveyor: Top, Right, Left, etc. This parameter acts on the software reading algorithms and on the position and height sensors configuration.

Mirroring

Select **Disable** or **Enable** from the drop-down list.

This parameter (when enabled) allows inverting or mirroring the image sent by the camera. This function is used to set the object movement with respect to the camera mounting position (i.e. camera position = Top Back). It is used to change a reversed (mirrored) image to proper orientation for OCR applications or video coding.

Left/Right Offset (Y)

Enter the camera offset from the Y-axis. 0 = centered on Y. This defines the center of the cropped image.

Automatic Calibration Parameters

Mounting Calibration Wizard

Click to open the Mounting Calibration Wizard (see section). This is used during initial static calibration only.

View Angle

Enter an angle (degrees) in the field provided.

This parameter allows defining the reading angle of the camera. For standard installations this angle should be set to match the mechanical mounting: +15 or -15 degrees (single side object reading), +45-degrees for a side/back read or -45-degrees for a side/front read (double side object reading) depending on the type of installation. This parameter may be up to two degrees different then the 15/45 degree after the completed calibration.

For top read single side, +15-degrees is facing downstream, and -15-degrees is facing upstream. For top read multi-side, +45-degrees for top/back and -45-degrees for top/front.

Negative angles correspond to the package front or leading side with respect to the package movement and positive angles correspond to the package back or trailing side.

This field is automatically filled in during the static calibration of the unit (Calibration Wizard), but may be changed during dynamic calibration.

If a mirror is used this direction relates to the mirror.

The possible values are from -50° to +50°. The default setting is 15°.

Distance to Trigger Source (X)

Defines the distance from the camera scan line to the trigger source (typically a RangeFinder or DM3610 Dimensioner).

This field is automatically filled in during the static calibration of the unit (Calibration Wizard), but may be changed during dynamic calibration.

In a tunnel each AV7000 has its own unique start and end trigger.

Far Working Distance (Z)

Defines the distance from the camera to the furthest scanning point.

This field is automatically filled in during the static calibration of the unit (Calibration Wizard), but may be changed during dynamic calibration.

Aligns the AV7000 to the focus source.

Global Gain with Continuous Illumination

Enter the gain value. A typical value would be 1.0.

This parameter sets the gain in the image to create the contrast between the dark and light elements in the image.

This field is automatically filled in during the static calibration of the unit (Calibration Wizard), but may be changed during dynamic calibration.

This is used if Pulsed illumination is disabled.

Global Gain with Pulsed Illumination

Enter the gain value. This parameter is only used when Pulsed Illumination Enable is selected in Modify Settings | Device settings | Camera x | Imaging.

This parameter sets the gain in the image to create the contrast between the dark and light elements in the image.

This field is automatically filled in during the static calibration of the unit (Calibration Wizard), but may be changed during dynamic calibration.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Mounting | Mounting Calibration Wizard

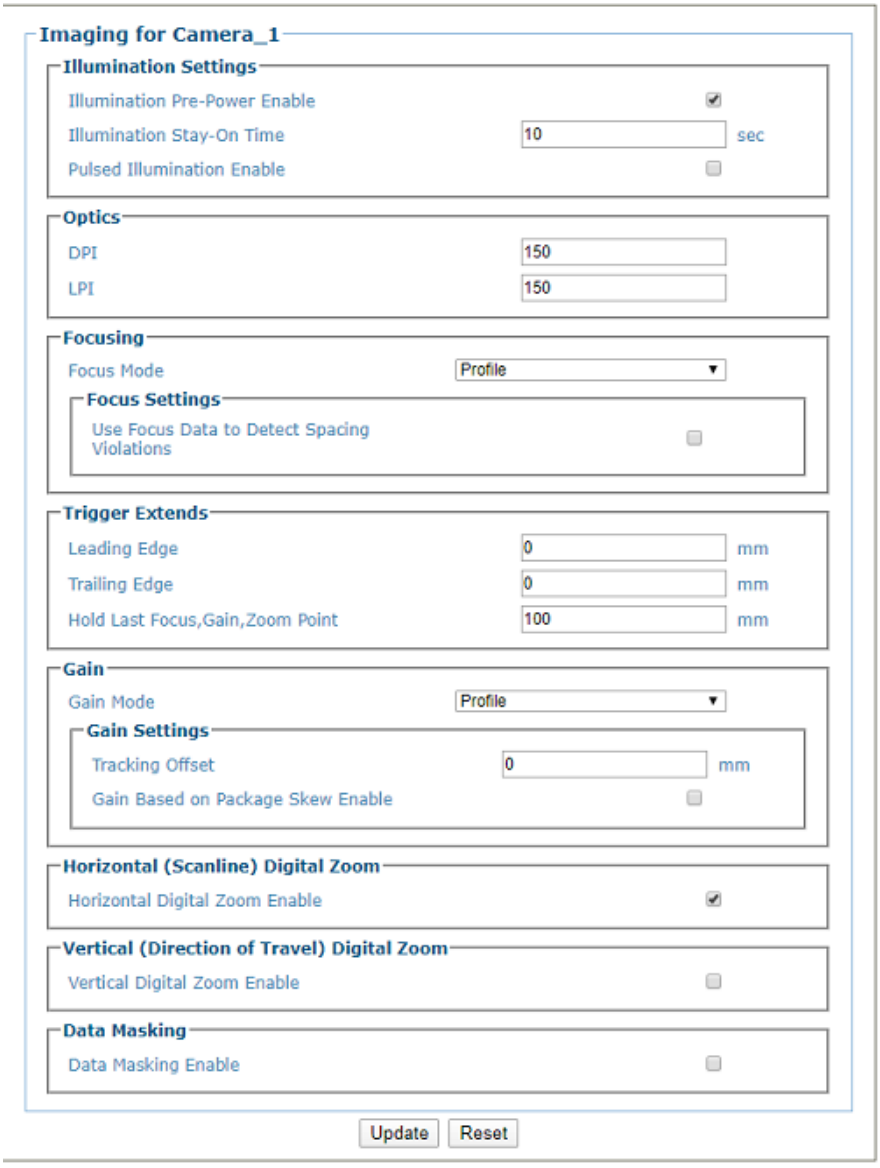
For complete information on using the **Mounting Calibration Wizard**, see section “” on page 265.

Modify Settings | Device Settings | <Camera name> | Imaging

Use the **Imaging** window to configure how images are handled by the selected camera.

To view the Imaging window:

1. In the menu tree under **Modify Settings,** navigate to **Device Settings | <Camera name> | Imaging.** The **Imaging** window opens.



2. View the following barcode reader information:

Illumination Settings

Illumination Pre-Power Enable

Select the check box to enable. This puts the illumination in a power saving mode that allows it to power up to full mode faster.

Illumination Stay-On Time

Enter a value in seconds. This determines how long the illumination will stay on after the end of the trigger cycle.

NOTE **If Direct Encoder is enabled in Modify Settings | Global Settings | Operating Mode (see section), the Illumination Stay-On Time needs to be greater than the amount of time the conveyor will be stopped in a start/stop configuration.**

Pulsed Illumination Enable

Select the check box to enable pulsed illumination and reveal the related option.

Pulsed Acq Delay

Enter the Pulsed Acq (Acquisition) Delay in nanoseconds in the field provided. The default value is zero.

This option is used to synchronize the illumination in an application where there are multiple cameras in a tunnel and the illuminator lobes cross over the conveyor, possibly causing interference (See). This allows the mounting structure to be reduced in size.

If a bright glare spot appears in the AV7000 Live Image Viewer when an image is acquired, this may indicate interference of crossing illuminator lobes. Increase the Pulsed Acq Delay value incrementally until the bright spot disappears.

Top Position Group

This is only for Top cameras when pulsed illumination is enabled. It allows the user to select the group the Top camera will be pulsed with (A or B).

Optics

After running the Calibration Wizard, changes should ONLY be made to the DPI/LPI as directed by Datalogic Support. Changing DPI/LPI may have a negative effect on the quality of the image which my result in no reads.

DPI

Enter the minimum allowable DPI (Dots Per Inch) in the field provided.

This parameter expresses the minimum resolution (in the X direction) in Dots Per Inch (DPI), supported by the camera. The minimum resolution is typically defined at the maximum reading distance.

This field is automatically filled in during the static calibration of the unit but may be changed during the dynamic calibration step

LPI

Enter the minimum allowable LPI (Lines Per Inch) in the field provided.

The LPI should match the DPI at the far scanning point. This matching of the DPI to the LPI assures the pixels are not out of square, which can cause a no read.

Focusing

Focus Mode

Select **Profile** or **Fixed** from the drop-down list.

When Profile is selected, the light curtain, RangeFinder, or DM3610 will provide the profile of the package.

Focus Settings

Use Focus Data to Detect Spacing Violations

When Profile mode is selected, select this check box to use focusing data and not photoeye, to identify whether there is a spacing violation. It allows the camera to detect spacing violations and is useful for Tilt Tray and Crossbelt applications.

Fixed Focus Value

When Fixed mode is selected, enter the fixed focus value in the field provided.

This parameter indicates the fixed focus position used when the position sensor related to the camera is not used. The possible values are from 0 to 32767 mm where 0 is the farthest valid station reading distance from the camera. The default setting is 0.

0 (zero) is referenced from the camera sensor.

This distance must be greater than the Far Working Distance (Z) set in the **Device settings>camera>mounting>automatic calibration** parameters.

Trigger Extends

Leading Edge

Enter the distance to extend the trigger phase beyond the leading edge of the package.

Trailing Edge

Enter the distance to extend the trigger phase beyond the trailing edge of the package.

Hold Last Focus, Gain, Zoom Point

Enter the distance to hold the latest focus, gain, and zoom.

Gain

Gain Mode

Select **Profile** or **Fixed** from the drop-down list.

- **Profile Gain**: This changes the gain of the image depending on the distance from the AV7000 or the speed of the conveyor. This allows the AV7000 to dynamically change the gain depending on the distance of the package from the AV7000 or the speed of the conveyor
- **Fixed Gain:** This gain will remain constant regardless of distance or speed.

Gain Settings

Tracking Offset

When Profile mode is selected, enter the tracking offset in the field provided.

The Height sensor can be positioned either above or below the 0 focus height as shown in the figures. However it should not be positioned above the level of the tray/box. In this case the tray/box would never be detected so the Tracking Offset must be set to compensate. This Offset then is added to the Percentage of Tray Depth to Set AF therefore degrading the focus precision.

Fixed Exposure Value

If Fixed is selected, this sets a fixed exposure time to optimize the quality of the acquired image

Fixed Gain Value

This option is only used for testing. It should be set to Normal for regular operation.

Horizontal (Scanline) Digital Zoom

Horizontal Digital Zoom Enable

Select the check box to enable. This allows the AV7000 to maintain a DPI value throughout the Depth of Field.

Vertical (Direction of Travel) Digital Zoom

Vertical Digital Zoom Enable

Select the check box to enable Vertical Digital Zoom. This allows the AV7000 to maintain a vertical DPI value throughout the Depth of Field.

Vertical Digital Zoom, Settings

Minimum Vertical Zoom LPI

Enter the minimum vertical digital zoom.

Maximum Vertical Zoom LPI

Enter the maximum vertical digital zoom.

Data Masking

Data Masking Enable

Select the check box to enable the Data Masking options. This enables options for Line Length, Line Start, and Line End that allows you to isolate a portion of scanning area.

Data Masking Settings

Line Start

Enter a value in pixels in the field provided.

Line End

Enter a value in pixels in the field provided.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Device Settings | <Camera Name> | Serial Port

Use the Serial Port menu tree selections to set up communications through the serial Port. If necessary, you can later make modifications to the device settings using the same menu selections, including:

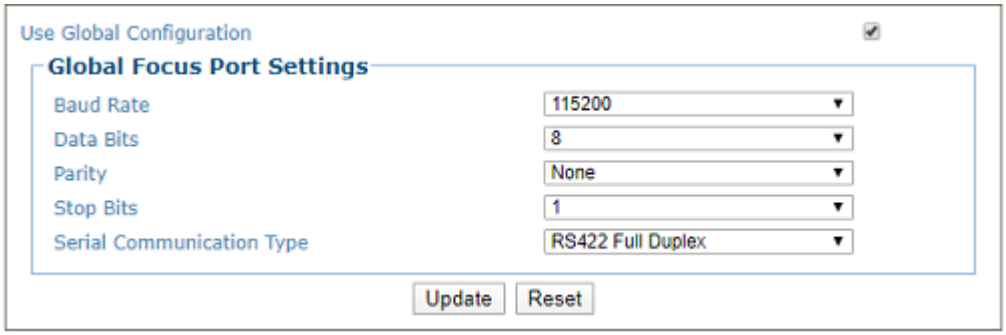
- “Serial Port | Focus Port” on page 196
- “Serial Port | Host Port” on page 197
- “Serial Port | Aux Port” on page 198

Serial Port | Focus Port

Use the **Focus Port** window to configure communication between the barcode reader and the focusing device. The focus port is only used to match the focus device’s communication configuration (light curtain, S-80, DM3610).

To edit the Focus Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Serial Ports | Focus Port.** The Focus Port window opens.



NOTE

The Rangefinder does not use serial focus.

2. Enter the appropriate information in the form as described below:

Use Global Configuration

Select the check box when using a serial focus device for one or more cameras.

Baud Rate

Select a value from 1200 to 115200 from the drop-down list. Baud Rate is the transmission speed in a communication line.

Data Bits

Select 7 or 8 from the drop-down list. Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Parity

Select None, Odd, or Even from the drop-down list. Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Stop Bits

Select 1 or 2 from the drop-down list. Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

Serial Communication Type

Select RS422 Full Duplex or RS232 from the drop-down list.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Serial Port | Host Port

Use the **Host Port** window to configure communication between the barcode reader and the Host, or, in a multi-sided layout, between the Master and a Host.

To edit the Host Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Serial Ports | Host Port.** The **Host Port** window opens.

2. Enter the appropriate information in the form as described below:

Use Global Configuration

Select the check box when using a serial focus device for one or more cameras.

Baud Rate

Select a value from 1200 to 115200 from the drop-down list. Baud Rate is the transmission speed in a communication line.

Data Bits

Select 7 or 8 from the drop-down list. Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Parity

Select None, Odd, or Even from the drop-down list. Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Stop Bits

Select 1 or 2 from the drop-down list. Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

Serial Communication Type

Select RS422 Full Duplex or RS232 from the drop-down list.

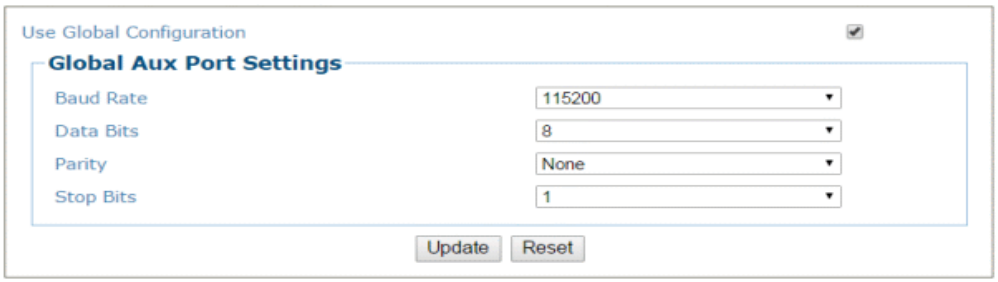
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Serial Port | Aux Port

Use the **Aux Port** window to configure communication between the barcode reader and the Host, or, in a multi-sided layout, between the Master and a Host.

To edit the Aux Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Serial Ports | Aux Port.** The **Aux Port** window opens.



2. Enter the appropriate information in the form as described below:

Use Global Configuration

Select the check box when using a serial focus device for one or more cameras.

Baud Rate

Select a value from 1200 to 115200 from the drop-down list. Baud Rate is the transmission speed in a communication line.

Data Bits

Select 7 or 8 from the drop-down list. Data Bits is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Parity

Select None, Odd, or Even from the drop-down list. Parity is a parameter indicating the presence of a control bit in the communication protocol frame.

Stop Bits

Select 1 or 2 from the drop-down list. Stop Bits is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Modify Settings | Device Settings | <Camera Name> | Ethernet

Use the Ethernet menu tree selections to set up communications through Ethernet. If necessary, you can later make modifications to the device settings using the same menu selections, including (click on the menu item to access that help window):

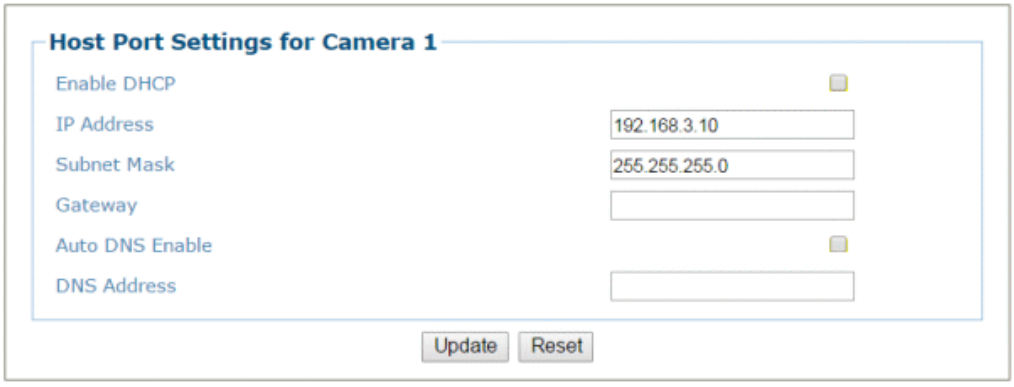
- “Ethernet | Host Port” on page 199
- “Ethernet | Image Port” on page 200
- “Ethernet | Advanced Routing” on page 201

Ethernet | Host Port

Use the **Host Port** window to set up network communications to the Host.

To edit the Host Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Ethernet | Host Port**. The **Host Port** window opens.



2. Enter the appropriate information in the form as described below:

NOTE

In a multi-headed system each AV7000 will have its own host option.

Enable DHCP

Select the check box to use addresses assigned by a DHCP server. When not selected, the static IP options are made available.

IP Address

Enter the device Internet Protocol (IP) network address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Subnet Mask

Enter the device subnet mask address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Gateway

Enter the device gateway address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Auto DNS Enable

Select the check box to automatically assign a DNS address. When not selected, the DNS Address field is revealed. Available only in static IP mode (when DHCP is not selected).

DNS Address

Enter the address of the Secondary Domain Name System (DNS) in the field provided.

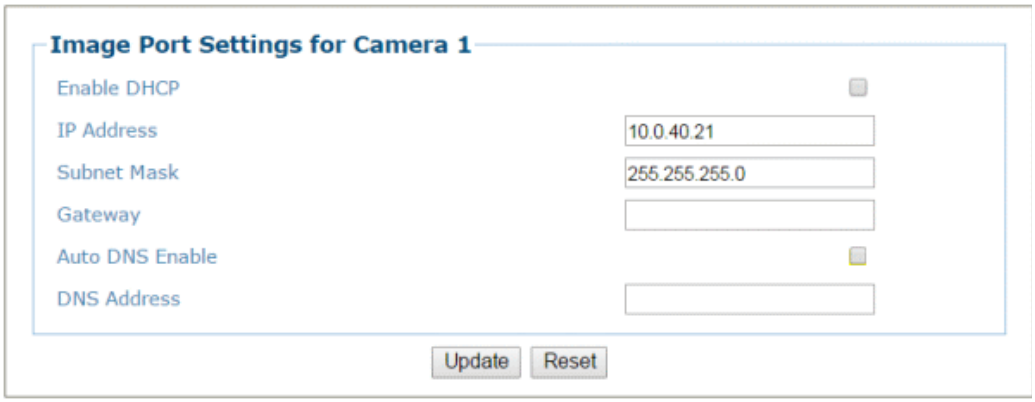
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Ethernet | Image Port

Use the **Image Port** window to set up network communications from the Image Port to a server.

To edit the Image Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Ethernet | Image Port.** The **Image Port** window opens.



2. Enter the appropriate information in the form as described below:

Enable DHCP

Select the check box to use addresses assigned by a DHCP server. When not selected, the static IP options are made available.

IP Address

Enter the device Internet Protocol (IP) network address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Subnet Mask

Enter the device subnet mask address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Gateway

Enter the device gateway address in the field provided. Consult your network administrator to obtain a new address. Available only in static IP mode (when DHCP is not selected).

Auto DNS Enable

Select the check box to automatically assign a DNS address. When not selected, the DNS Address field is revealed. Available only in static IP mode (when DHCP is not selected).

DNS Address

Enter the address of the Secondary Domain Name System (DNS) in the field provided.

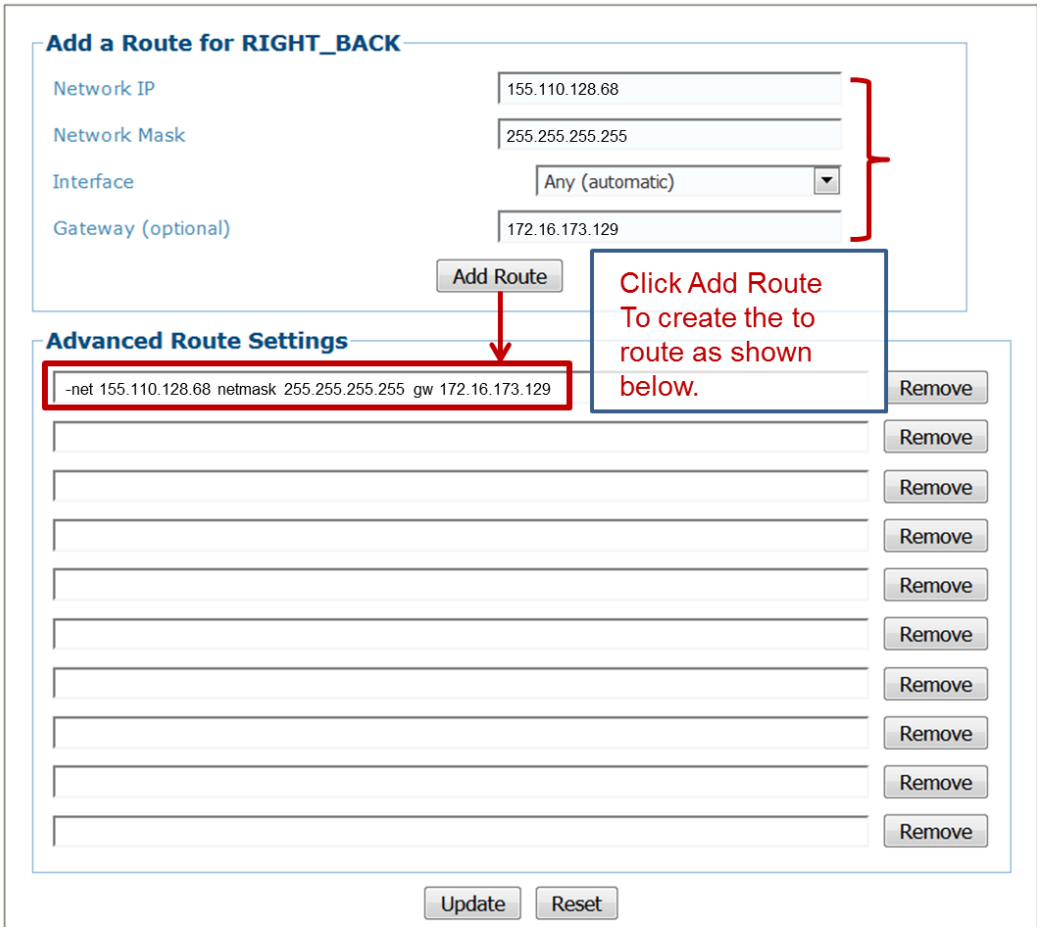
3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

Ethernet | Advanced Routing

Use the **Advanced Routing** window to make a string command to route to your network.

To edit the Image Port settings:

1. In the menu tree under Modify Settings, navigate to **Modify Settings | Device Settings | Camera N | Ethernet | Advanced Routing**. The **Advanced Routing** window opens.



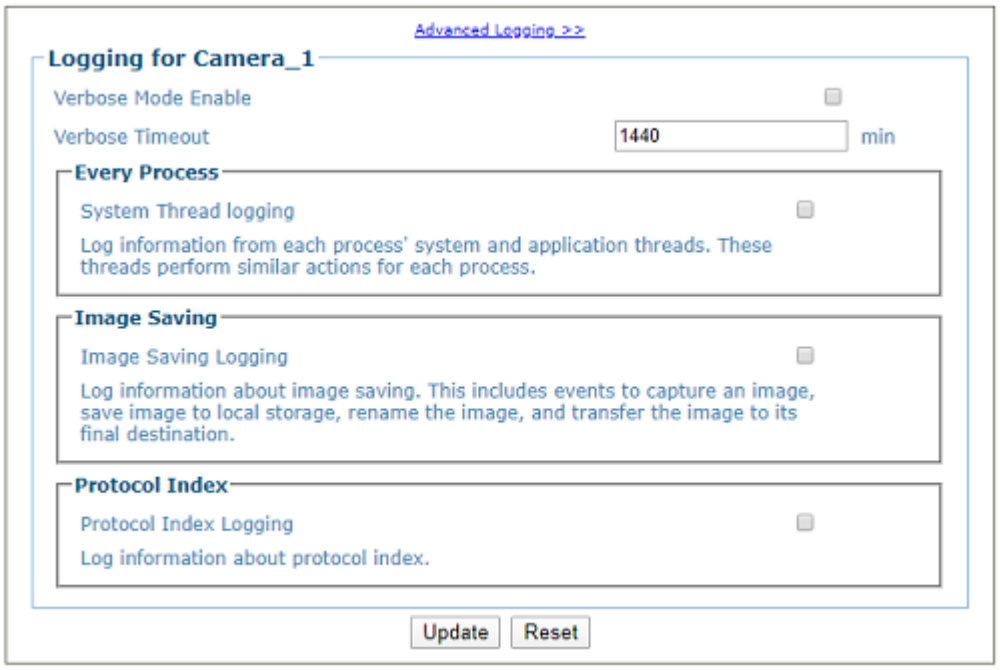
2. Click **Update** to save or **Reset** to revert to previously saved fields.

Modify Settings | Device Settings | <Camera Name> | Logging

Use the **Logging** configuration window to configure how and what information is logged (saved).

To view the Logging configuration window:

1. In the menu tree under Modify Settings, navigate to **Device Settings | Camera # (if applicable) | Logging**. The **Logging** window opens.



2. View the following camera information:

Advanced Logging

Click the link to go to the Advanced Logging window. The main Logging options will typically be all that is needed for standard systems. Advanced logging options are available for problem solving on cameras not connected with the standard decoder. Enabling them may fill the event buffer with unimportant information and therefore overwrite important information.

NOTE

Consult Datalogic Engineering before using this Advanced logging option.

Verbose Mode Enable

Select the check box to verbose logging. When disabled, the debug log will provide data for Critical, Errors, Warnings, and Info in the log text. When enabled, diagnostic data is logged for 24 hours.

Verbose Timeout

Enter the number of minutes before Verbose Mode will be automatically disabled.

Every Process

Select the check box to log information from each process' system and application threads. These threads perform similar actions for each process.

Image Saving

Select the check box to log information about image saving. This includes events to capture an image, save image to local storage, rename the image, and transfer the image to its final destination.

Protocol Index

Select the check box to Log information about protocol index.

3. When you have finished making changes, click Update to save or click Reset to revert to previously saved values.

Advanced Logging

Use the **Advanced Logging** window to configure how and what information is logged (saved). The main Logging options have been identified to cover most logging needs, however, Advanced Logging can provide advanced data collection for troubleshooting purposes.

WARNING

Enabling Advanced Logging options during operations may have an adverse effect on the system performance. Advanced Logging should only be use during troubleshooting.

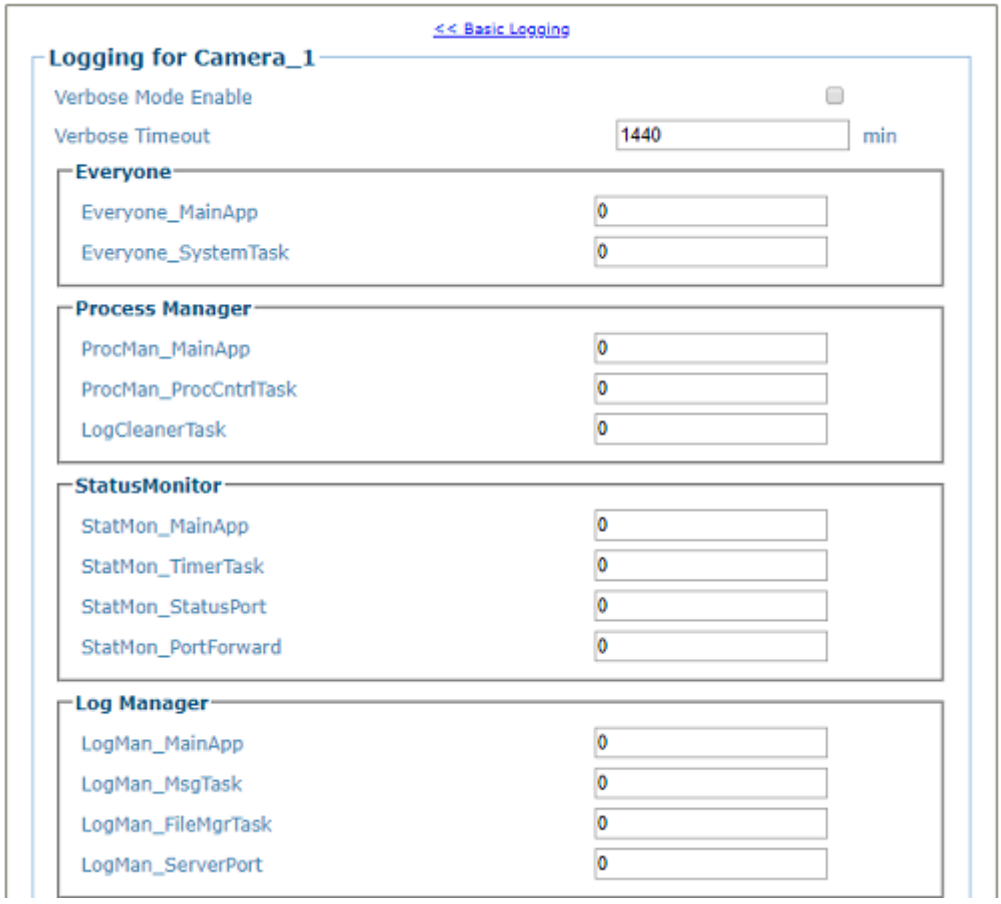
Enabling Advanced Logging may fill the event buffer with unimportant information and overwrite important information.

NOTE

Consult Datalogic Engineering before using this Advanced logging option. This section identifies the options but does not provide an in depth explanation.

To view the Advanced Logging window:

1. From the **Logging** window, click **Advanced Logging**. The **Advanced Logging** window opens.



2. View the following camera information.

Basic Logging

Click the link to return to the basic Logging window.

Verbose Mode Enable

Select the check box to verbose logging. When disabled, the debug log will provide data for Critical, Errors, Warnings, and Info in the log text. When enabled, further diagnostic log data is provided in the debug log.

Verbose Timeout

Enter the number of minutes before Verbose Mode will be automatically disabled.

Advanced Logging Parameters

Advanced Logging allows the user to modify logging parameters in several categories, including:

- Everyone
- Process Manager
- Status Monitor
- Log Manager
- Config Manager
- Package Collector
- FPGA
- Decode Engine
- Host
- Web Manager
- Communication
- Image Saving Master
- Image Saving
- RT Manager
- Protocol Index
- SimRangeFinder
- RF Manager
- Web Sentinel
- DM Manager
- Image Processing

3. When you have finished making changes, click **Update** to save or click **Reset** to revert to the previously saved values.

DIAGNOSTICS

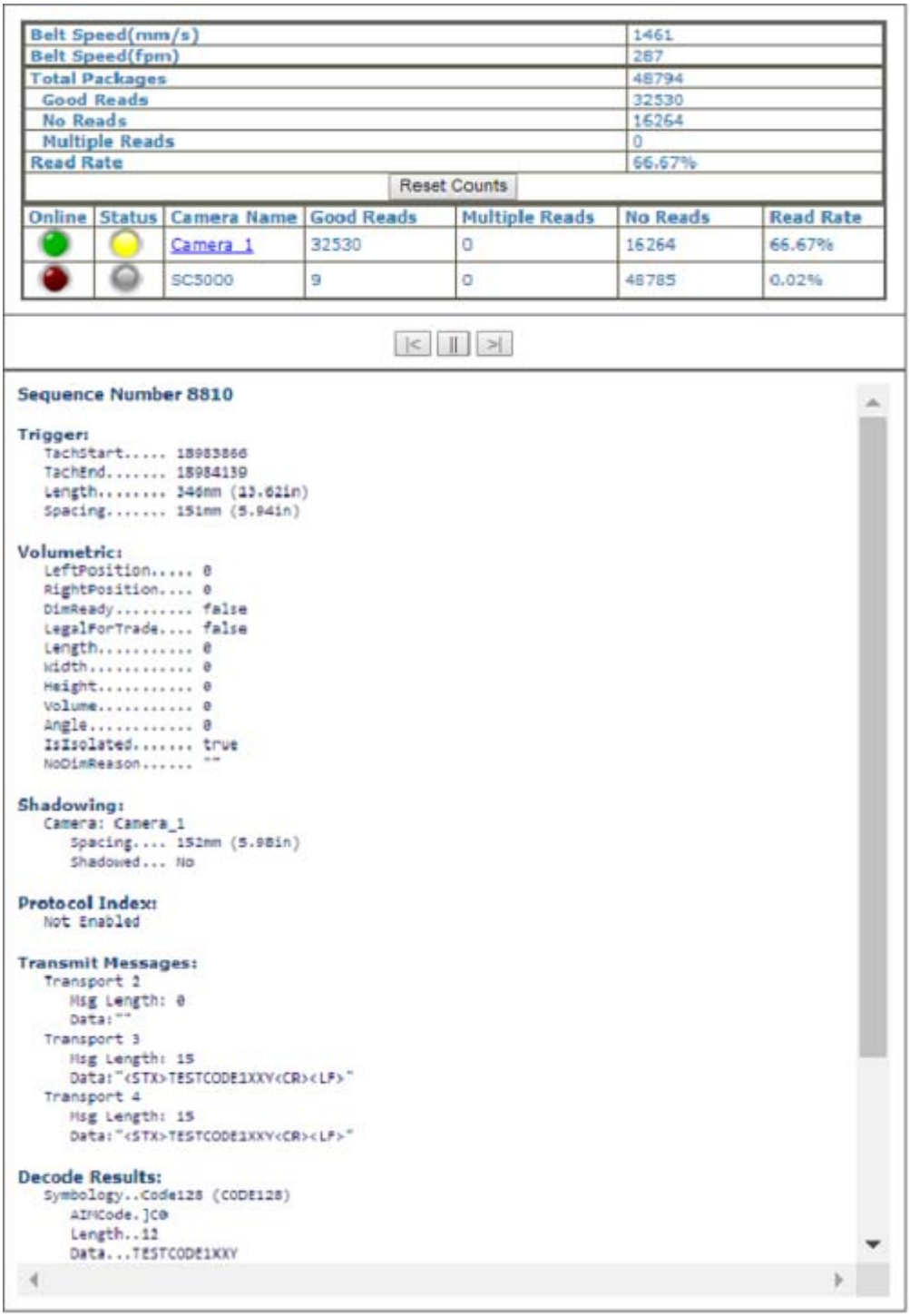
Use the Diagnostics Menu Tree selections to monitor system performance and identify maintenance or device degradation issues. You can continually monitor system performance using the following selections:

Diagnostics | System Status

Use the System Status to get an overview of how your system is running.

To access the System Status window:

1. In the menu tree under **Diagnostics**, click **System Status**. The **System Status** window opens.



1. From the System Status window, the following information is available:

Tunnel/Array Statistics

Belt Speed(mm/s)

Shown in millimeters per second.

Belt Speed(fpm)

Shown in feet per minute.

Total Packages

Package count since last reset.

Good Reads

Number of good packages read since last reset.

No Reads

Number of packages not read since last reset.

Multiple Reads

Number of times a “Mult” condition has been met since last reset.

Read Rate

The average number of packages successfully read since last reset.

Reset Counts (button)

Click to reset the counts to zero.

Camera Statistics

Statistics for each system camera are shown in rows with the following columns:

Online

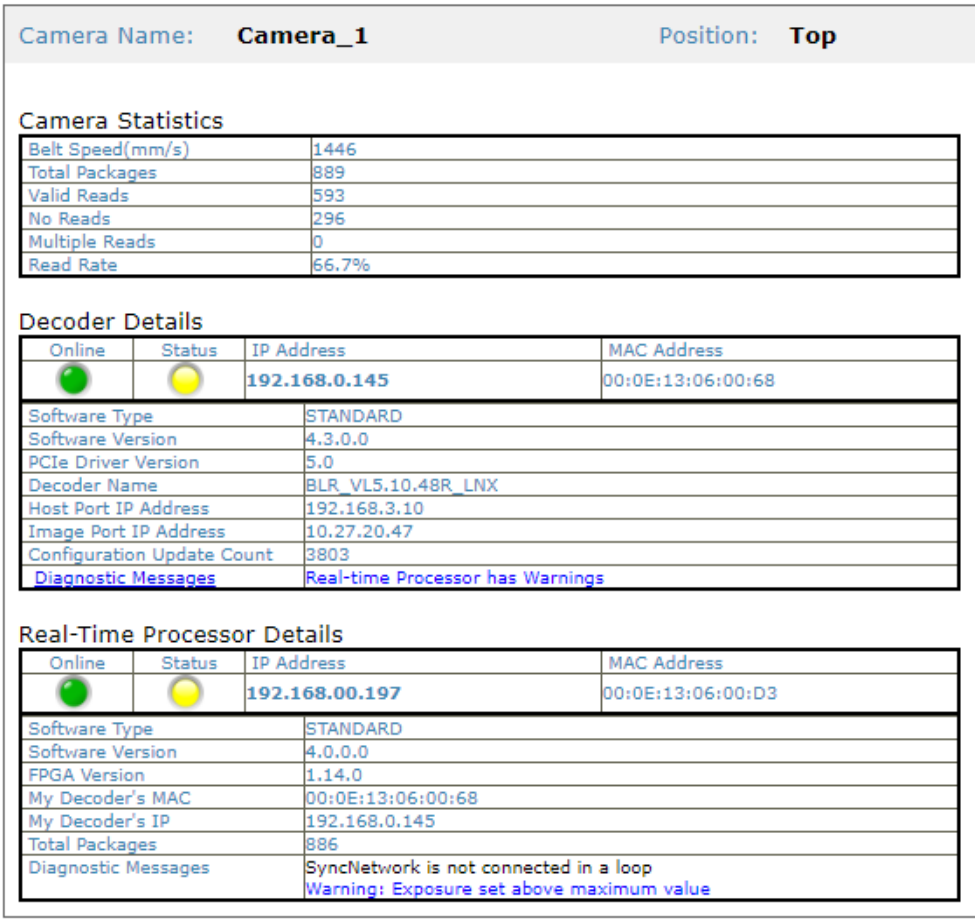
Green indicates the camera is connected to the cluster.
Red indicates the camera is not connected to the cluster.

Status

Green indicates the camera is functioning correctly.
Red indicates the camera has posted an error.

Camera Name

Displays the camera/device name. Click the device name to view details about that specific device.



Camera Name: **Camera_1** Position: **Top**

Camera Statistics

Belt Speed(mm/s)	1446
Total Packages	889
Valid Reads	593
No Reads	296
Multiple Reads	0
Read Rate	66.7%

Decoder Details

Online	Status	IP Address	MAC Address
		192.168.0.145	00:0E:13:06:00:68

Software Type	STANDARD
Software Version	4.3.0.0
PCIe Driver Version	5.0
Decoder Name	BLR_VL5.10.48R_LNX
Host Port IP Address	192.168.3.10
Image Port IP Address	10.27.20.47
Configuration Update Count	3803
Diagnostic Messages	Real-time Processor has Warnings

Real-Time Processor Details

Online	Status	IP Address	MAC Address
		192.168.00.197	00:0E:13:06:00:D3

Software Type	STANDARD
Software Version	4.0.0.0
FPGA Version	1.14.0
My Decoder's MAC	00:0E:13:06:00:68
My Decoder's IP	192.168.0.145
Total Packages	886
Diagnostic Messages	SyncNetwork is not connected in a loop Warning: Exposure set above maximum value

Good Reads

Number of good barcode reads on that device since last reset.

Multiple Reads

Number of times a “Mult” condition has been met since last reset for the selected camera.

No Reads

Number of packages not read on that device since last reset for the selected camera.

Read Rate

The average number of packages successfully read on that device since last reset.

Back, Pause, Forward

Click the **Back |<, Pause ||, and Forward >|** buttons to navigate through recent statistics of previous trigger cycles.

Package Information

The following information is displayed:

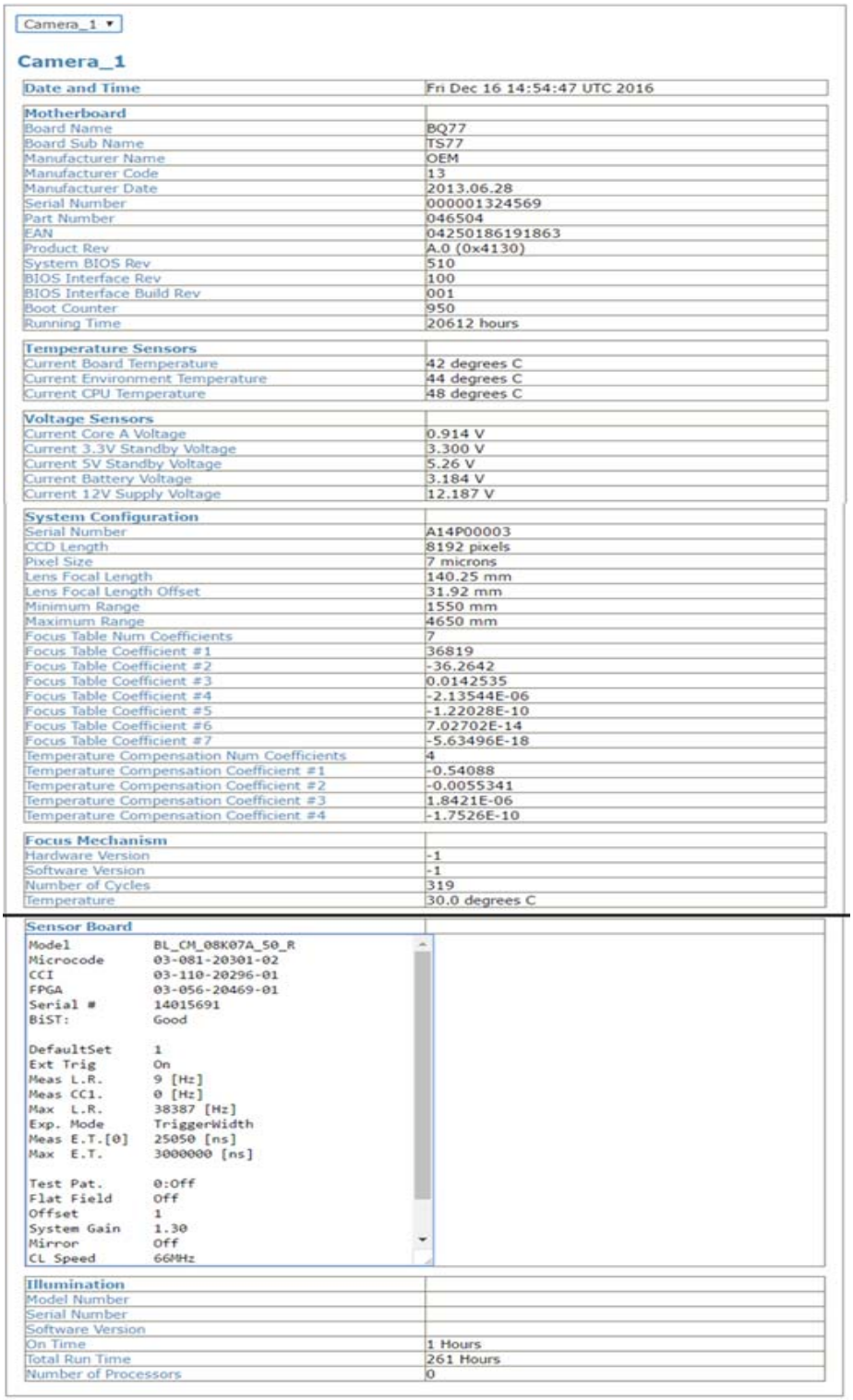
- **Trigger:** Tachometer information for each phase
- **Volumetric:** general package size/position
- **Shadowing:** Indicates camera spacing and whether there is shadowing
- **Protocol Index:** Protocol data if enabled. Identifies when the Protocol Index window opens and closes and the position of the parcel in tach/encoder pulses.
- **Transmit Messages:** General message data
- **Decode Results:** Posts the barcode data and indicates the camera that read the code
- **Decoding Status:** Displays barcodes and which camera(s) read them
- **Image Saving:** Image links are provided for each named camera in the system
- **Sequence Number:** Identifies the total number of packages with history stored in the camera

Diagnostics | System Health

Use the **System Health** window to get specific functional details on each device in the system.

To access the System Health window:

1. In the menu tree under **Diagnostics**, click **System Health**. The **System Health** window opens.



Camera_1

Camera_1

Date and Time	Fri Dec 16 14:54:47 UTC 2016
Motherboard	
Board Name	BQ77
Board Sub Name	TS77
Manufacturer Name	OEM
Manufacturer Code	13
Manufacturer Date	2013.06.28
Serial Number	000001324569
Part Number	046504
EAN	04250186191863
Product Rev	A.0 (0x4130)
System BIOS Rev	510
BIOS Interface Rev	100
BIOS Interface Build Rev	001
Boot Counter	950
Running Time	20612 hours
Temperature Sensors	
Current Board Temperature	42 degrees C
Current Environment Temperature	44 degrees C
Current CPU Temperature	48 degrees C
Voltage Sensors	
Current Core A Voltage	0.914 V
Current 3.3V Standby Voltage	3.300 V
Current 5V Standby Voltage	5.26 V
Current Battery Voltage	3.184 V
Current 12V Supply Voltage	12.187 V
System Configuration	
Serial Number	A14P00003
CCD Length	8192 pixels
Pixel Size	7 microns
Lens Focal Length	140.25 mm
Lens Focal Length Offset	31.92 mm
Minimum Range	1550 mm
Maximum Range	4650 mm
Focus Table Num Coefficients	7
Focus Table Coefficient #1	36819
Focus Table Coefficient #2	-36.2642
Focus Table Coefficient #3	0.0142535
Focus Table Coefficient #4	-2.13544E-06
Focus Table Coefficient #5	-1.22028E-10
Focus Table Coefficient #6	7.02702E-14
Focus Table Coefficient #7	-5.63496E-18
Temperature Compensation Num Coefficients	4
Temperature Compensation Coefficient #1	-0.54088
Temperature Compensation Coefficient #2	-0.0055341
Temperature Compensation Coefficient #3	1.8421E-06
Temperature Compensation Coefficient #4	-1.7526E-10
Focus Mechanism	
Hardware Version	-1
Software Version	-1
Number of Cycles	319
Temperature	30.0 degrees C

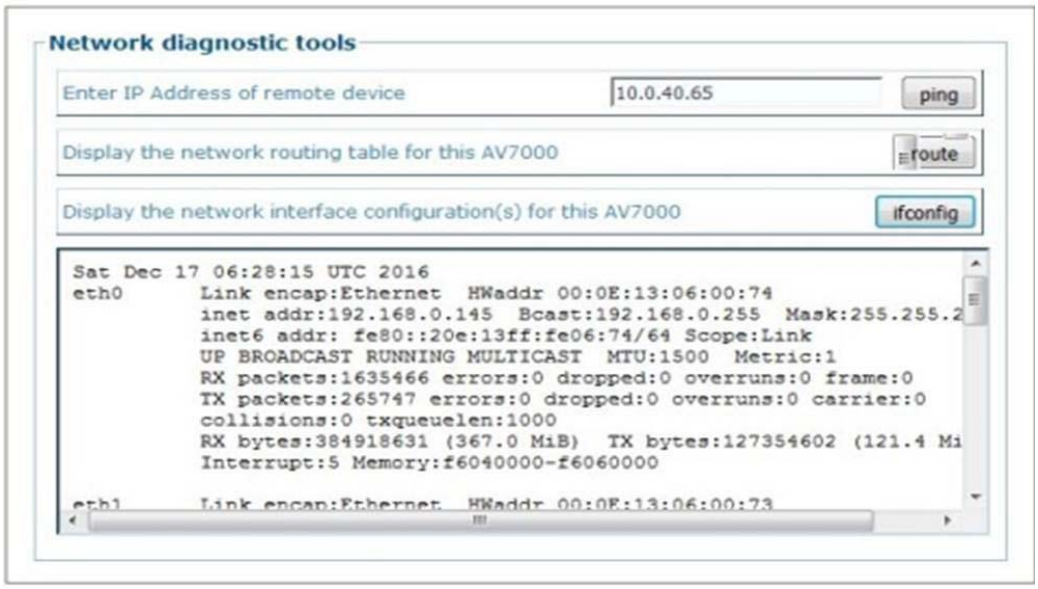
Sensor Board

```
Model          BL_CM_08K07A_S0_R
Microcode      03-081-20301-02
CCI            03-110-20296-01
FPGA           03-056-20469-01
Serial #       14015691
BiST:          Good

DefaultSet     1
Ext Trig       On
Meas L.R.      9 [Hz]
Meas CC1.      0 [Hz]
Max  L.R.      38387 [Hz]
Exp. Mode      TriggerWidth
Meas E.T.[0]   25050 [ns]
Max  E.T.      3000000 [ns]

Test Pat.      0:Off
Flat Field     Off
Offset         1
System Gain    1.30
Mirror         Off
CL Speed       66MHz
```

Illumination	
Model Number	
Serial Number	
Software Version	
On Time	1 Hours
Total Run Time	261 Hours
Number of Processors	0

2. Select a device from the drop down list to view its **Motherboard, Temperature Sensor, Voltage Sensor, System Configuration, Focus Mechanism, Sensor Board** and **Illumination** data.

3. In the menu tree under **Diagnostics**, click Network **Diagnostics.** The **Network Diagnostics** window opens.



4. Enter the IP Address of the remote device you want to communicate with and click the **ping** button to send a message to that device.

5. Click **route** button to view Network routing table.

6. Select **ifconfig** button to view configuration information.

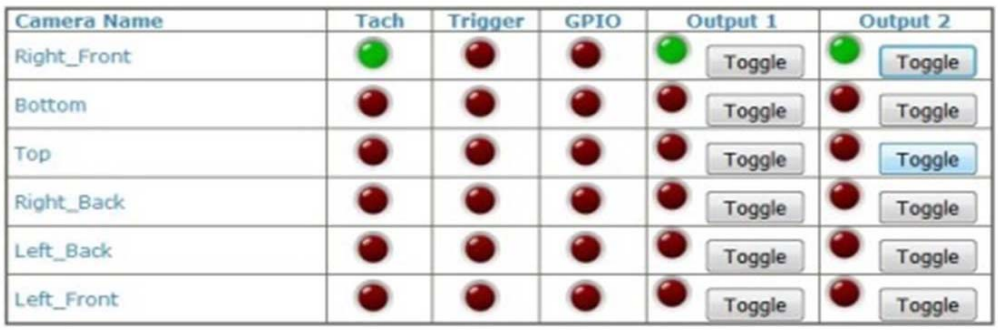
Diagnostics | Input/Output Status

Use the Input/Output Status window to determine whether the AV7000 is seeing the data coming from the tachometer or trigger sources. It also identifies the status of relay output 1 and 2.

The Trigger LED does not toggle unless there is a Tach signal present.

To access the Input/Output Status window:

1. In the menu tree under Diagnostics, click Input/Output Status. The Input/Output Status window opens.



2. Click **Toggle** next to correct camera I/O to send data from the I/O to the PLC.

Diagnostics | Serial Comm Status

Use the **Serial Comm Status** window to view the serial data being received by the camera from the focusing device.

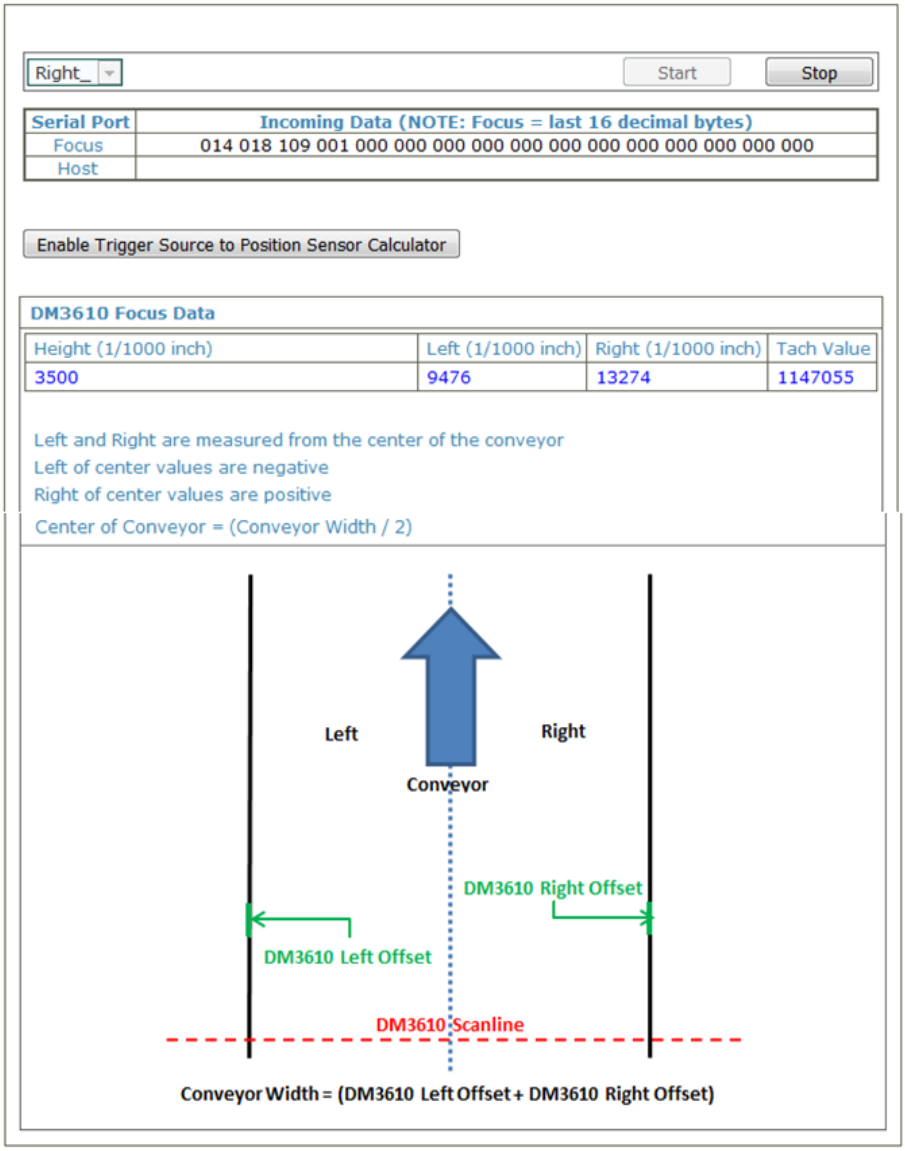
To access the Serial Comm Status window:

In the menu tree under **Diagnostics**, click **Serial Comm Status**. The **Serial Comm Status** window opens. Displays serial messages received.

Serial Comm Status Example 1

Camera Name	Serial Port	Incoming Data (last 16 decimal bytes)
Right_Front	Focus	003 255 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000
	Host	
Bottom	Focus	
	Host	
Top	Focus	
	Host	
Right_Back	Focus	
	Host	
Left_Back	Focus	
	Host	
Left_Front	Focus	
	Host	

Serial Comm Status Example 2



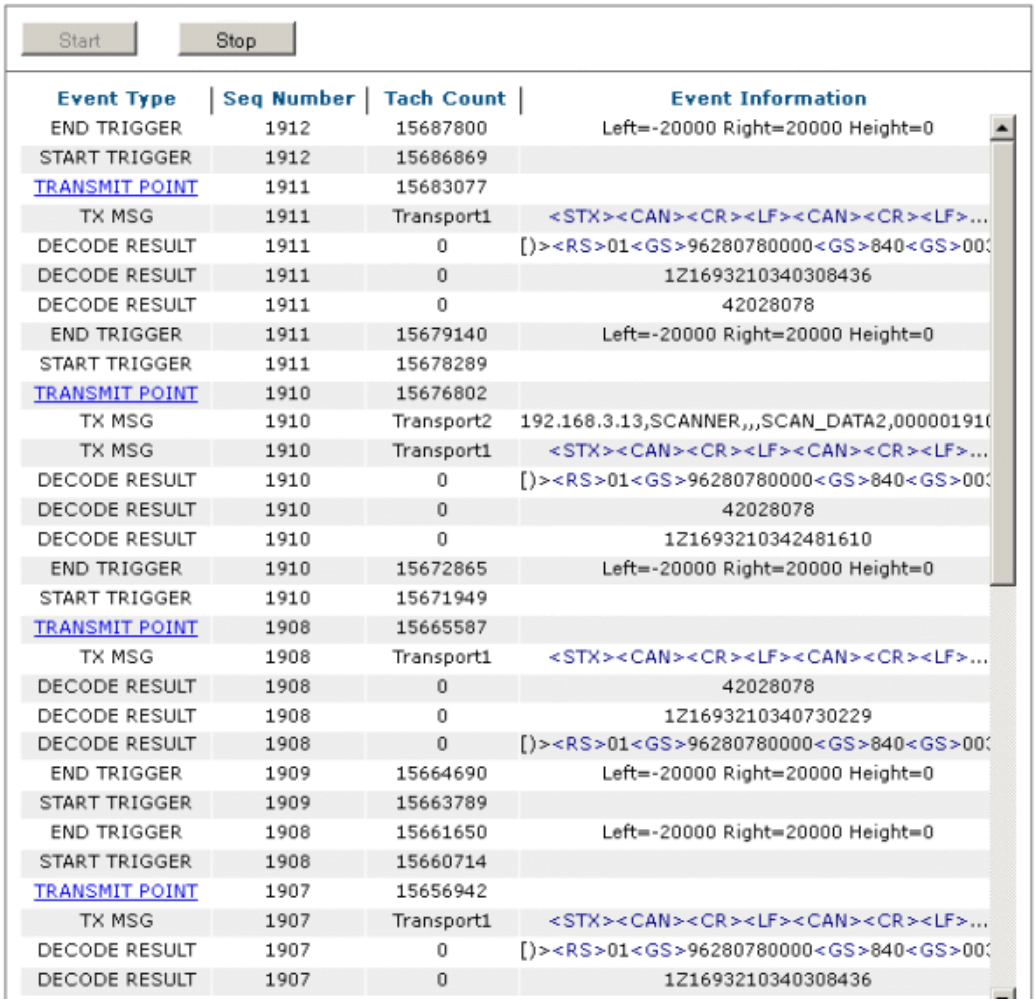
Diagnostics | Device Tracking

Use the **Device Tracking** window to view encoder/tachometer and trigger event information.

This will provide information such as **start and end trigger, transmit point data, transmit message, sequence number,** and etc)

To access the Device Tracking window:

1. In the menu tree under **Diagnostics,** click **Device Tracking.** The **Device Tracking** window opens.



Event Type	Seq Number	Tach Count	Event Information
END TRIGGER	1912	15687800	Left=-20000 Right=20000 Height=0
START TRIGGER	1912	15686869	
TRANSMIT POINT	1911	15683077	
TX MSG	1911	Transport1	<STX><CAN><CR><LF><CAN><CR><LF>...
DECODE RESULT	1911	0	[]><RS>01<GS>96280780000<GS>840<GS>00
DECODE RESULT	1911	0	1Z1693210340308436
DECODE RESULT	1911	0	42028078
END TRIGGER	1911	15679140	Left=-20000 Right=20000 Height=0
START TRIGGER	1911	15678289	
TRANSMIT POINT	1910	15676802	
TX MSG	1910	Transport2	192.168.3.13,SCANNER,,,SCAN_DATA2,00000191
TX MSG	1910	Transport1	<STX><CAN><CR><LF><CAN><CR><LF>...
DECODE RESULT	1910	0	[]><RS>01<GS>96280780000<GS>840<GS>00
DECODE RESULT	1910	0	42028078
DECODE RESULT	1910	0	1Z1693210342481610
END TRIGGER	1910	15672865	Left=-20000 Right=20000 Height=0
START TRIGGER	1910	15671949	
TRANSMIT POINT	1908	15665587	
TX MSG	1908	Transport1	<STX><CAN><CR><LF><CAN><CR><LF>...
DECODE RESULT	1908	0	42028078
DECODE RESULT	1908	0	1Z1693210340730229
DECODE RESULT	1908	0	[]><RS>01<GS>96280780000<GS>840<GS>00
END TRIGGER	1909	15664690	Left=-20000 Right=20000 Height=0
START TRIGGER	1909	15663789	
END TRIGGER	1908	15661650	Left=-20000 Right=20000 Height=0
START TRIGGER	1908	15660714	
TRANSMIT POINT	1907	15656942	
TX MSG	1907	Transport1	<STX><CAN><CR><LF><CAN><CR><LF>...
DECODE RESULT	1907	0	[]><RS>01<GS>96280780000<GS>840<GS>00
DECODE RESULT	1907	0	1Z1693210340308436

2. Click **Start** for a continuous feed of Event Type, Seq(uence) Number, Tach(ometer) Count, and Event Information data.

3. Click **Stop** to pause the feed.

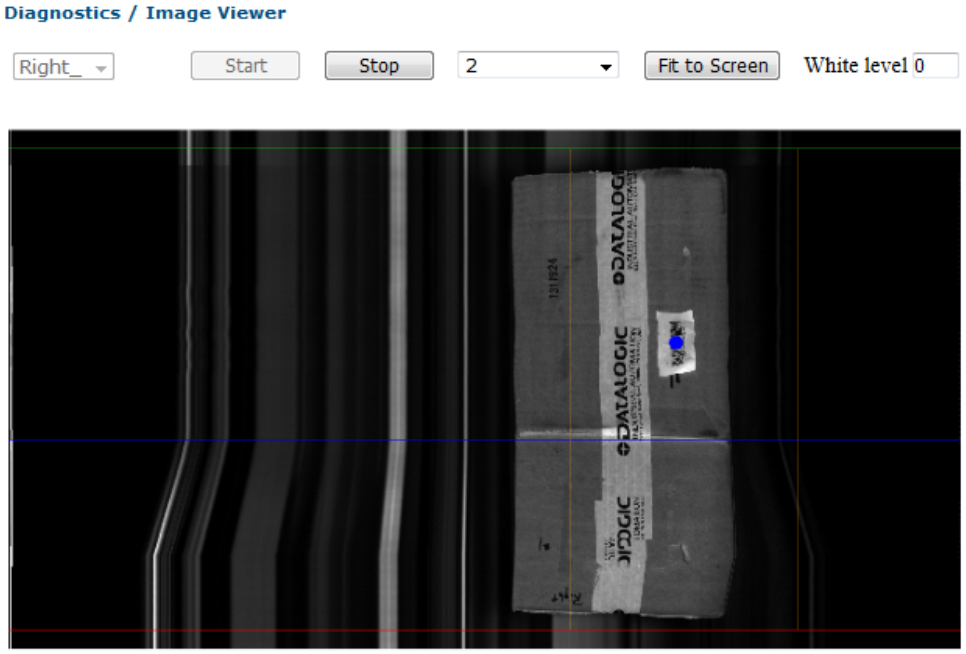
4. Click on a **TRANSMIT POINT** link to view specific transaction data and image of last package.

Diagnostics | Image Viewer

Use the **Image Viewer** window to view encoder/tachometer and trigger event information.

To access the Image Viewer window:

1. In the menu tree under **Diagnostics**, click **Image Viewer**. The **Image Viewer** window opens.



The following colored lines indicate where the device sees certain parts of the package.

- Green Indicates Start of Trigger
- Purple Indicates where the focus source perceives the transition corner of the box.
- Red Indicates End of Trigger

2. Select a device (named camera) from the drop-down list.

3. Click **Start** to view live captured images.

When the **Image Viewer** captures an image of the box, it displays a purple line in the image to indicate the **Focusing Data Transition Point**, which should align with the leading or trailing edge of the corner of the box.

The **White Level** is displayed based on where the cursor is positioned.

4. Select a down sampling number from the drop-down list. Choose a lower number to see a fuller resolution of the image. Choose a higher number to view an image during operation. A low number in downsampling may cause a decode problem if set during operations.

NOTE

The White Level field displays the image white level based on where the cursor is positioned. The X,Y values field displays the cursor coordinates.

5. Click **Stop** to cease capturing images.

6. Click **Fit to Screen** to zoom the image to fill the view window.

Controls:

- Click an image multiple times to zoom in.
- Hold **<SHIFT>** and click an image multiple times to zoom out.
- Roll the mouse wheel to zoom in or out.

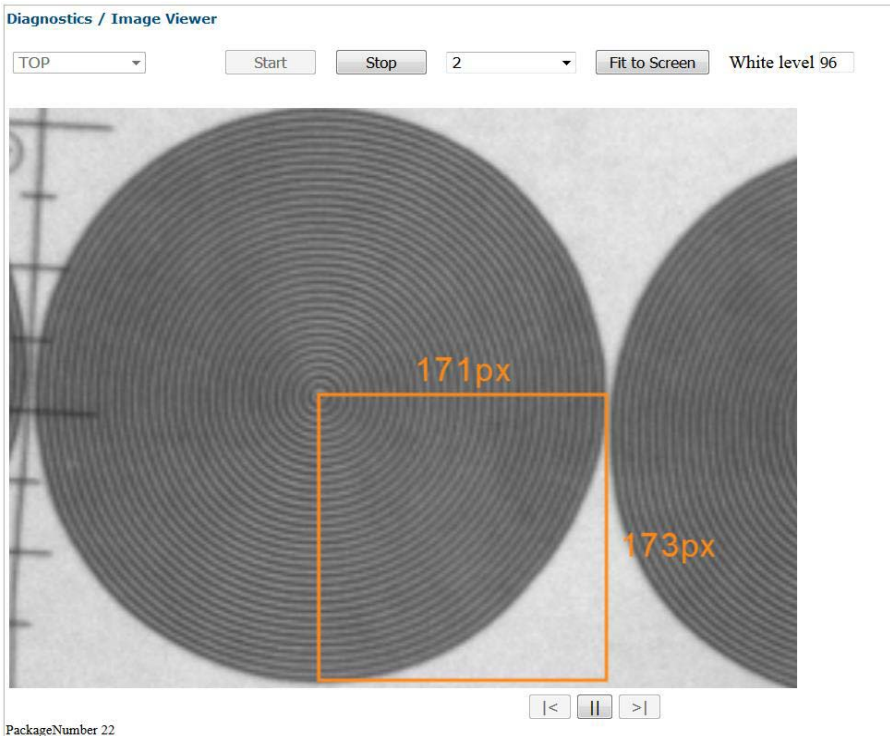
- Click, hold and slide to pan an image.

LPI/DPI Tool

The Image Viewer can also be used to check the **Lines per Inch (LPI)** and **Dots per Inch (DPI)** of an image.

Prepare a test box with the **Dynamic Focus Target** that is included with each AV7000 camera.

7. With the Image Viewer open, click Start, and run the box through the system.
8. Zoom in to the captured image of the **Dynamic Focus Target** so one of its circles fills the screen.
9. With the mouse cursor, click and drag a graphic box from the middle of the center dot to the outer edges of the outer circle as shown below. The graphic displays the LPI and DPI of the box. Adjustments can then be made in **Modify Settings | Device Setting | <Camera name> | Imaging** to square the image, but **ONLY as directed by Datalogic Support.**

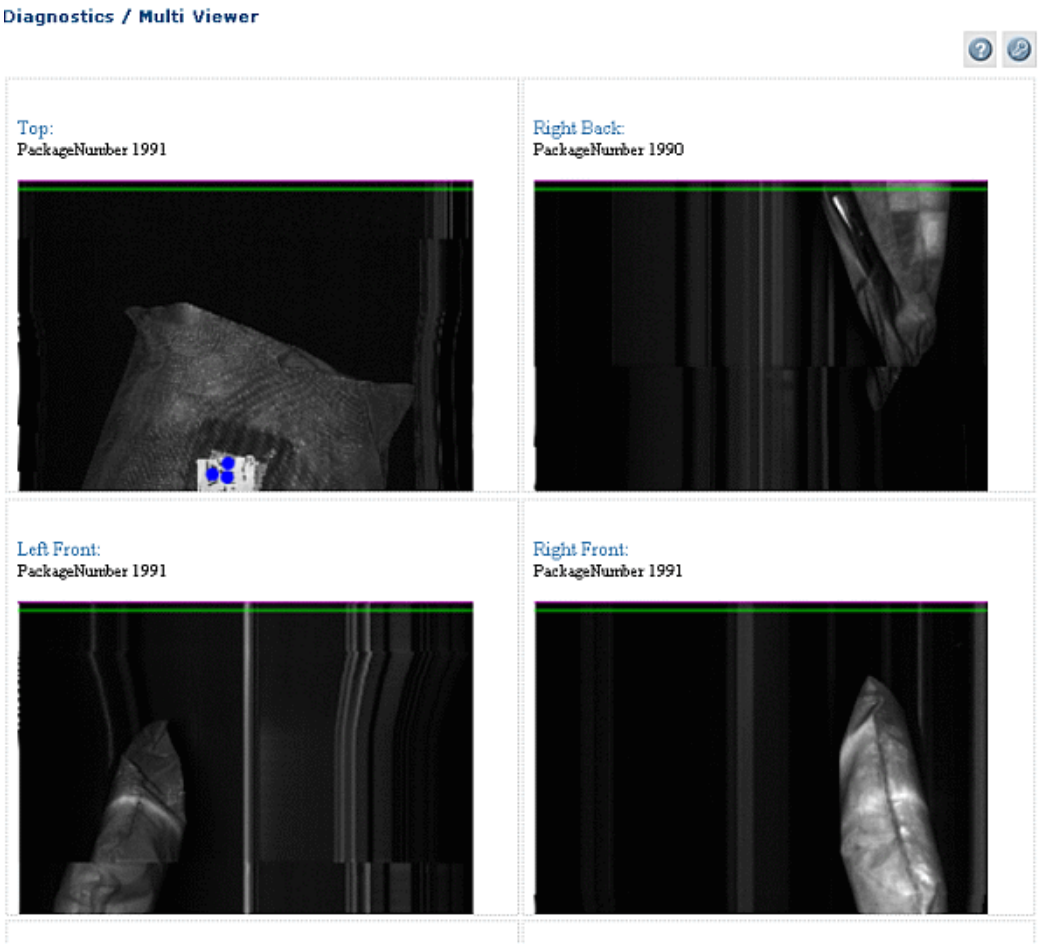


Diagnostics | Multiple Camera Viewer (Multi Viewer)

The **Multiple Camera Viewer** allows you to view low resolution images from all system AV7000s at the same time during a trigger cycle. The number of images shown depends on the number of AV7000 cameras in the tunnel/array.

To access the Multiple Camera Viewer:

1. In the menu tree under **Diagnostics,** navigate to **Multiple Camera Viewer.** The **Multiple Camera Viewer** window opens.



Controls:

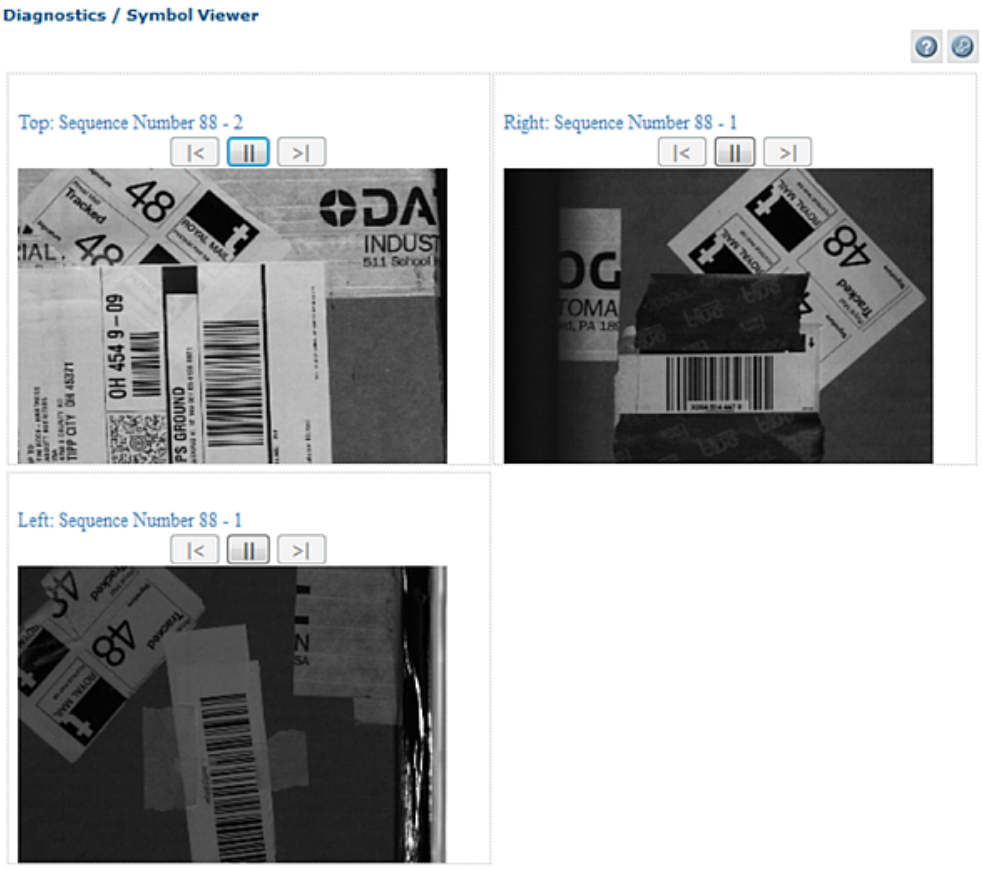
- Click an image multiple times to zoom in.
- Hold **<SHIFT>** and click an image multiple times to zoom out.
- Roll the mouse wheel to zoom in or out.
- Click, hold, and slide to pan an image.

Diagnostics | Multiple Symbol Viewer

The **Multiple Symbol Viewer** allows you to view high resolution images of all the barcodes read on each box during a trigger cycle. The number of images shown depends on the number of AV7000 cameras that read barcodes on a particular package. Only cameras that read a barcode will return an image. For a barcode to be read, it must be configured in **Modify Settings | Global Settings | Barcode Settings | Barcode Settings Table** (See “Modify Settings | Global Settings | Barcode Settings | Barcode Settings Table” on page 123).

To access the Multiple Symbol Viewer:

1. In the menu tree under **Diagnostics,** navigate to **Multiple Symbol Viewer**. The **Multiple Symbol Viewer** window opens.



Controls:

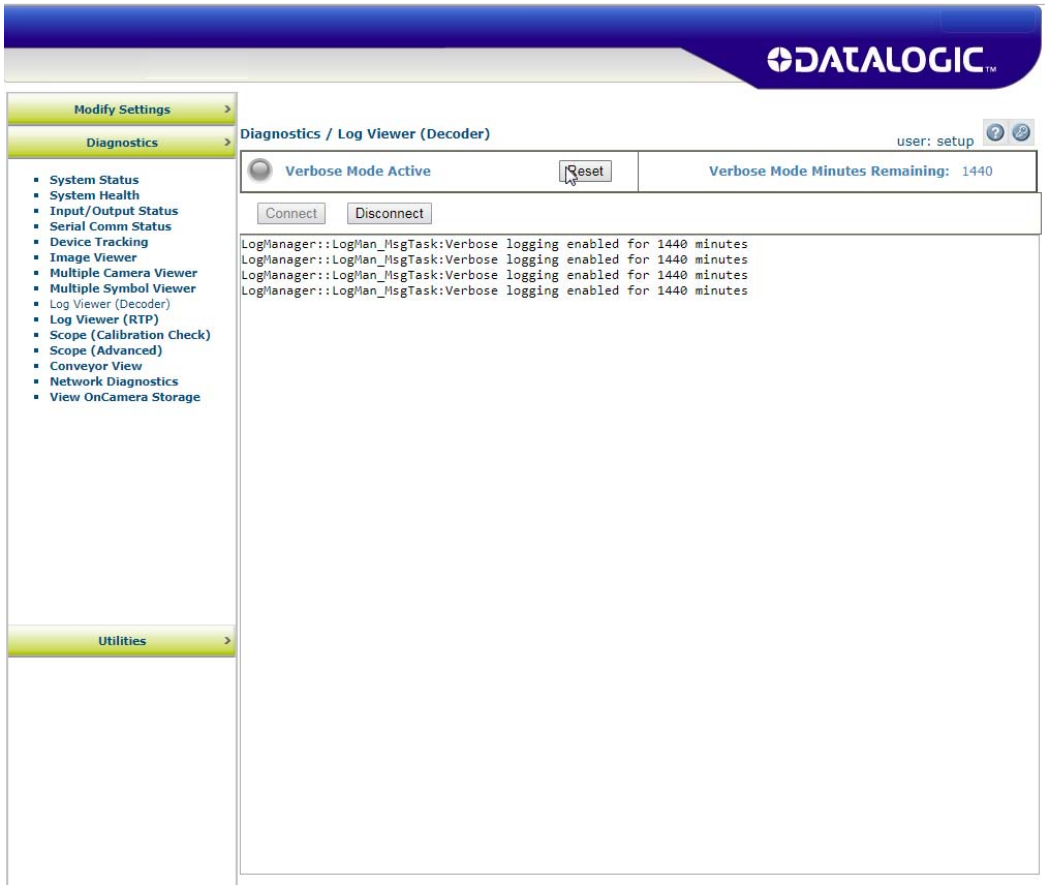
- Click **||** to pause the images from a particular camera.
- Click **>** to continue viewing new images from a particular camera.
- Click **|<** view a barcode from the previous package, or click **>|** to view a barcode from the next package.
- Click an image multiple times to zoom in.
- Hold **<SHIFT>** and click an image multiple times to zoom out.
- Roll the mouse wheel to zoom in or out.
- Click, hold, and slide to pan an image.

Diagnostics | Log Viewer (Decoder)

Use the **Log Viewer (Decoder)** window to view encoder/tachometer and trigger event information.

To access the Log Viewer (Decoder) window:

1. In the menu tree under **Diagnostics**, click **Log Viewer (Decoder)**. The **Log Viewer (Decoder)** window opens.



2. Click **Connect** to view logged data from the decoder.
3. Click **Disconnect** to pause the data stream.

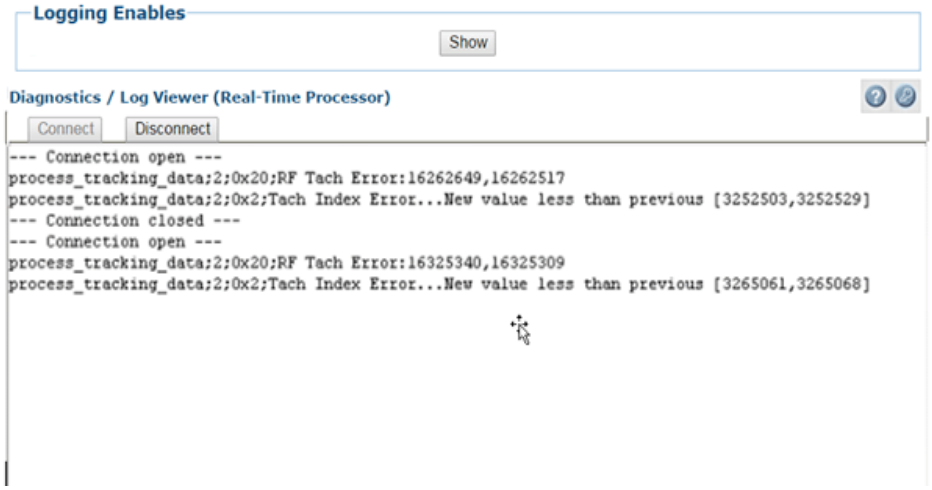
Click Reset to re-enable Verbose Mode logging.

Diagnostics | Log Viewer (Real-Time Process)

Use the **Log Viewer (RT)** window to view encoder/tachometer and trigger event information.

To access the Log Viewer (RT) window:

1. In the menu tree under **Diagnostics,** click **Log Viewer (RT).** The **Log Viewer (RT)** window opens.



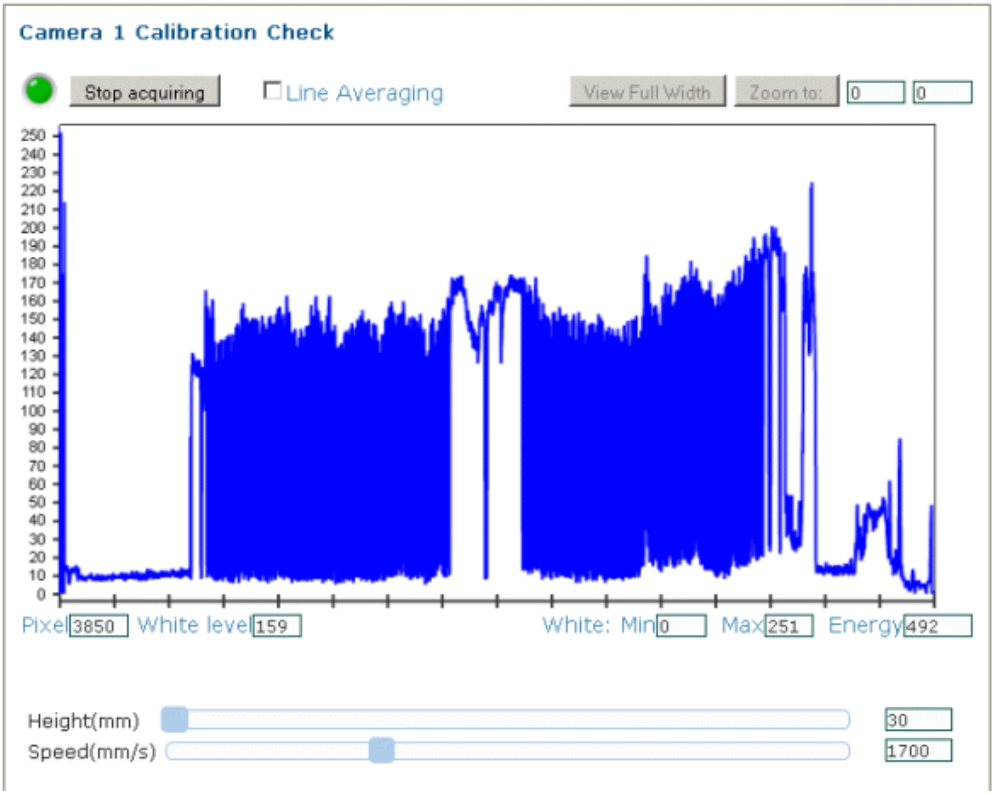
2. Click **Show** at the top of the window to view a Logging Enables table of processes.
3. Select the check boxes related to the named processes to display Logged Information pertaining to **Critical, Error, Warning, Info,** or **Debug** conditions.
4. Click **Connect** to view logged data from the real-time processes.
5. Click **Disconnect** to pause the data stream.

Diagnostics | Scope (Calibration Check)

Use the **Scope (Calibration Check)** window to view a software oscilloscope of the camera/illumination performance.

Click Reset to re-enable Verbose Mode logging.

For practical use of the Scope for verifying the function of the focusing mechanism.



To access the Scope (Calibration Check) window:

1. In the menu tree under Diagnostics, click Scope (Calibration Check). The **Scope (Calibration Check)** window opens.
2. To zoom, click on the right and left sides of the area to be zoomed, and then click Zoom to.
3. Use the sliders at the bottom of the screen to adjust Height (Focus) and Speed (Amplitude).
4. Click **Stop Acquiring** to freeze the scope.

Diagnostics | Scope (Advanced)

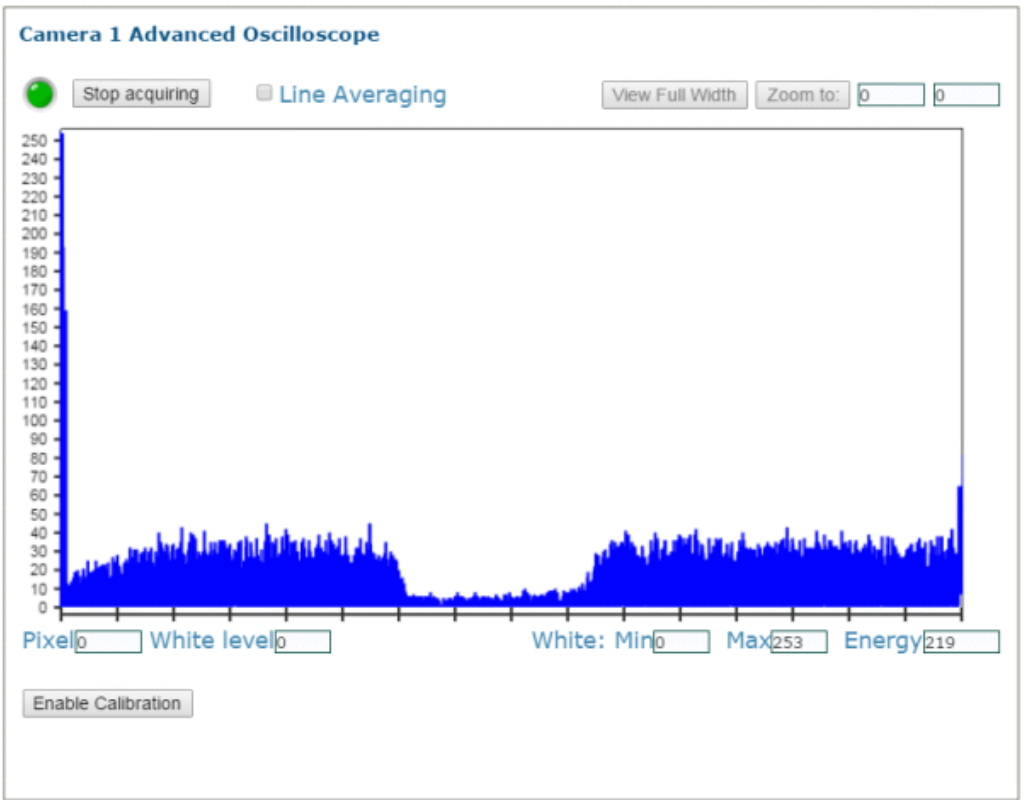
Use the **Scope (Advanced)** window to view a software oscilloscope of the camera/illumination performance.

NOTE

Scope functionality will enable Calibration Mode and disable normal camera functionality.

To access the Scope (Calibration Check) window:

1. In the menu tree under **Diagnostics,** click **Scope** (Calibration Check). The **Scope (Advanced)** window opens.



2. Click **Stop Acquiring** to freeze the scope.

3. Click **Enable Calibration** to reveal the calibration sliders.

NOTE

Do not change these settings unless instructed by Datalogic Technical Support or Engineer. Adjusting this option may cause the AV7000 to experience incorrect no reads.

4. Select the **Illumination Correction Enable** to modify illumination settings.

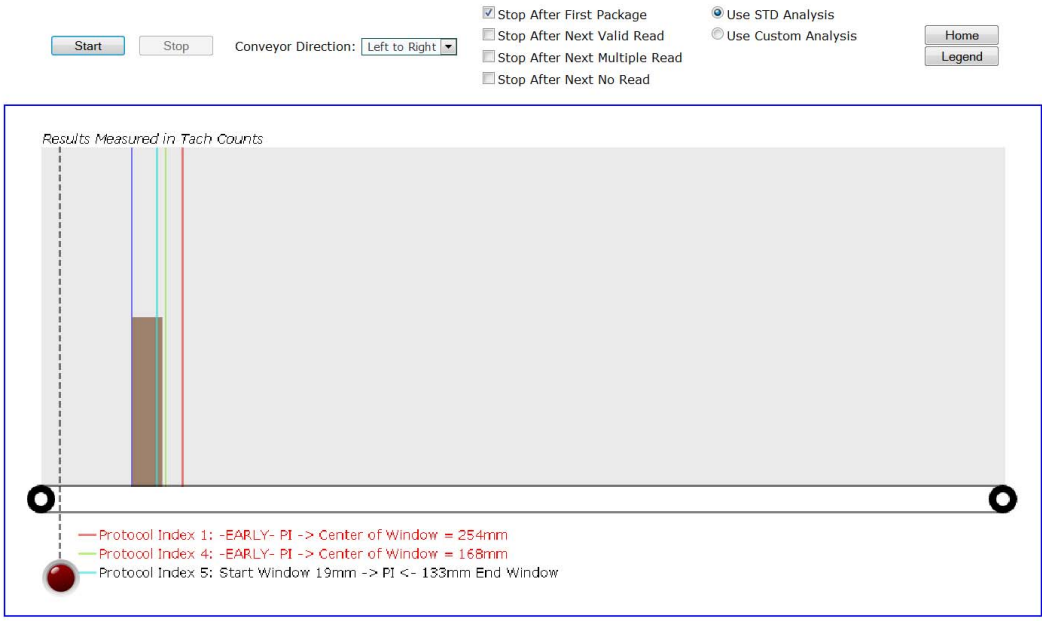
5. Click and move the sliders to make adjustments to the imaging settings.

Diagnostics | Conveyor View

Use the **Conveyor View** window to view a representation of the packages currently on the conveyor.

To access the Conveyor View window:

1. In the menu tree under **Diagnostics**, click **Conveyor View.** The **Conveyor View** window opens.



2. Select the check box(es) by the option(s) you want to use.

- Stop After First Package
- Stop After Next Valid Read
- Stop After Next Multiple Read
- Stop After Next No Read

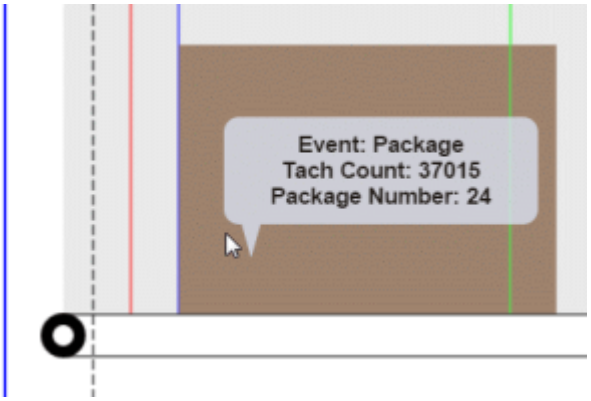
3. Select **Left to Right** or **Right to Left** from the Conveyor Direction drop-down list to shift the orientation.

4. Select the Use STD (standard) Analysis or Use Custom Analysis option button. If the Use Custom Analysis option is selected, you can then select a numbered Transport from the drop-down list that appears.

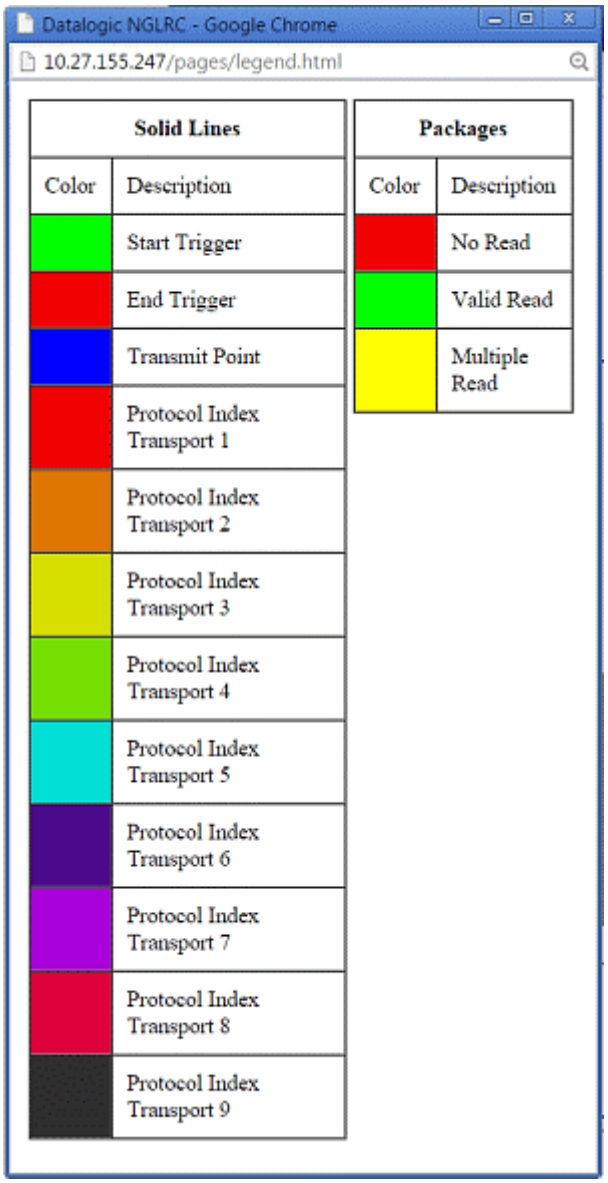
5. Click **Start** to view a representation of packages moving along the conveyor, or click **Stop** to freeze the window.

NOTE

Hold the cursor of the package shown on the conveyor animation to view package information, including Event, Tach Count, and Package Number information.



6. Click **Legend** to view a color key for the **Conveyor View** animation. Click **Home** to return to **Modify Settings | System Info**.



Solid Lines	
Color	Description
	Start Trigger
	End Trigger
	Transmit Point
	Protocol Index Transport 1
	Protocol Index Transport 2
	Protocol Index Transport 3
	Protocol Index Transport 4
	Protocol Index Transport 5
	Protocol Index Transport 6
	Protocol Index Transport 7
	Protocol Index Transport 8
	Protocol Index Transport 9

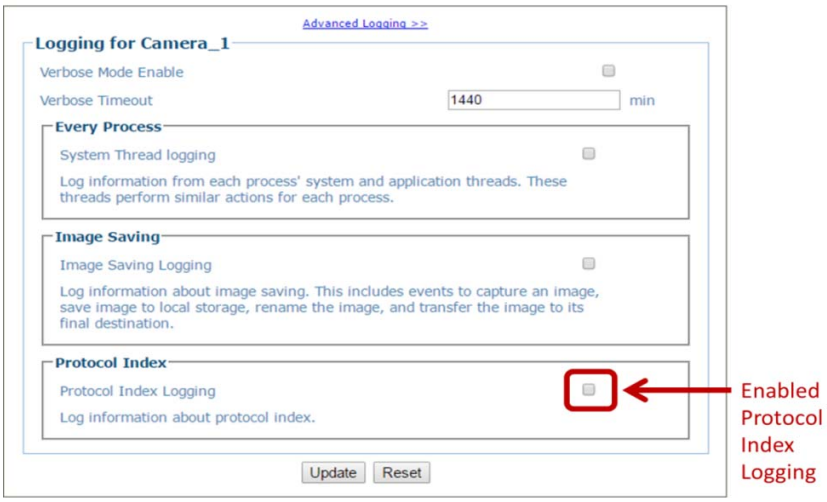
Packages	
Color	Description
	No Read
	Valid Read
	Multiple Read

Enabling Diagnostics | Conveyor View

Two settings must be enabled in order for the **Conveyor View** to be available.

7. Access **Device Settings | Camera_1 | Logging** and the logging window will open.

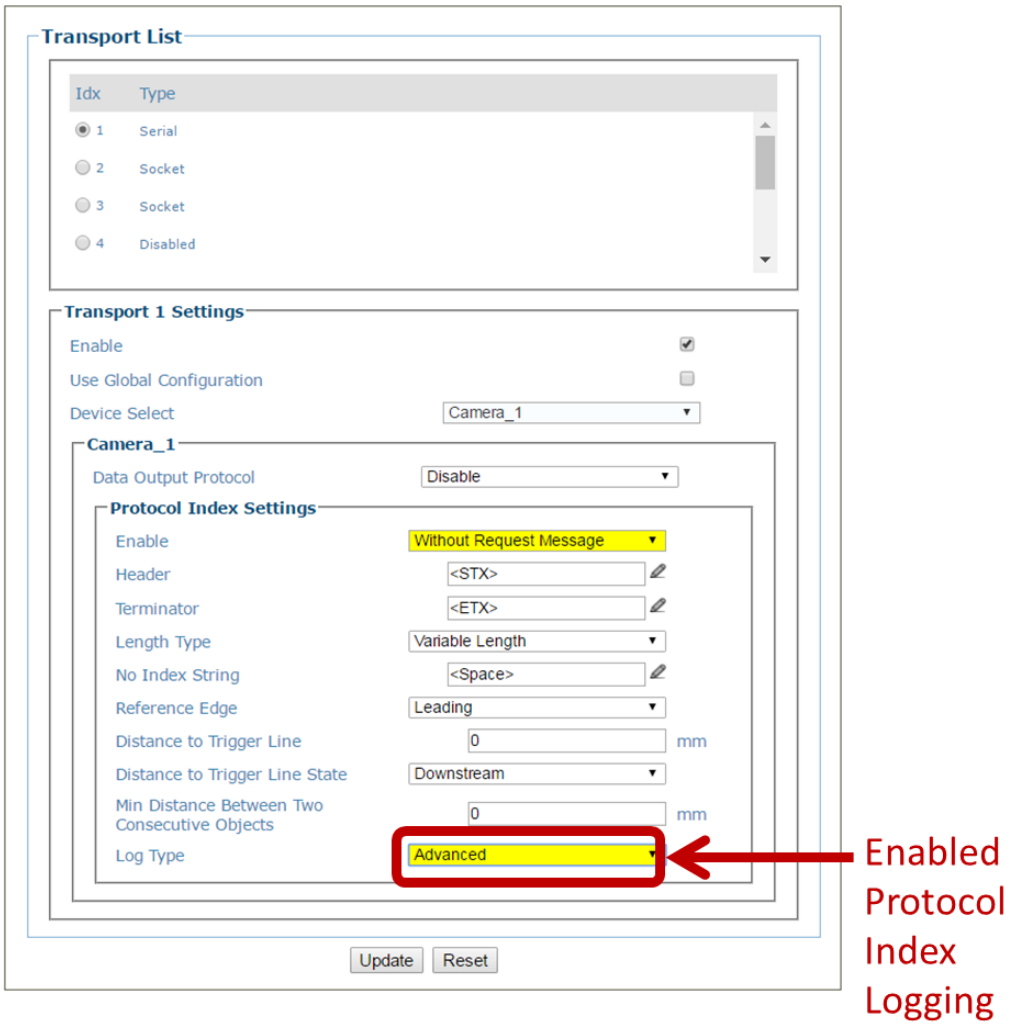
8. Select the checkbox to enable **Protocol Index Logging.**



9. Click **Update** to save your changes.

10. Access **Global Settings | Communications | Transports** and the Transport List window opens.

11. From the Log Type drop-down select **Advanced.**



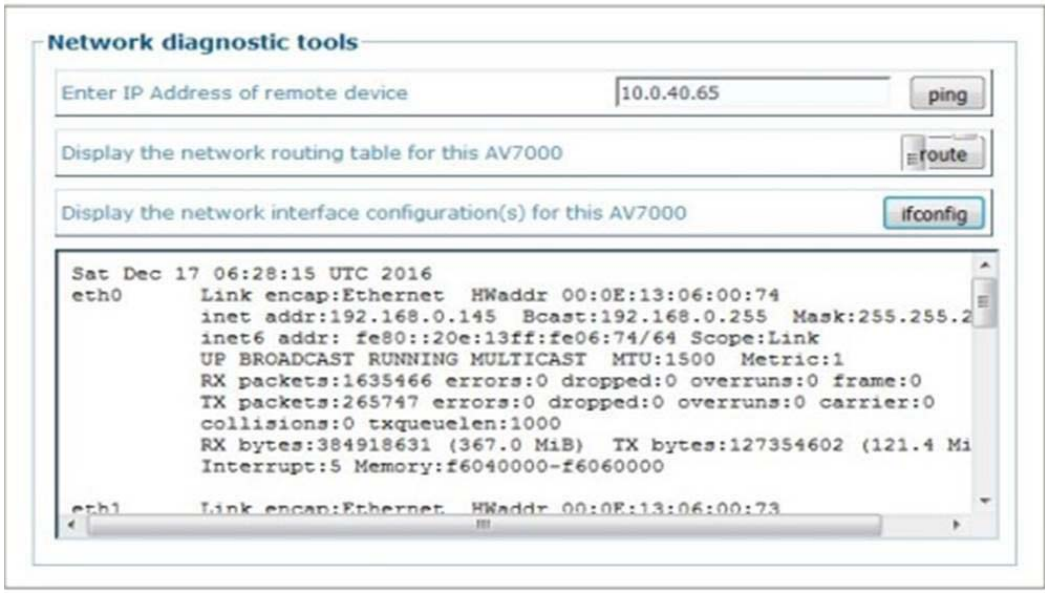
12. Click **Update** to save your changes.

Diagnostics | Network Diagnostics

Use **Network Diagnostics** to diagnose network issues.

To access the Network Diagnostics window:

1. In the menu tree under **Diagnostics,** click Network **Diagnostics**. The **Network Diagnostics** window opens.



2. Enter the IP Address of the remote device you want to communicate with and click the **ping** button to send a message to that device.
3. Click **route** button to view Network routing table.
4. Select **ifconfig** button to view configuration information.

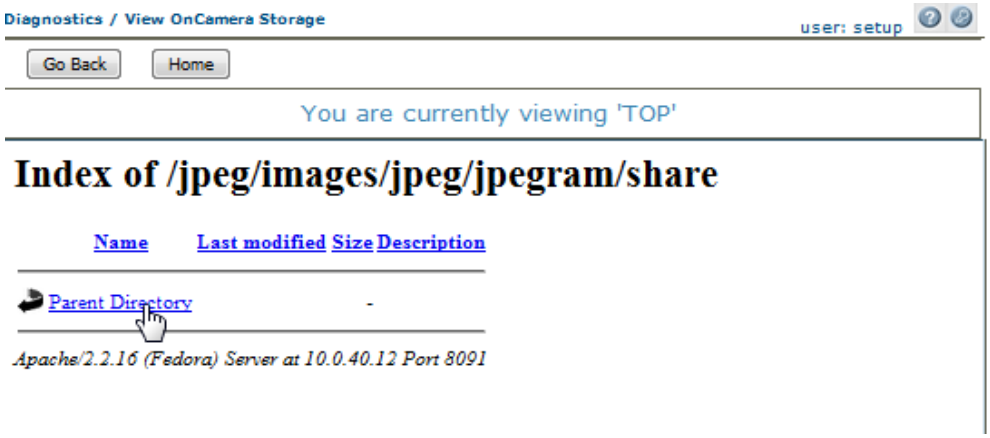
Diagnostics | View OnCamera Storage

Use the **View OnCamera Storage** window to view stored images on a particular camera within your system.

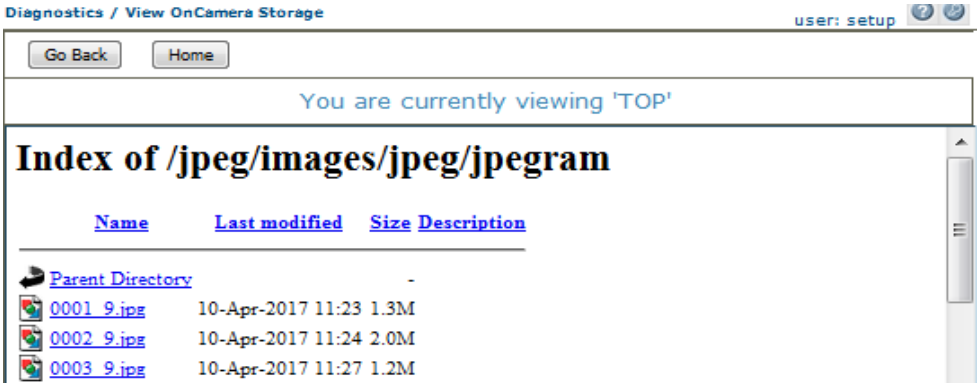
To access the View OnCamera Storage window:

1. In the menu tree under **Diagnostics,** click **View OnCamera Storage.** The **View OnCamera Storage** window opens.

2. Click on **Parent Directory**.



3. All of the images stored in that directory will display, along with date and time.



4. Click on the image name “0001.9.jpb” to view that particular image.

UTILITIES

Use the Utilities Menu Tree selections to backup and restore system parameters, upgrade system software, or download system log information:

Utilities | Advanced Cluster Configuration

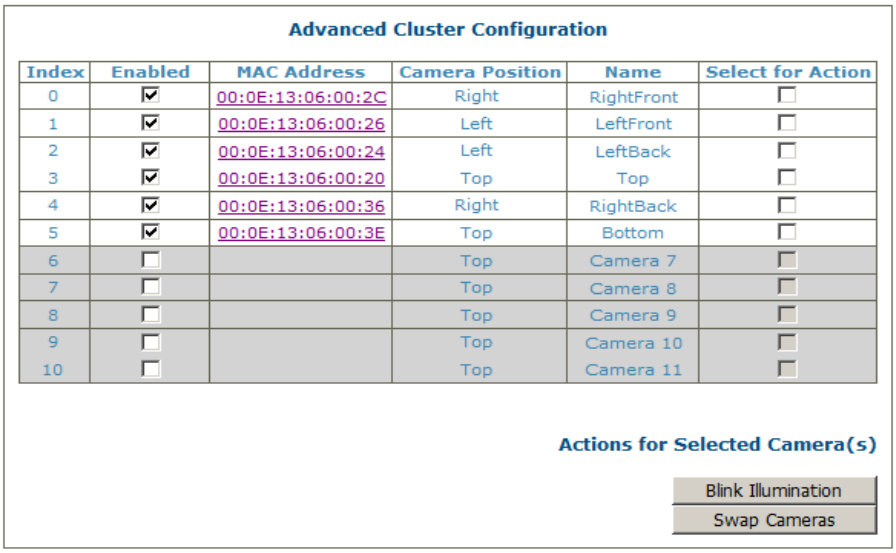
Use **Advanced Cluster Configuration** to reorganize the cameras in a Tunnel/Array.

WARNING

DO NOT use **Advanced Cluster Configuration** unless authorized by Datalogic Support. Using this function without Datalogic Support can harm system operation.

To access the Advanced Cluster Configuration window:

1. In the menu tree under **Utilities**, click **Advanced Cluster Configuration.** The A**dvanced Cluster Configuration** window opens.

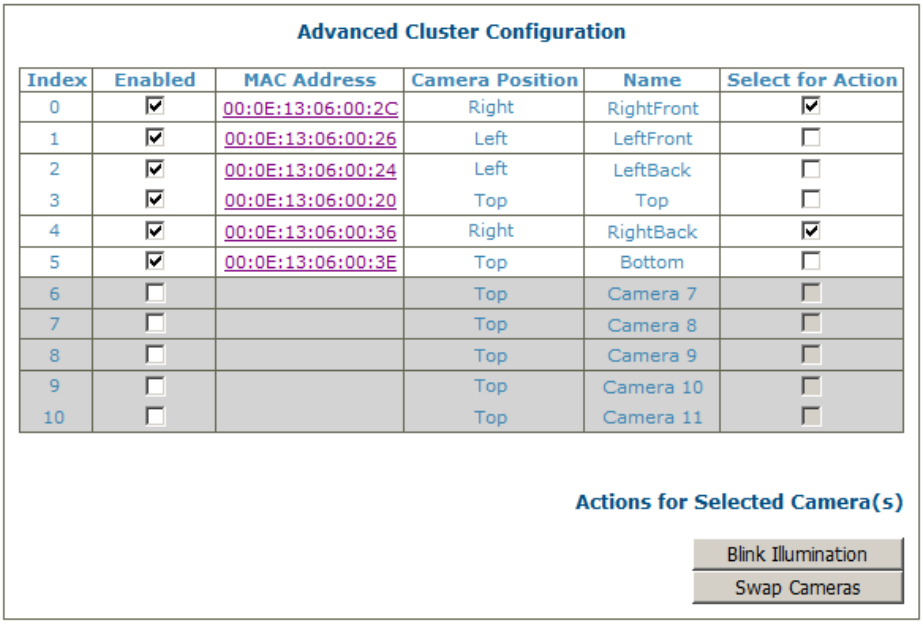


The enabled columns (not grayed out) show the AV7000 cameras currently online in the system. If a camera is not online (grayed out) you can still select it for action.

To Swap Two Cameras in the same tunnel:

2. Select the check boxes in the **Select for Action** column corresponding to the cameras you want to swap.

3. Click **Swap Cameras**. The selected cameras swap MAC addresses.

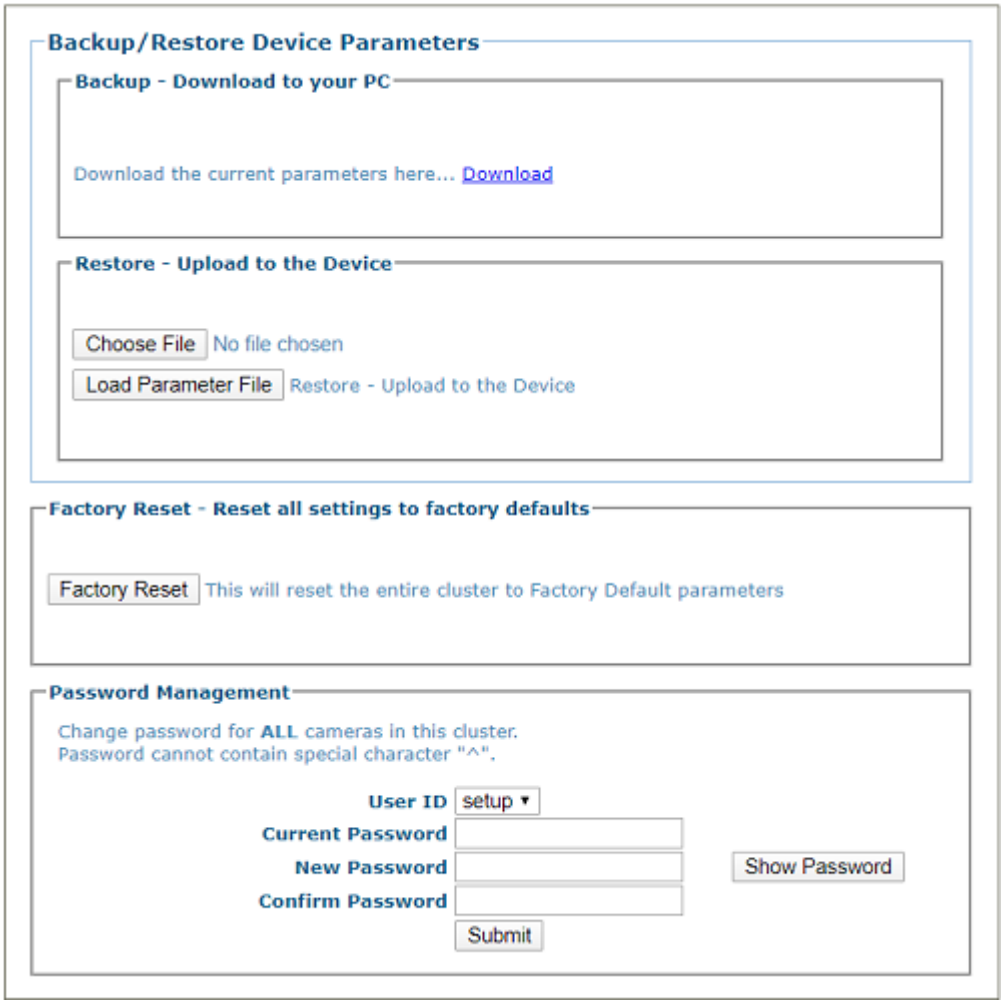


Utilities | Backup/Restore Parameters

Use **Backup/Restore Parameters** window to download system parameters to a camera or save them to a file.

To use the Backup/Restore Parameters functions:

1. In the menu tree under Utilities, click **Backup/Restore Parameters Info.** The Backup/Restore Parameters window opens.



2. From the **Backup - Download to your PC** section of the window, click **Download**. The parameter file is downloaded by the browser to the PC.

NOTE

Various browsers will handle file saving in different ways.

3. From the **Restore - Upload to the Device** section of the window, click **Browse** (or **Choose File** in Chrome). From the file window that opens, navigate to and select a previously saved parameter file.

WARNING

You must only restore a system with a restore file originally created from that system. DO NOT use a restore file from a different system. NEVER use on a configured system.

4. Click **Load Parameter File** to upload the file to the system device(s).

To use the Factory Reset function:

5. Click **Factory Reset.** A confirmation box appears stating “This will reset the entire cluster to Factory Default parameters” appears.

6. Click **OK** to reset to the factory default, or click **Cancel** to return to the Backup/ Restore Parameters window.

WARNING

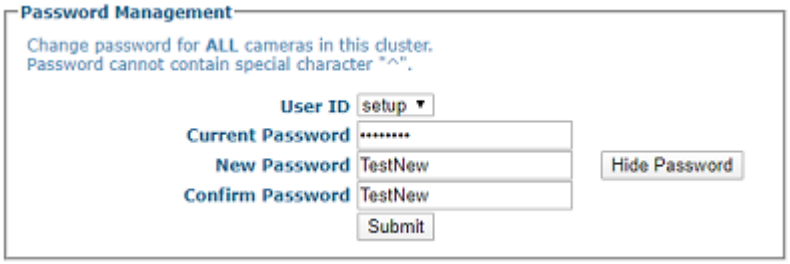
Selecting Factory Reset will default the whole camera tunnel setting ALL cameras to factory defaults. DO NOT select this option unless instructed by a Datalogic Technician.

To use Password Management function:

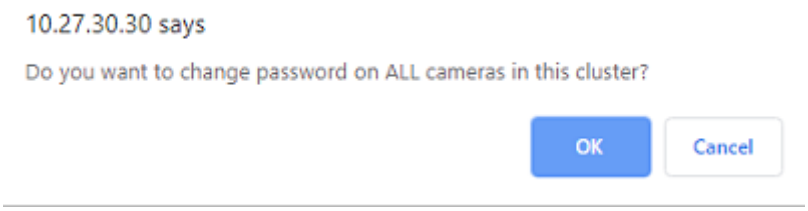
1. Select the **User ID** from the drop-down.

2. Enter the valid current password. You can click **Show Password** to reveal what the password is that you are entering. Click **Hide Password** to hide it again.

3. Enter the new password and confirm the new password.

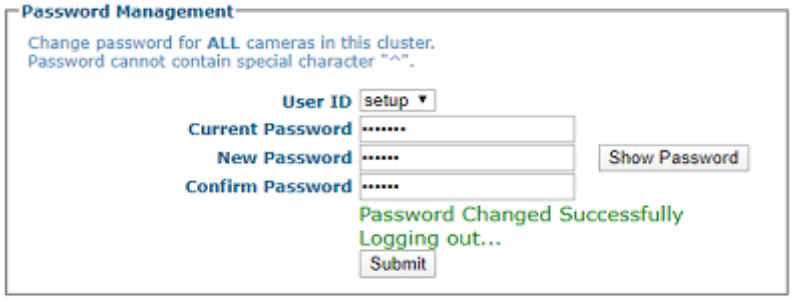


4. Click **Submit** to save the new password. The following confirmation message appears.



5. Click **OK** to reset the password for ALL cameras in this cluster or **Cancel.**

6. When the password has been successfully reset, the following message appears.



Utilities | Software Upgrade

Use the **Software Upgrade** window to load new versions of the camera system software.

NOTE

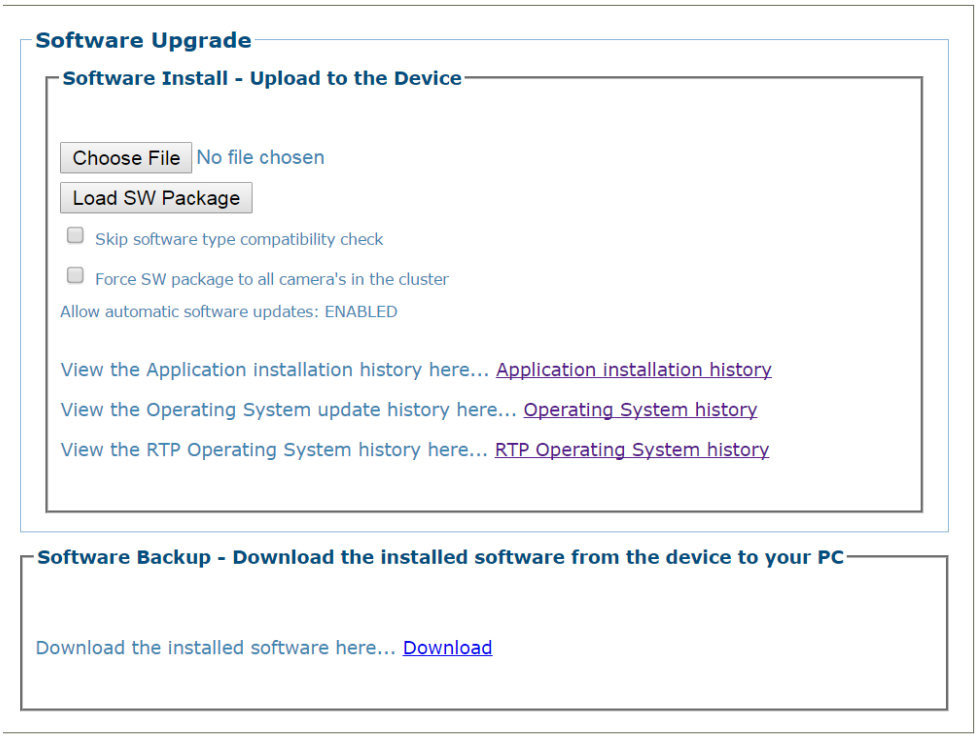
Please clear the PC's browser cache regularly or set up the browser to disable caching altogether. This is especially important after software upgrades to make sure updates in e-Genius are visible.

WARNING

The Software Upgrade options is used to load Standard Application Software, custom application software and RTP software and various software patches.

To use the Software Upgrade functions:

1. In the menu tree under **Utilities,** click **Software Upgrade** Info. The **Software Upgrade** window opens.



2. Click **Choose File**. From the file window that opens, navigate to and select the software upgrade file.
3. Click **Load SW Package** to upload the software upgrade to the device.
4. Select the **Skip software type compatibility check** check box if you are certain the software is newer than that currently installed on the system.
5. Select **Force SW package to all camera's in the cluster** to update all of the cameras with the latest software downloaded.
6. Click **Application Installation History** to view historical software revision information about the application.

```
App Base R2 Apr 4,2016

Tue Oct 18 16:42:43 UTC 2016 : Installing AV7000_VERSION STANDARD 1_12_0_0
Thu Dec 1 16:17:16 UTC 2016 : Installing AV7000_VERSION STD_BETA 1_16_0_8
Thu Jan 19 14:16:04 UTC 2017 : Installing AV7000_VERSION STANDARD 2_0_0_0
```

7. Click **Operating System History** to view historical software patch information about the operating system.

```
OS Base 2_0_0_0 Sept 12, 2016  PCIe4, Partition fix, Clean OS

Mon Sep 12 19:05:29 UTC 2016 : CleanOS patch
Mon Sep 12 19:23:15 UTC 2016 : CleanOS patch
```

8. Click **RTP Operating System history** to view RTP (Real Time Processing) software revision historical information about the Real Time Processing OS.

```
Installing RTP STANDARD 1_8_0_0
Installing RTP BETA 1_16_0_2
Installing RTP STANDARD 2_0_0_0
```

9. Click **Download** to save a copy of the installed software to your PC.

NOTE

The retrieved software does not retain the software version name. The name must be changed once the software has been retrieved.

Utilities | Download Logs

Use **Download Logs** window to download system information logs to your PC.

To use the Download Logs function:

1. In the menu tree under **Utilities, click Download Logs**. The Download Logs window opens.

Device Name	SyncNet IP	Status
Camera 1	192.168.0.145	getting file
Camera 1	192.168.0.145	Success
Camera 2	192.168.0.183	getting file
Camera 2	192.168.0.183	Success
All Devices		Click here to download debug logs

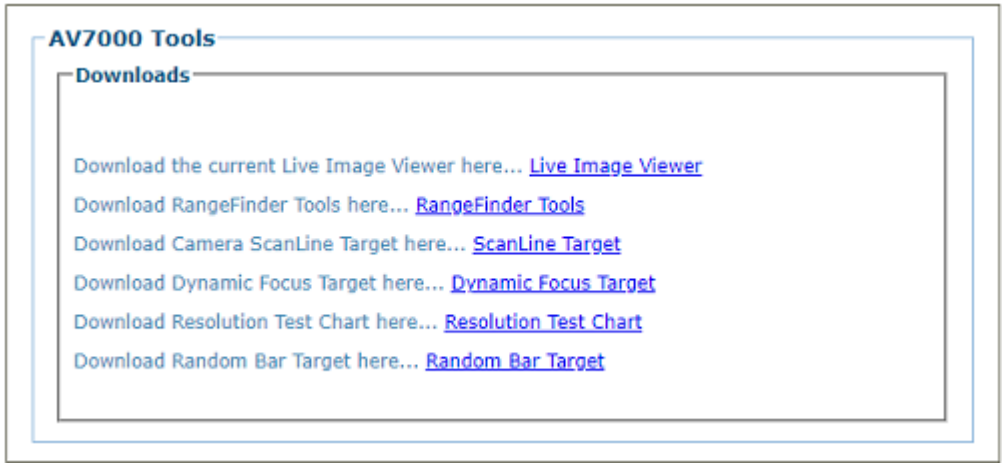
2. Click "**Click here to download debug logs**" to download the following file to your PC: **AllDebugLogs.tar.gz**

Utilities | Download Tools

The Download Tools window provides links to tools stored on the AV7000 that can be used for calibrating and testing the camera system. These include printable calibration targets and other helpful items. The items available may change depending on the camera version.

To view the available tool links:

1. In the menu tree under **Utilities, click Download Tools**. The Download Tools window opens.



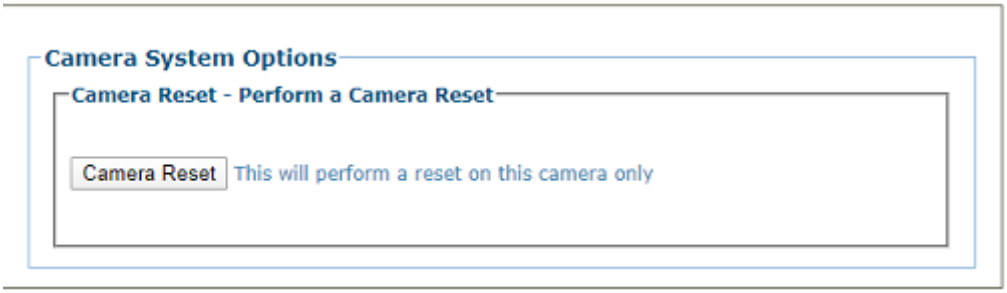
2. Click on a link to download the indicated tool to your computer.

Utilities | Camera Reset

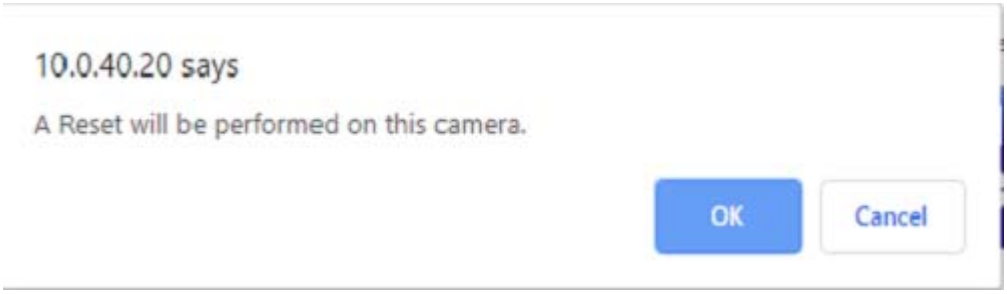
The Camera Reboot window allows you to reboot a specific camera in a cluster.

To reset the camera:

1. In the menu tree under **Utilities,** click **Camera Reset**. The **Camera System Options** window opens.



2. Click **Camera Reset** and the following confirmation message appears.



3. Click **OK** to continue the camera reboot or **Cancel** to discontinue this process.

Utilities | Help

Use the **Help** selection to access the online help system.

In the menu tree under **Utilities,** click **Help**. The online help **Welcome** page opens in a new browser window.

Utilities | Logout

Click **Utilities | Logout** to exit **e-Genius**.

CHAPTER 5
FOCUSING SETUP AND CALIBRATION

FOCUSING DEVICES

The AV7000 focusing position is computed by the camera based on the position of the parcel triggered and/or measured by a focusing device. The Datalogic focusing devices may be one or more of the following:

- S-60 Photocell
- AS1 AREAscan™
- DLA Light Curtain (LCC-75xx AV7 Light Curtain)
- STI Light Curtain
- S-80 Positioning Sensor (DK-501 Kit)
- DM3610 Dimensioner
- DLA RangeFinder

This section provides detailed procedures on setup and calibration of your AV7000 Camera and the necessary focusing devices installed for your system.

Though it is unlikely to happen, a DM3610 and RangeFinder cannot be installed and configured for focusing on the same system.

The procedures outlined in this chapter should only be performed by a Datalogic trained technician. For further information on training, contact us through the Datalogic website at www.datalogic.com.

WHAT YOU WILL NEED

Items listed below are not required for every focusing option.

- Application Drawing (for structure, camera, mirror, sensor and focusing device positioning)
- Application Specifications
- Laptop PC
- Tape Measure
- Sync Ethernet Cable Adapter
- Installation Kit (Test Boxes) (included with AV7000)
- CH-3 Autofocus Test Chart (included with AV7000)
- Dynamic Focus Target (included with AV7000)
- Picket Fence/Step Ladder Test Chart
- RangerOScope (software): Download from **e-Genius, Utilities | Download Tools** window. Click **RangeFinder Tools** (Only when using RangeFinder for focusing)
- CodeWord Viewer: Download (Only when using RangeFinder for focusing)
- Inventory All Equipment and Structure Parts

See"AV7000 Timing and Distance Diagrams" on page 111.

FIRST-TIME STARTUP

On initial power-up, the AV7000 performs a series of self-diagnostic and LED tests. When the **STATUS** LED turns a steady green the power-up sequence is complete, and the camera is operational.

The AV7000 cameras are shipped from the factory with these defaults:

- **Default User ID:** setup (case sensitive)
- **Default Password:** DLAset (case sensitive)
- Control Panel Buttons Enabled
- IP address - **192.168.0.145 (setup/sync controller),** 192.168.3.10 (Host), and 10.0.40.20 (Image)

UNDERSTANDING DATALOGIC FOCUSING OPTIONS

There are several Datalogic focusing options available for the AV7000. Each option serves a different purpose in AV7000 systems. They can be used alone or in combination with one another. Below is a list of the available options and an explanation of their purpose. The following sections detail how to focus each device when used in an AV7000 system. Also see **"AV7000 Timing and Distance Diagrams" on page 111.**

S-60 Photocell

The standard **S-60 Photoelectric sensor** is used in AV7000 Camera Fixed Focus systems to detect the presence of an item entering the scanning area. This device works best in systems where packages are separated by an open space between the trailing edge of one package and the leading edge of the next.

AS1 AREAscan™

The **AS1 area sensors** represent the ideal solution for the detection of very small objects, even when passing in different positions inside the controlled height and width. They can also help avoid multiple triggers on irregular shaped packages.

DL Light Curtain (LCC-75xx AV7 Light Curtain)

The **DL Light Curtain** is used to detect the presence of objects as they enter the scanning area, as well as report the package heights ranging from 150 to 2500mm to the AV7000.

STI Light Curtain

The **STI Light Curtain** is a legacy light curtain device that also detects the presence and package heights of objects as they enter the scanning area.

S-80 Positioning Sensor (DK-501 Kit)

The **S80 distance sensor** with laser emission provides time of flight measurement between the S80 and an object located between the S80 and the calibrated far distance.

DM3610 Dimensioner

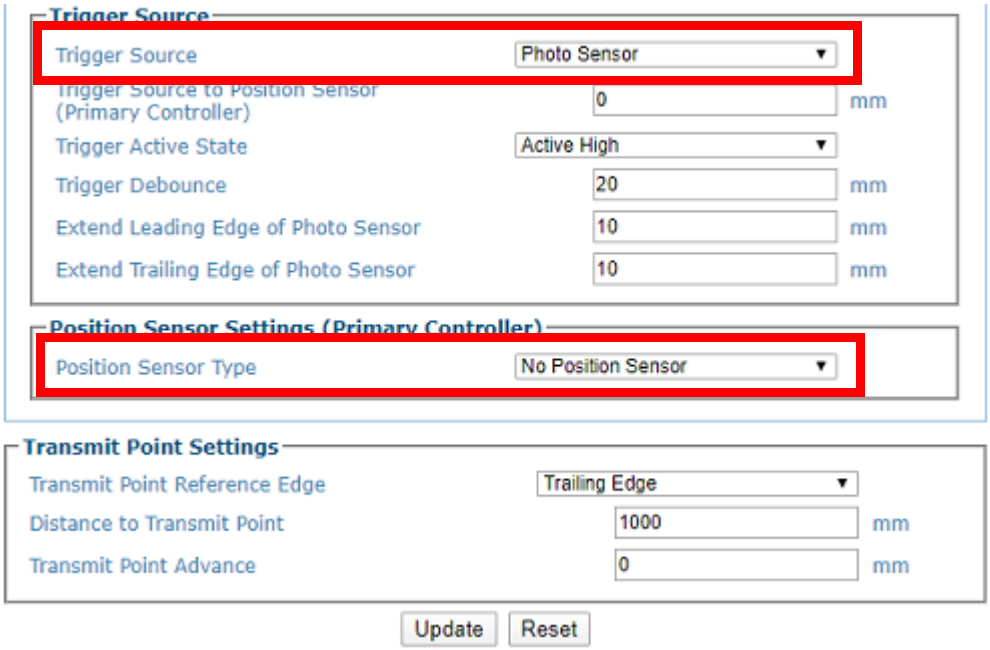
The **DM3610 Dimensioner** is used to detect the presence of products and report the package position, heights and sequence number to all cameras in the system as parcels enter the scanning area.

RangeFinder

The **RangeFinder** can be used to detect the presence of products as they enter the scanning area as well as report the package positions/heights and sequence number to all cameras in the system. RangeFinders used in dimensioning are calibrated to have an accuracy of 2.5 mm [0.1 in], 5 mm [0.2 in] or 13 mm [0.5 in].

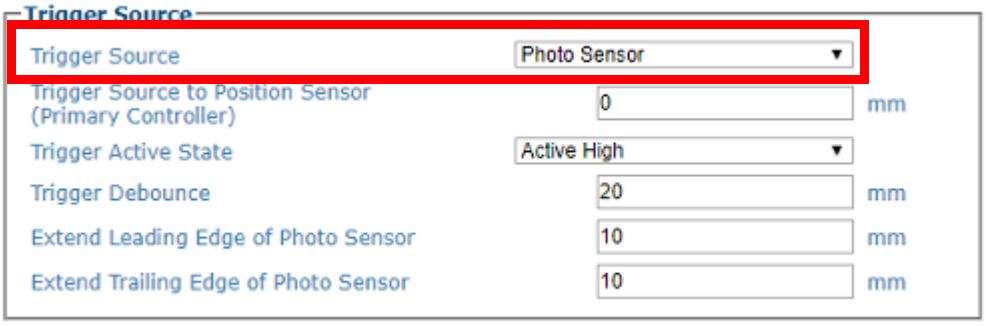
SETTING UP THE S-60 PHOTOCELL

Reference the **S-60 Installation Guide** (included with your S-60 kit) for complete information on connecting and aligning the Photocell. Make the following selections in the AV7000 e-Genius application **Operating Mode**.



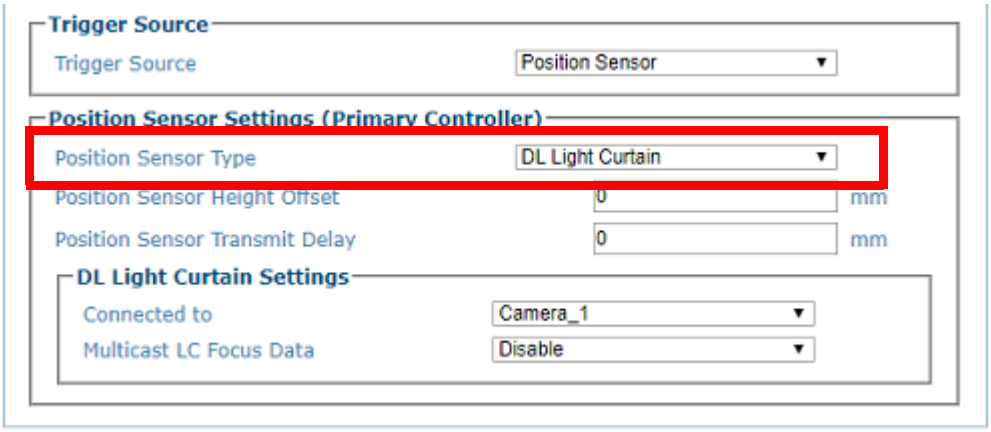
SETTING UP THE AS1 AREASCAN

Reference the **AS1 Series Instruction Manual** (included with your AS1 kit) for complete information on connecting and aligning the ASl. Make the following selections in the AV7000 e-Genius application **Operating Mode**.



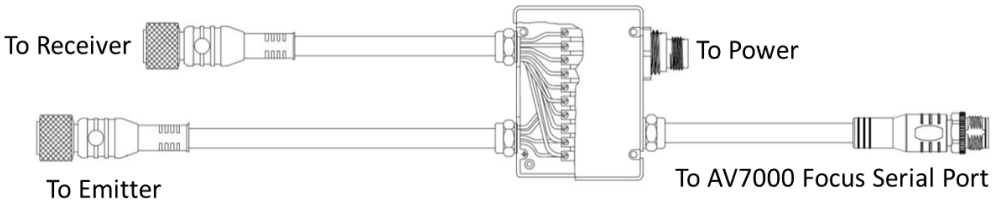
SETTING UP THE DS2 LIGHT CURTAIN

Reference the **DS2 Instruction Manual** available at www.datalogic.com for complete information on connecting and aligning the Light Curtain. Make the following selections in the AV7000 e-Genius application **Operating Mode**. The baud rate of the **DS2 light curtain is 19200.** Make sure the baud rate for the Focus Serial port in the AV7000 is set to match.



Connecting a DS2 Light Curtain to the AV7000

A special CVL-2403 Connection Cable is provided to attach the DS2 Light Curtain emitter and receiver to the AV7000 and a power source.



Power Options:	
If requiring an external Power Supply there are three options:	
PG-100-K01 POWER SUPPLY 60W KIT (EU)	93ACC0059
PG-100-K02 POWER SUPPLY 60W KIT (UK)	93ACC0060
PG-100-K03 POWER SUPPLY 60W KIT (US)	93ACC0058
If receiving power from a CBX box, use cable 95ACC2110 and connect as follows:	
	CBX box terminal
Brown and White twisted together	Power Vdc
Blue and Black twisted together	Power GND
Grey	Earth

Verify the following Receiver (CBX Box) DIP Switches:

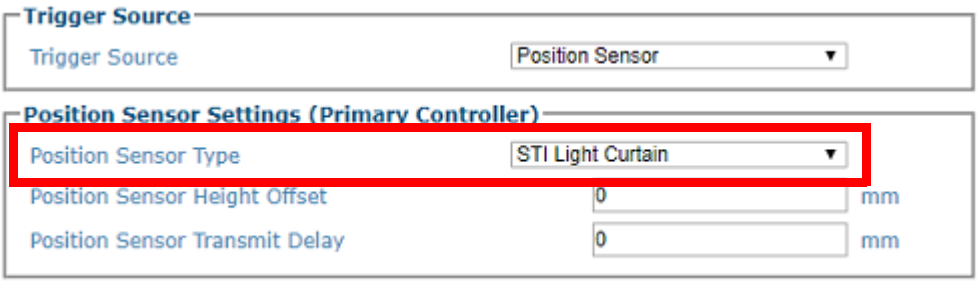
1 = OFF (down)

2-8 = ON (up)

Emitter Trimmer is set fully clockwise (maximum gain)

SETTING UP THE STI LIGHT CURTAIN

Reference the **STI Light Curtain Instruction Manual** available at STI.com for complete information on connecting and aligning the Light Curtain. Make the following selections in the AV7000 e-Genius application Operating Mode.

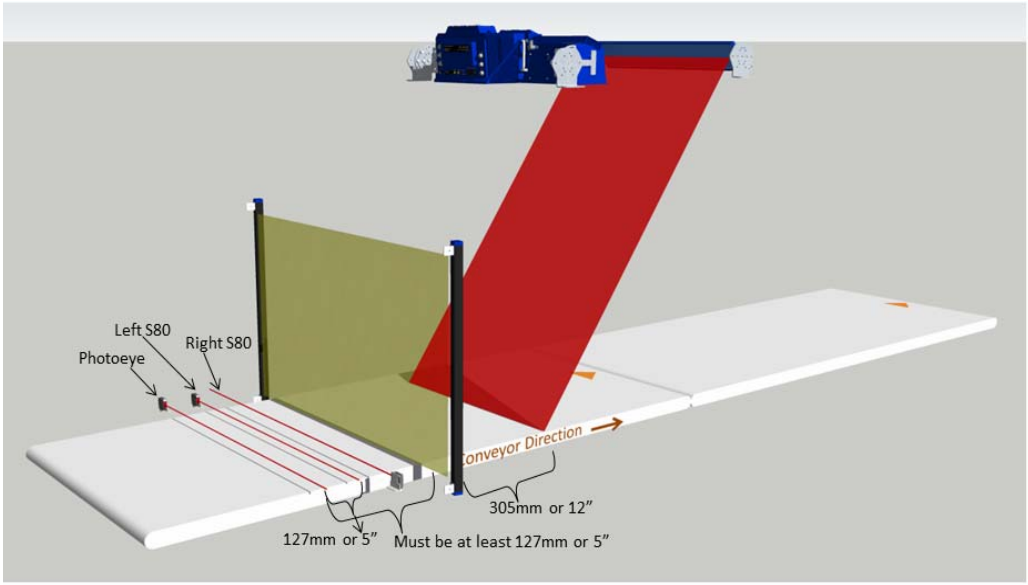


SETTING UP THE DK501 (S80) DISTANCE KIT

Reference the DK-501 Distance Kit Installation Manual for mounting and connecting the S80 Distance Sensor available at www.datalogic.com for information about the S-80 position sensor.

Mounting the S80 in an AV7000 System

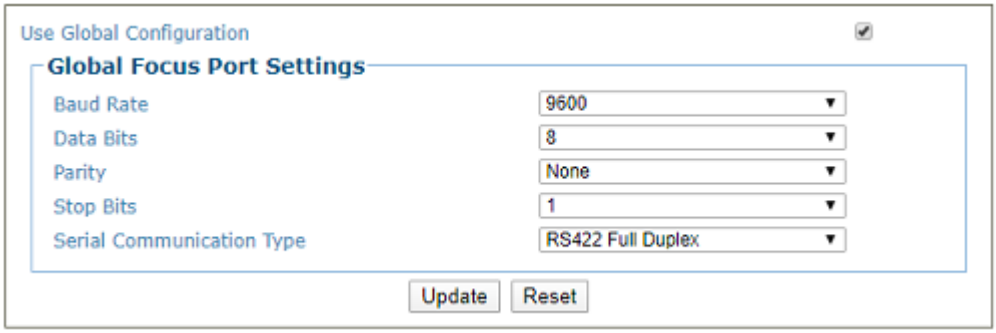
In an AV7000 system, the S80 Distance Sensor must be mounted perpendicular to the conveyor. If there is more than one, the first S80 must be mounted at least 127mm (5 inches) downstream from the trigger photoeye. The trigger photoeye and downstream most S80 or Light Curtain must be mounted at least 127mm (5 inches) a part. The downstream most S80 or Light Curtain must be mounted at least 305mm (12 inches) upstream from the first camera scan line. There is no required distance between each S80/Light Curtain.



1. Mount the S80(s) and DL light curtain (if required), as previously described.
2. Connect the S80(s) to the focus serial port of the controller AV7000 in the tunnel.

3. If two S80's are used, one S80 needs to be on the left side of the conveyor and the other on the right side. The left S80 is connected to the left side camera, the right S80 is connected to the right side camera.

4. Set the focus serial port on each camera with an S80 connected, to RS422 – 9600 8 N 1.



NOTE

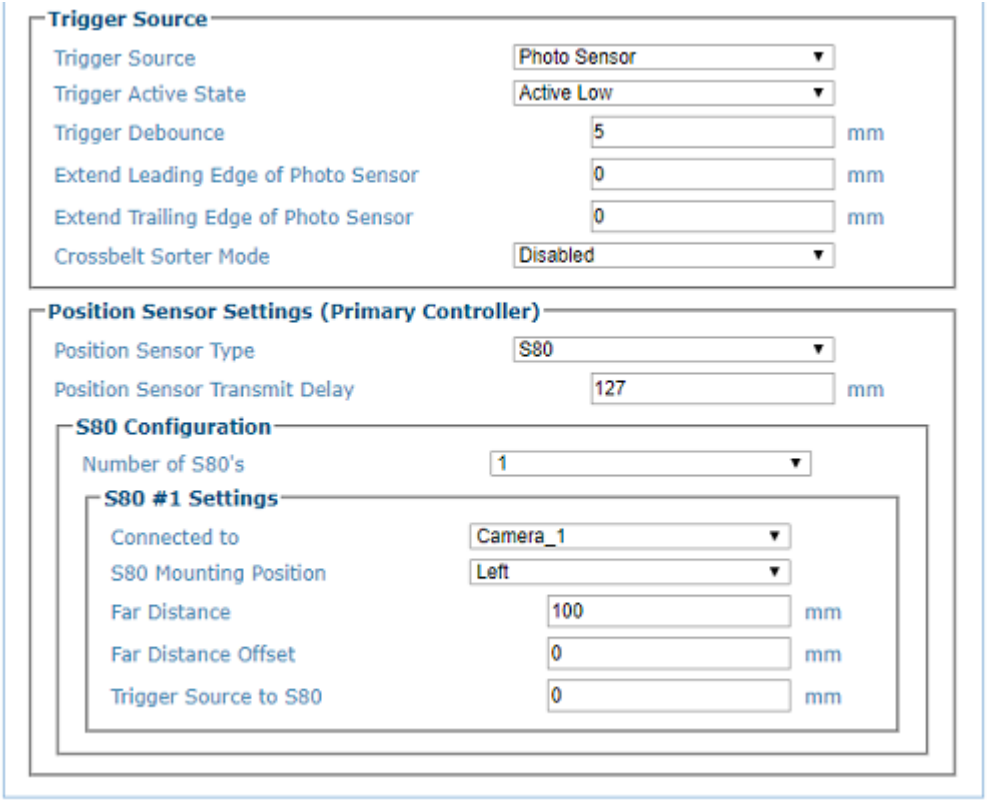
Make sure to connect the correct S80 to the correct camera.

5. The tach controller camera (with or without an S80 connected) tracks the connected S80's and DL light curtain to a point that is 127mm past the S80/LC that's located the furthest downstream from the PE (and closest to the first camera scan-line).

S80 Setup and Calibration

To calibrate the S80 Distance Sensors, follow these steps:

1. In e-Genius under **Modify Settings**, navigate to **Global Settings / Operating Mode**. The Operating Mode window opens.



2. Select the **Photo Sensor** as **Trigger Source** from the drop-down.

3. Select the **Position Sensor Type** from the drop-down. Select S80 or S80 with DL Light Curtain.

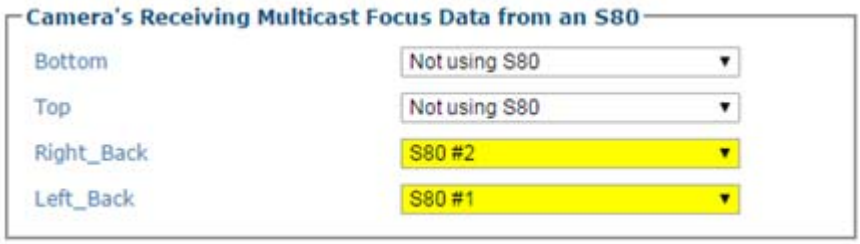
4. Enter the **Position Sensor Transmit Delay** as 127mm. This is required because the tach controller camera (with or without an S80 connected) tracks the connected S80's and DL light curtain to a point that is 127mm past the S80/LC that's located the furthest downstream from the PE (and closet to the first camera scanline).

5. Select None or 1 from the **Number of S80's** drop-down.

6. For each S80 used, select the correct camera from the **Connected to** drop-down**.**

7. If the S80 is required to share its focus information with other cameras on the same side of the conveyor, select **Enable** from the **Multicast S80 Focus Data** drop-down.

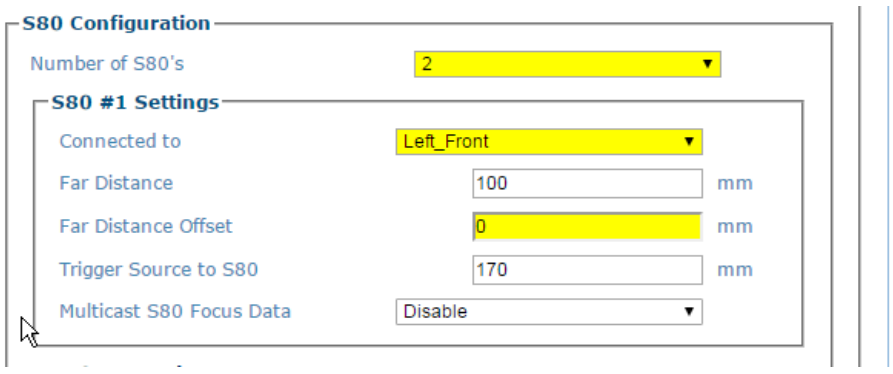
8. Once Multicast is enabled, **Camera's Receiving Multicast Focus Data from an S80** options appear.



9. Select from the **Multicast Focus Data** drop-downs which cameras will use data from which S80.

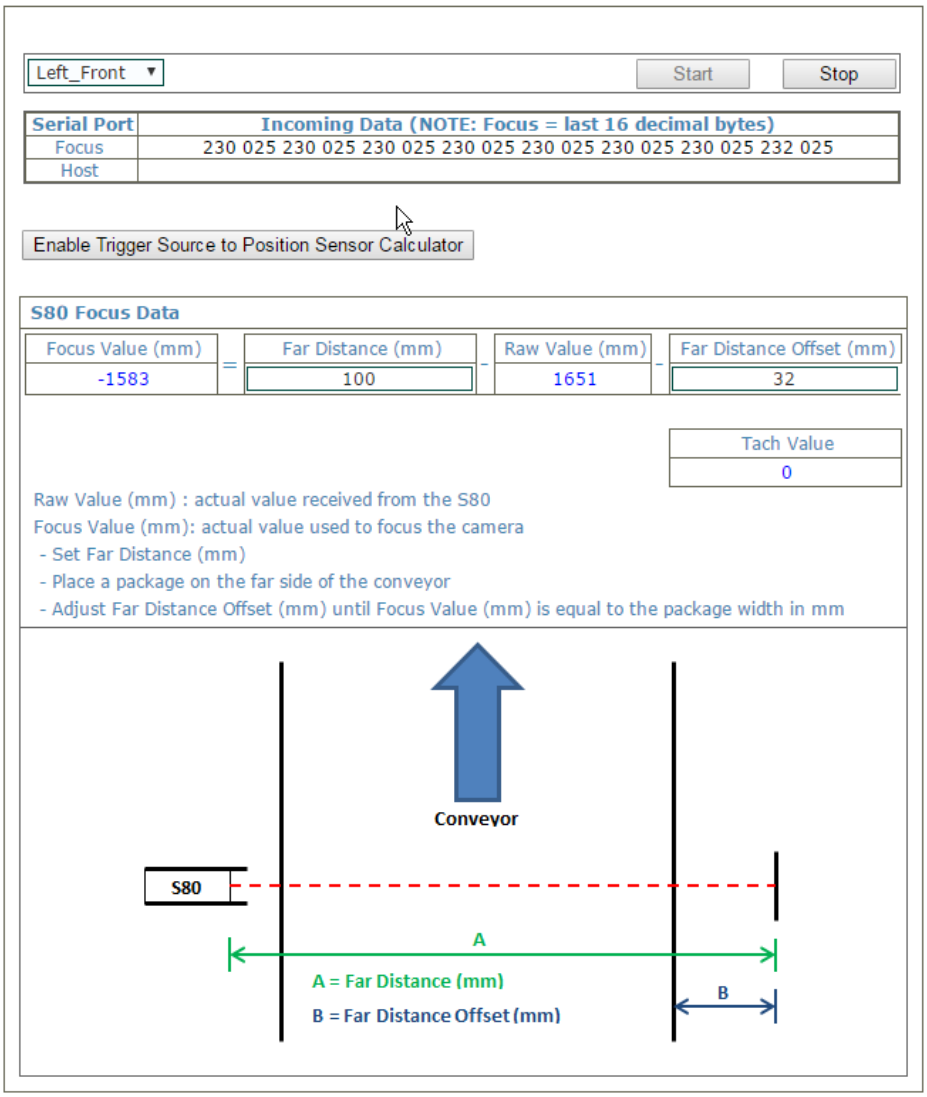
10. Measure the distance from the trigger source to the first S80.

11. Enter this value into the **Trigger Source to S80** field. In this example 170 has been entered.



12. Click **Update** to save your changes.

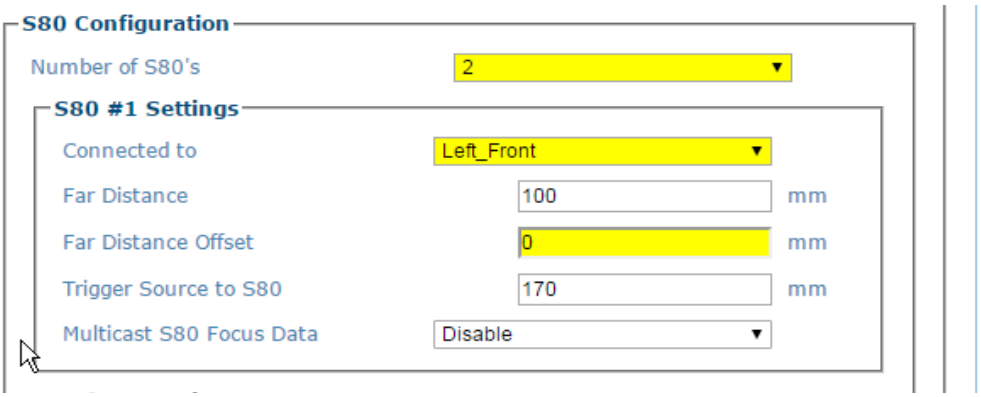
13. In **e-Genius** under Diagnostics, navigate to **Serial Comm Status**. The Serial Communications Status window opens.



14. Remove all objects from the conveyor belt and click the **Start** button.

15. Determine the Far Distance (A).

16. Enter the displayed distance in the **Operating Mode > Far Distance** field. Click U**pdate** to save your changes.



17. Place an object of known width on the far edge of the conveyor and adjust the Far Distance Offset (B) until the focus value equals the object width.

18. To adjust the distance, press enter each time you make an adjustment.

19. Enter this displayed value in the **Operating Mode > Far Distance Offset** field.

20. Click **Update** to save your changes.

SETTING UP THE DM3610 DIMENSIONER

DM3610 Dimensioners provide focus data for Datalogic cameras, including the AV7000, NVS9000, and AV6010.

Refer to the **DM3610 Dimensioner Reference Manual** (or Two-Head Dimensioner Reference Manual) for complete information on installation and calibration of the DM3610. It is available for download from www.datalogic.com.

NOTE

For single Dimensioner applications, the DM3610 must be running software version 1.8.11 or greater. For multi-head applications, the DM3610's must be running 1.8.1 and the DC3000 must be version 1.3.60 or greater.

The Dimensioner scan line must be installed at least 500 mm [20 in] upstream from the nearest camera scan line.

The examples used in this guide use Imperial units i.e. inches. If the system is configured for metric, the unit of measure will be in mm.

Remember to reset these parameters to the application specifications after the calibration is complete.

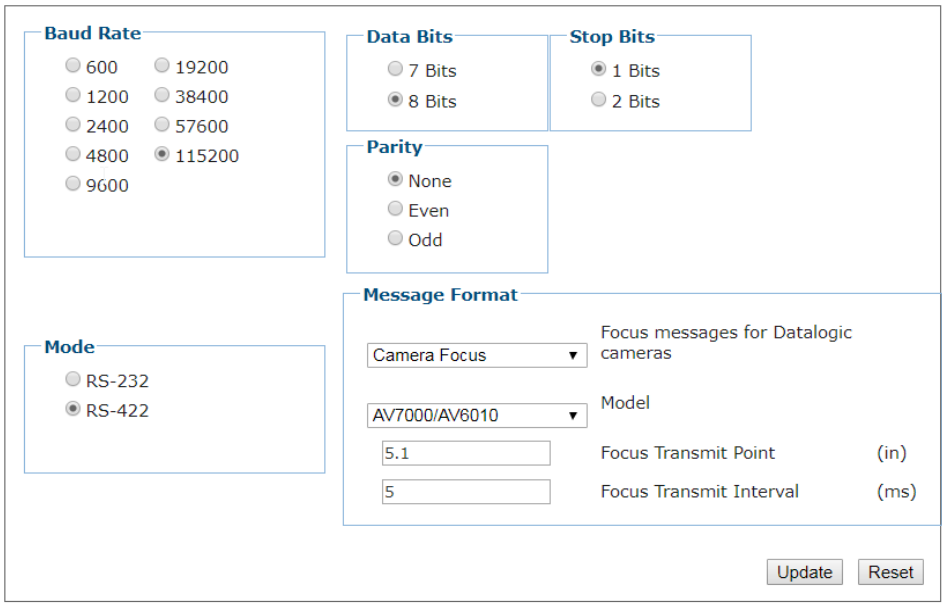
Preparation

Before beginning the DM3610 focusing process, a few preliminary settings are required.

NOTE

When working with a multi-head Dimensioning system, the focus setup steps apply to the unit designated as the "Tach Master" by the DC3000.

1. In the DM3610 e-Genius under **Modify Settings**, navigate to **Serial | Main** or **Aux** depending on the port wired to the AV7000 (typically **Main,** consult your application interconnect diagrams for details). The **Serial | Main** window opens.



2. Make sure the selected **Baud Rate** matches that of the AV7000 (AV7000 uses the main port, RS485 (RS422), at 115200).

3. Under **Message Format**, select **Camera Focus** from the **Focus messages for Datalogic cameras** drop-down list.

4. Select the **Model** of camera for which you are focusing.

5. Enter the **Focus Transmit Point**. This is the distance the DM3610 waits until after the AV7000 scan line has read, to transmit the message. This value correlates to a value in the AV7000 settings. Default is 8 inches.

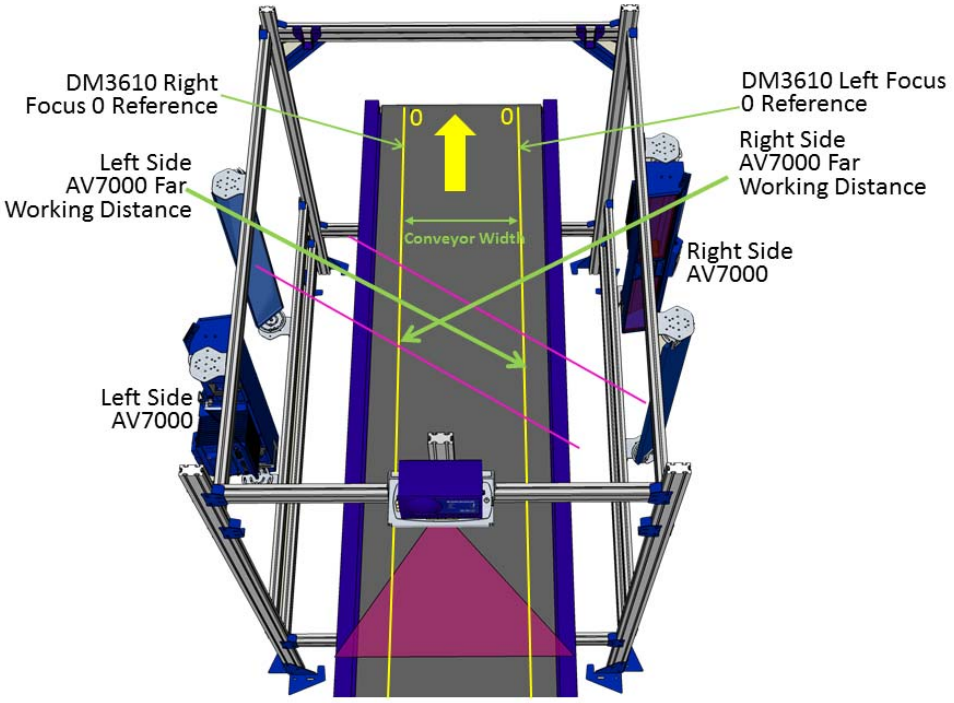
6. Enter the **Focus Transmit Interval**. This is the amount of milliseconds between data transmissions. It defines the frequency of the data transmissions from the DM3610(s).

7. Click **Update** to save the changes.

8. The distance between the far working distances of the cameras is considered the "Conveyor Width" and must also be entered in the **Conveyor Width** field in AV7000 **Global Settings | Operating Mode.**

Understanding DM3610 Focusing and AV7000 System Orientation

The goal of this focusing process is to correlate the DM3610 zero reference points to the far working distances of the cameras.

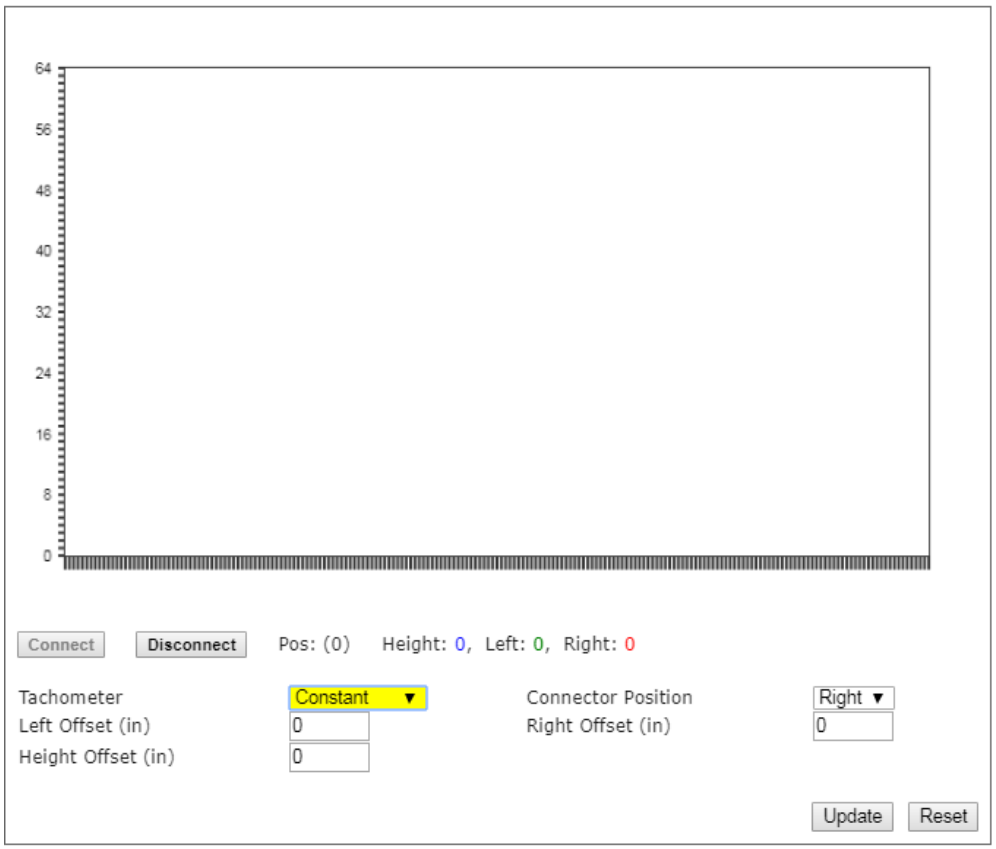


The DM3610 Left and Right Offsets focus the DM3610 at the **Far Working Distances (Left and Right)** of the side AV7000 cameras. These values are not necessarily the same. Reference the system application drawings for the exact prescribed Far Working Distances of each camera.

1. Navigate to **Diagnostics | Focus Setup**. The **Focus Setup** window opens.

NOTE

If you navigate away from the Focus Setup page, the Constant Tach setting will automatically reset to Hardware Tach. Reset it, to continue the focus setup process.



2. From the **Tachometer** drop-down list, select **Constant**.

3. Verify that the values displayed for **Left Offset, Right Offset,** and **Height Offset** are all set to 0.

4. Referencing the direction of conveyor travel, view the Dimensioner from an upstream position. Determine if the connectors located on the side of the unit face left or right, see the image below.

5. From the **Connector Position** drop-down, select **Left** or **Right**.

6. Click **Update** to save the changes.

WARNING

When working with a DC3000 multi-head system, you must select a focus data source on the DC3000 Tach/Trigger/Transmit page. In applications involving side read cameras, select Head 1 and Head 2. For top read only applications, selecting a single head will suffice.

Adjusting DM3610 Left Focus Offset

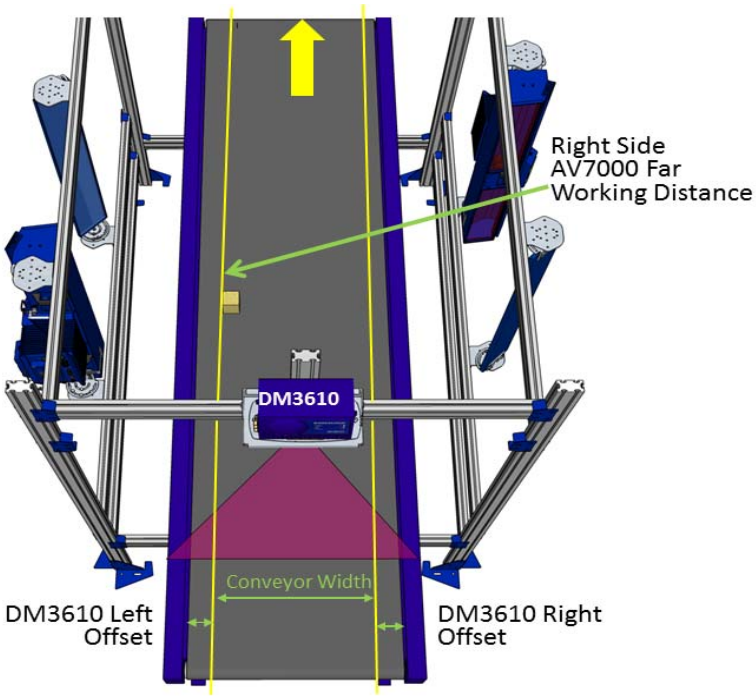
1. Position a test box with a known width in the dimensioner line(s) so the side of the box is at the RIGHT side AV7000 far working distance as specified by the application's installation drawing. In this example we will be using a box with a 3" width.

WARNING

When working with a DC3000 multi-head system, the text box must intercept all dimensioning lines

NOTE

When working with a DC3000 based Dimensioning system, please allow time for the constant tach signal to synchronize between the Master and Slave units.



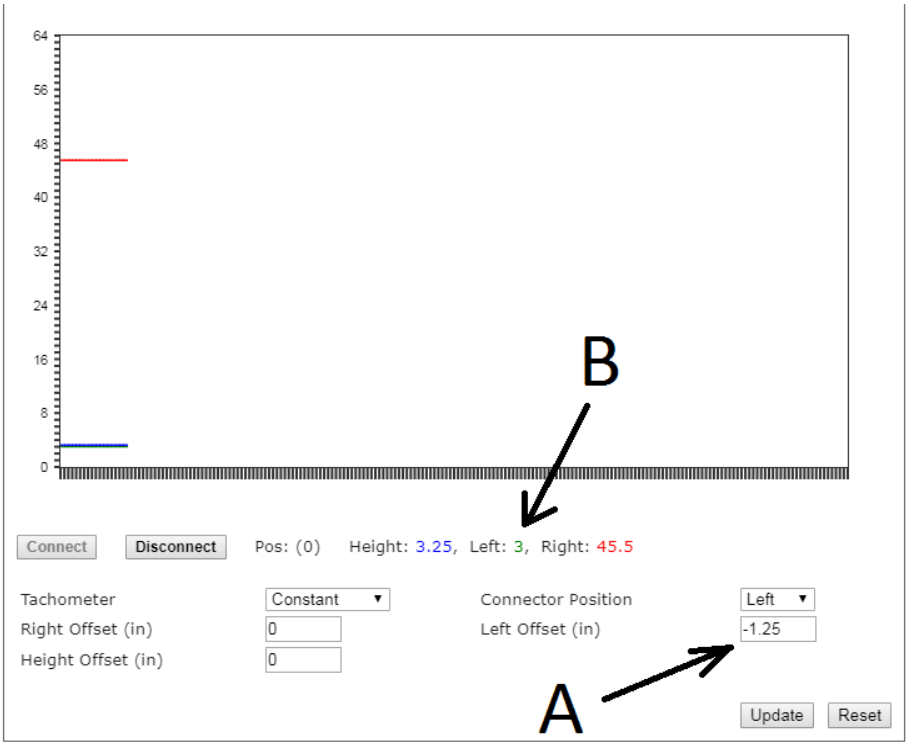
2. In the menu tree under **Diagnostics**, click **Focus Setup**. The **Focus Setup** Window opens.

3. View the displayed data and determine what the left value is. In the displayed example above, the value is 4.25”.

4. Subtract the width of the test box, in our example it is 3”, from the value displayed for Left.

   4.25 – 3 = 1.25

5. Enter the result as a NEGATIVE value in the Left Offset field. In this case you will enter -1.25.



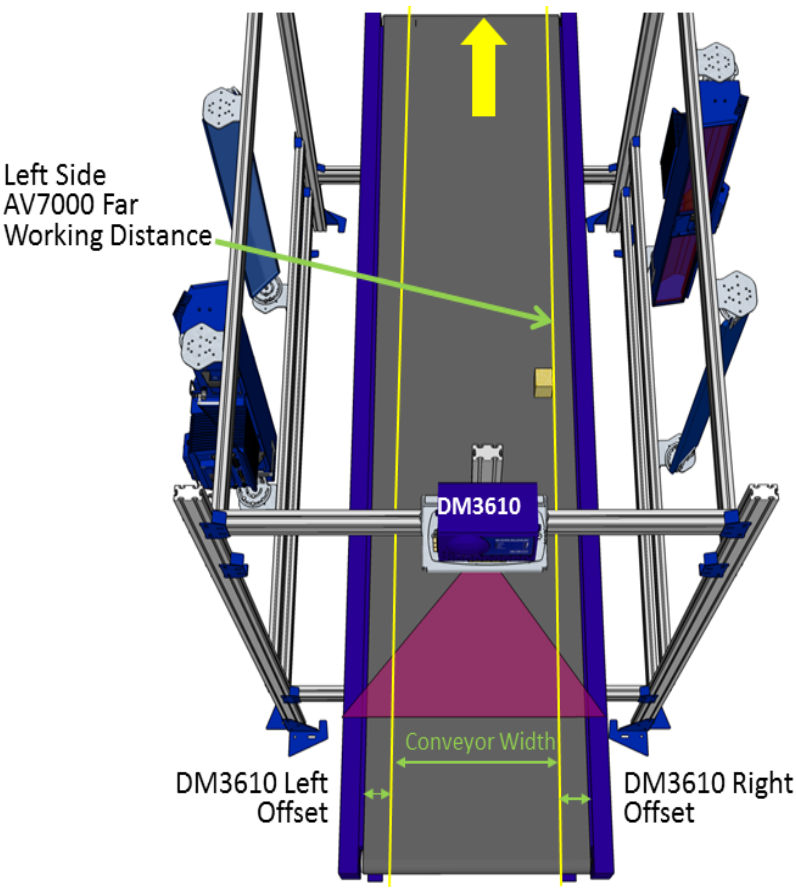
6. The position value displayed for the Left is now 3.

7. Click **Update** to save your changes.

Adjusting Right Focus Offset

When working with a DC3000 multi-head based Dimensioning system, the text box must intercept all dimensioning lines.

1. Position the test box with a known width in the dimensioning line so the LEFT side of the box is at the RIGHT far working distance as specified by the application installation drawing.



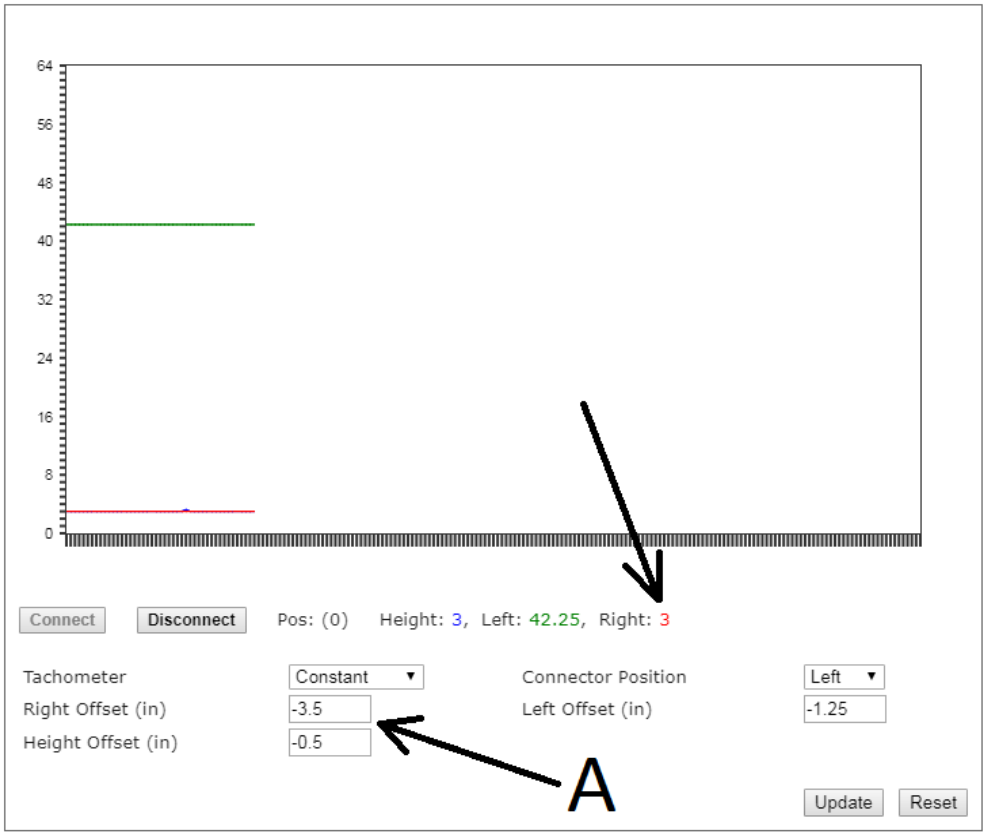
2. View the displayed data and determine what the **RIGHT** value is. In our example the value is 6.5”.

3. Subtract the width of the test box from the value displayed for RIGHT.

6.5 – 3 = 3.5

4. Enter the result into the RIGHT OFFSET field as a negative value, in our example it is -3.5.

5. Note the position value displayed for RIGHT is now 3.



6. Click **Update** to save the changes.

7. Test the system by inducting a series of application objects and bar codes. Use the AV7000 imaging utility to verify that the cameras are focusing properly over the width and height of the conveyor.

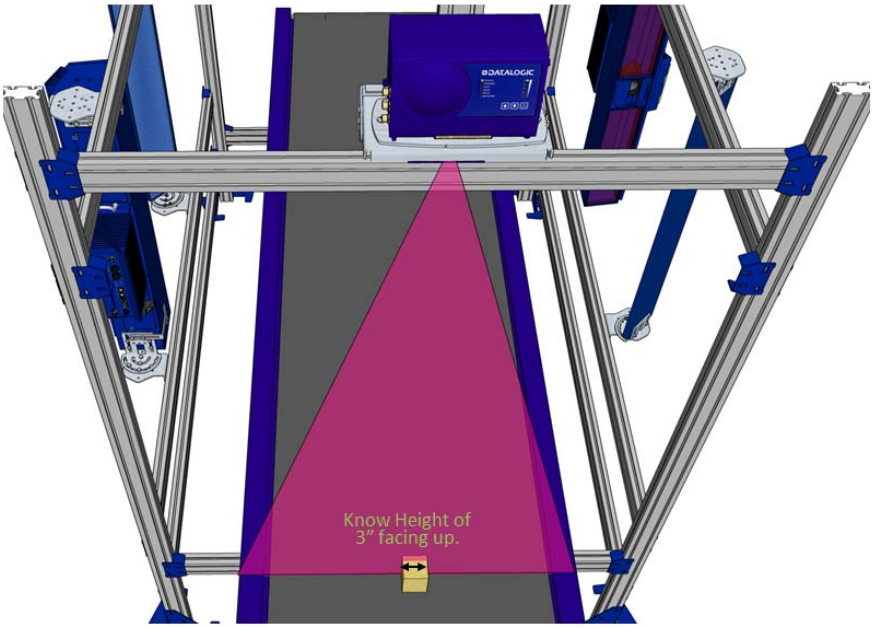
8. Under **Tachometer**, select **Hardware/External** from the **Tach Source** drop-down list.

9. Click **Update**.

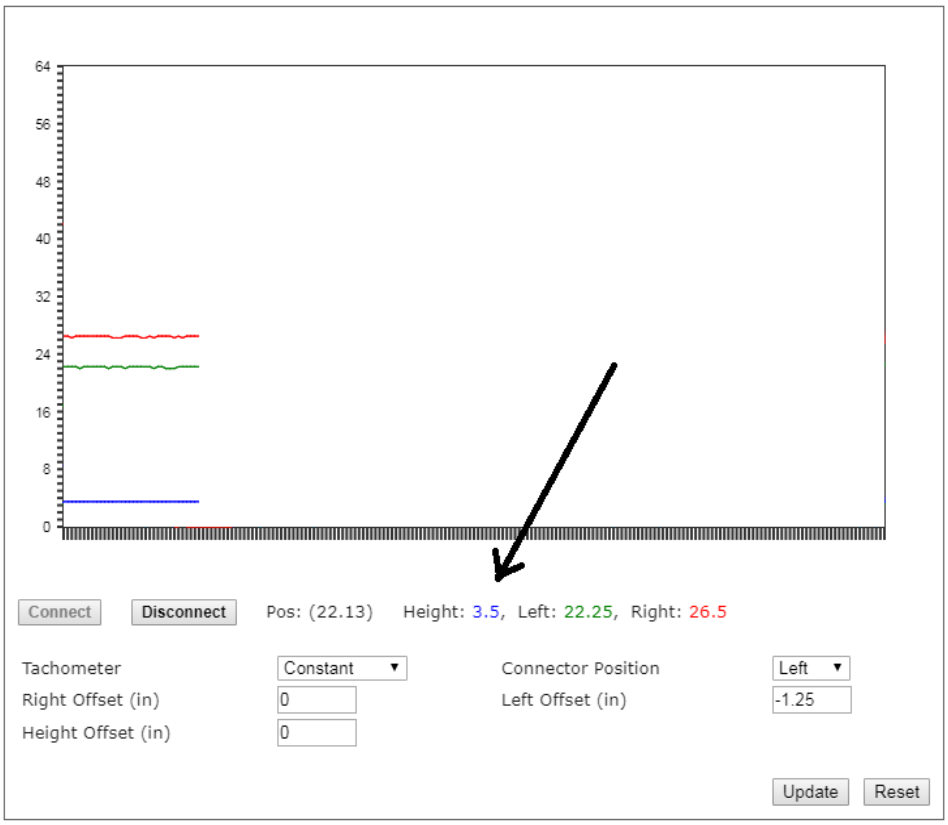
Adjusting Height Offset

When working with a DC3000 multi-head based Dimensioning system, the text box must intercept all dimensioning lines.

1. Place the same test box in the center of the dimensioning line so the known distance side is facing up.



2. Determine the Height value as displayed by the DM3610. In the image below the 3" test box displays a height of 3.5.

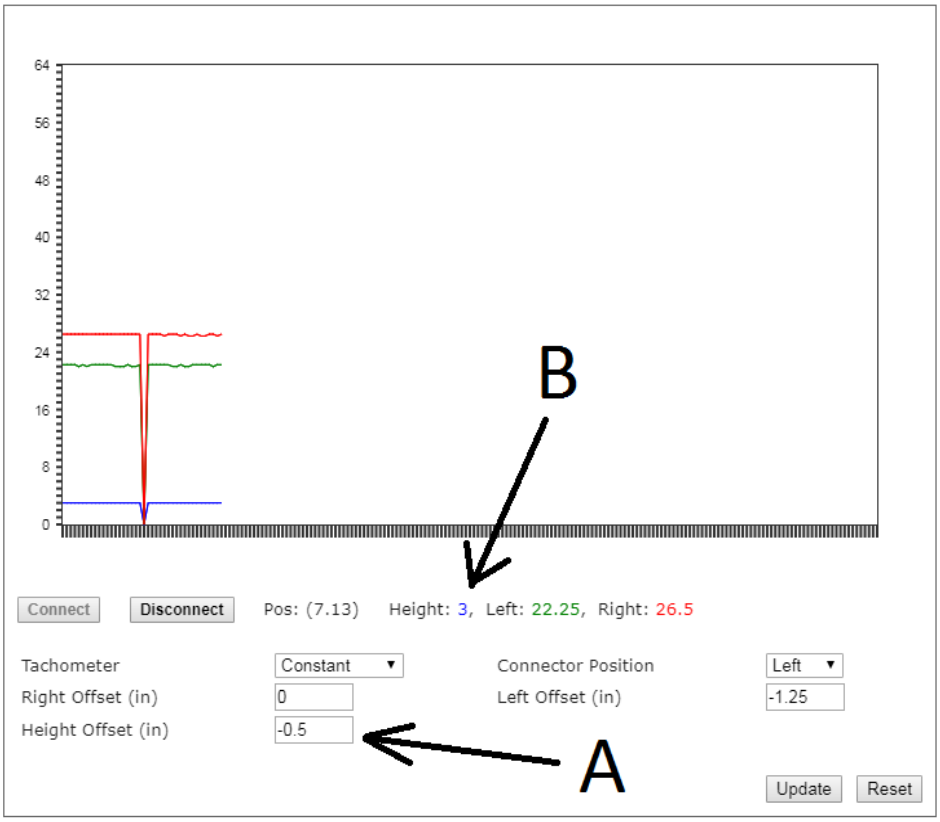


3. Subtract the test box height from the displayed height.

3.5 – 3 = 0.5

4. Enter the result as a NEGATIVE value in the Height Offset field. In this case you will enter -.5.

5. The Height Offset is now reflected in the Height value.



6. Click **Update** to save your changes.
7. Click on the **"Tachometer"** pull down menu and select "Hardware", then click "Update".
8. Test the system by induct a series of application objects and barcodes.
9. Use the AV7000 / NVS9000 / AV6010 imaging utility to verify that the cameras are focusing properly over the width and height of the conveyor.

SETTING UP THE RANGEFINDER

This process calibrates the Rangefinder focus data for AV7000 camera systems. The RangeFinder provides focus data for Datalogic cameras.

These steps require downloading of the AV7000 tools.

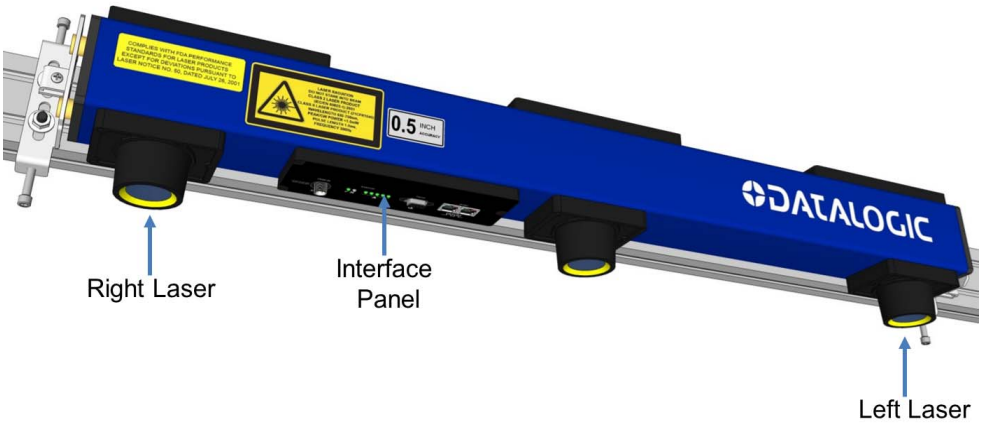
1. Make sure the RangeFinder is mounted at the correct height (typically 1924 mm [75.75 in] from the left and right laser housings to the conveyor belt.
2. Attach an RJ45 cable from your PC to the **SYNC** port of the RangeFinder.
3. From a command prompt enter: (start>run>cmd) 0.

- telnet 192.168.0.40
- Free Scale login: **root**
- Password: **root**

- **set_gain** (this command will return with the current gain setting)

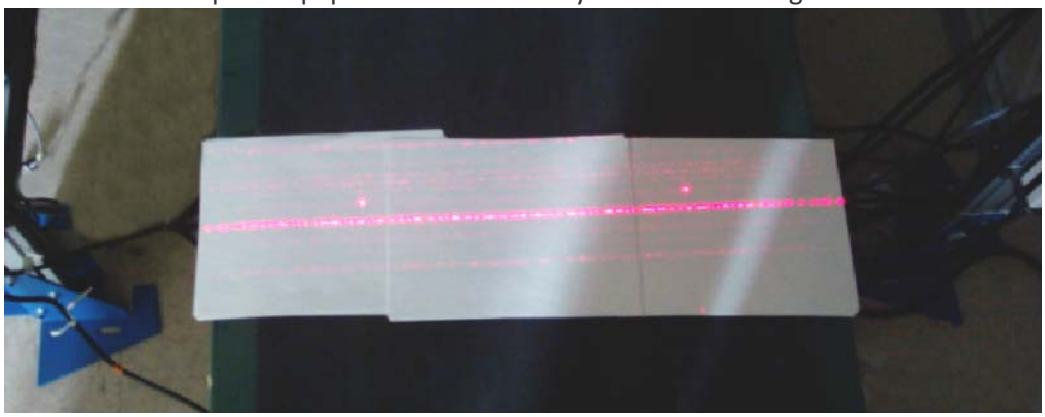
NOTE

The RangerOScope and CodeWord Viewer allows for turning on/off the display for each laser. The image below identifies the right and left laser positions on the RangeFinder:



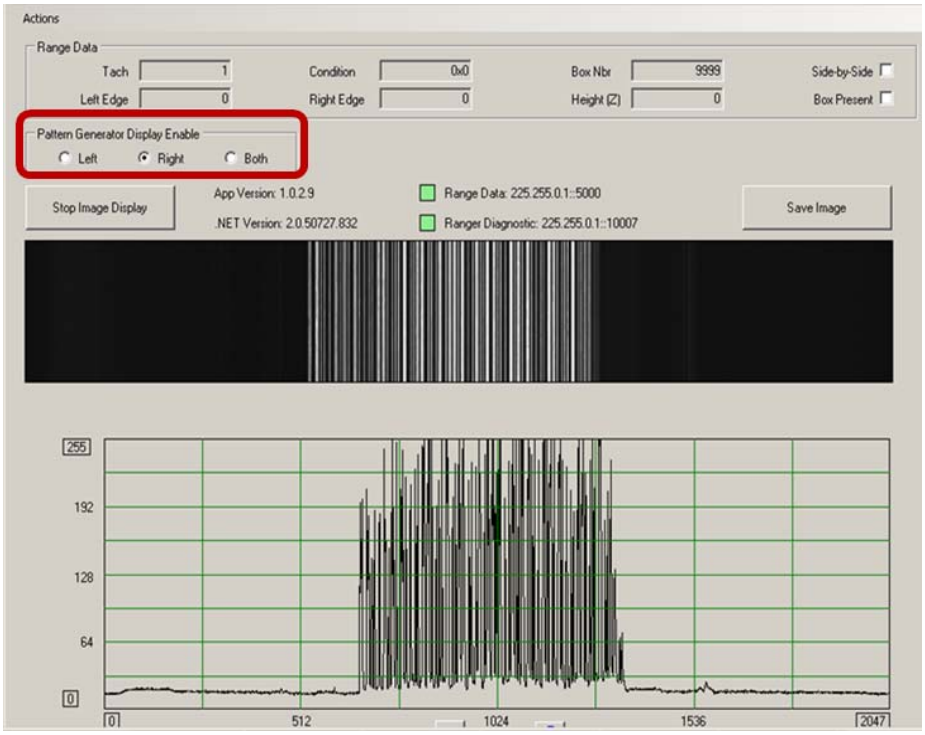
Setting the RangeFinder Gain

1. Place white printer paper across the conveyor under the RangeFinder



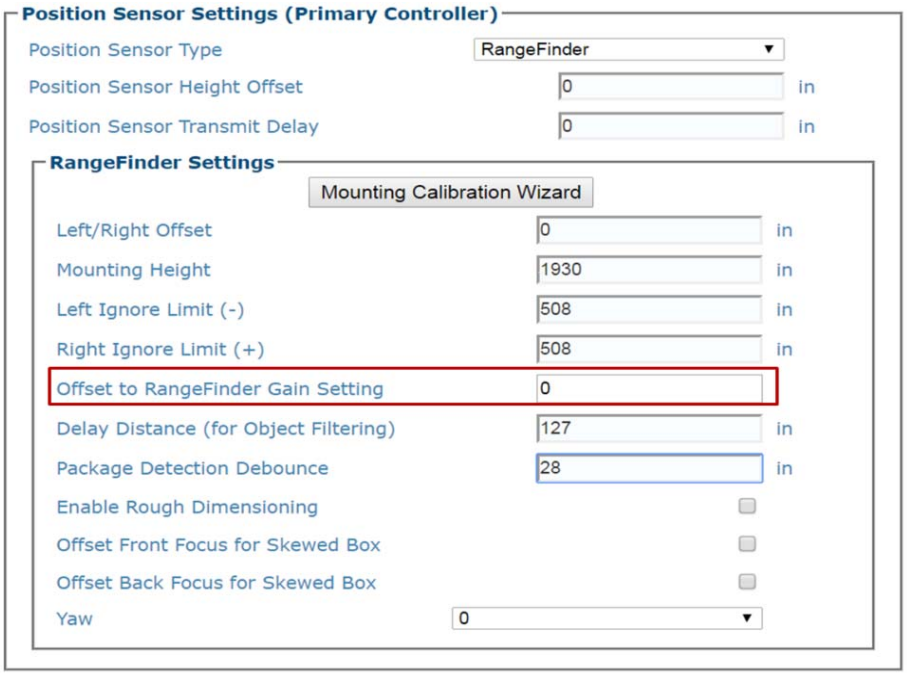
2. Open the **RangerOScope** application to view the signal.

3. Select the left pattern generator and compare its signal to the right pattern generator. Both signals should be symmetrical.

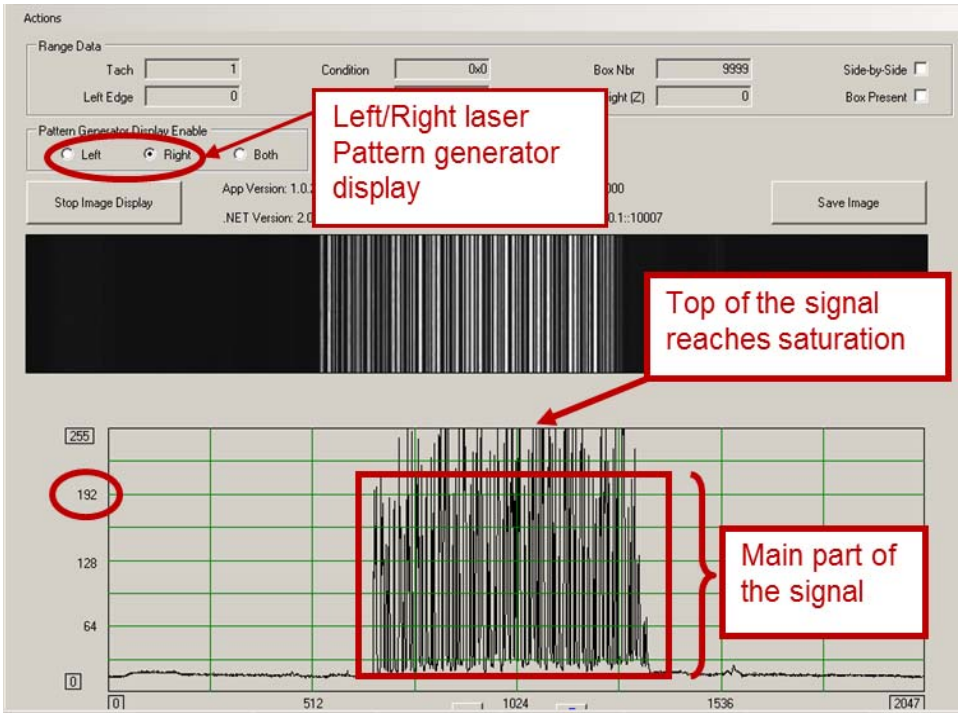


4. In **e-Genius** under **Modify Settings**, navigate to **Global Settings / Operating Mode**. The **Operating Mode** window opens.

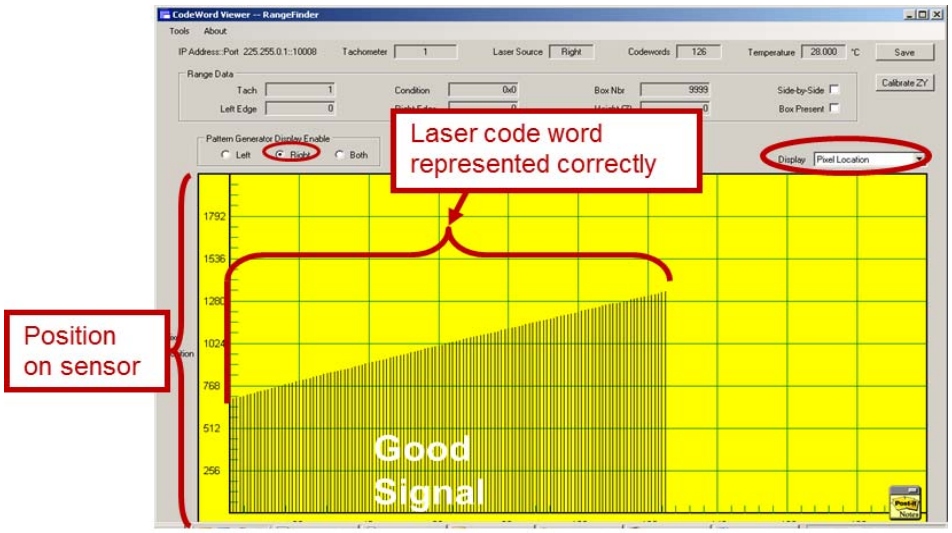
5. Under **RangeFinder Settings**, adjust the signal gain value in the **Offset to Range-Finder Gain Setting** text field until the right and left pattern generator signals are symmetrical in the **RangerOScope** application and gain pattern matches the sample in the image above.



6. Make sure the main part of the signal reaches inside line 192 in the **RangerOScope** application program.



7. Open the **CodeWord Viewer** application and view the signal.

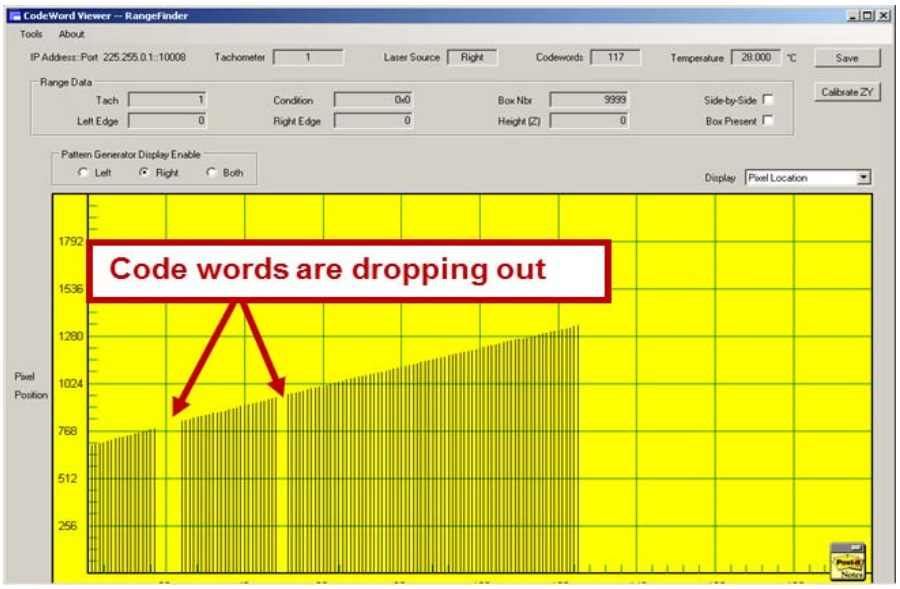


8. Select the **Left** option button under **Pattern Generator Display Enable**.

9. Select **Pixel Location** from the **Display** drop-down list.

10. Watch the CodeWord Viewer screen for a few moments, and make sure the code word signal remains solid, and none of the code words drop in and out.

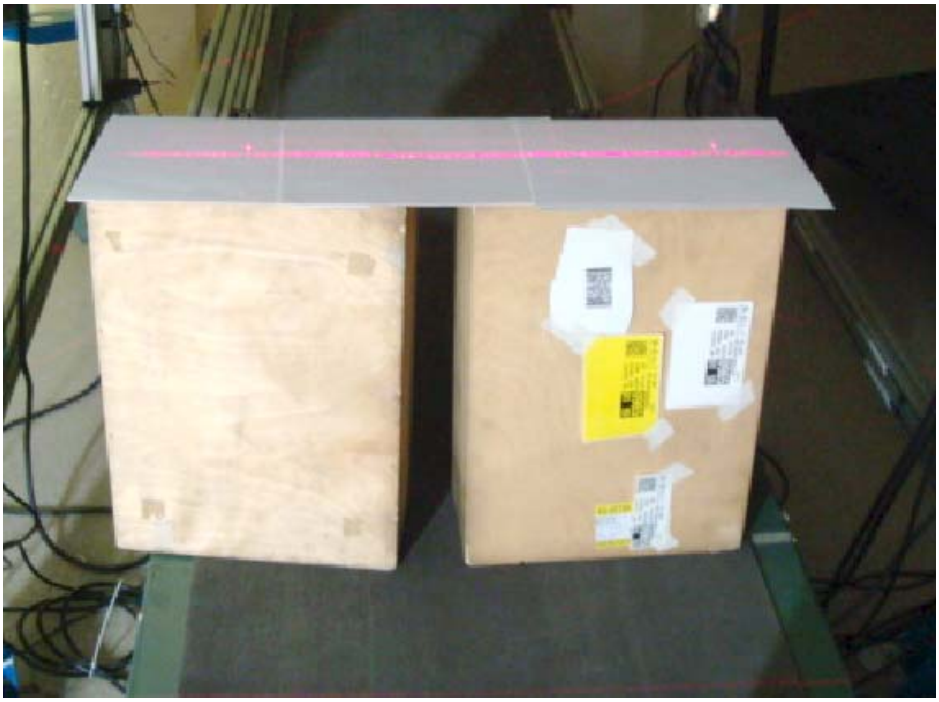
11. Select the **Right** option button under **Pattern Generator Display Enable,** and make sure the code word signal remains stable.



NOTE

If the gain is set too high or too low some of the code words along the scan line will drop in and out as shown below. Adjust the gain to eliminate the drop-outs.

12. Next, place the white paper on some tall system boxes in the near of the depth of field (DOF) as shown below.



13. Repeat steps 7-11 above.

Possible RangeFinder Signal Degradation Factors

Two factors that can negatively affect the RangeFinder signal are **Laser Power** and **Ambient Light.**

Perform a Laser Power Test

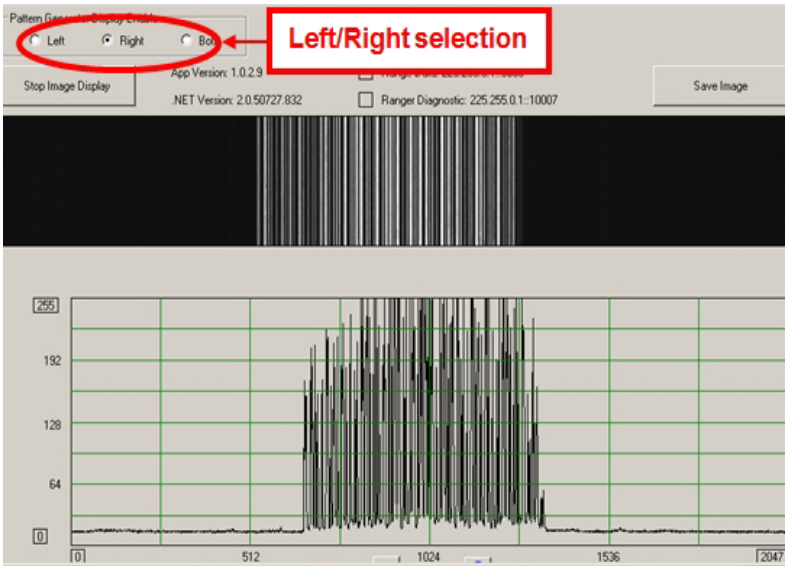
If the Left (or Right) laser signal looks good, but the opposite side laser code words periodically drop out:

1. Select left side signal and note its signal amplitude.

NOTE

The gain may have to be reduced in order to have a good representation of the signal.

2. Select right side laser and confirm that the signal amplitude is relatively equal to the left side signal amplitude.



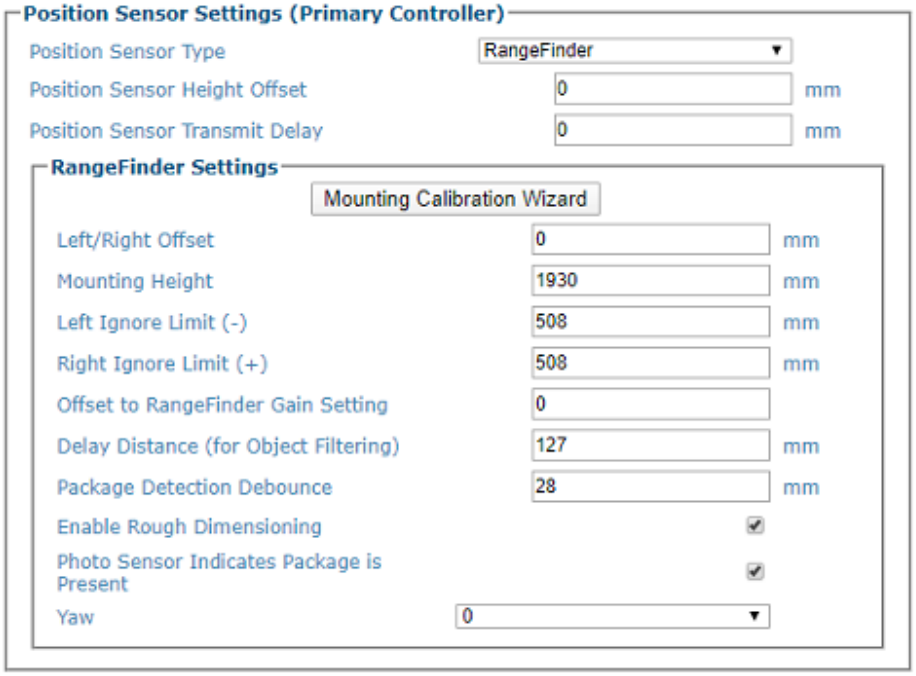
If a noticeable discrepancy is observed, it could indicate a potential problem with the laser diode and the unit could report erroneous height data. Since there are no field repairable items on the RangeFinder the unit should be replaced.

RangeFinder Mounting Calibration Wizard (Static Calibration)

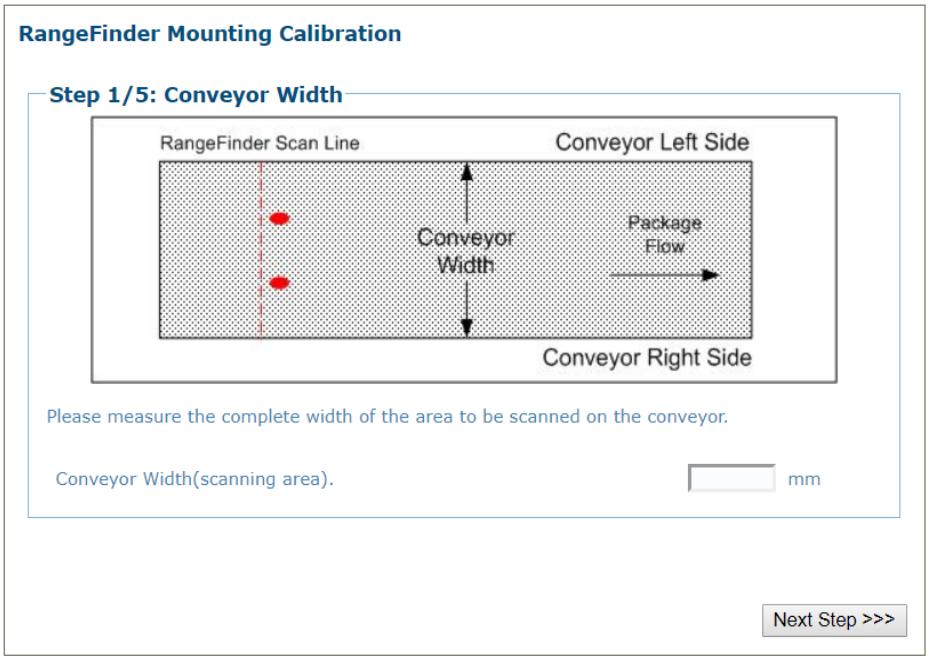
1. In **e-Genius** under **Modify Settings**, navigate to **Global Settings / Operating Mode**. The **Operating Mode** window opens.

2. Under **Position Sensor Settings (Primary Controller)**, select RangeFinder from the **Position Sensor Type** drop-down.

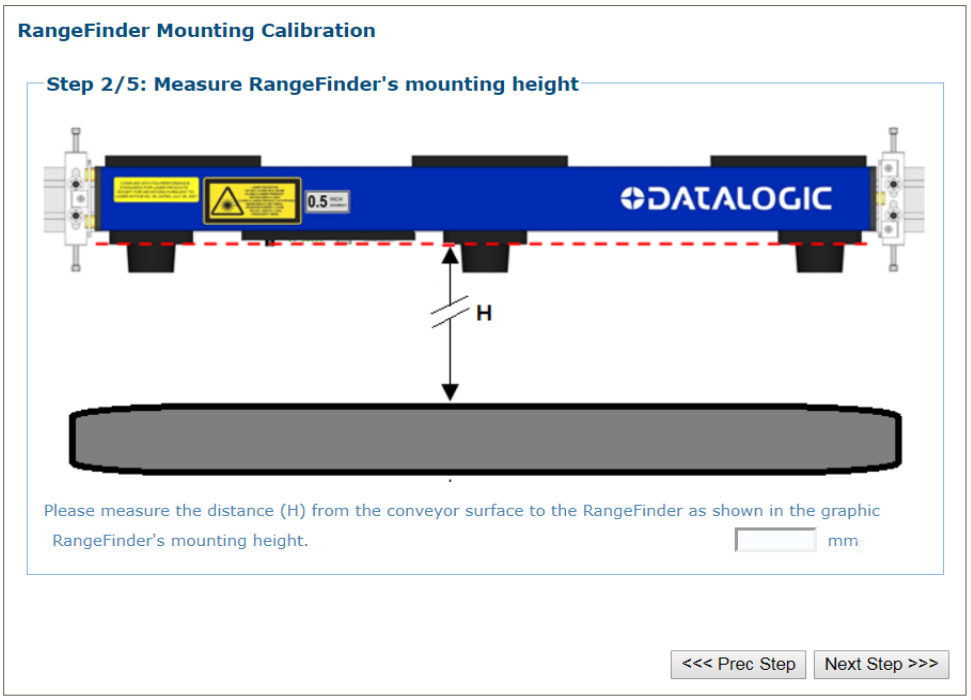
3. The **RangeFinder Settings** options appear.



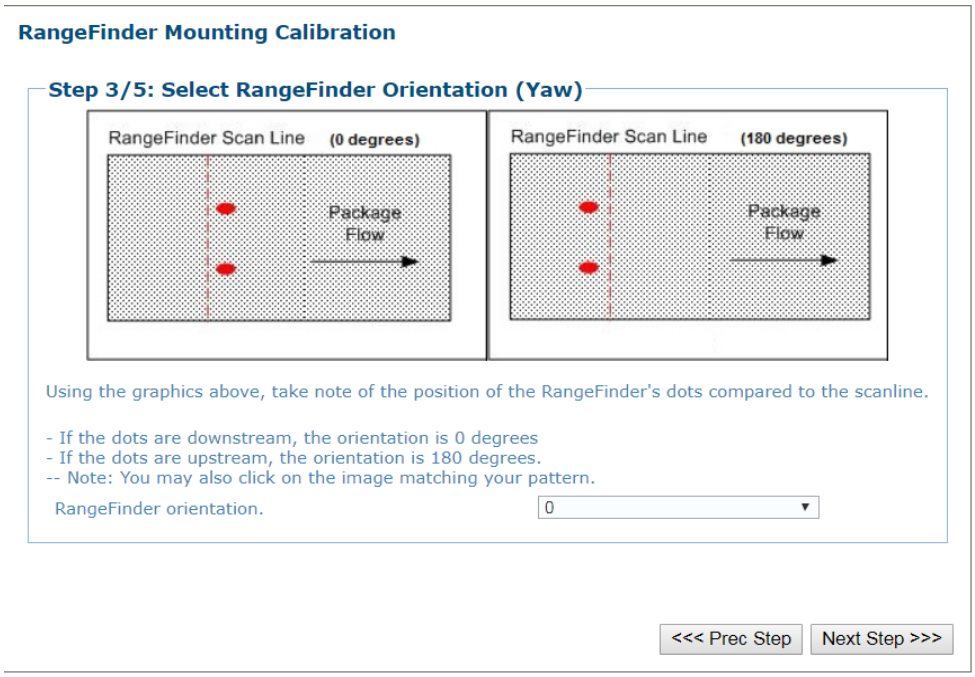
4. Click the **Mounting Calibration Wizard** button, the first step in the Mounting Calibration process appears.



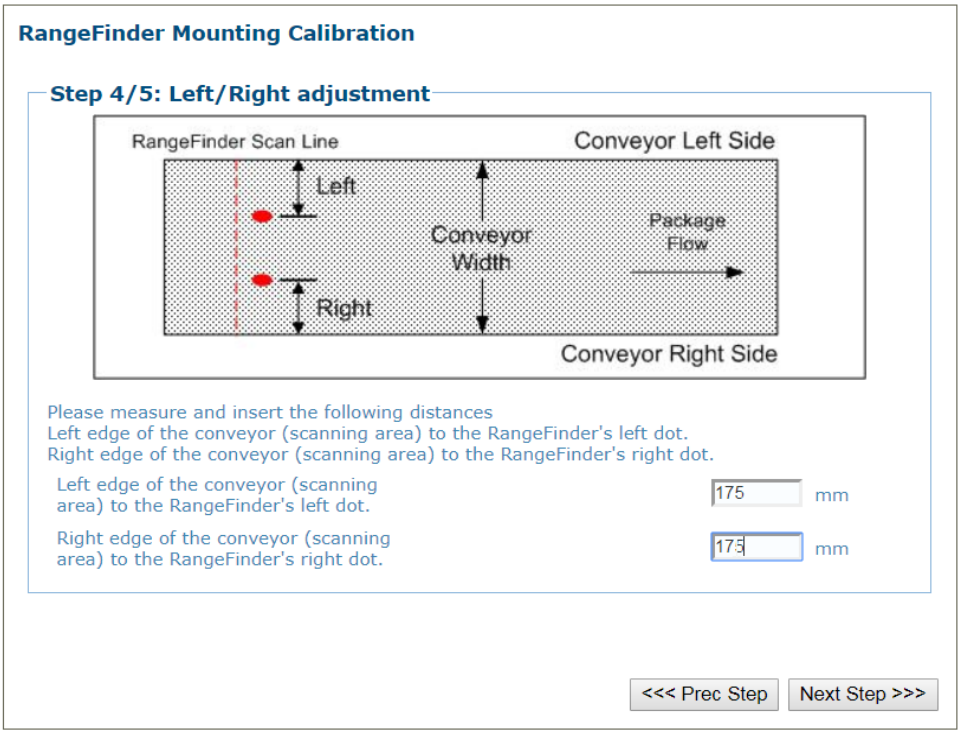
5. Measure the width of the conveyor and enter that value. Click **Next Step >>>** to proceed to Step 2 in the calibration process.



6. Enter the **RangeFinder mounting height**. Measure the distance from the conveyor surface to the Rangefinder and enter that value. Click **Next Step >>>** to proceed to Step 3 in the calibration process.



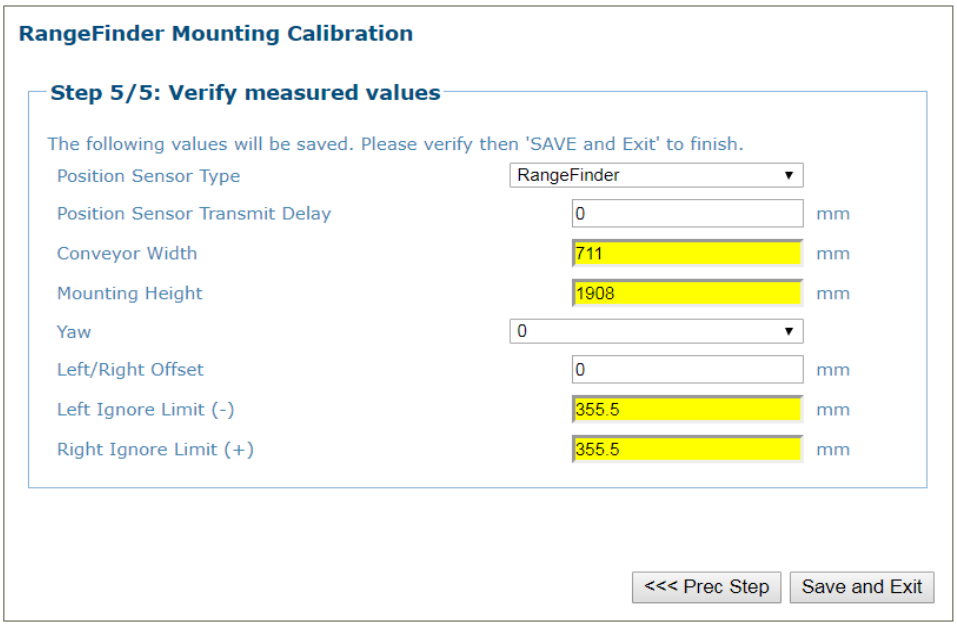
7. Select the **RangeFinder Orientation** or **Yaw** from the drop-down. Click **Next Step >>>** to proceed to Step 4 in the calibration process.



8. Enter the distance from the **Left edge of the conveyor to the Rangefinder's left dot.**

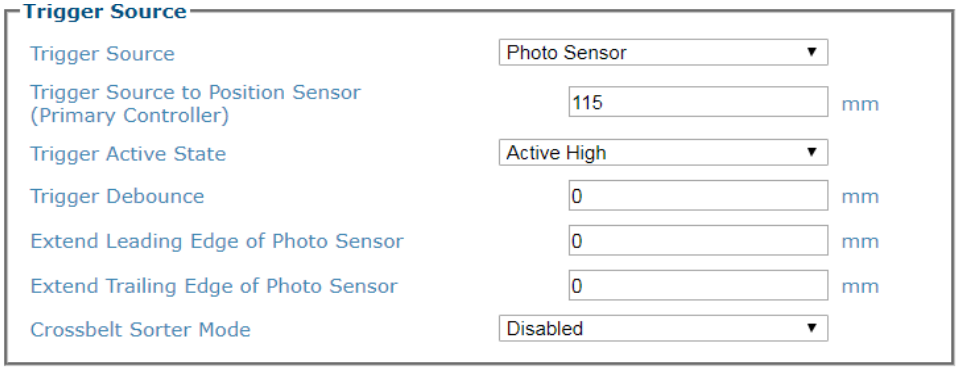
9. Enter the distance from the **Right edge of the conveyor to the Rangefinder's right dot.**

10. Click **Next Step >>>** to proceed to Step 5 in the calibration process.

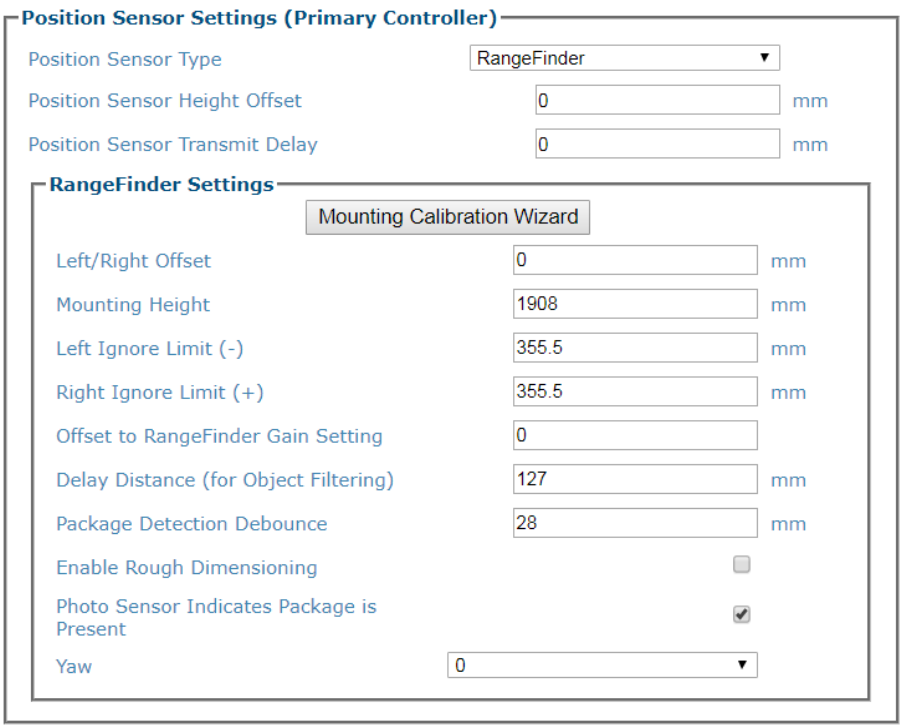


11. Verify the values are correct and click **Save and Exit.**

12. Select the correct **Trigger Source** from the drop-down



13. You will see the values entered during the Mounting Wizard process, appear under **RangeFinder Settings.**


Position Sensor Settings (Primary Controller)
Position Sensor Type
RangeFinder
Position Sensor Height Offset
0
mm
Position Sensor Transmit Delay
0
mm
RangeFinder Settings
Mounting Calibration Wizard
Left/Right Offset
0
mm
Mounting Height
1908
mm
Left Ignore Limit (-)
355.5
mm
Right Ignore Limit (+)
355.5
mm
Offset to RangeFinder Gain Setting
0
Delay Distance (for Object Filtering)
127
mm
Package Detection Debounce
28
mm
Enable Rough Dimensioning
Photo Sensor Indicates Package is Present
Yaw
0

CHAPTER 6
SETUP AND CALIBRATION

The AV7000 Camera can be set up as a single unit or with multiple AV7000s in a scanning array (tunnel). The AV7000 camera system is a high-precision imaging system, and requires careful and accurate setup and calibration to function at its full potential.

Review Mounting Drawing and Application Specifications

Make sure all equipment is mounted correctly based on the application drawings and specifications.

- **AV7000 Deflection Mirror Alignment** - Reference the application drawing and for deflection mirror placement and mounting.
- **Photoelectric Sensor, Trigger (if applicable)** - Mount the photoelectric sensor according to the application drawing, and with the following recommendations:
  - Make sure the PS is square to the conveyor
  - Make sure the PS is high enough off the conveyor surface that it will not get false triggers from any part of the conveyor
  - Make sure the PS is aligned properly to the reflector. (In a sender receiver application, make sure the two components are aligned correctly)
  - Make sure the PS is 155 mm [6 in] or greater upstream from the RangeFinder scan line (if applicable).
- Refer to the Focusing Device Setup in the Product Reference Guide and each focusing device setup guide for complete details.

AV7000 SOFTWARE UPDATE

If necessary, a Datalogic technician will update the AV7000 CPU with the latest software. This must only be done by, or under the guidance of, a trained Datalogic technician.

DO NOT use a parameter file from any previous AV7000 installations.

Connect a Laptop to the AV7000.

The static and dynamic calibration can be accomplished using any of the three Ethernet ports; Image, Host or Sync:

- Host default IP: 192.168.3.10
- Image default IP: 10.0.40.20

- Sync Controller IP (the sync adapter cable must be used): 192.168.0.145

NOTE

Your PC's IP address needs to match the camera system's IP Address range, see "To change your PC's IP Address:" on page 90 **for information on connecting a laptop to the system. The Host and Image port IP addresses may have been changed for your application. Contact your system administrator for changes.**

Open a browser and enter cameras IP address into the browser's address field. When **e-Genius** opens, enter the case sensitive user name (setup) and password (DLAset).

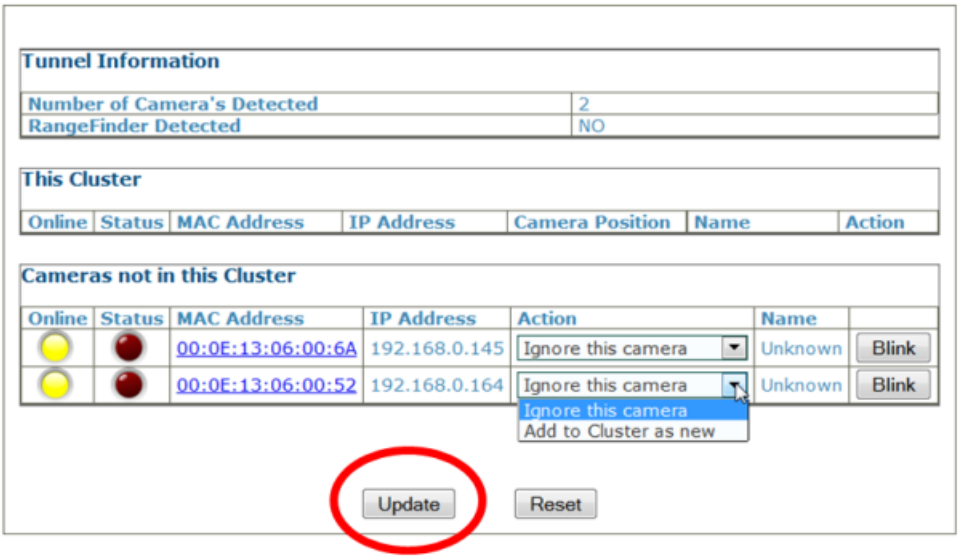
E-GENIUS CALIBRATION PRESETS

Before physical calibration is begun, a few settings need to be confirmed or modified in **e-Genius.** Your PC's IP address needs to match the camera system's IP Address range.

System Info: Bring Each Camera into the Network

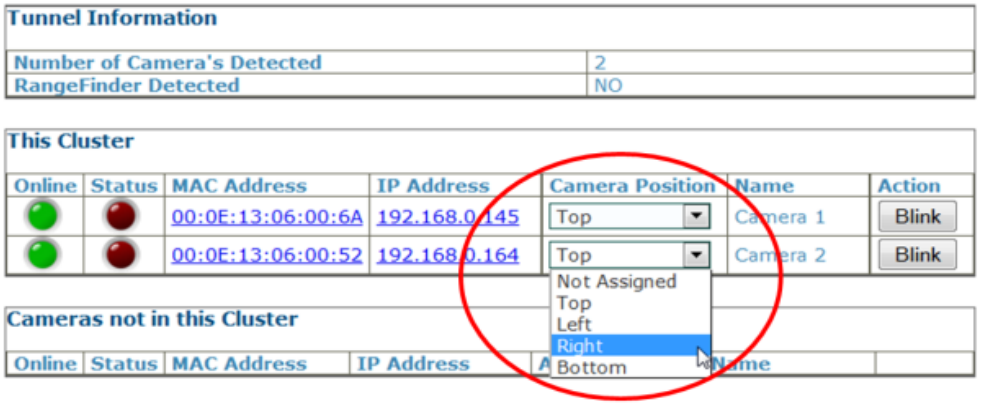
When power is applied to the AV7000 scan tunnel for the first time each camera will need to be brought into the sync network using the **e-Genius**.

1. From the menu tree, navigate to the **Modify Settings | System Info.** The **System Info** Page opens.

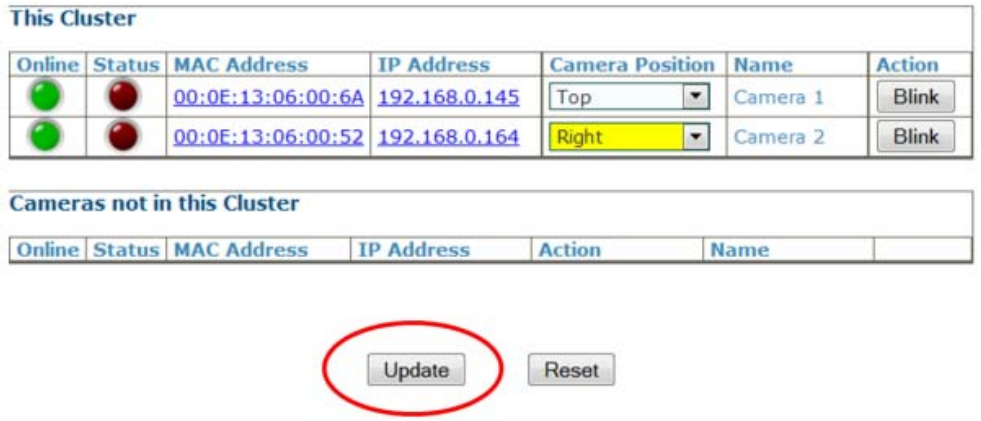


2. From the **Action** drop-down list, select the **Add to Cluster as new.**
3. Click **Update** to add the camera to the **This Cluster** table.
4. Once each AV7000 has been added under **This Cluster,** its mounting positions will need to be identified. Click **Blink** in a camera's row in the table. That camera's illumination will light.

5. Once the camera has been identified, select its mounting position from the **Camera** Position drop-down list.



6. Click **Update** to save the configuration



Operating Mode

In the menu tree under **Modify Settings,** navigate to **Global Settings | Operating Mode.** The **Operating Mode** window opens.

The following parameters are important to be set to match the application:

Encoder Settings: Encoder Step Settings > Encoder Step. Conveyor speed

Conveyor width: Enter the width of the conveyor (the distance between left and right focus offsets

Trigger Source: Make sure the Trigger Active State is set correctly, To test this, navigate to **Diagnostics | Device Tracking**. Run two boxes through the system. Confirm that the start and end trigger corresponds to the correct **Seq Number.**

Transmit Point Settings

Other Important Application Dependent Parameters:

- **Modify Settings | Global Settings | Object Detection**
- **Modify Settings | Global Settings | Barcode Settings**
- **Modify Settings | Global Settings | Communications**
- **Modify Settings | Global Settings | Output Format**
- **Modify Settings | Global Settings | Image Saving**

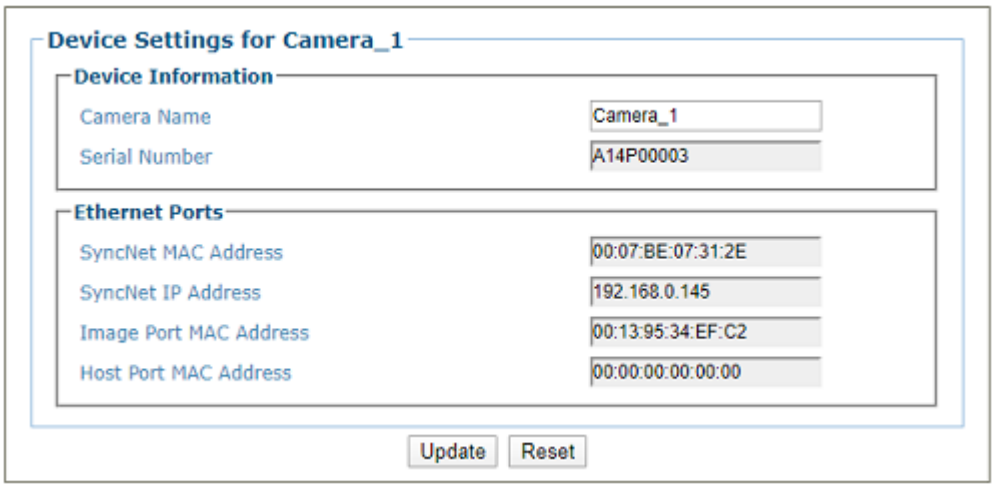
Device Settings

In the menu tree under **Modify Settings,** navigate to **Device Settings.** Due to the mounting differences among the AV7000 cameras in the system, each camera will be calibrated separately.

There will be a different **Device Settings** branch in the menu tree for each camera in the array.

1. In the menu tree, navigate to **Modify Settings | Device Settings | Camera N | Device Info.** The **Device Info** window opens.

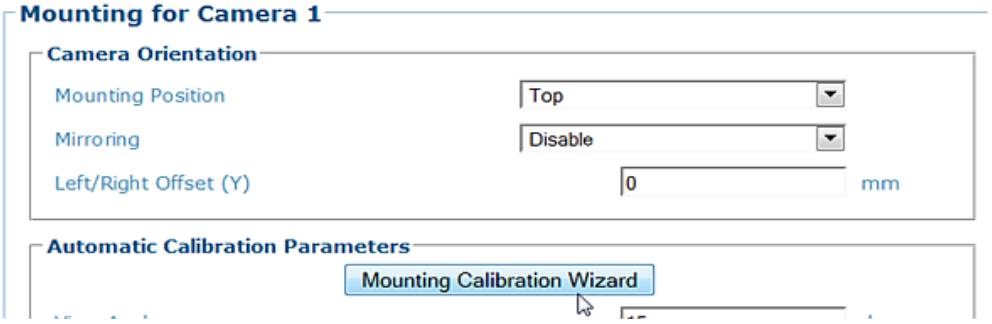
2. Enter a unique name for the camera. The new name will appear in the **Name** column on the **System Info** window, and also in the menu tree under **Device Settings.**



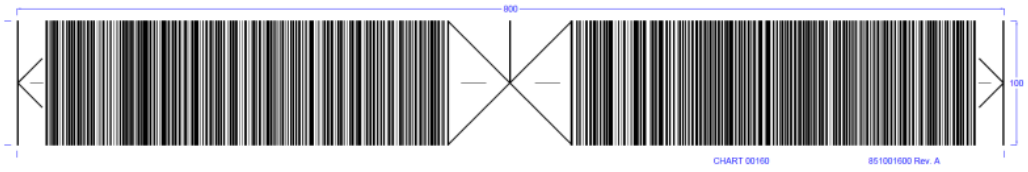
3. Click **Update** to save the new name. Repeat this for each camera in the system.

CALIBRATING AV7000: STATIC CALIBRATION

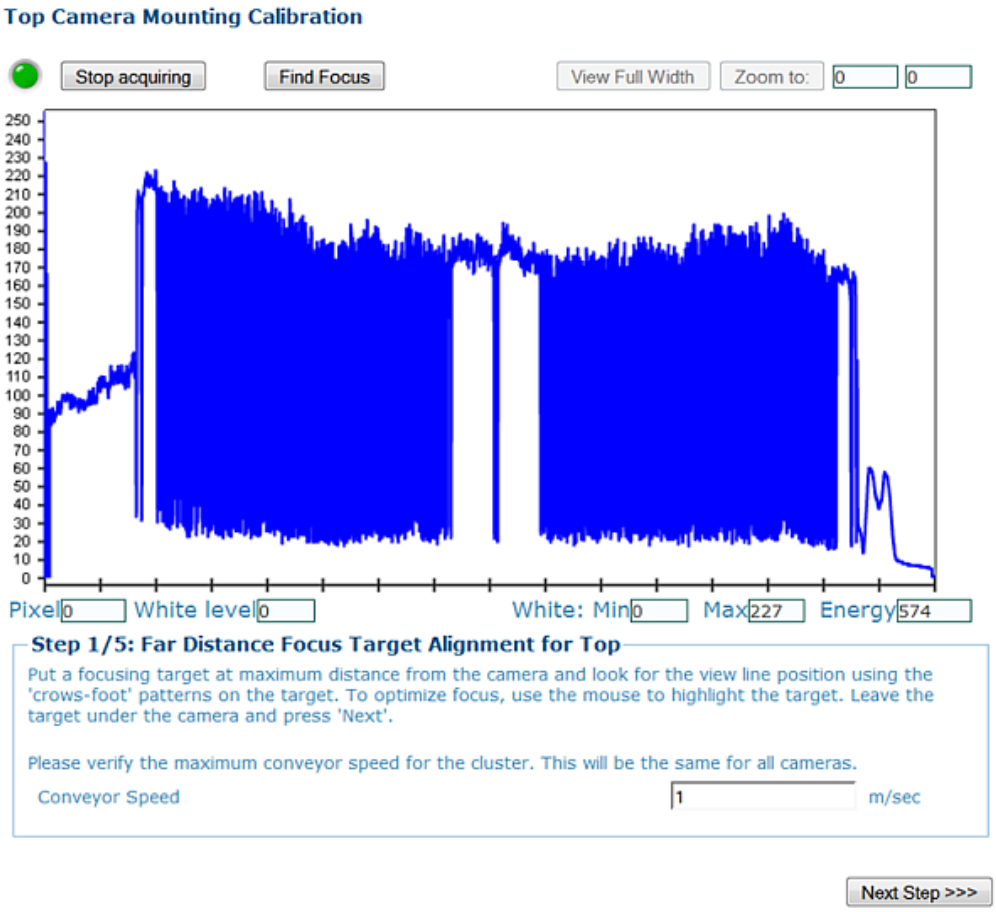
1. Navigate to **Modify Settings | Device Settings | Camera N | Mounting.** The **Mounting** window opens.



2. Place the CH-3 Autofocus Test Chart on the conveyor within the imaging area for the selected camera.



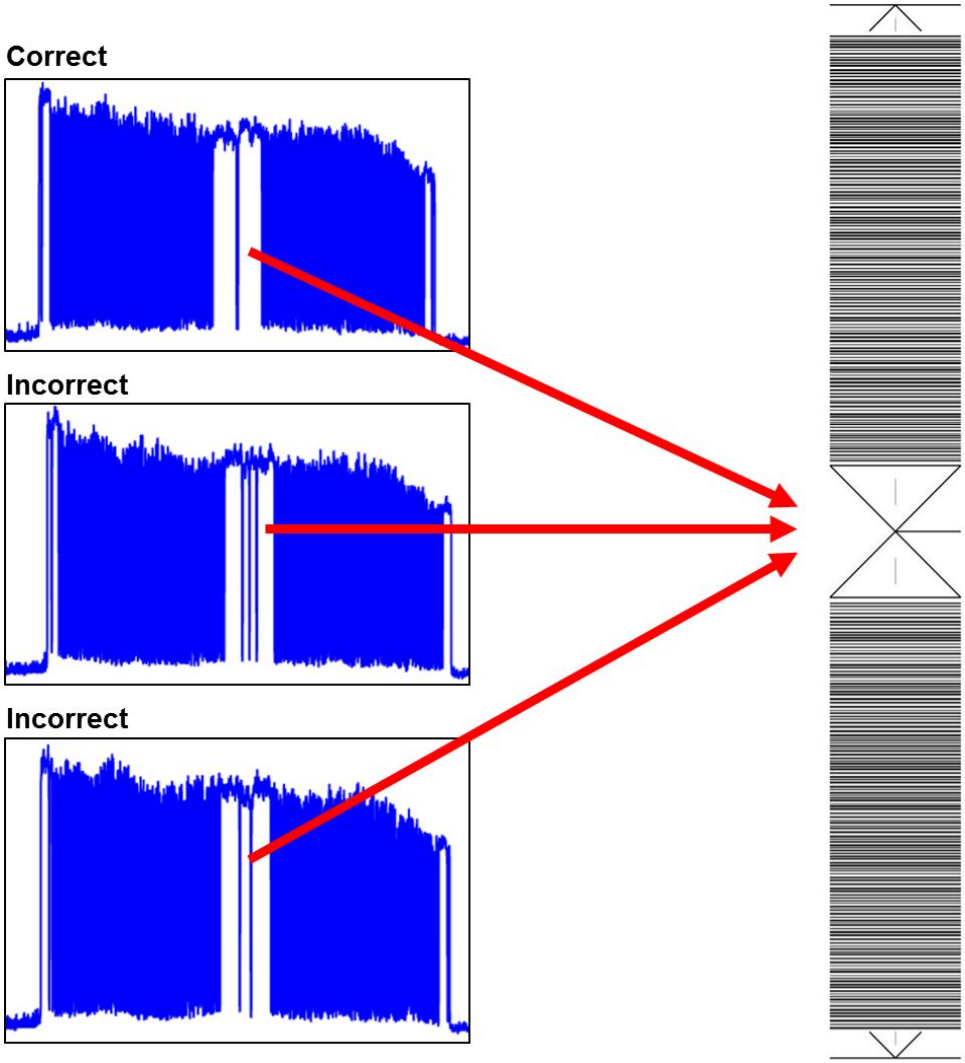
3. Click **Mounting Calibration Wizard.** The AV7000 camera launches the **Step 1/5** calibration wizard window, and attempts to focus on the calibration test target.



4. Confirm that the application's correct MAX conveyor speed (Formula: Max conveyor speed x 1.05) is in the **Conveyor Speed** field. This is used by the AV7000 to set the image exposure time.

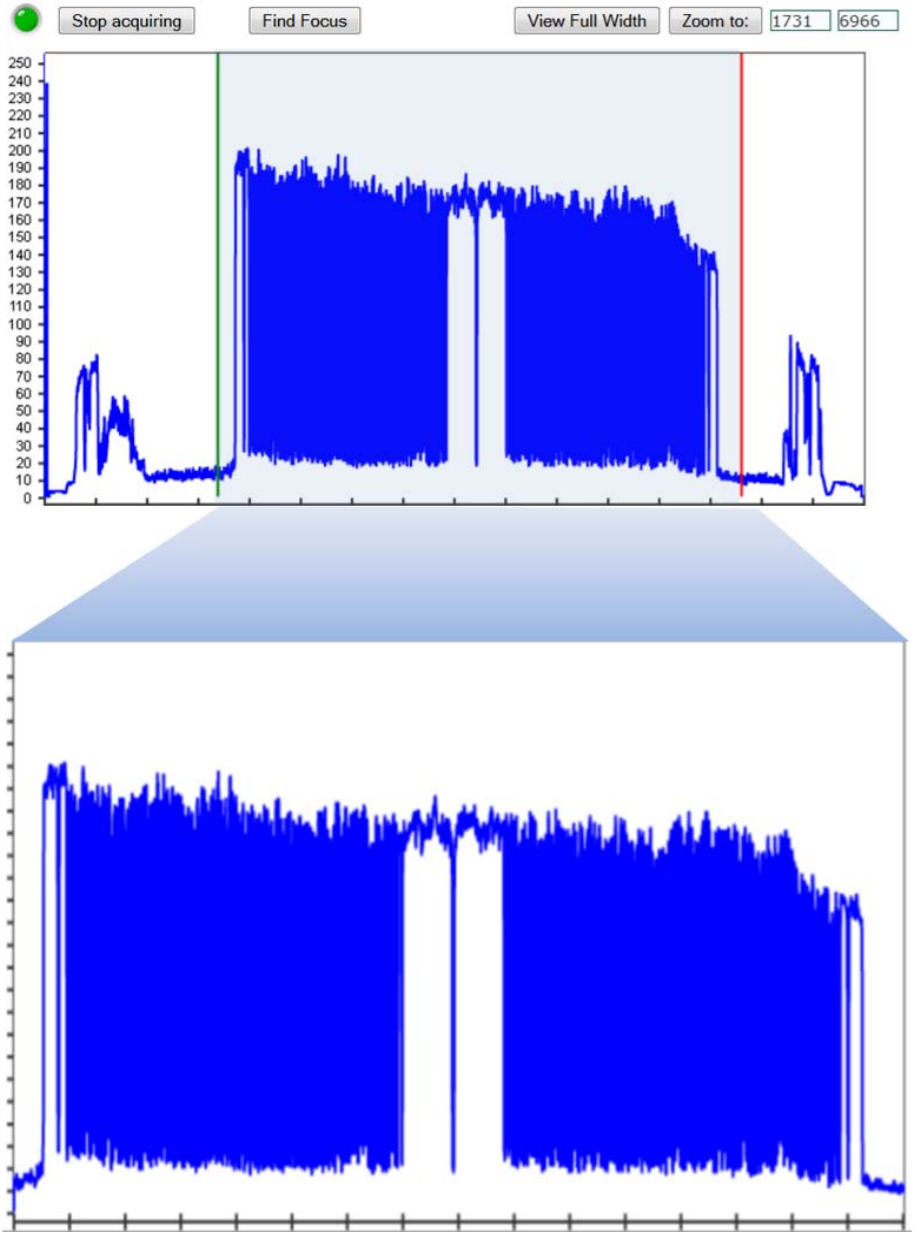
5. Place the **CH-3 Autofocus Test Chart** at the **FARTHEST** distance from the AV7000 (far working distance).

6. Adjust the target position until the center pattern is represented by only a single line.



7. Zoom into the focused area with the mouse by left clicking and holding the cursor on the left side of the image and then dragging the cursor to the right. Release the mouse button past the second focused area. This minimizes the amount of data the AV7000 has to process during this calibration step.

8. Click **Zoom to** and the image is zoomed to the selected area.



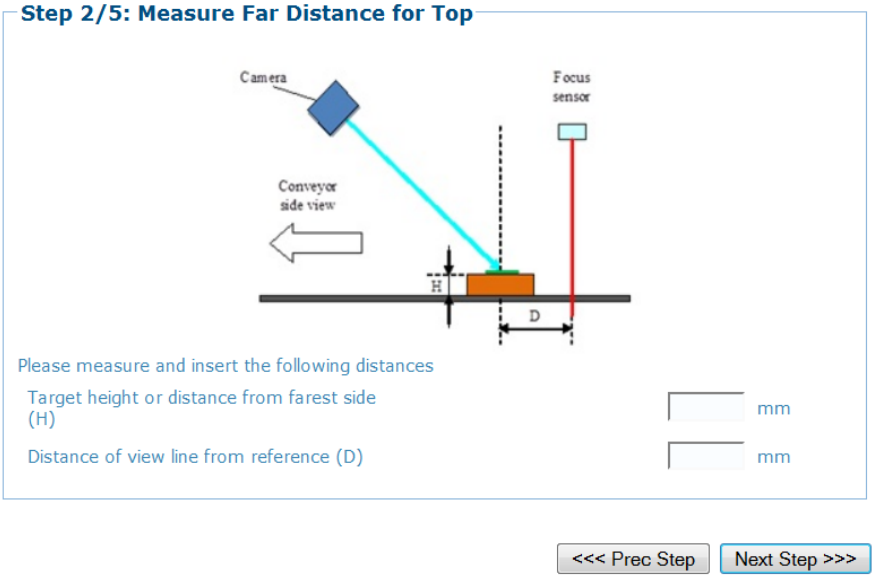
9. Click **Next Step >>>.** The **Step 2/5 Mounting Calibration Window** opens. The AV7000 uses the image and determines the optimal far working distance for the camera. This step takes a while and the “Please Wait” message will blink during this time.

Step 1/5: Far Distance Focus Target Alignment for Top

Please wait while the camera determines the optimal far working distance.
Do not move the target during this time.

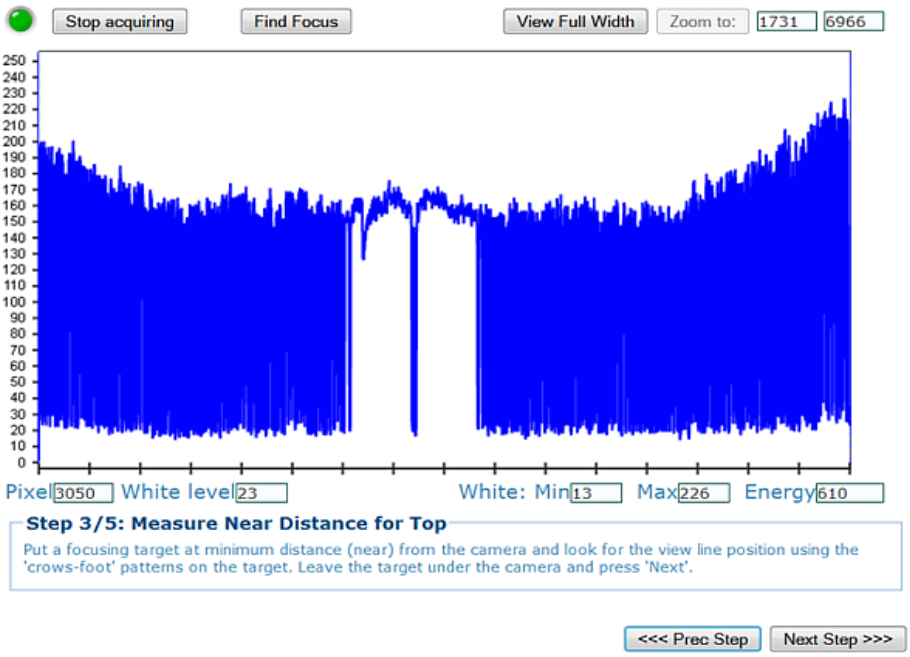
10. Enter the **Target height** (Top mount) **or distance from the farthest side** (Side Mount) **(H).**

- For **Top Read,** with the target on the conveyor this value is **0.**
- For **Side Read,** the target can be placed on a box. Set the box at the farthest distance from the AV7000 and the **H** value is the width of the box.



11. Measure the distance from the center of the **CH-3 Autofocus Test Chart** (center of X) to the focus source (DM3610, RangeFinder, or Light Curtain). Enter the distance in the **Distance of view line from reference (D).**

12. Click **Next Step >>>.** The **Step 3/5 Mounting Calibration Window** opens.



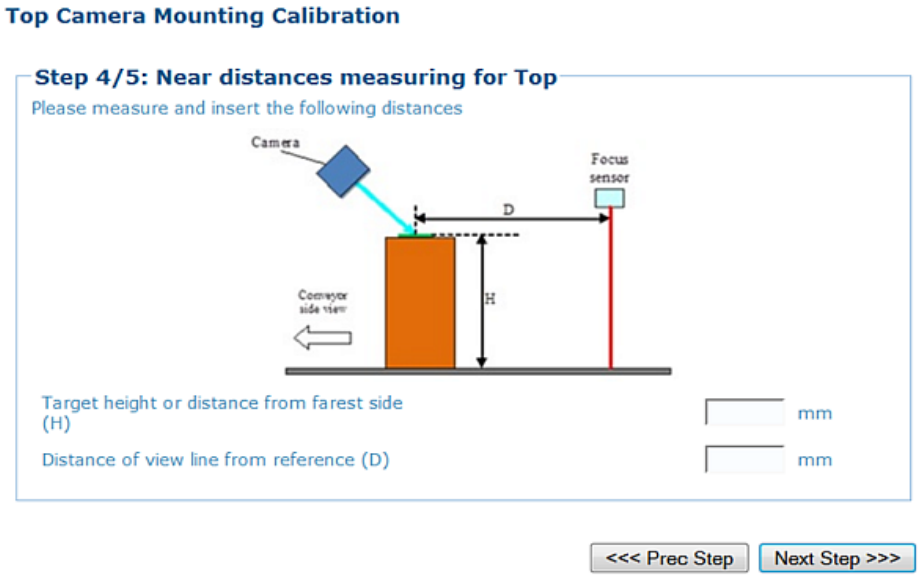
NOTE

If the image does not come into focus as shown above, click Find Focus. This should find and focus on the target.

13. Place the **CH-3 Autofocus Test Chart** at the near distance. Position the target so the center X has only one leg (center of X) represented.

14. Zoom into the target area as described in the steps above.

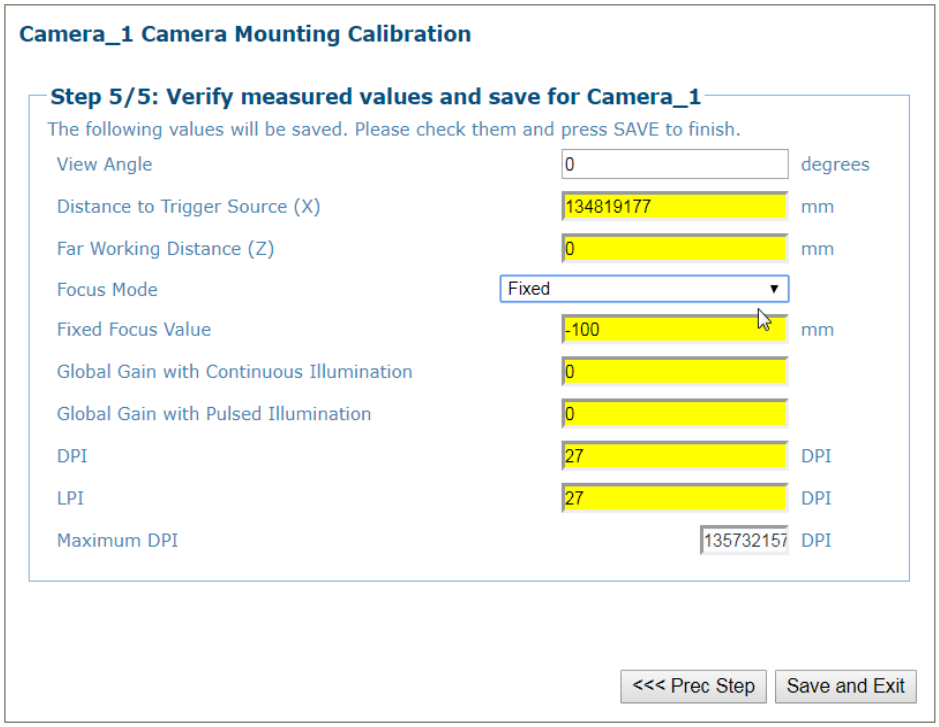
15. Click **Next Step >>>. The Step 4/5 Mounting Calibration Window** opens.



16. Enter the **Target height** (top mount AV7000) **or distance from farthest side** mounted AV7000) **(H).**

17. Enter **Distance of view line to reference (D).** This is the distance from DM3610, RangeFinder, or Light Curtain to the view line.

18. Select **Next >>>.** The **Step 5/5 Mounting Calibration Window** opens.



19. Select Fixed or Profile from the **Focus Mode** drop-down, if necessary.

20. The **Mounting Calibration Wizard** displays the results of the static calibration. The yellow highlight indicates which fields will be changed in the XML file. These new parameters will automatically be used by the AV7000.

21. Click **Save and Exit.**

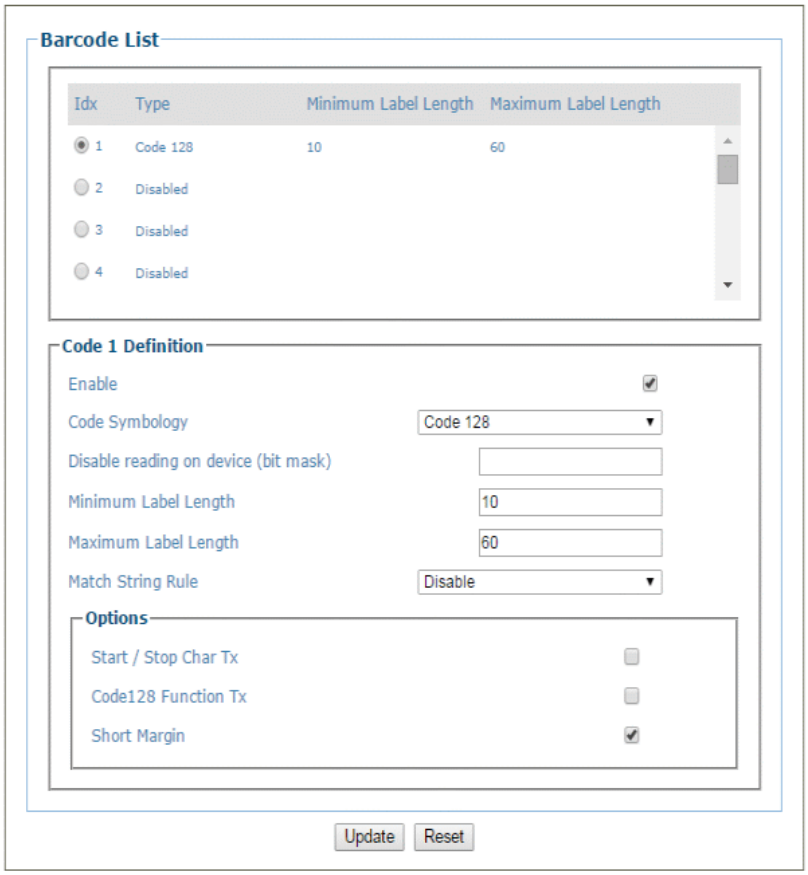
CALIBRATING AV7000: DYNAMIC CALIBRATION

Dynamic calibration is used to set up and calibrate a system in motion.

Follow these steps to configure e-Genius for Running Dynamic Calibration

1. The test target used for dynamic calibration uses 20 character Code 128 barcodes, so e-Genius must be configured to accept those codes.

2. In the menu tree under **Modify Settings**, navigate to **Global Settings | Barcode Settings | Barcode Settings Table.** The **Barcode Settings Table** window opens.



3. Set the barcode menu to read the **Picket Fence/Step Ladder Res Test Chart** (code 128 barcodes).

NOTE

After calibration is completed, this barcode setting must be removed if it is not the customers expected barcode.

Preparing the Dynamic Calibration Test Box

1. Tape the **Dynamic Focus Target** and **Picket Fence/Step Ladder Res Test Chart** on the 460x300x150 mm [18x12x6 in] test box as shown.

2. Turn on the conveyor.
3. In e-Genius, navigate to **Diagnostics | System Status** and confirm that the belt speed is correct.

Belt Speed(mm/s)	1508
Belt Speed(fpm)	296
Total Packages	48
Good Reads	6
No Reads	25
Multiple Reads	17
Read Rate	47.92%
Reset Counts	

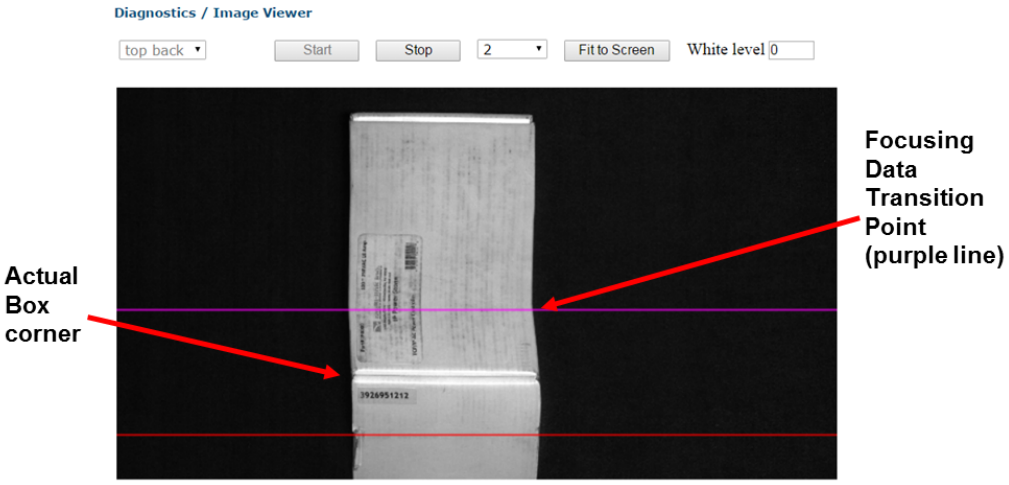
Calibrating Distance to Trigger Source (X)

1. In e-Genius, navigate to **Diagnostics | Image Viewer.** The **Image Viewer** window opens.

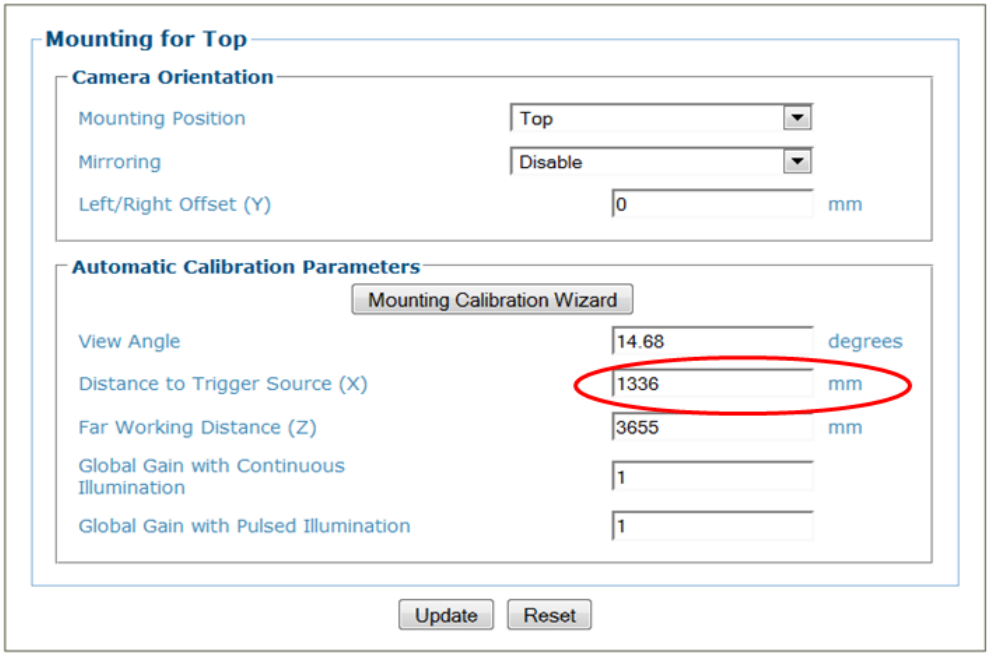
2. Select the camera to be calibrated from the first drop-down box.
3. Click **Start.**
4. Send a small box through the system (belt surface for top mount, and farthest distance from camera for side mount).

The **Image Viewer** captures an image of the box. The purple line in the image indicates the **Focusing Data Transition Point,** which should align with the corner of the box.

5. If the **Focusing Data Transition Point** (purple line) does not align with the leading corner of the box, the **Distance to Trigger Source (x)** must be modified to align the purple **Focusing Data Transition Point** line with the corner of the box.



6. In the menu tree, navigate to **Modify Settings | Device Setting | Camera n (unit being calibrated) | Mounting.** The **Mounting** window opens.



7. Incrementally modify **Distance to Trigger Source (X)** to move the **Focusing Data Transition Point** (purple line) to the actual corner of the box.

8. **To do this,** re-run the **SMALL** box and adjust the **Distance to Trigger Source (X)** until the **Focusing Data Transition Point** aligns with the leading corner of the box.

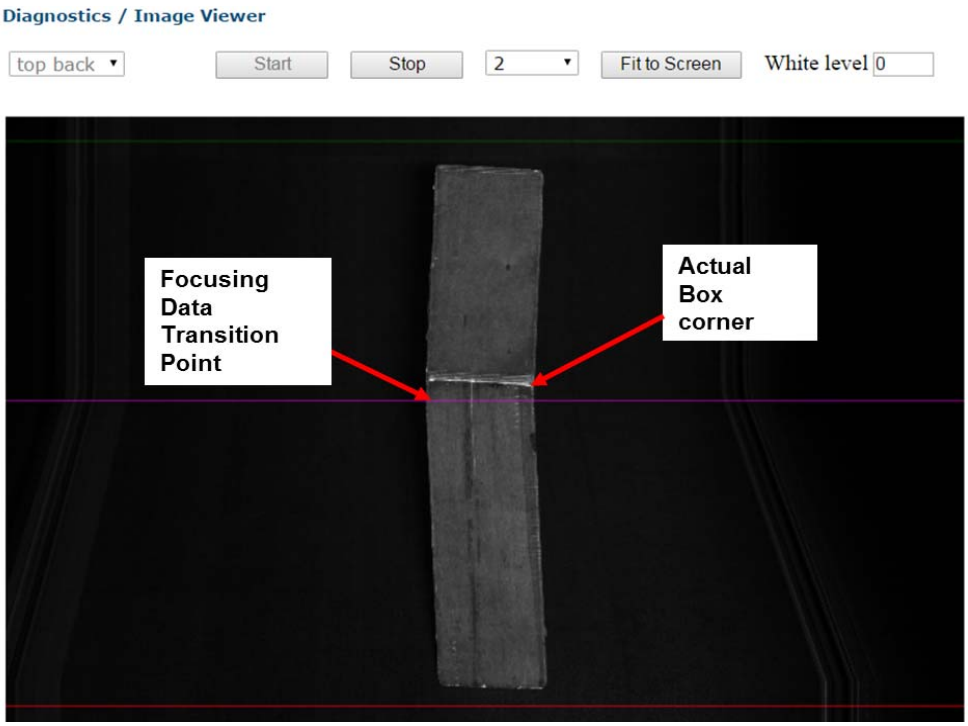
NOTE

The leading corner of the box should align with the purple Focusing Data Transition Point.

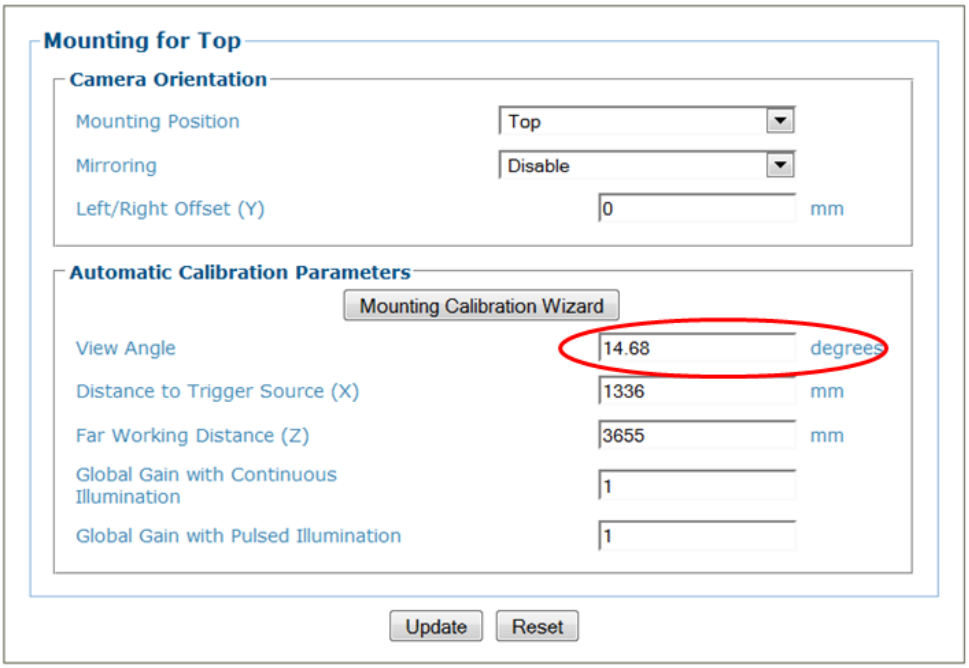
Calibrating Camera View Angle

After the **Distance to Trigger Source (X)** is set correctly, set the camera view angle.

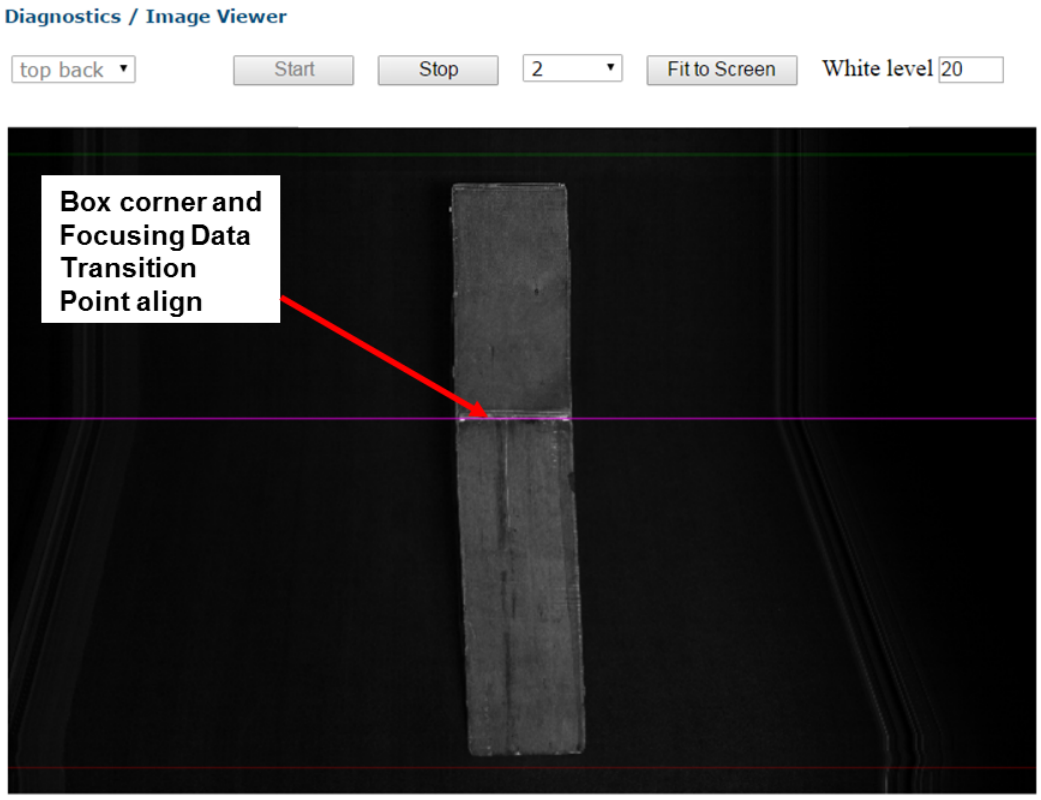
1. From the menu tree, navigate to **Diagnostic | Image Viewer.** The **Image Viewer** window opens.
2. Run a box (TALL box for a top read, and NEAR box for a side read), through the system and identify the position of the **Focusing Data Transition Point** (purple line) in regards to the corner of the box.



3. In the menu tree, navigate to **Modify Settings | Device Setting | Camera n (unit being calibrated) | Mounting.** The **Mounting** window opens.



4. Incrementally modify the View Angle until the **Focusing Data Transition Point** aligns with the corner of the box.



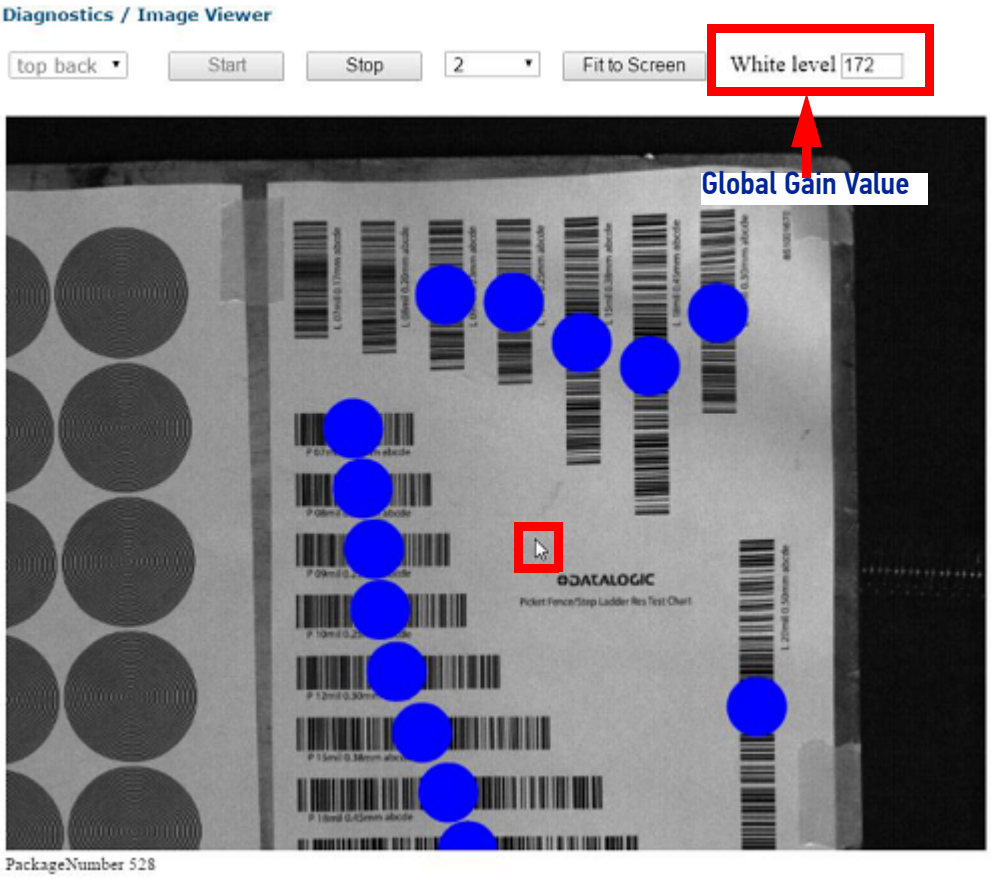
5. Re-run the small box and confirm the **Distance to Trigger Source (X)** setting. Make adjustments as needed.

6. Re-run the tall box and confirm the **View Angle** setting. Repeat process until both the tall (or near distance for side read) and small (farthest distance for side read) boxes have the same **Focusing Data Transition Point** at the corner of the box.

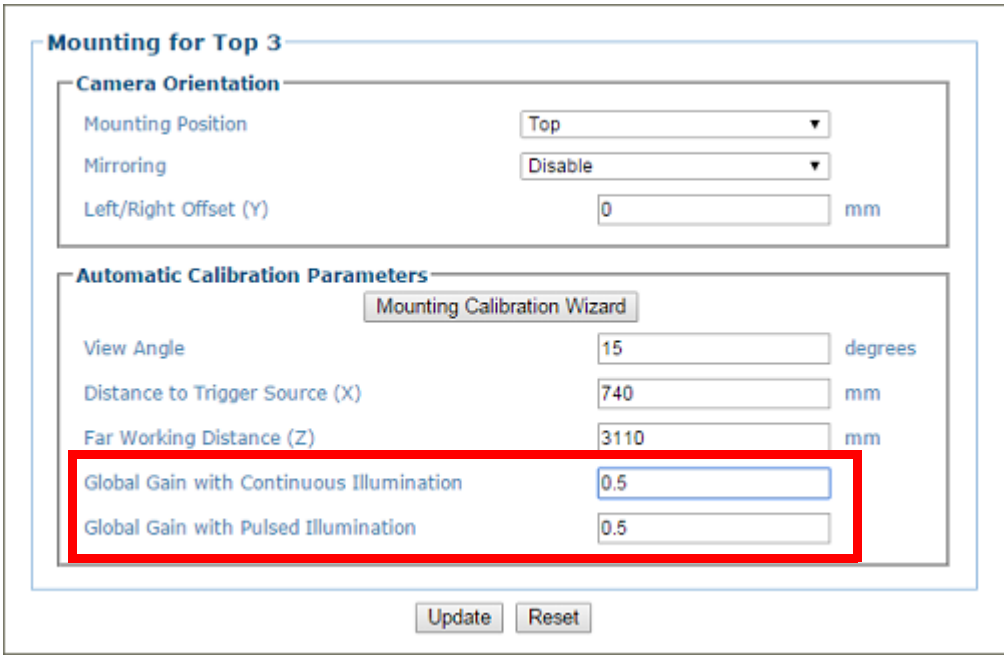
Image Gain

The image gain affects the camera's ability to decode the barcodes by modifying the image exposure. Increased gain increases the brightness and clarity of an image at a given exposure.

1. From the menu tree, navigate to **Diagnostic | Image Viewer.** The **Image Viewer** window opens.
2. Again run the text box through the system with the targets facing the camera.
3. In the **Image Viewer,** hold the mouse pointer over any white area of the target.



4. The gain value (White level) should fall between 180 and 200.
5. In the menu tree, navigate to **Modify Settings | Device Setting |Camera n (unit being calibrated) | Mounting.** The Mounting window opens.



NOTE

If pulsed illumination is enabled in Device Settings | Camera n | Imaging Global Gain with Pulsed Illumination should be adjusted. If pulsed illumination is not enabled, make adjustments to Global Gain with Continuous Illumination.

6. Adjust the gain until the white level shown in the Image Viewer is between 180 and 200.

LPI/DPI Calibration

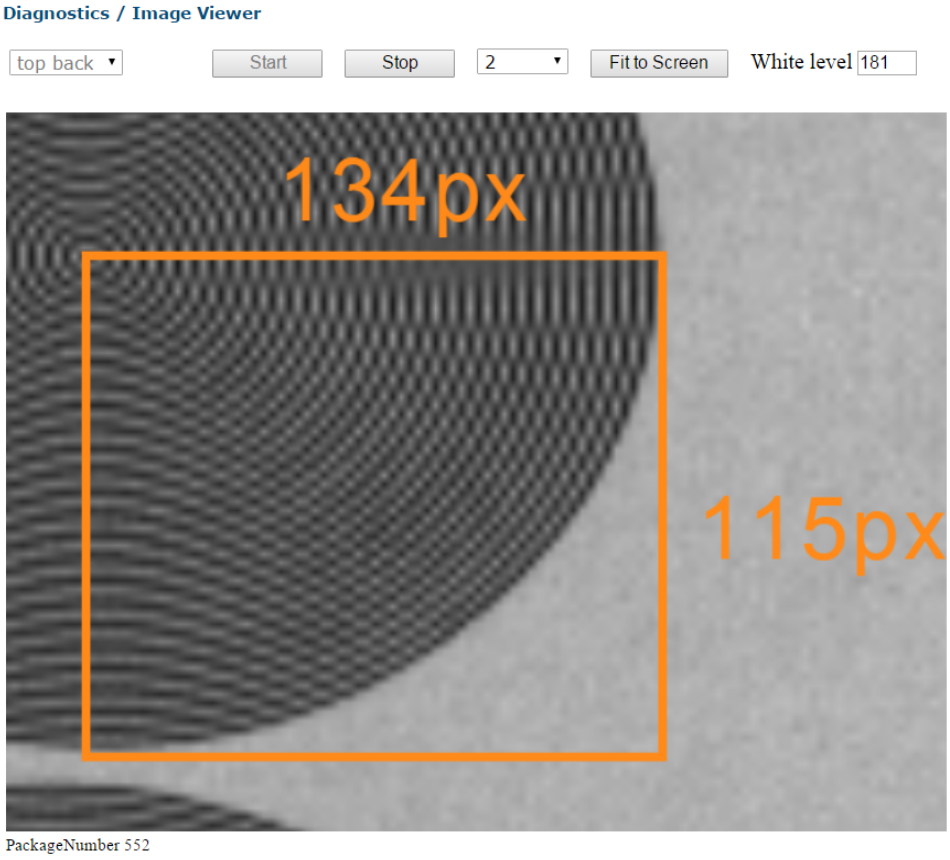
Lines Per Inch (LPI) and Dots Per Inch (DPI) values read by the AV7000 must be within 5% of each other. The goal is for the AV7000 to capture square pixels. This is especially important with certain barcodes and in cases where Optical Character Recognition (OCR) is required.

1. From the menu tree, navigate to **Diagnostic | Image Viewer**. The **Image Viewer** window opens.
2. Run the prepared test box through the system.
3. Click to zoom into the captured image of the **Dynamic Focus Target** so one circle fills the screen.

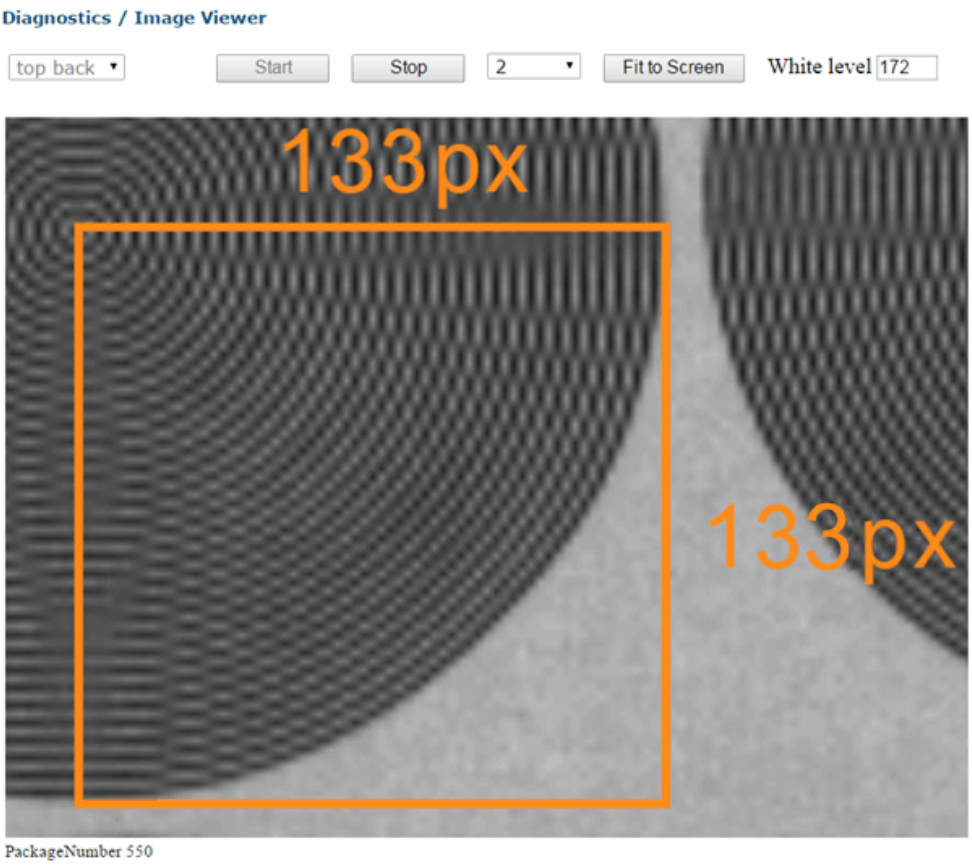
NOTE

If necessary, hold the Shift key and click to zoom back out. Alternately, rotate the mouse wheel to zoom in or out.

4. While holding down the **CTRL** key, click and drag a box from the middle of the center dot to the outer edges of the outer circle as shown below. This image is obviously elongated, and corrections must be made.



5. If the LPI/DPI are not within 5% then a parameter is likely incorrect. Run the install wizard again to correct the problem. If that doesn't correct the problem, consult Datalogic Support for possible solutions.



Adjusting the Focus (Far Working Distance (Z))

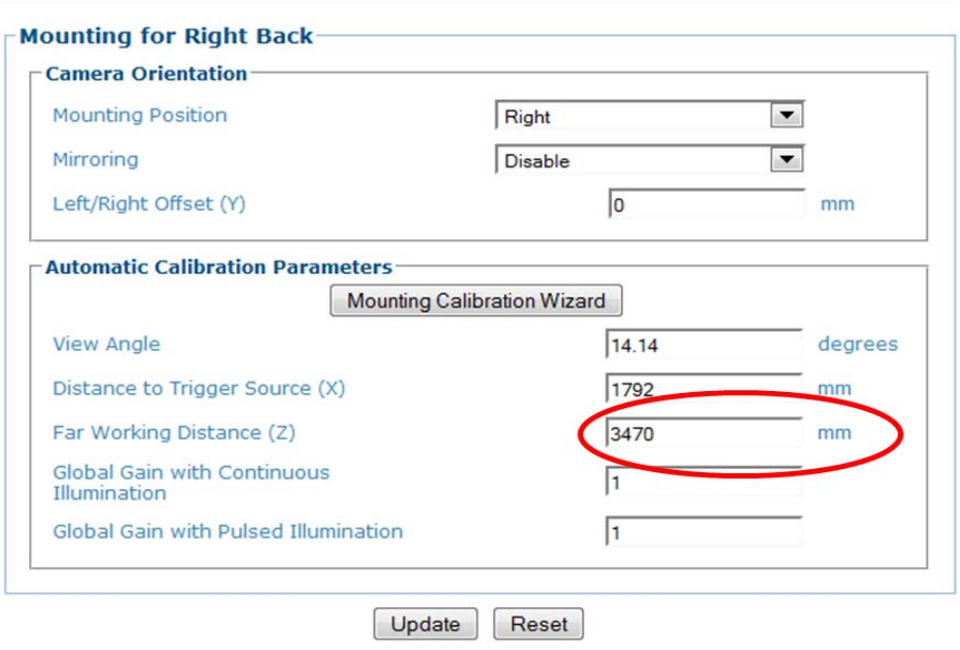
The Far Working Distance must be adjusted to read an equal number of step ladder and picket fence barcodes on the **Picket Fence/Step Ladder Test Chart.**

1. Place the **Picket Fence/Step Ladder Test Chart** on the test box. The first part of the data of the barcode indicates the mil/mm size of the narrow element.

2. Run a box with the **Picket Fence/Step Ladder Test Chart** through the system. The goal is to have the same number of picket fence and ladder barcodes decoded. In

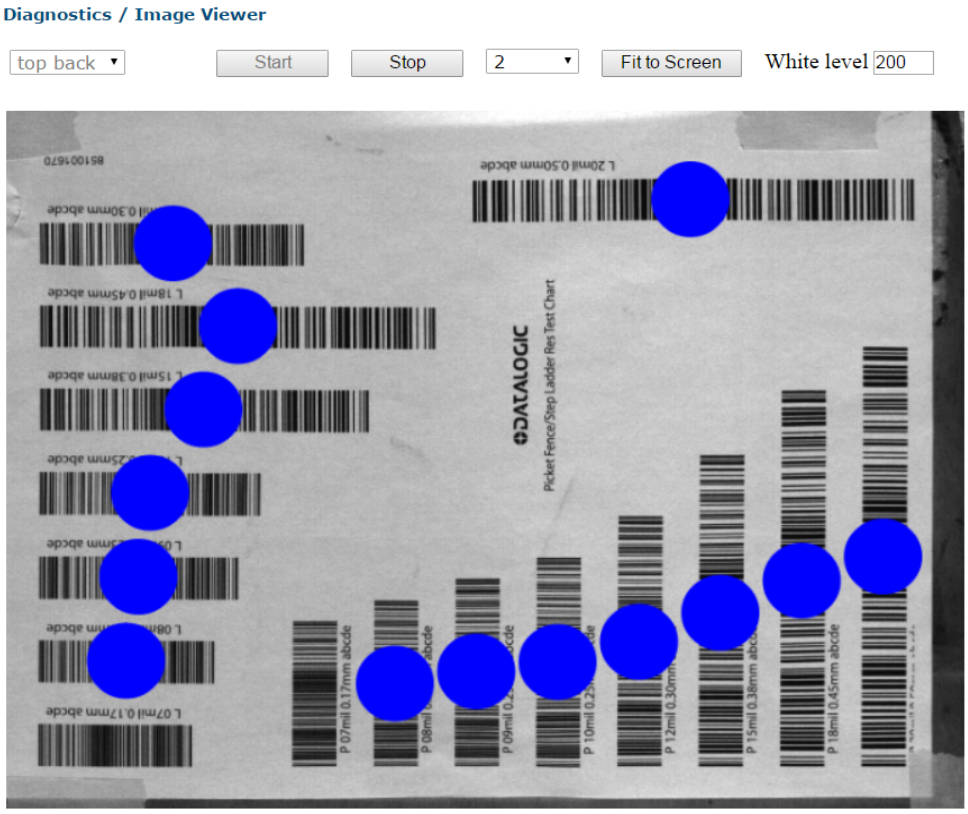
the following example, there are more barcodes decoded in one orientation than the other. This indicates that the camera is not focused correctly.

3. In the menu tree, navigate to **Modify Settings | Device Setting | Camera n (unit being calibrated) | Mounting.** The **Mounting** window opens.



4. Adjust the **Far Working Distance (Z)** parameter incrementally and run the box through the system again.

The image below is an optimized focus example with the same number of barcodes decoded in ladder and picket fence orientation. However, there may be times when one orientation will have one more barcode decoded than the other.



PackageNumber 563

5. Continue running the box and making adjustments until the barcodes are in focus. Make sure that barcodes from both columns have been read.

NOTE **Remove the test barcode from the symbologies menu when completed.**

FINAL ACCEPTANCE TEST

Dynamic Read Test

Use the smallest, medium, and largest-sized system boxes for the dynamic read test.

- System smallest box: Used to test the far read distance from the camera
- System medium box: Used to test the center of the read area
- System tallest box: Used to test the near read distance from the camera

Code Placement

Obtain system code samples of various density and contrast.

Position the barcode on the surface of the box in the following manner (sample)

Repeat the following procedure for each AV7000 Camera in the tunnel or array.

NOTE

For a front or back read the top surface of the box should have labels placed in the same pattern to accommodate testing both surfaces at the same time.

1. Place bar codes on the surface of the box facing the AV7000 mounting location.
2. Using the smallest box with the barcodes on the top surface, run the box on the left, center, and right portions of the Field of View. **All bar codes should be read.**
3. Using the medium box with the barcodes on the top surface, run the box on the left, center, and right portions of the Field of View. **All barcodes should be read.**
4. Using the largest box with the barcodes on the top surface, run the box on the left, center, and right portions of the Field of View. **All barcodes should be read.**
5. If there is a problem reading any of the barcodes, run the Image Viewer to view the codes. The barcodes used should reflect a sampling of the various codes to be read by the system.
   - Variation in contrast
   - Variation in barcode's X dimensions
6. Make sure all the barcodes are read successfully.

Other Camera Checks

Perform the following final camera checks:

1. Confirm communication with host.
   - Serial (if applicable)
   - Ethernet (if applicable)
   - Confirm Protocol Index (if applicable)
2. Observe the System in Action.
3. Confirm that all cameras are reading the barcode correctly and that the scan point is communicating to the host.

CHAPTER 7
AV7000 FEATURES

In this chapter we explain some of the operating features unique to the AV7000:

- LEDs
- Working with WebSentinel PLUS
- AV7000 Read Charts

LED INDICATORS

AV7000 LEDs

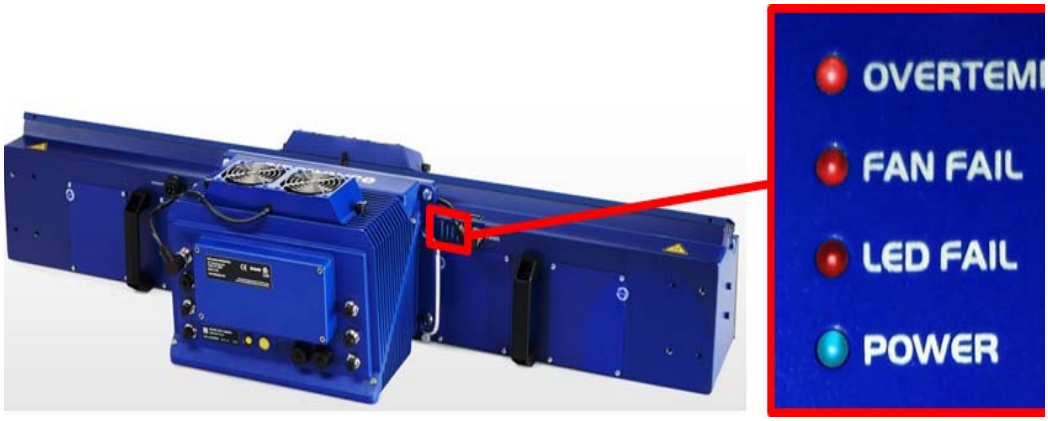
The AV7000 Camera has several LEDs on its back panels.

#	LED	Description
1	POWER	Solid Blue – Power LED indicating all internal power supplies are at the correct voltage. Can be out if external power is supplied and an internal supply is out of range.

#	LED	Description
2	I/O	Solid Green – Indicates CBX box connected has the ID+ to GND jumper and this camera is the controller for the tunnel. The Tachometer/Encoder must be connected to this unit.
3	STATUS	Solid Green– Good status Solid **Yellow** – active warning exists Solid **Red** – active error exists
4	TACH	**Yellow** – Blinks with tachometer/encoder input
5	TRIGGER	**Yellow** – Blinks on when Photoelectric Sensor is triggered
6	HOST NET	Green - Host Network Link at Gbit speed **Red** – Host Network Data activity **NOTE:** With a Gbit link, Green will always be on and Red will blink, looking like it alternates Green to amber. If connected to 100Mbit network, the LED will only blink Red with activity.
7	IMAGE NET	Green - Image Network Link at Gbit speed **Red** – Image Network Data activity **NOTE:** With a Gbit link, Green will always be on and Red will blink, looking like it alternates Green to amber. If connected to 100Mbit network, the LED will only blink Red with activity.
8	SYNC IN	Green - SyncNet Link at 100Mbit speed **Red** – SyncNet Data activity **NOTE:** With a 100Mbit link, Green will always be on and Red will blink, looking like it alternates Green to amber. If connected to 100Mbit network, the LED will only blink Red with activity.
9	SYNC OUT	Green - SyncNet Link at 100Mbit speed **Red** – SyncNet Data activity **NOTE:** With a 100Mbit link, Green will always be on and Red will blink, looking like it alternates Green to amber. If connected to 100Mbit network, the LED will only blink Red with activity.
10	FOCUS NET	Green - Focus Network Link at 100Mbit speed **Red** – Focus Network Data activity **NOTE:** With a 100Mbit link, Green will always be on and Red will blink, looking like it alternates Green to amber. If connected to 100Mbit network, the LED will only blink Red with activity.

AI7000 Illumination LEDs

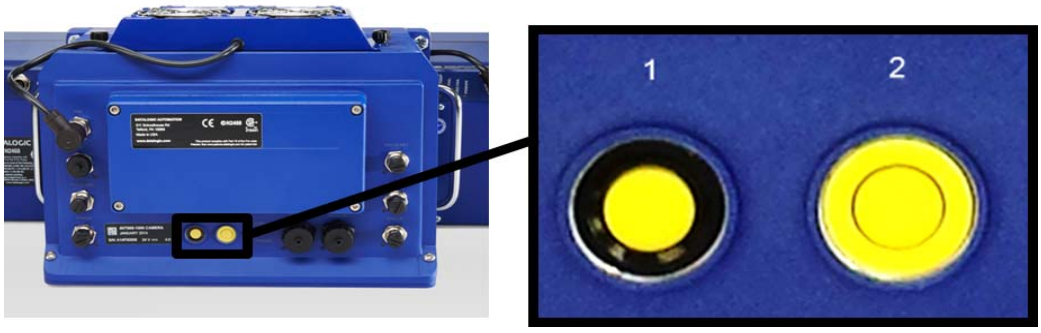
The AI7000 Illumination has several LEDs on its back panel.



The indicators have the following meanings:

LED	Description
OVERTEMP	Solid Red – Indicates internal temperature exceeding software or hardware threshold
FAN FAIL	Solid Red – Indicates external cooling fan failure
LED FAIL	Solid Red – Indicates one or more Illuminator LED boards has low current or a failure
POWER	Solid Blue – Indicates illuminator Power ON

CONTROL PANEL BUTTONS



Function	Description
Reset Camera to Factory Defaults	With the unit powered up, hold down buttons 1 and 2 at the same time. The STATUS LED will blink GREEN and then RED to indicate that the unit has been defaulted.

SETTING UP WEBSENTINEL PLUS IN THE AV7000

WARNING

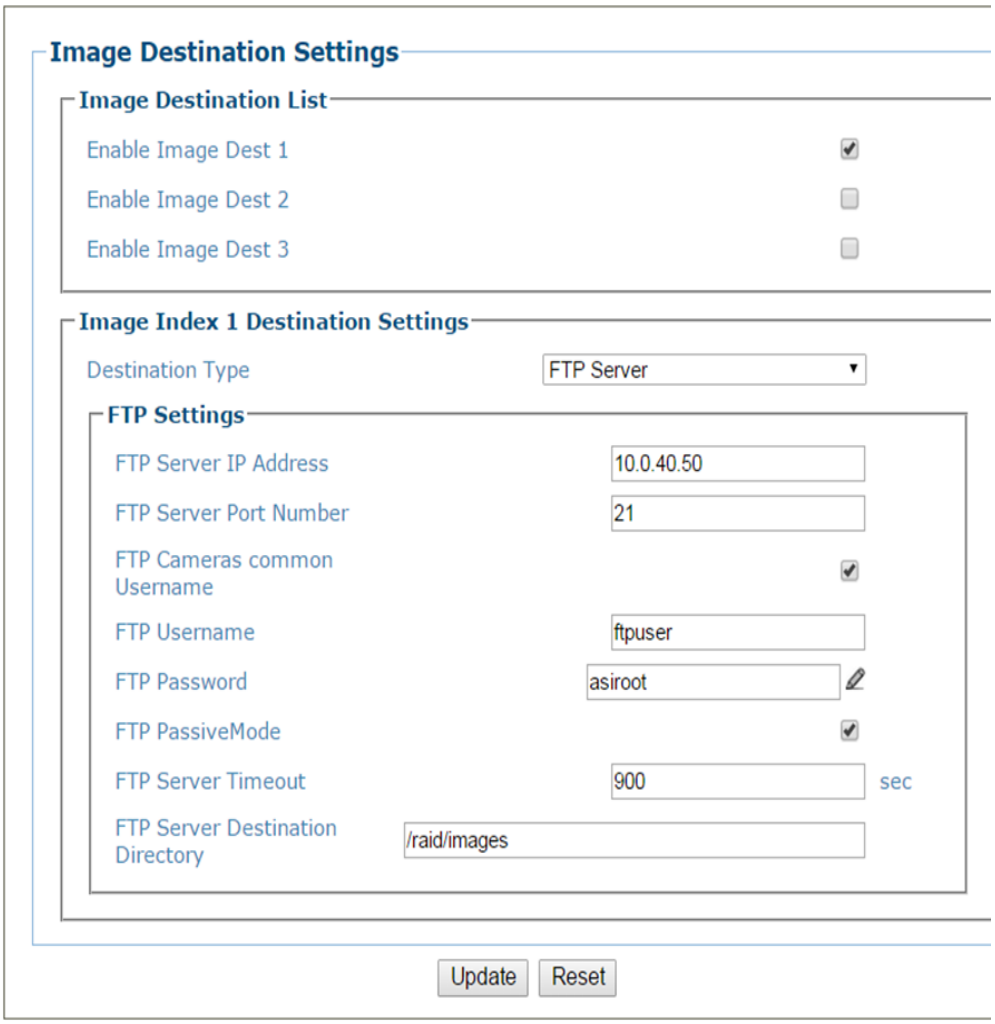
Set the parameters in the order they appear in this documentation.

Update the settings in **e-Genius** as shown in the following procedure:

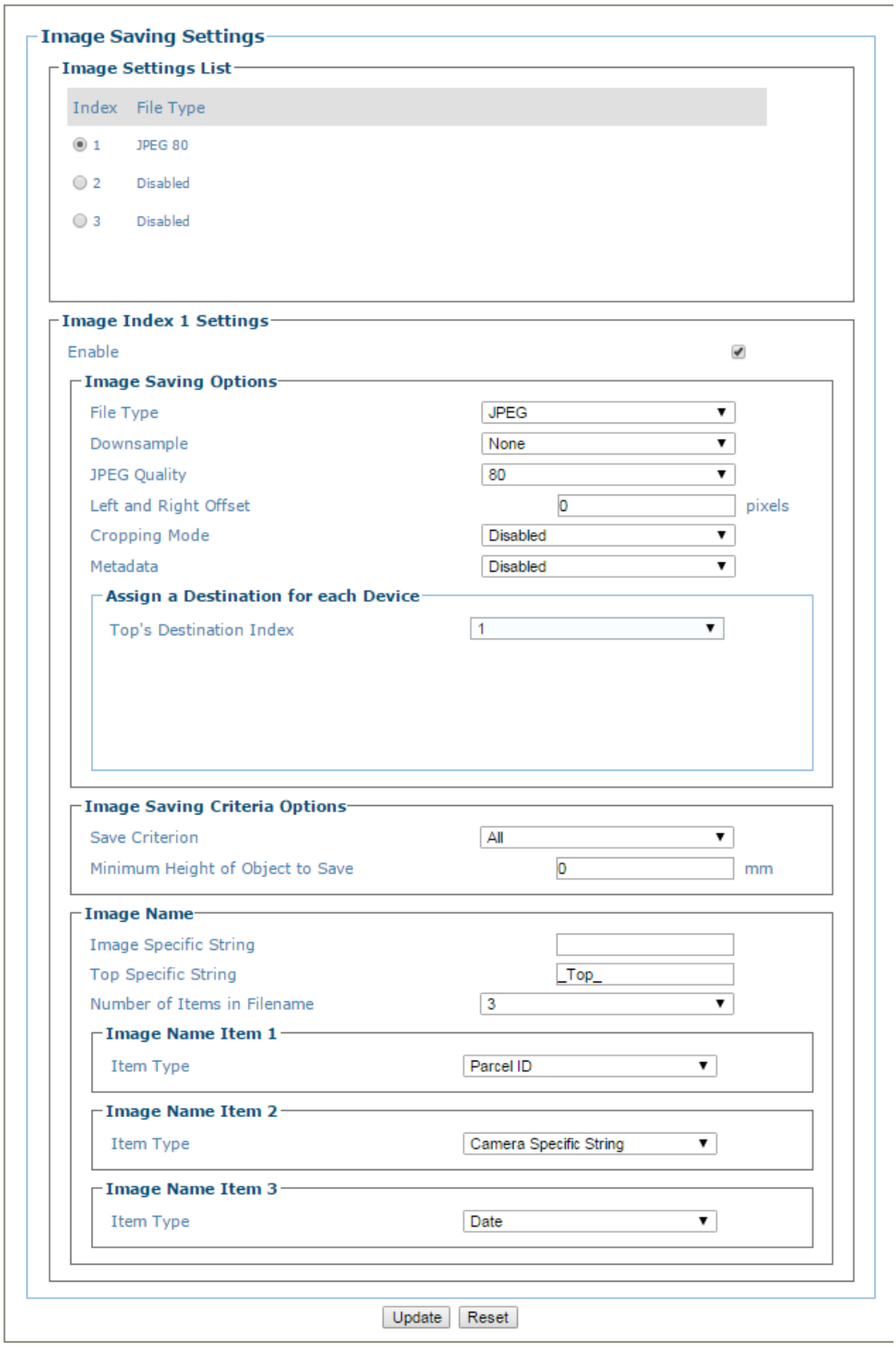
1. In the menu tree under Modify Settings, navigate to **Global Settings | Image Saving | Destination Settings**. The **Destination Settings** window opens.
2. Set up the **Destination Settings** options as shown below.

WARNING

If your Destination Type is Network File System, be aware of the direction of you slashes. For example, //192.168.1.23/FTP.



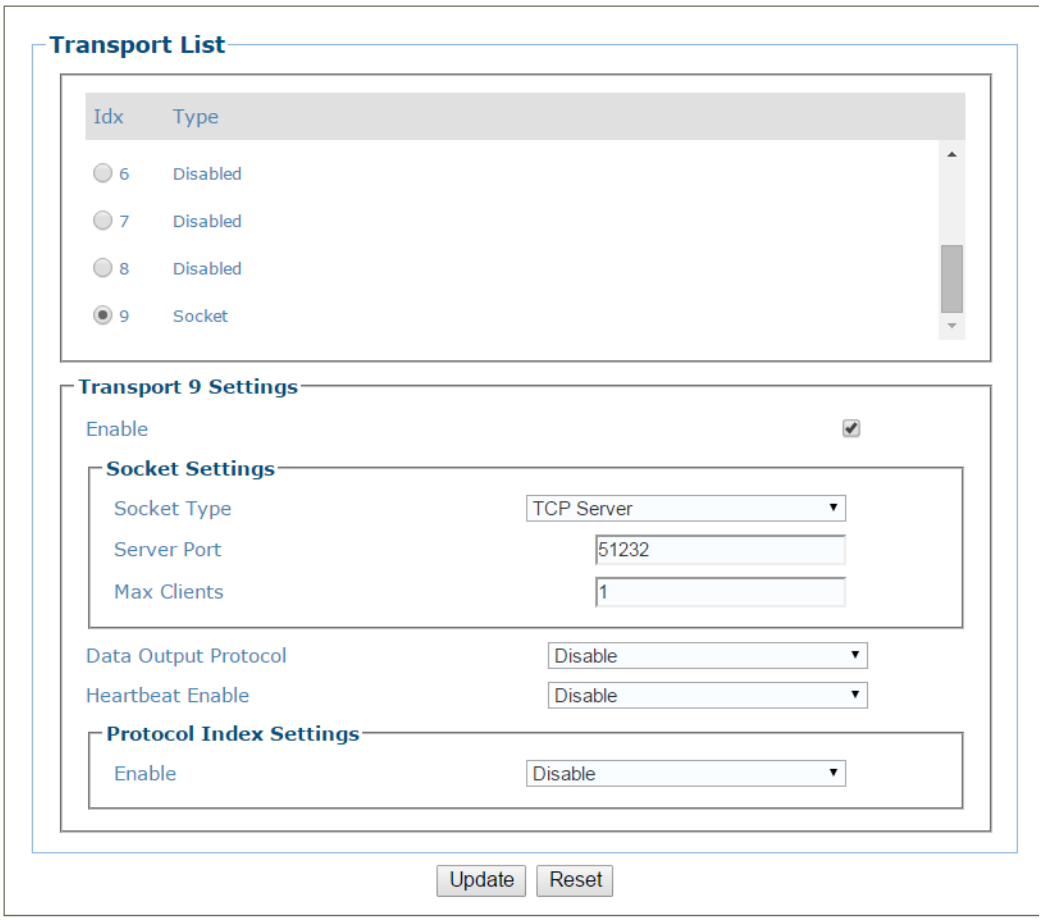
3. Click **Update** to save the changes.
4. In the menu tree under Modify Settings, navigate to **Global Settings | Image Saving | Image Settings.** The Image Settings window opens.
5. Set up the **Image Saving** options as shown below.



6. Click **Update** to save the changes.

7. In the menu tree under **Modify Setting**s, navigate to **Global Settings| Communications | Transports**. The **Transports** window opens.

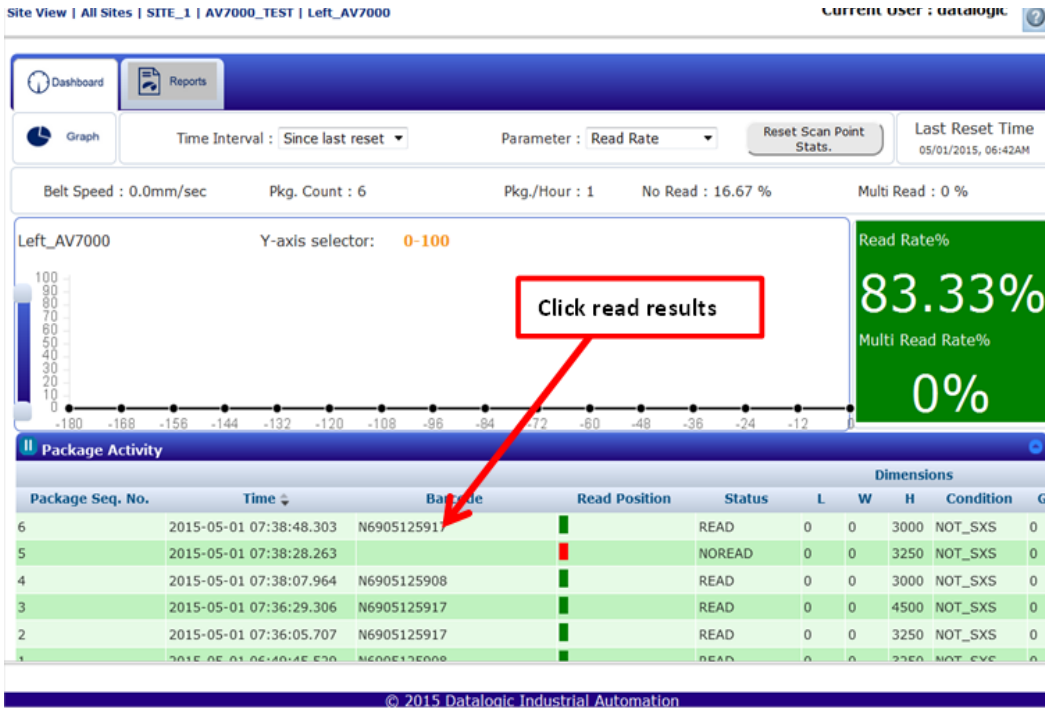
8. Set up the **Transports** options as shown below.



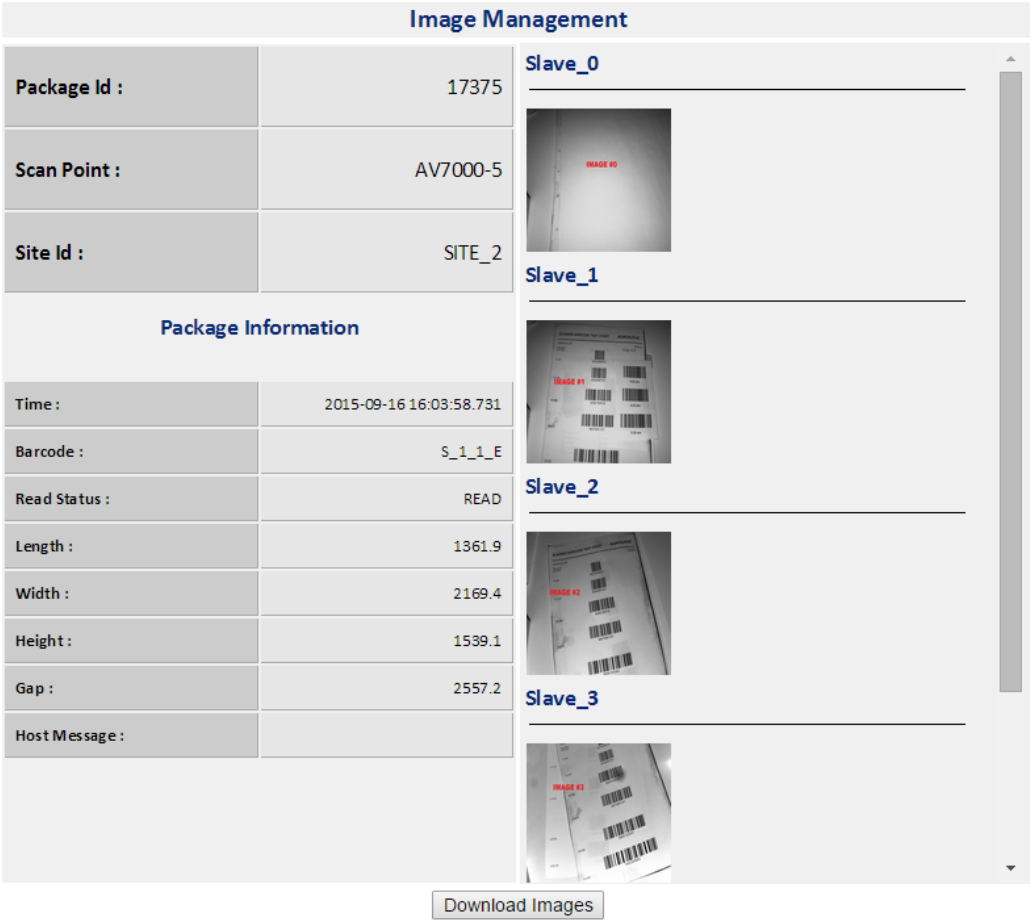
9. Click **Update** to save the changes.

USING WEBSENTINEL TO VIEW AV7000 IMAGES

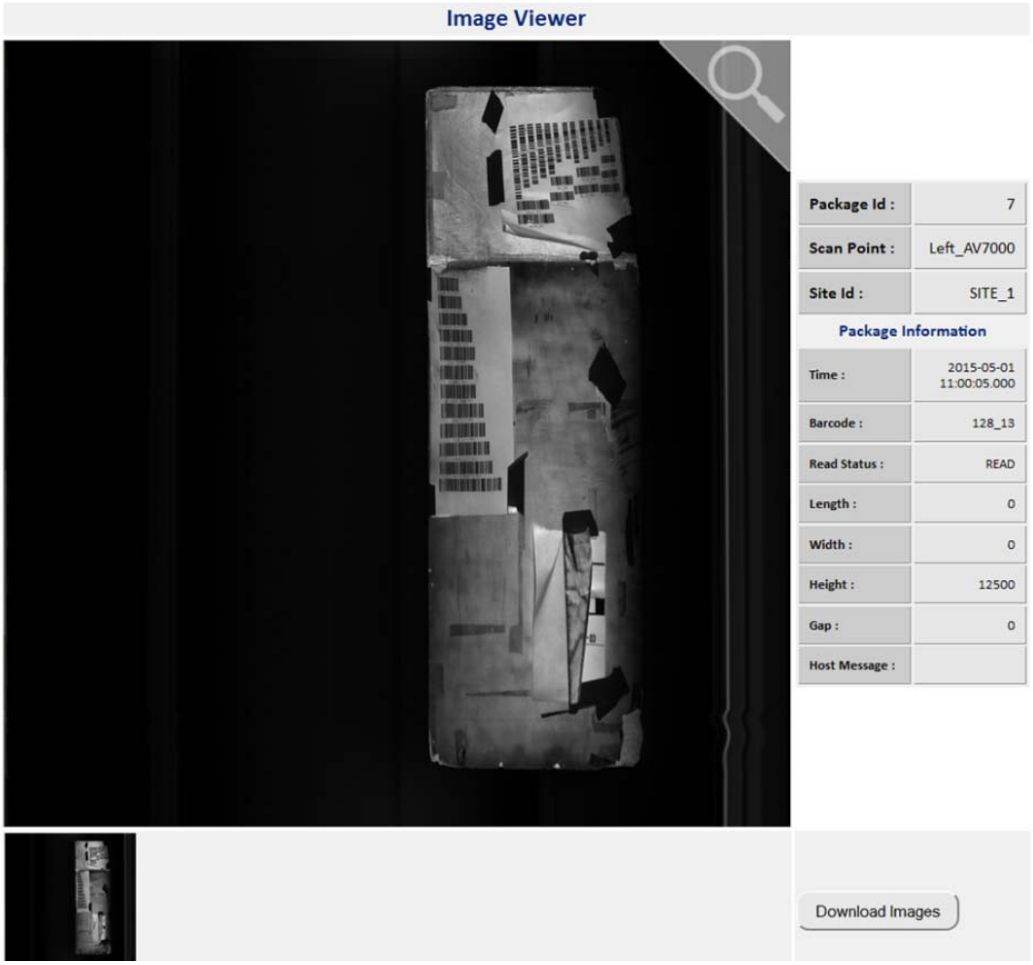
1. Click on the scan point name to view the **Dashboard** window for that device.



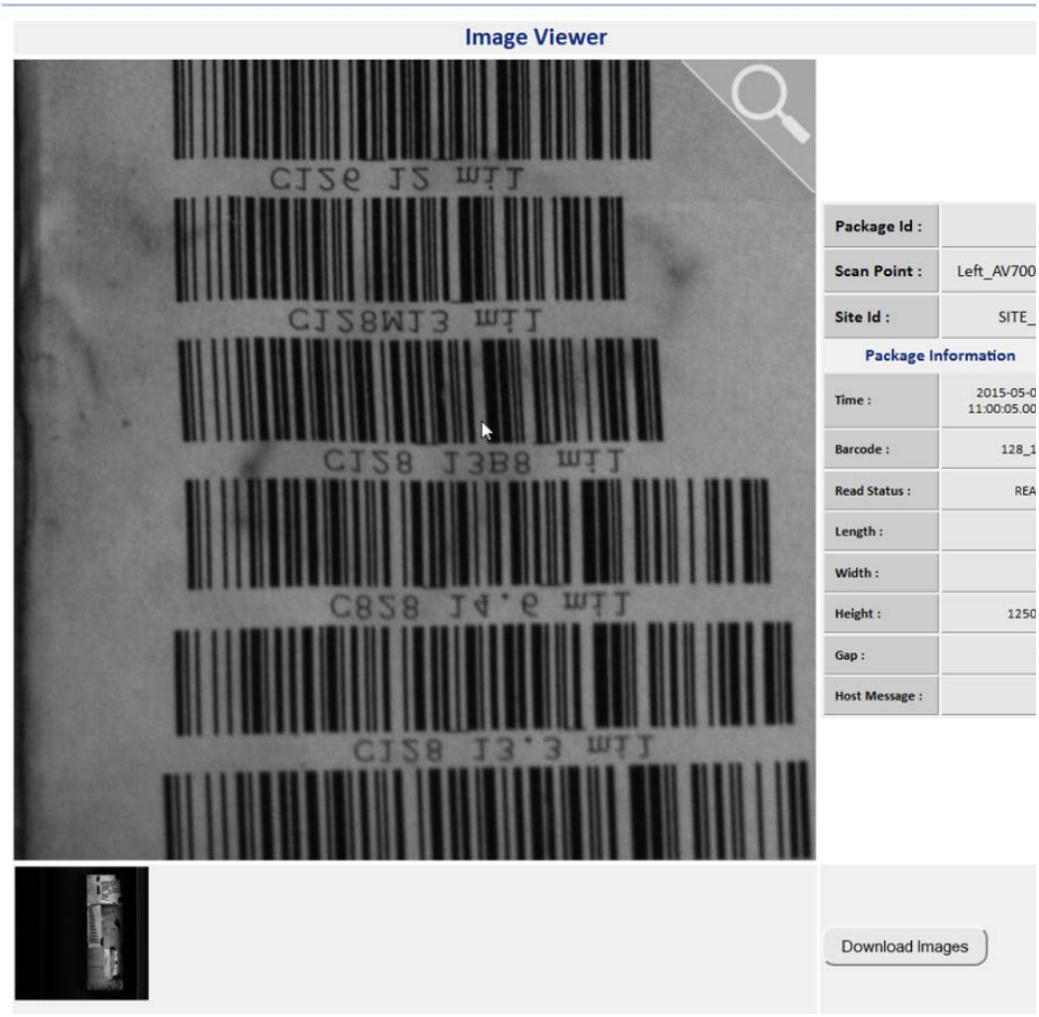
2. Click on the **Package Activity** results to show more information. The **Image Management** window opens.



3. Click on an image to open the **Image Viewer** with additional information.



4. Click and hold the left mouse button over the image to zoom in.



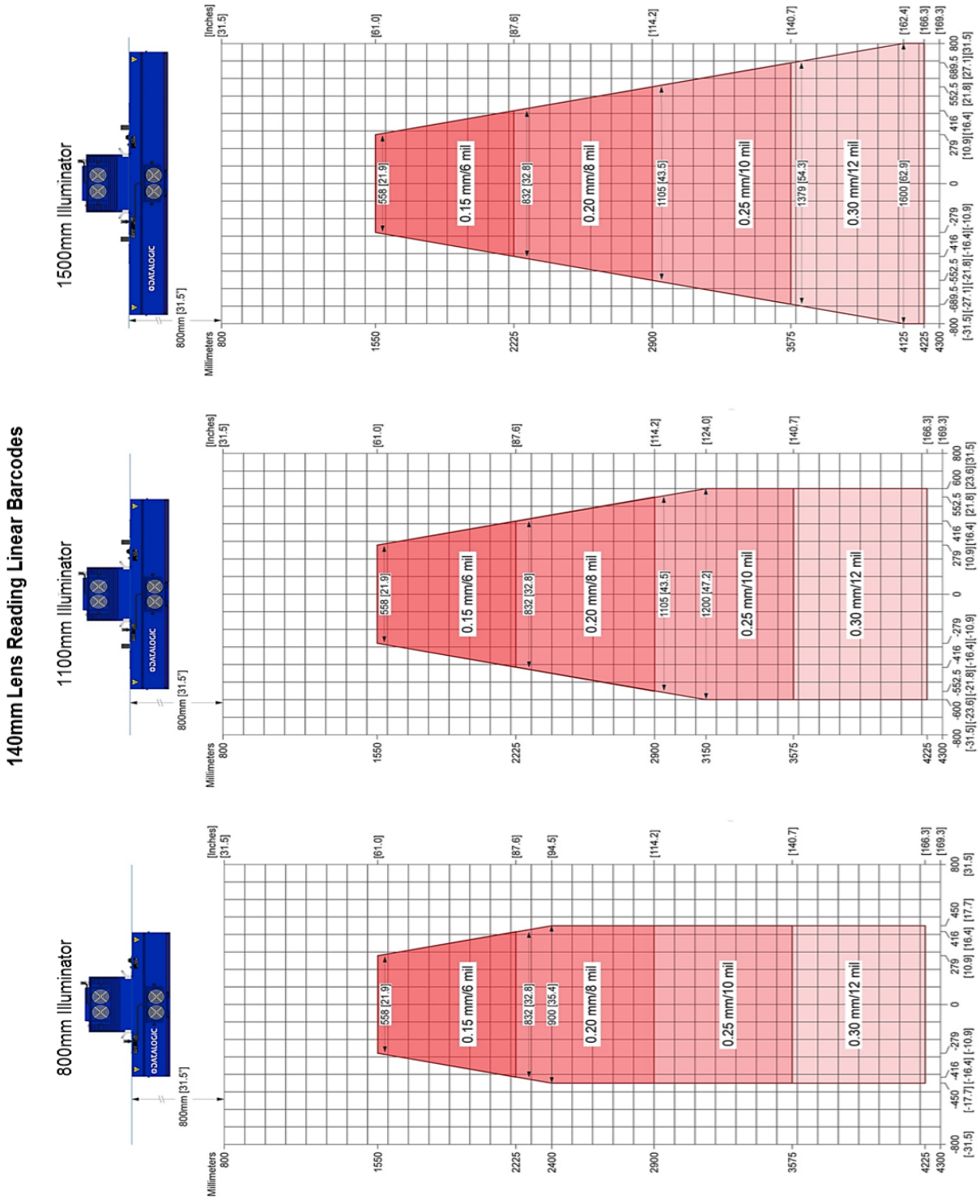
5. To pan the image, click and hold down the left mouse button while moving the cursor around the viewing window.

Reading Diagrams

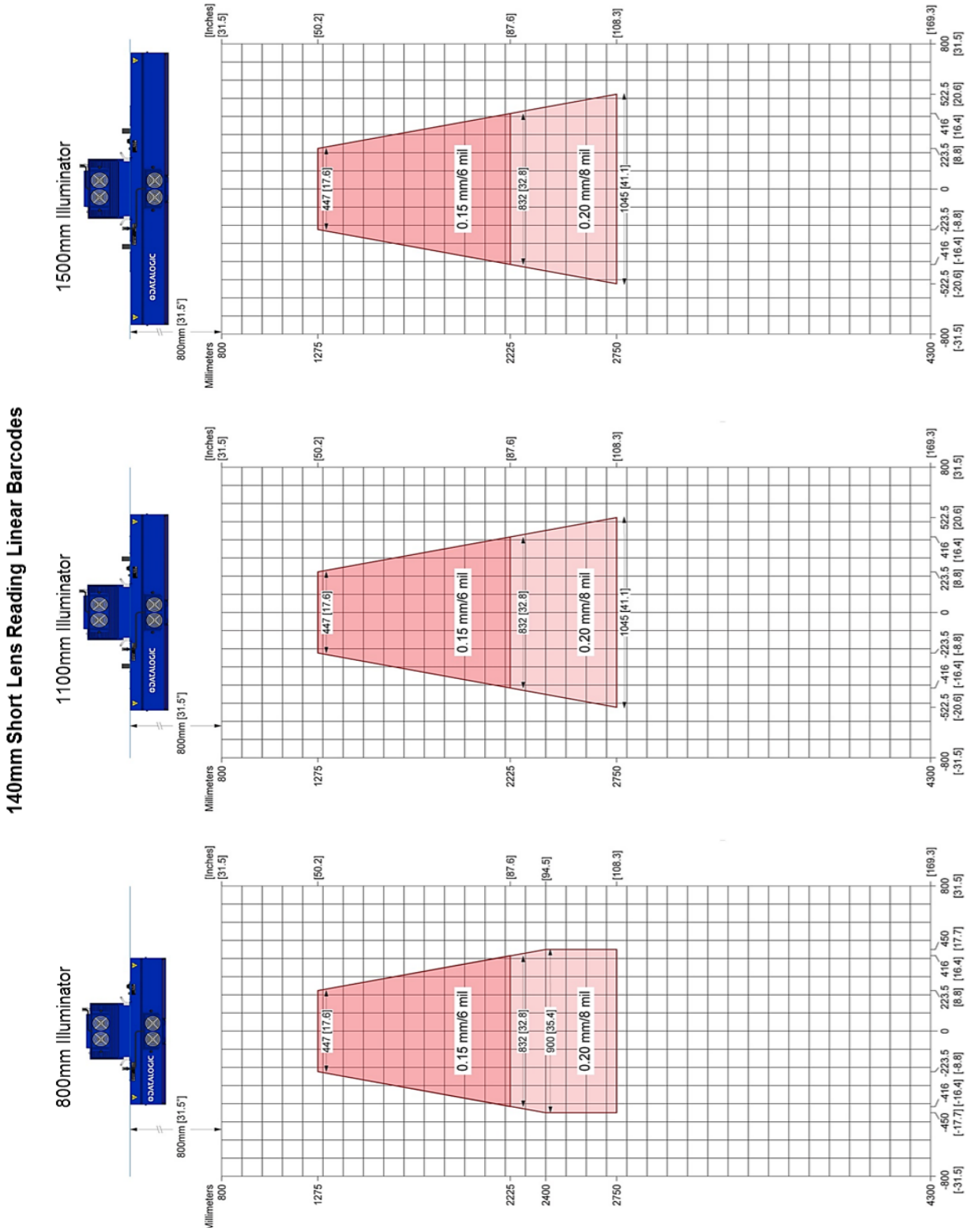
How to identify the camera model:

The camera and illumination model numbers are shown on the serial label.

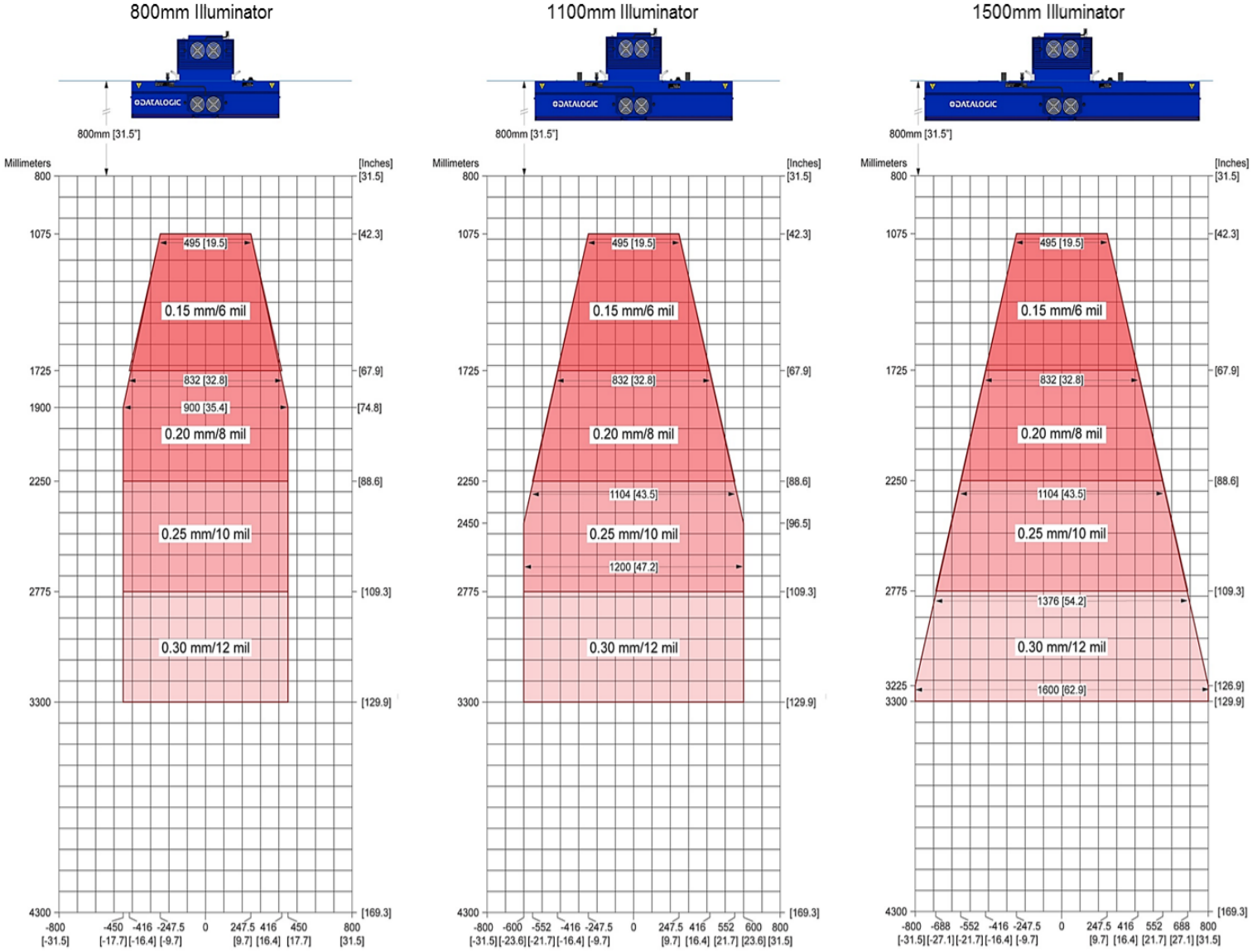
READING LINEAR BARCODES



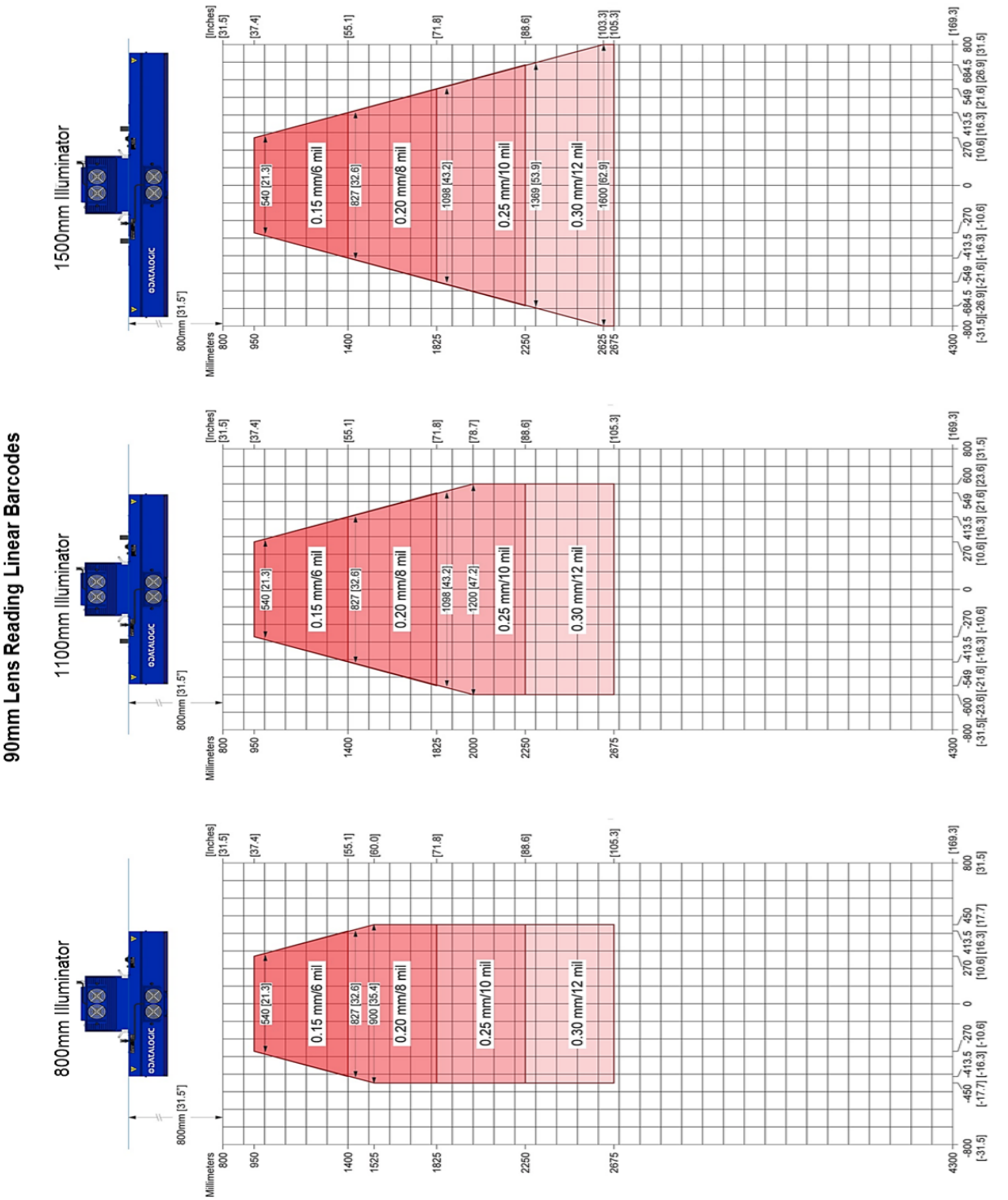
140mm Short Lens Reading Linear Barcodes



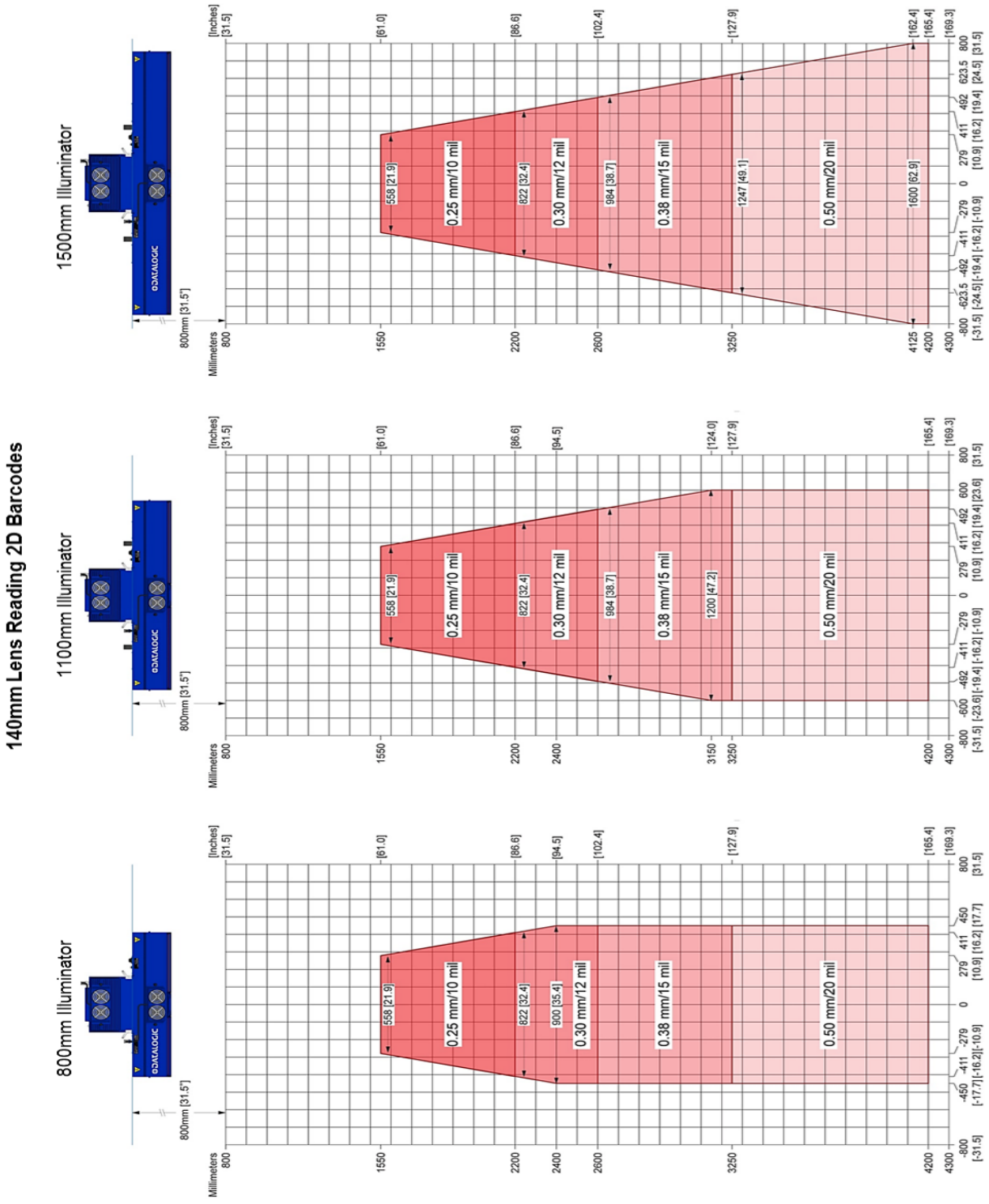
110mm Lens Reading Linear Barcodes



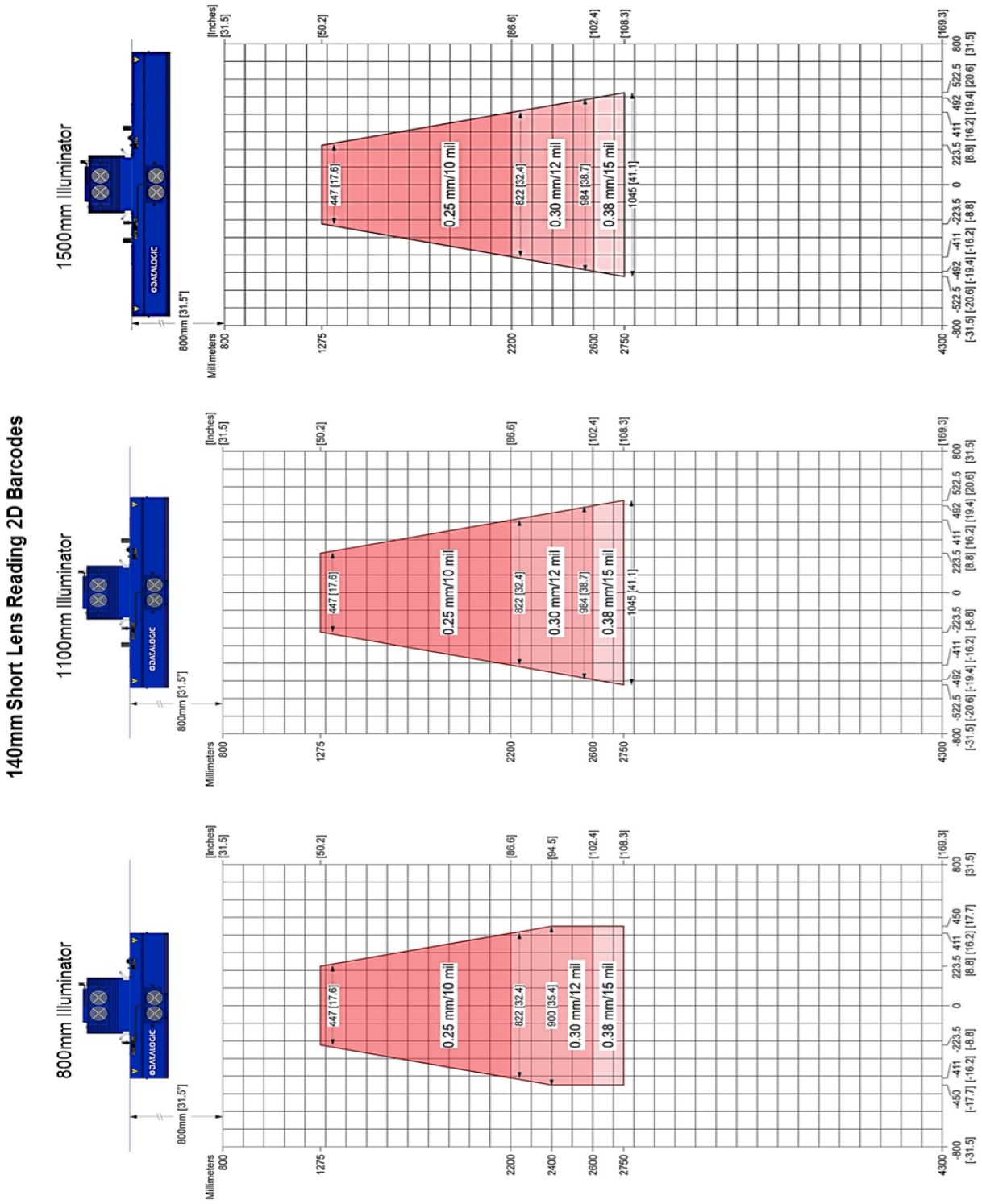
90mm Lens Reading Linear Barcodes



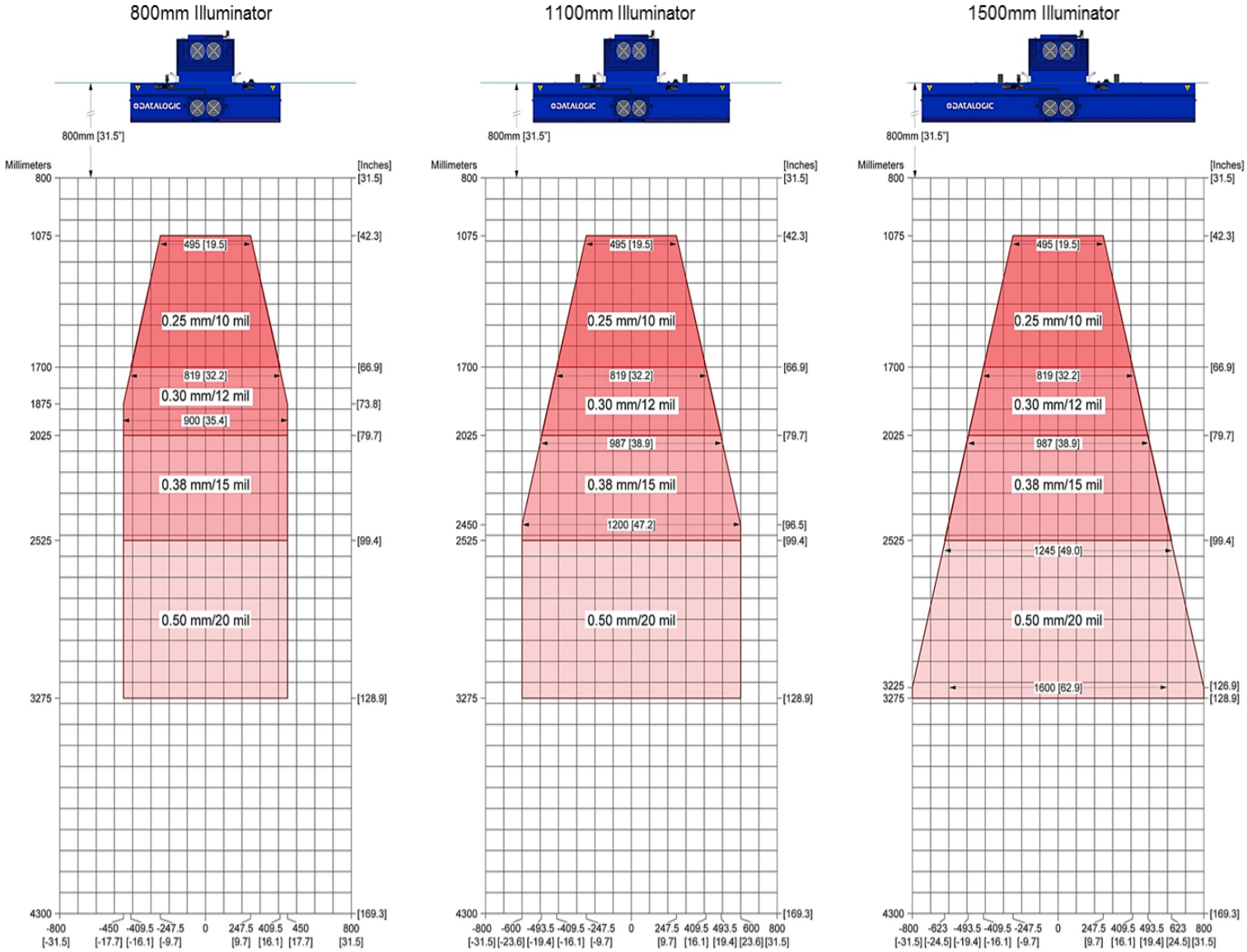
READING 2D BARCODES



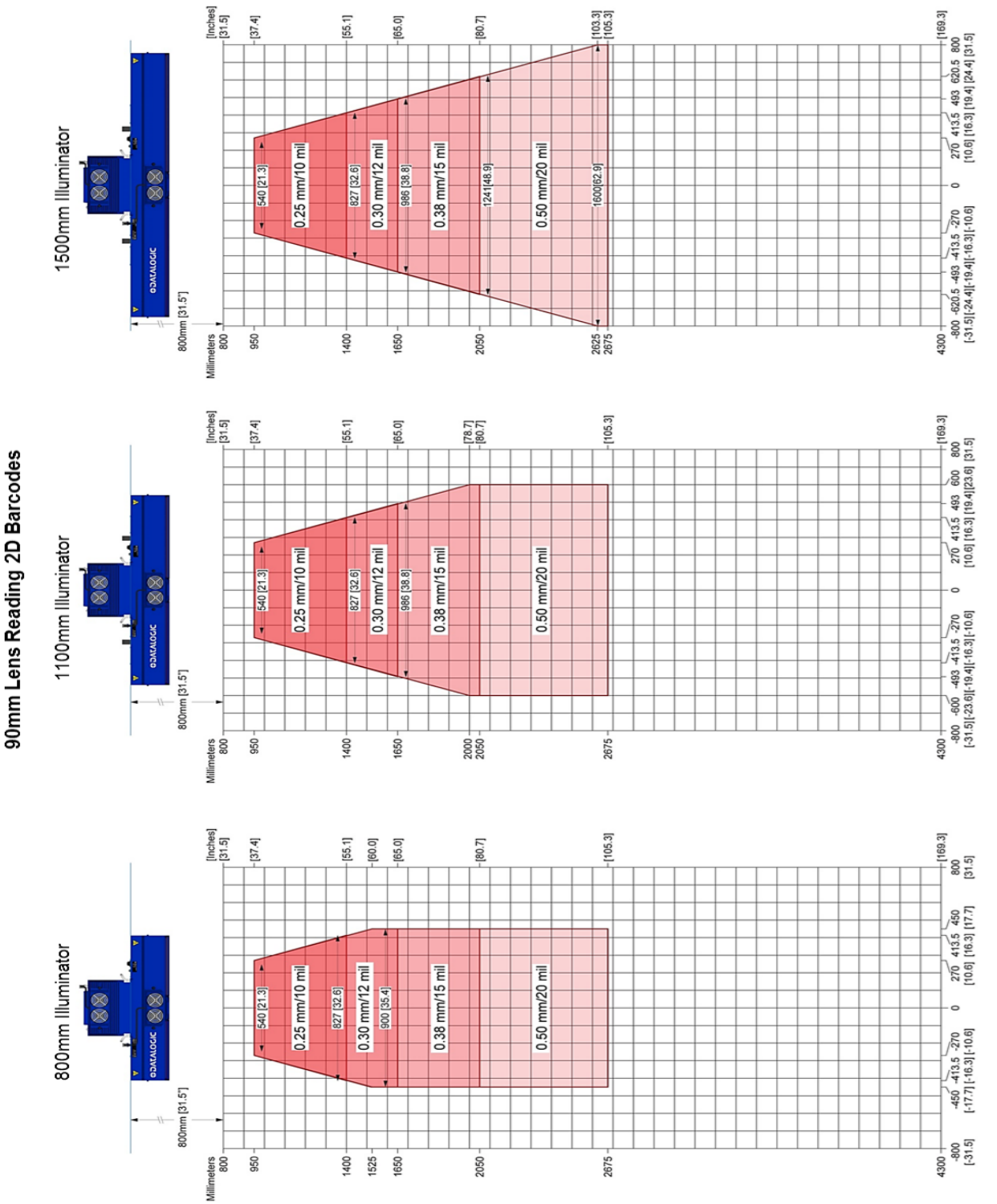
140mm Short Lens Reading 2D Barcodes



110mm Lens Reading 2D Barcodes



90mm Lens Reading 2D Barcodes



CHAPTER 8
MAINTENANCE

OVERVIEW

This chapter provides instructions for maintaining optimal performance and life for your AV7000 cameras. It provides specific information on:

- Maintenance Procedures
- Exterior Cleaning
- Mounting Hardware Checks
- Wiring Connection Checks

Item	Description
Soft-bristle brush	For cleaning the unit's exterior
Clean, soft cloths	For cleaning the unit's exterior
Cleaning solutions	Mild detergent solution for cleaning the unit's exterior. 70% denatured alcohol, 30% de-ionized water solution for cleaning
Soft cotton swabs or	Use to clean illumination exit window

Due to the complex and application-specific nature of these installations, AV7000 camera systems must be setup and serviced by authorized technicians trained by Datalogic.

The maintenance procedures in this chapter may be performed by an end user technician. Training is recommended if the end user intends to do more than the maintenance procedures provided in this chapter.

THERE ARE NO USER SERVICEABLE PARTS WITHIN THE AV7000.

DO NOT OPEN THE UNIT. OPENING THE AV7000 MAY VOID ITS WARRANTY.

CAUTION: Proceeding with any setup, calibration, or service procedures without proper training may void the warranty.

For further information on training, contact us through our website at www.datalogic.com.

RECOMMENDED MAINTENANCE FREQUENCY

The AV7000 Camera Barcode Reading System is designed for industrial environments. The recommended frequency for performing these maintenance tasks will depend on the application's environment. In general, these procedures are recommended only if it is noticed that the environment is dirty enough that deposits are appearing on the

equipment or when performance is degraded by accumulation of dust or dirt on the exit windows or deflection mirrors. By monitoring normal operations and performing weekly visual checks, you can establish a maintenance schedule that fits your application.

MAINTENANCE TASKS

Perform the maintenance tasks on an “as needed” basis to assure proper operation of the camera.

Task schedule frequency depends upon the application environment conditions. Harsh environments that expose the equipment to more heat, dust, and dirt will require these procedures be performed more frequently.

It only requires a few minutes to complete each maintenance task.

Exterior Cleaning

Do not use any chemical on the barcode reader that is unsafe for plastics, such as benzene, acetone, or similar products. Before performing this maintenance task, be sure to shut down the unit.

The exterior cleaning procedure may be performed without removing the barcode reader from the mounting structure.

1. Switch off the conveyor.
2. Switch off the camera system by disconnecting the power source.
3. Clean the exterior (except the windows) with a clean, soft-bristle brush. Be sure not to brush any dust, dirt, or debris onto the windows.
4. Carefully remove any dirt or debris in or around the connector panel and cooling fans. If necessary, clean under the fans by removing them from the camera and illumination. Unscrew the knurled knobs at the sides of the fan and lift it free.
5. Wipe the exterior with a clean, soft cloth dampened slightly with a mild detergent solution.

Cleaning the Illumination and Camera Window

Shut down the camera system before performing this maintenance task. Do not stare into the camera’s window at the LED light. Avoid direct eye exposure. The LED light level does not constitute a health hazard, however staring at the LED light for prolonged periods could result in eye damage.

Never apply cleaning solution directly to the camera window. Always apply the solution to a cloth, and then the cloth to the window. Do not use any chemical on the camera that is unsafe for plastics, such as benzene, acetone, or similar products.

This procedure is recommended only if it is noticed that the environment is dirty enough that deposits are appearing on the deflection mirrors. The window cleaning

procedure should be performed without removing the camera from the mounting structure.

1. Switch off the conveyor.
2. Switch off the camera system.
3. Follow the exterior cleaning procedure before cleaning the window.
4. Check the window surface for any dust, dirt, or smudges. If the window needs to be cleaned, proceed to Step 5.
5. Make a solution of seven parts denatured alcohol and three parts water. (Many over-the-counter solutions will leave deposits/smudges that can affect performance.)
6. Apply the cleaning solution to a lint-free cotton cloth.
7. Apply the cloth with cleaning solution to the camera and illumination window.
8. Remove any streaks or remaining moisture from the window with a dry, soft, lint-free cloth or lens paper.
9. Verify camera operation.

Cleaning the Deflection Mirror

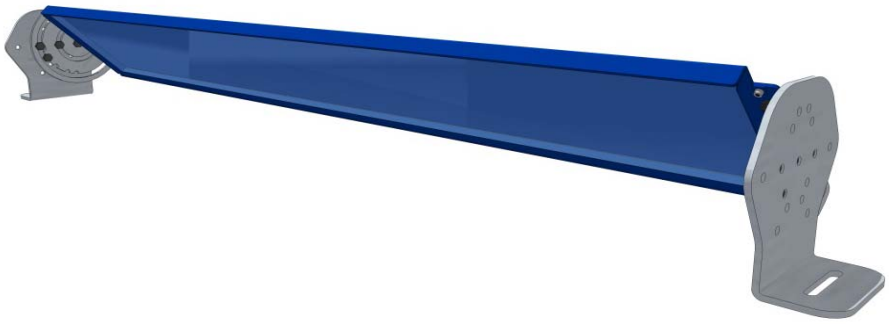
Shut down the camera system before performing this maintenance task. Do not stare into the camera's window at the LED light. Avoid direct eye exposure. The LED light level does not constitute a health hazard, however staring at the LED light for prolonged periods could result in eye damage.

Use care when cleaning the deflection mirror to assure that the alignment with the camera is not altered. Never apply cleaning solution directly to the mirror. Always apply the solution to a cloth, and then the cloth to the mirror. It is a good habit to pre-mark the mirror position, so if it does move it can be returned to the original position.

This procedure is recommended only if it is noticed that the environment is dirty enough that HEAVY deposits are appearing on the deflection mirrors. The cleaning procedure should be performed without removing the mirror from the mounting structure.

1. Switch off the conveyor.
2. Switch off the camera system.

3. Review the exterior cleaning procedure before cleaning the deflection mirror.
4. Check the deflection mirror for any dust, dirt, or smudges. If the deflection mirror needs to be cleaned, proceed to ***Step 5***.
5. Use a dry, soft, lint-free cloth to remove accumulated dust.
6. If the deflection mirror is particularly dirty or smudged, make a solution of seven parts denatured alcohol and three parts water. (Many over-the-counter solutions will leave deposits/smudges that can affect performance.)
7. Apply the cleaning solution to a lint-free cloth.
8. Apply the cloth with the cleaning solution to the mirror.
9. Remove any streaks or remaining moisture from the mirror with a dry, soft, lint-free cloth or lens paper.
10. Verify camera operation.



Cleaning the RangeFinder Windows

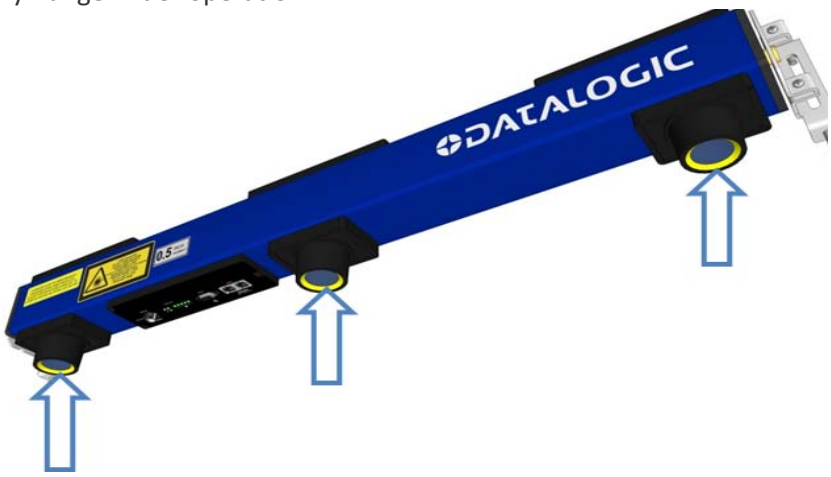
Shut down the camera system before performing this maintenance task. Do not stare into the camera's window at the LED light. Avoid direct eye exposure. The LED light level does not constitute a health hazard, however staring at the LED light for prolonged periods could result in eye damage.

Use care when cleaning the RangeFinder to assure the windows are not scratched or damaged in any way. Never apply cleaning solution directly to the windows. Always apply the solution to a cloth, and then the cloth to the windows.

This procedure is recommended only if it is noticed that the environment is dirty enough that deposits are appearing on the RangeFinder windows. The cleaning procedure should be performed without removing the RangeFinder from the mounting structure.

1. Switch off the conveyor.
2. Switch off the camera system.
3. Review the exterior cleaning procedure before cleaning the three windows.
4. Check the windows for any dust, dirt, or smudges. If the window needs to be cleaned.
5. Use a dry, soft, lint-free cloth to remove accumulated dust.

6. If the windows are particularly dirty or smudged, make a solution of seven parts denatured alcohol and three parts water. (Many over-the-counter solutions will leave deposits/smudges that can affect performance.)
7. Apply the cleaning solution to a cotton swab or lint-free cloth.
8. Apply the cleaning solution to the windows.
9. Remove any streaks or remaining moisture with a dry, soft, lint-free cloth or lens paper.
10. Verify RangeFinder operation.



Cleaning the Photoelectric Sensor

If your application uses the photoelectric sensor option as a hardware trigger, be sure to clean the photoelectric sensor periodically as outlined below.

1. Switch off the conveyor.
2. Switch off the camera system.
3. Clean the photoelectric sensor's lens using the denatured alcohol solution and a cotton swab or lens paper.
4. Clean the reflector using the denatured alcohol solution and a cotton swab or lens paper.
5. Verify photoelectric sensor operation.

Cleaning the Tachometer

If your application uses the tachometer option for tracking purposes, be sure to clean the tachometer wheels periodically as outlined below.

1. Turn off the product transport.
2. Turn off the barcode reader by disconnecting the power source.
3. Using a clean, soft cloth, wipe the wheels of the tachometer clean using a mild detergent solution.
4. Before restarting the system, be sure the tachometer is making good contact with the product transport.
5. Verify tachometer operation.

Tighten Mounting Hardware

1. Check all AV7000, Deflection Mirrors, CBX connection boxes, and power supply mounting hardware as applicable. Tighten as necessary. Do not over-tighten. Be sure not to disturb the equipment's alignment as it relates to the product transport.
2. Check the mounting hardware of the Photoelectric Sensor (if this option is being used). Tighten as necessary. Do not over-tighten.
3. Check the mounting hardware of the tachometer (if this option is being used). Tighten as necessary. Do not over-tighten.

Checking Barcode Reading System Connections

This is a safety check recommended for harsh environments where vibration may be a problem. *(See Chapter Three"Electrical Installation" on page 47.)*

1. Check all wiring connections to the camera and illumination connector panels. Tighten any loose connections as necessary. Do not over-tighten.
2. Check all wiring connections to the CBX connection box. Tighten any loose connections as necessary. Do not over-tighten.
3. Check all cabling/conduit for signs of wear/damage. Repair/replace any damaged cable connections as necessary.

Verify Barcode Reader Operation

If after performing maintenance, the imaging system continues to perform below the normal operations experienced with the system under normal daily conditions, contact Datalogic through our website at www.datalogic.com.

Verify Photoelectric Sensor Operation

1. Block the Photoelectric Sensor emitter beam to confirm it is aligned properly with the reflector.
2. Verify that the TRIGGER LED on camera lights when photoelectric sensor beam is blocked.
3. If the photoelectric sensor's LED does not change status, adjust the photoelectric sensor so that it is properly aligned with the reflector.
4. If the TRIGGER LED on the barcode reader does not light when the photoelectric sensor's beam is blocked, check the cabling between the photoelectric sensor and CBX connection box for damage. 0.

Verify Tachometer Operation

1. Rotate the tachometer wheel slowly.
2. The **TACH** LED on camera's connector panel should flash indicating the tachometer is operational.

CHAPTER 9
TROUBLESHOOTING

WARNING

Due to the complex and application-specific nature of these installations, operational deficiencies of the barcode reader must be diagnosed and serviced by a trained and authorized Datalogic technician.

There are no user serviceable components or field replaceable units (FRUs) inside the barcode reader.

For further information on training, contact us through the Datalogic website at www.datalogic.com.

When contacting Datalogic for help with an AV7000 camera or AI7000 Illumination, please be ready to share the unit serial number with the Datalogic technician. The unit's serial number tag is located on the bottom of the device, as shown below. Help desk contact information is available at www.datalogic.com.

ERROR CODES AND RESOLUTIONS

Decoder Errors

Alphabetical by type: Error / Warning / Info.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Application failed to shut-down	Info	The application was in a state where it could not shut down properly.	If software was recently loaded, an error occurred during the load.	Cycle the unit's power. If software was recently loaded, try to reload the new software. If the error persists, contact Datalogic Support.
Application failed to start	Error	One of the applications failed to properly start and is not functioning.	The application was unable to initialize its interfaces properly and failed. If software was recently loaded, an error occurred during the load.	Cycle the unit's power. If software was recently loaded, try to reload the new software. If the error persists, contact Datalogic Support.
Bad scanline data detected	Error	Raw data from the image buffer is corrupt.	RAM is corrupt or bad.	Contact Datalogic Support.
Camera status not understood	Error	Received camera status was not understood.	Make sure all of the cameras in the tunnel contain the same software.	Load the same software into all of the cameras in the tunnel.
Configuration not synchronized with cluster	Error	XML does not match the XML in other cameras.	XML from a custom version of software was loaded into a camera running STD software.	Default the camera and reboot. That will force the camera to load the appropriate XML.
Could Not Save JPEG - Compression Failed	Error	JPEG compression failed.	Image was too big or too small. Compression was interrupted.	Contact Datalogic Support if this error persists.
Could Not Save JPEG - Job Queue is Full	Error	Internal JPEG queue is full.	JPEG compression is taking too long.	Contact Datalogic Support if this error persists.
Could Not Save JPEG - Queue is Full	Error	Internal JPEG queue is full.	JPEG compression is taking too long.	Contact Datalogic Support if this error persists.
Could Not Save JPEG - Waiting for FPGA	Error	Attempt to compress a JPEG while another compression is taking place.	JPEG compression is taking too long.	Contact Datalogic Support if this error persists.
Dimensioner Beacon not understood	Error	Status received from the Dimensioner was not understood.	The dimensioner is not running a version of software that is compatible with the camera.	Load the correct software into the dimensioner.
Error Configuring the Decode Engine	Error	Parameter settings used to configure the decode engine were rejected.	A decode engine parameter is out of range.	Make sure all decode engine settings are correct. Contact Datalogic Support.
Expected Camera is Offline	Error	A camera in the tunnel configuration is not online.	The Offline camera has lost power or restarted. The Offline camera failed to start properly. The SyncNet cables are not connected properly to the camera listed offline.	Verify the offline camera has power. Verify the SyncNet cables are connected properly between the offline camera and next camera. Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Failed to set space notification	Error	Camera could not set a delayed encoder/ tachometer event.	Encoder/tachometer resolution is set too high.	Check the encoder/tachometer resolution. Contact Datalogic Support if the encoder/ tachometer resolution is set properly.
Failed to Allocate Memory for Image Transfer	Error	Requested image could not be loaded into memory.	RAM is bad or corrupt.	Contact Datalogic Support.
Failed to Login to FTP Server	Error	The camera was unable to log into the specified FTP server to save images.	The log in credentials are incorrect. The external FTP server is offline. The camera Image port is not connected to the network to get to the FTP server.	Verify the login credentials are correct. Verify the external FTP server is up and running. Verify the camera image port is correctly connected to the appropriate network.
Failed to Read Image from Ramdisk	Error	Requested Image no longer available in Ramdisk.	Parameter updated performed while sorting packages. Image transfer taking too long.	Check the network connection speed.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Failed to Write Image to File System	Error	The camera was unable to save the image file to the specified File System Location.	The file system location is incorrect or full.	Verify that the Image saving settings for the file system are correct. Verify the location is not full or set up the file maintenance to remove old files automatically.
Failed to Write Image to FTP Server	Error	The camera was unable to write the image to the FTP server.	The external FTP server is offline. The camera Image port is not connected to the network to get to the FTP server.	Verify the external FTP server is up and running. Verify the camera image port is connected to the appropriate network correctly.
Failed to Write Image to Offline Viewer	Error	The camera was unable to send an image to the external viewer.	External viewer is not running or it's not a version meant for the AV7000. Parameters required to send images to the external viewer are not set properly.	Make sure the external viewer is running. Make sure the external viewer was downloaded from the camera. Make sure the external viewer network parameters on the Modify Settings | Global Settings | Image Saving Destination Settings window are properly set (See section 'Modify Settings | Device Settings | <Camera name> | Imaging" on page 193).
Far Working Distance Out of Range	Error	The far working distance is set to a distance beyond the focus range of the camera.	The far working distance is set incorrectly. The camera being used is incorrect for the application.	Verify the camera model is correct for the application. Re-run the calibration wizard on this camera.
Fixed Focus Value Out of Range	Error	The fixed focus setting is set to a distance beyond the focus range of the camera.	The fixed focus value is set incorrectly. The camera being used is incorrect for the application.	Verify the fixed focus value is correct. Verify the camera model is correct for the application.
Image Transfer Falling Behind. Check Connection Speed	Error	The volume of images to be saved is exceeding the hardware capabilities of the Image port connection.	The ethernet connected to the camera Image port (cables, switches, etc.) are not Gigabit capable.	Verify the switches are Gigabit capable and the cables are at least Cat5e. Verify the LED's of the camera Image port is indicating a Gigabit connection. Verify the ethernet are not routed with AC wiring and are not excessively long.
Image Saving Queue is Full. Check Connection Speed	Error	Requested package is no longer available to save.	Image transfer is taking too long, resulting in lost packages.	Check the network connection speed.
IV Monitor failed to get an image buffer	Error	Camera could find the raw image buffer.	RAM is corrupt or bad.	Contact Datalogic Support.
LogManager can't open a log file	Error	Log Manager was unable to open the log file on the media device.	Log file media device is unavailable or full.	Verify logging options.
LogManager can't write to the log file	Error	Log Manager was unable to write to the log file on the media device.	Log file media device is unavailable or full.	Verify logging options.
Maximum Application restarts	Error	An application was restarted multiple times due to an error.	If software was recently loaded, an error occurred during the load. An internal hardware failure exists.	Cycle the unit's power. If software was recently loaded, try to reload the new software. If the error persists, contact Datalogic Support.
Maximum system resets in one day	Error	The system became unresponsive multiple times within a 24 hour period and was reset.	If software was recently loaded, an error occurred during the load. An internal hardware failure exists.	Cycle the unit's power. If software was recently loaded, try to reload the new software. If the error persists, replace the camera and/or contact Datalogic Support.
No ACK from Rangefinder after Parameter Update	Error	RangeFinder did not Ack the last parameter update.	Communication with the RangeFinder is compromised.	Check the Ethernet connection with the RangeFinder.
Not Saving BMP Image. Request Too Late	Error	Requested package is no longer available to save.	Image transfer is taking too long, resulting in lost packages.	Check the network connection speed.

e-Genius Description	Type	Explanation	Possible Cause	Solution
RangeFinder is not Online	Error	The RangeFinder is selected as the position sensor but is not detected as being online.	The RangeFinder is powered off or not connected. The Range finder is not the position sensor being used.	If the RangeFinder is not the position sensor being used, select the appropriate position sensor. Verify the RangeFinder has power. Verify the network port of the RangeFinder is connected to the Ethernet Focus port of one of the cameras. Cycle the RangeFinder power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
RangeFinder status not understood	Error	The status message received from the RangeFinder was not understood by the camera.	The RangeFinder software is out of date.	Load the appropriate software into the RangeFinder.
Real-Time Processor has Errors	Error	The Real-Time Processor is reporting an error.	Check the Real-Time Processor section of the System Info > Device Details window for detailed error information (see section Device Details).	Check the Real-Time Processor section of the System Info > Device Details window for detailed error information (see section Device Details). Refer to the Real-Time Processor error list for more information.
Real-Time Processor is not Online	Error	The Real-Time Processor is unable to communicate with the Decoder.	Real-Time Processor has stopped functioning. Internal hardware failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Real-Time Processor status not understood	Error	Status received from the Real-Time Processor was not understood.	Make sure the Real-Time Processor software version is compatible with the Application software.	Load a compatible version of Real-Time Processor software.
Software upgrade failed	Error	An attempt to load upgraded software failed.	There is a type mismatch with the existing software and the new software being loaded. An error occurred while loading software.	Verify the software type being loaded matches that of the existing software. If you are intentionally changing the software type, check the box to skip software type compatibility check when loading the new software file. Cycle the unit's power, and re-attempt to load software.
Bottom Camera Distance to Scanline too Small	Warning	The distance from the position sensor scan line to the bottom camera scan line is too small.	The position sensor is mounted incorrectly, too close to the camera. The bottom camera is mounted incorrectly.	Verify and move the position sensor further upstream if needed. Verify and move the camera further downstream if needed.
Could Not Save JPEG - Image Too Large	Warning	Requested image is too large to compress.	Photo sensor or Position sensor obstructed or a package jam resulting in an extremely long package.	Eliminate package jams. Make sure the photo sensor and/or position sensor are not obstructed.
Could Not Save JPEG - Image Too Small	Warning	Requested image is too small to compress.	Debris on the conveyor.	Check for junk on the conveyor resulting in extremely small packages.
Decoder board over temperature	Warning	The Decoder board has exceeded the maximum temperature.	Ambient temperature has exceeded the maximum 50 degrees C operating temperature. There is a fan failure or airflow blockage.	Verify the ambient temperature is less than or equal to 50 C. Check the fan operation and for any airflow obstructions. Replace fans if necessary.
Decoder CPU over temperature	Warning	The Decoder CPU exceeding the maximum temperature.	Ambient temperature has exceeded the maximum 50 degrees C operating temperature. There is a fan failure or airflow blockage.	Verify the ambient temperature is less than or equal to 50 C. Check the fan operation and for any airflow obstructions. Replace fans if necessary.
Distance to Scanline too small	Warning	The distance from the position sensor scan line to the closest point of the camera line of sight is too small.	The position sensor is mounted incorrectly, too close to the camera. The camera is mounted incorrectly or the angle is wrong.	Verify and move the position sensor further upstream if needed. Verify and move the camera further downstream if needed. Verify and correct the camera angle if needed.
IV State Not Sent - Pkg Not Found	Warning	A trigger message for a package was received but the package was never found in the image data.	This can occur during boot up if packages are running through the tunnel or if a package is completely shadowed.	Contact Datalogic Support if this error persists.

e-Genius Description	Type	Explanation	Possible Cause	Solution
RangeFinder is not Expected	Warning	A RangeFinder is detected in the system but is not selected as the position sensor.	Wrong position sensor is selected in the configuration.	Select the RangeFinder as the position sensor in the configuration.
RangeFinder is not OK	Warning	The RangeFinder is online but reporting an error.	Check the RangeFinder GUI page for error details.	Check the RangeFinder GUI page for error details. Refer the RangeFinder error list for more information.
Real-time Processor has Warnings	Warning	The Real-Time Processor is reporting at least one warning.	Check the Real-Time Processor section of the **Modify Settings | System Info > Device Details** window for detailed warning information (See section (see section Device Details).	Check the Real-Time Processor section of the **Modify Settings | System Info > Device Details** window for detailed warning information (See section (see section Device Details). Refer to the Real-Time Processor warning list for more information.
Software upgrade in progress	Warning	The camera is in the process of updating software.	A software update was loaded on this camera or one of the cameras in the tunnel and auto-update is enabled.	Wait for the update to complete.
Unable to mount SMB/CIFS file share for image saving	Warning	The camera was unable to mount the SMB/CIFS file share on the external device.	File System parameters on the Modify Settings | Global Settings | Image Saving Destination Settings window are not correct (See section 'Modify Settings | Device Settings | <Camera name> | Imaging" on page 193). External device is not available. The Server Path is set to a path local to the camera.	Make sure the File System parameters on the Modify Settings | Global Settings | Image Saving Destination Settings window are properly set (See section 'Modify Settings | Device Settings | <Camera name> | Imaging" on page 193). Make sure the Server Path is not local to the camera.
Unexpected Camera is Online	Warning	A camera is detected in the tunnel that was not part of the tunnel configuration.	A new camera was added to the tunnel or an existing camera was replaced.	Add the camera to the configuration and proceed with the set up if it is a new camera. If an existing camera was replaced, there should be an offline camera. From the Modify Settings | System Info, replace the offline camera with one listed outside the cluster (See section 'Modify Settings | System Info" on page 95).
Decoder load warning	Info	Decode engine CPU usage is high.	Background is noisy. Multiple 2D codes are enabled. Camera gain is too low or too high or the camera is out of focus.	Make sure gain and focus are set properly. Otherwise this error will not cause any problems.
Decoder overload error	Info	Decode engine is being killed before the package is complete.	Background is noisy. Multiple 2D codes are enabled. Camera gain is too low or too high or the camera is out of focus. Transmit point distance is too close.	Make sure gain and focus are set properly. Increase the transmit point distance if possible.
Driver returned an error	Info	PCIe driver returned an error.	HW issue with the PCIe bus or the FPGA.	Contact Datalogic Support if this error persists.

Real-Time Processor Errors

Alphabetical by type: Error / Warning / Info

e-Genius Description	Type	Explanation	Possible Cause	Solution
Error: Calibration Manager stopped responding	Error	The Calibration Manager application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Diagnostic Monitor stopped responding	Error	The Diagnostic Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Failed to Load Focus Table	Error	RTP failed to load the focus table.	Focus table was not received or is corrupt.	Contact Datalogic Support.
Error: Failed to Load Gain Table	Error	RTP failed to load the gain table.	Gain table was not received or is corrupt.	Contact Datalogic Support.
Error: Failed to Load Illumination Table	Error	RTP failed to load the illumination table.	Illumination table was not received or is corrupt.	Contact Datalogic Support.
Error: Failed to read illumination profile	Error	The camera was unable to read the illumination profile from the illumination.	Illumination not present. Interface window between camera and illumination blocked. Illumination internal failure.	Verify the camera is fully seated to the illumination. Verify there is nothing blocking the small windows between the camera and the illumination. Verify the illumination is powered up and has no errors. Cycle the unit's power. If the error persists, replace the camera or illumination and/or contact Datalogic Support.
Error: Failed to read Illumination temp	Error	The illumination interface is unable to read the internal temperature.	An internal failure occurred in the illumination.	Cycle the unit's power. If the error persists, replace the illumination and/or contact Datalogic Support.
Error: Failed to save illumination profile	Error	The illumination profile could not be saved.	Communication with the illumination has been compromised.	Contact Datalogic Support.
Error: Fixed Focus Value Out of Range	Error	The current fixed focus value is set beyond the far working distance for the camera.	Parameter set incorrectly.	Change the fixed focus value to be equal to or less than the far working distance value.
Error: Focus Port Mon stopped responding	Error	The Focus Port Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Focus Servo Mon stopped responding	Error	The Focus Servo Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM Data Valid	Error	The focus servo EEPROM is not valid or is corrupt.	Data corruption while reading the EEPROM.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM exceeded max temp	Error	The focus servo exceeded the maximum internal temperature.	Ambient temperature has exceeded the maximum 50 degrees C operating temperature. There is a fan failure or airflow blockage.	Verify the ambient temperature is less than or equal to 50 C. Check the fan operation and for any airflow obstructions. Replace fans if necessary.
Error: FSM Invalid Servo command received	Error	The camera received an invalid command response from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM Invalid Servo packet received	Error	The camera received an invalid data packet for the command from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM PWM Over Limit	Error	The focus servo exceeding the maximum PWM attempting to get to the commanded position.	The shipping lock is still engaged or partially engaged. There is an internal hardware failure.	Verify the shipping lock is fully disengaged. Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Error: FSM PWM Over Time	Error	The focus servo exceeding the maximum PWM time-outs attempting to get to the commanded position.	The shipping lock is still engaged or partially engaged. There is an internal hardware failure.	Verify the shipping lock is fully disengaged. Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM Servo reception	Error	The camera is unable to receive messages from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: FSM Servo Transmission	Error	The camera is unable to send messages to the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: GPIO Handler stopped responding	Error	The GPIO Handler application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Illumination exceeded max temp	Error	The illumination exceeded the maximum internal temperature	Ambient temperature has exceeded the maximum 50 degrees C operating temperature. There is a fan failure or airflow blockage.	Verify the ambient temperature is less than or equal to 50 C. Check the fan operation and for any airflow obstructions, particularly at the ends of the illumination. Replace fans if necessary.
Error: Illumination Mon stopped responding	Error	The Illumination Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Image Line Handler stopped responding	Error	The Image Line Handler application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Image Sensor Mon stopped responding	Error	The Sensor Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Interrupt Handler stopped responding	Error	The Interrupt Handler application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: LED Bar Failed	Error	The illumination controller has indicated an issue with a LED module.	An internal failure occurred in the illumination.	Cycle the unit's power. Verify all of the LED modules in illumination come on. If the error persists, replace the illumination and/or contact Datalogic Support.
Error: Network Logger stopped responding	Error	The Network Logger Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Network Rx stopped responding	Error	The Network Receive Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Network TX stopped responding	Error	The Network Transmit Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Parameter Manager stopped responding	Error	The Parameter Manager application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Position Sensor Too Close to Camera	Error	The position sensor is mounted too close to the camera and incoming focus data cannot be processed.	The camera is mounted too close to the position sensor or the distance to scan line parameter is not set properly.	Check the distance to scan line parameter. The camera will need to be moved if the distance to scan line parameter is set to the correct value.
Error: Proc Tach Array stopped responding	Error	The Process Tach Array application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Error: Process Tracking Manager stopped responding	Error	The Process Tracking Manager application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Recovery Mode. Software Load Required !	Error	RTP is running recovery applications. RTP software must be loaded before the camera will function properly.	RTP software upload failed or the RTP SD card is new.	Load RTP software via the GUI.
Error: Sensor Board Communication	Error	The Real-Time Processor is unable to communicate to the sensor.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Sensor Board Error Loading CCI	Error	An error may have occurred while writing the CCI software to the sensor.	An error occurred writing the software to the sensor.	Cycle the unit's power. Verify the Sensor SW did not update by checking the version. If the version updated then it loaded correctly. If not, re-attempt to load the software. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Sensor Board Error Loading FPGA	Error	An error may have occurred while writing the FPGA software to the sensor.	An error occurred writing the software to the sensor.	Cycle the unit's power. Verify the Sensor SW did not update by checking the version. If the version updated then it loaded correctly. If not, re-attempt to load the software. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Sensor Board Error Loading Micro	Error	An error may have occurred while writing the Micro software to the sensor.	An error occurred writing the software to the sensor.	Cycle the unit's power. Verify the Sensor SW did not update by checking the version. If the version updated then it loaded correctly. If not, re-attempt to load the software. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Sensor Board Failure Detected	Error	The camera detected a failure with the sensor.	An internal sensor failure occurred.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Status Mon stopped responding	Error	The Status Monitor application has stopped.	The application has stopped responding or crashed.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Unable to Read FSM Hardware Version	Error	The camera is unable to receive messages from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Unable to Read FSM Software Version	Error	The camera is unable to receive messages from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Error: Unable to Read FSM Temperature	Error	The camera is unable to receive messages from the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Waiting for first parameter update	Error	The Real-Time Processor is waiting for the parameters from the Decoder.	The Decoder is still booting and has not sent the parameters yet. Communications failure between the Real-time processor and the Decoder.	Wait a couple minutes for the Decoder to complete initialization and send the parameters. If the error remains, Cycle the unit's power. If the error still persists, replace the camera and/or contact Datalogic Support.
Warning: External fan failure	Warning	The external fan(s) mounted to the camera have stopped functioning.	Fans are disconnected. Fan hardware failure.	Verify the external fans are connected properly. Replace fan assembly.
Warning: Forced Fixed Focus in PE Only Mode	Warning	Camera is being forced into Fixed Focus because the Photo Sensor is set to Photo-eye only mode.	Photo Sensor is set to PE Only and focus is set to Profile. The RTP will force focus to fixed in this case.	Set focus to fixed and set the fixed focus value.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Warning: Forced Fixed Gain in PE Only Mode	Warning	Camera is being forced into Fixed Gain because the Photo Sensor is set to Photo-eye only mode.	Photo Sensor is set to PE Only and gain is set to Profile. The RTP will force gain to fixed in this case.	Set gain to fixed and set fixed gain and fixed exposure.
Warning: Illumination Fan1 Failed	Warning	The external fan mounted to the illumination has stopped functioning.	Fans are disconnected. Fan hardware failure.	Verify the external fans are connected properly. Replace fan assembly.
Warning: Illumination Fan2 Failed	Warning	The external fan mounted to the illumination has stopped functioning.	Fans are disconnected. Fan hardware failure.	Verify the external fans are connected properly. Replace fan assembly.
Warning: Internal fan failure	Warning	The internal fan has stopped functioning.	Internal fan hardware failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Warning: Invalid End of IV Detected	Warning	The RTP tried to end a new package before the new package started.	Parameter update was performed with packages running. Multiple focusing devices connected.	Contact Datalogic Support.
Warning: Invalid Start of IV Detected	Warning	The RTP tried to start a new package before the previous package ended.	Parameter update was performed with packages running. Multiple focusing devices connected.	Contact Datalogic Support.
Warning: Linerate exceeds Maximum Linerate	Warning	The required line rate is exceeding the maximum expected line rate based on the belt speed.	The belt speed parameter is set below the actual belt speed. The LPI is set too high.	Verify the belt speed is set just above the actual maximum belt speed. Verify the LPI is set correctly to the application specification.
Info: Failed to Send Focus Command	Info	The camera is unable to send messages to the focus servo.	Internal communication failure.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Info: Focus Command Above Max Range	Info	RTP attempted to focus beyond the far working distance of the camera.	Far working distance is not set to the left/right edge of the DM3610 or RangeFinder.	Make sure the far working distance of the camera is set to the left/ right edge of the DM3610 or RangeFinder.
Info: Focus Command Below Min Range	Info	RTP attempted to focus beyond the near working distance of the camera.	The camera is mounted too close.	Physically move the camera farther away.
Info: Invalid Height from Position Sensor	Info	Height received from the position sensor is out of range.	Package presented was too tall causing the camera to attempt to focus beyond its near working distance.	Physically move the camera farther away from the conveyor surface.
Info: Invalid Left Offset from Position Sensor	Info	Left offset received from the position sensor is out of range.	Far working distance of right side cameras is not set to the left edge of the DM3610/ Rangefinder or the left offset of the DM3610/ Rangefinder caused a left side camera to attempt to focus beyond its near working distance.	Make sure the cameras are mounted properly and the far working distance of each camera matches the DM3610/Range-Finder left/right edges.
Info: Invalid Right Offset from Position Sensor	Info	Right offset received from the position sensor is out of range.	Far working distance of left side cameras is not set to the right edge of the DM3610/ Rangefinder or the right offset of the DM3610/Rangefinder caused a right side camera to attempt to focus beyond its near working distance.	Make sure the cameras are mounted properly and the far working distance of each camera matches the DM3610/Range-Finder left/right edges.
Info: Issue Writing to Network	Info	The RTP could not write a message to the network.	A network issue exists between the RTP and computing module.	Cycle the unit's power. If the error persists, replace the camera and/or contact Datalogic Support.
Info: Maximum Digital Gain being used	Info	The digital gain value being used is the maximum value allowed. This could result in noisy and/or dark images.	Conveyor Speed and/or LPI settings are too high. Physical belt speed is too high for the LPI setting required.	Reduce LPI. Make sure the Conveyor speed parameter is set properly. Contact Datalogic Support if all settings are correct.
Info: Reading Calibration tables...	Info	RTP is in the process of reading calibration tables. This only happens during boot up.	Not an issue.	Wait until the calibration tables are loaded.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Info: Reading Illumination Profile...	Info	The camera is reading the illumination profile from the illumination.	The camera reads this data from the illumination on power up.	Wait for the camera to finish reading the illumination profile.
Info: Running FSM Self Test	Info	RTP is running a test script to test the focus mechanism	A production test script was left on the RTP	Contact Datalogic Support
Info: Saving Illumination Profile...	Info	The RTP is in the process of reading the illumination profile from the illumination.	New illumination was connected to the camera.	Wait until the illumination file is finished saving.
Info: Sensor Board Loading CCI	Info	A Sensor Board software patch was loaded and is being written to the sensor.	A Sensor Board software patch was loaded and is being written to the sensor.	Wait for software load to complete.
Info: Sensor Board Loading FPGA	Info	A Sensor Board software patch was loaded and is being written to the sensor.	A Sensor Board software patch was loaded and is being written to the sensor.	Wait for software load to complete.
Info: Sensor Board Loading Micro	Info	A Sensor Board software patch was loaded and is being written to the sensor.	A Sensor Board software patch was loaded and is being written to the sensor.	Wait for software load to complete.
Info: SyncNetwork is not connected in a loop	Info	The AV7000 sync network is not connected in a loop.	One of the two sync network Ethernet ports, on one of the cameras in the tunnel, does not have a cable connected.	Make sure cables are connected from the "In" port to the "Out" port of each camera in the tunnel.
Info: Verifying Sensor Board Status	Info	The camera is reading the status information from the sensor.		Wait for the camera to finish reading the data.

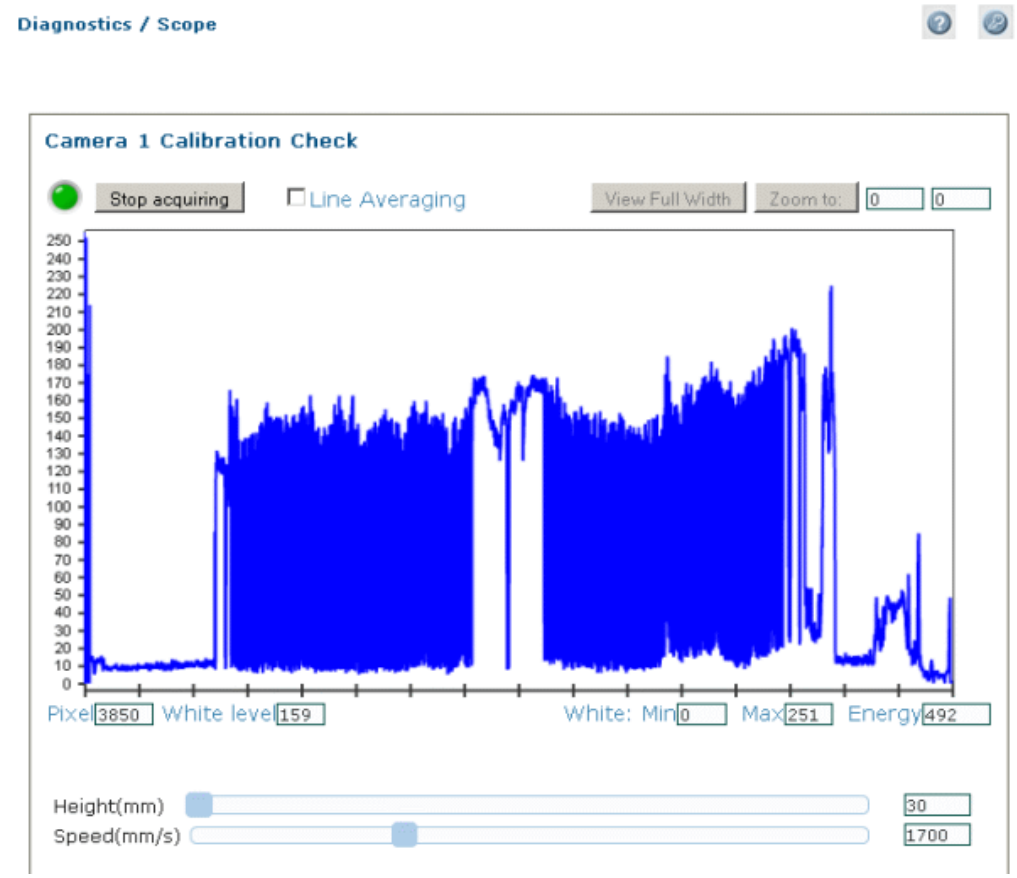
RangeFinder Errors

e-Genius Description	Type	Explanation	Possible Cause	Solution
Error: Image Sensor Read Failure	Error	The RangeFinder is unable to read data from the sensor.	Internal RangeFinder error.	Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Laser #1 current exceeds limit	Error	The laser current is exceeding its maximum setting.	Laser is at end of life. Internal laser failure.	Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Laser #1 temperature exceeds limit	Error	The laser is exceeding the maximum temperature limit.	Ambient temperature is exceeding the 50 degrees C maximum operating temperature. Internal laser failure.	Verify the ambient temperature is not exceeding 50 C. Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Laser #2 current exceeds limit	Error	The laser current is exceeding its maximum setting.	Laser is at end of life. Internal laser failure.	Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Laser #2 temperature exceeds limit	Error	The laser is exceeding the maximum temperature limit.	Ambient temperature is exceeding the 50 degrees C maximum operating temperature. Internal laser failure.	Verify the ambient temperature is not exceeding 50 C. Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: No valid temperature for laser #1	Error	The RangeFinder is unable to read the laser temperature.	Internal RangeFinder failure.	Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.

e-Genius Description	Type	Explanation	Possible Cause	Solution
Error: No valid temperature for laser #2	Error	The RangeFinder is unable to read the laser temperature.	Internal RangeFinder failure.	Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Sensor data always from DOE #1	Error	Object data is always being detected by DOE#1.	Object stuck on belt. Obstruction in the DOE laser pattern. Beam blockers not set correctly.	Verify there are no objects or obstructions in the DOE laser pattern. Verify the Beam blockers are set correctly. Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Sensor data always from DOE #2	Error	Object data is always being detected by DOE#2.	Object stuck on belt. Obstruction in the DOE laser pattern. Beam blockers not set correctly.	Verify there are no objects or obstructions in the DOE laser pattern. Verify the Beam blockers are set correctly. Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Sensor or laser problem (no codewords)	Error	The RangeFinder is unable to see the laser patterns.	There is an obstruction preventing the sensor (in the center of the RangeFinder) to see the laser patterns. An internal Sensor error. The laser patterns are not present or blocked.	Verify there are no obstructions blocking the view of the sensor. Verify there are no obstructions blocking the laser pattern generators. Cycle the unit's power. If the error persists, replace the RangeFinder and/or contact Datalogic Support.
Error: Tach or Tach Sync problem (invalid speed)	Error	The RangeFinder missed a tach sync pulse. The current tach value does not match the tach value in the tach sync message.	Noise on the Ethernet cable connected to the RangeFinder or the tachometer. Device connected without a breakout cable connected to eliminate tach and tach sync.	Make sure cables are not running too close to a motor. Make sure a breakout cable is used when a computer is attached.

VERIFYING FUNCTIONALITY OF THE FOCUS MECHANISM

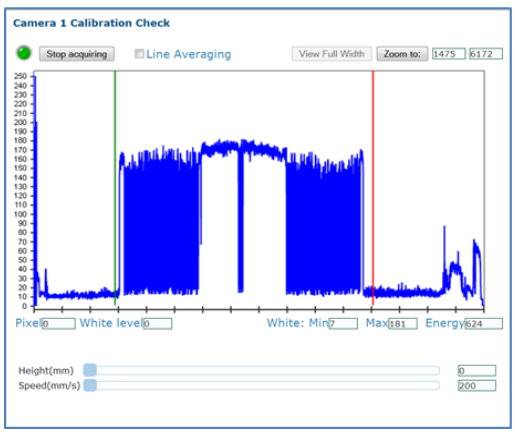
Use the **Scope (Calibration Check)** window to view a software oscilloscope of the camera/illumination performance.

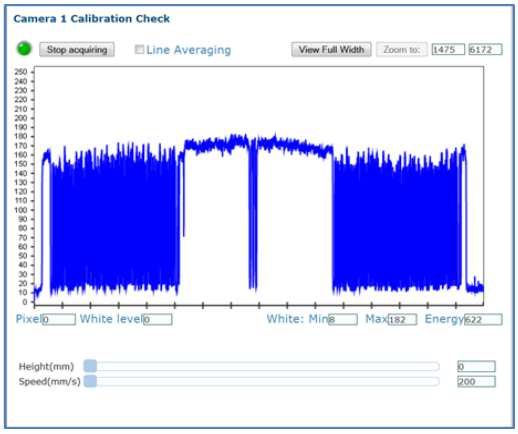


To access the Scope (Calibration Check) window:

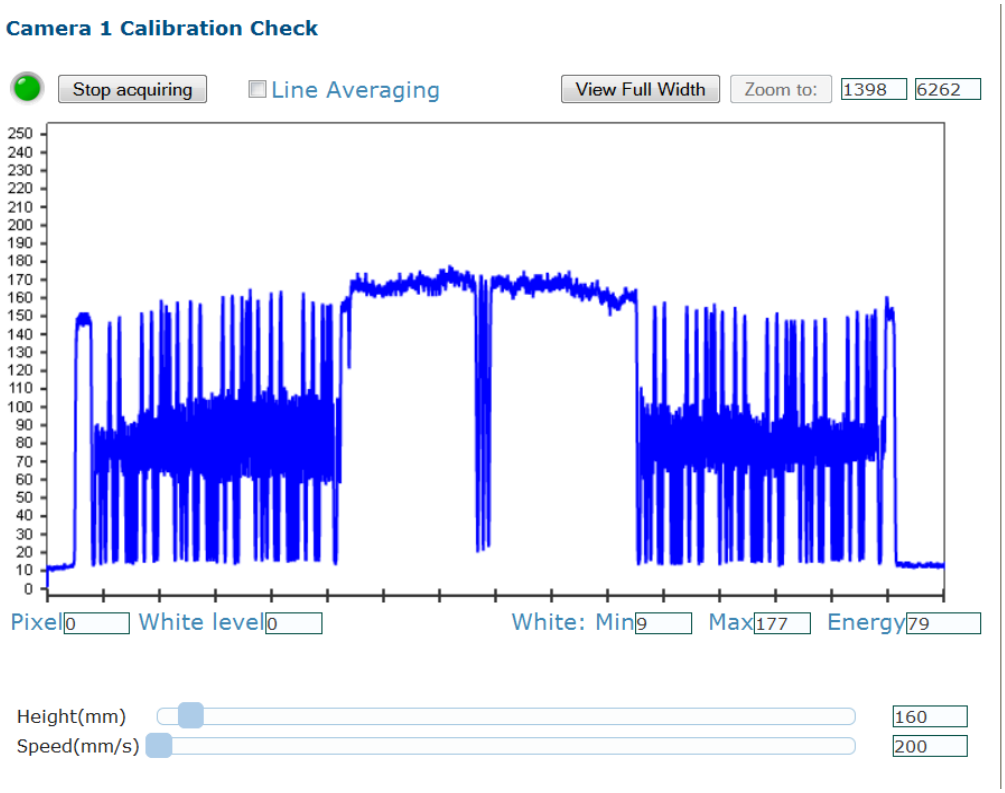
1. In the menu tree under Diagnostics, click Scope (Calibration Check). The **Scope (Calibration Check)** window opens.

2. To zoom, click on the right and left sides of the area to be zoomed, and then click Zoom to.





3. Use the sliders at the bottom of the screen to adjust Height (Focus) and Speed (Amplitude).

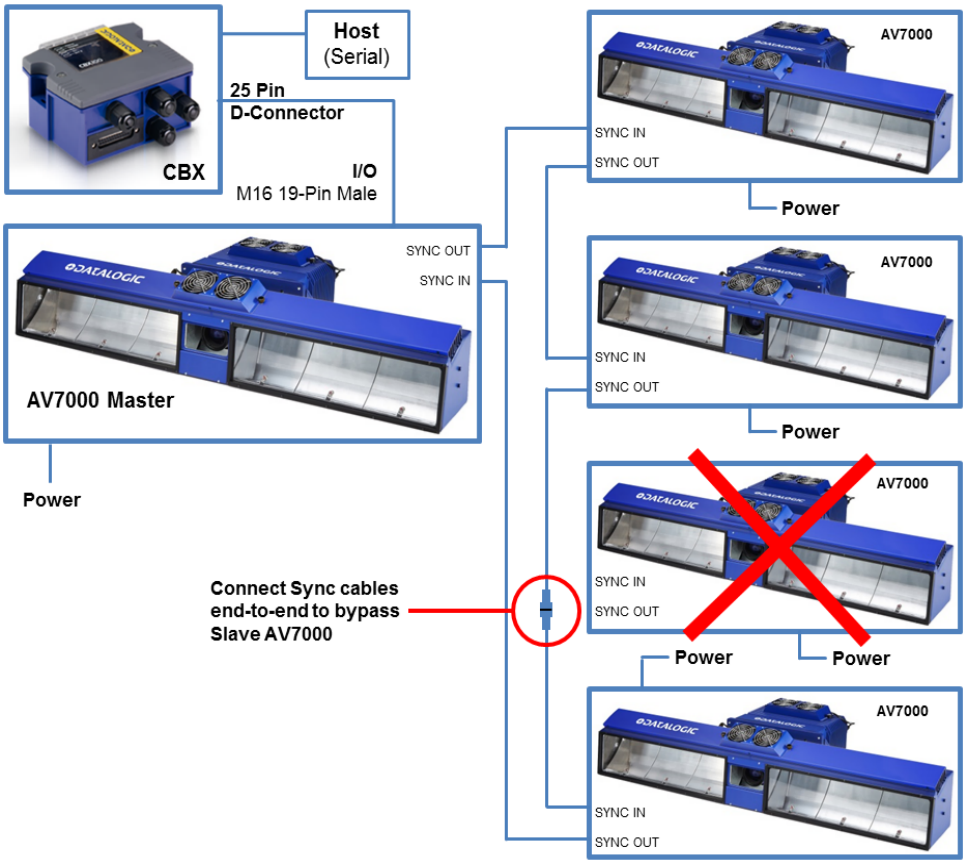


4. Click **Stop Acquiring** to freeze the scope.

BYPASSING AN AV7000 IN AN ARRAY (TUNNEL)

If for any reason, a slave AV7000 needs to be removed from an array (tunnel), it can be bypassed to allow the array to continue functioning in a redundant loop, minimizing down time.

To do this, remove the sync cables from **SYNC IN** and **SYNC OUT** connectors of the slave AV7000 and connect the sync cables end-to-end to complete the sync network. When the slave AV7000 is ready to be brought back into the sync network, reattach the cables to its **SYNC IN** and **SYNC OUT** ports. To bring the slave AV7000 back into the array cluster.



Other Camera Checks

Confirm communication with host

- Serial (if applicable)
- Ethernet (if applicable)
- Confirm Protocol Index (if applicable)

Observe the System in Action

Confirm that all cameras are reading the barcode correctly and that the scan point is communicating to the host.

REPLACING AN AV7000 CAMERA

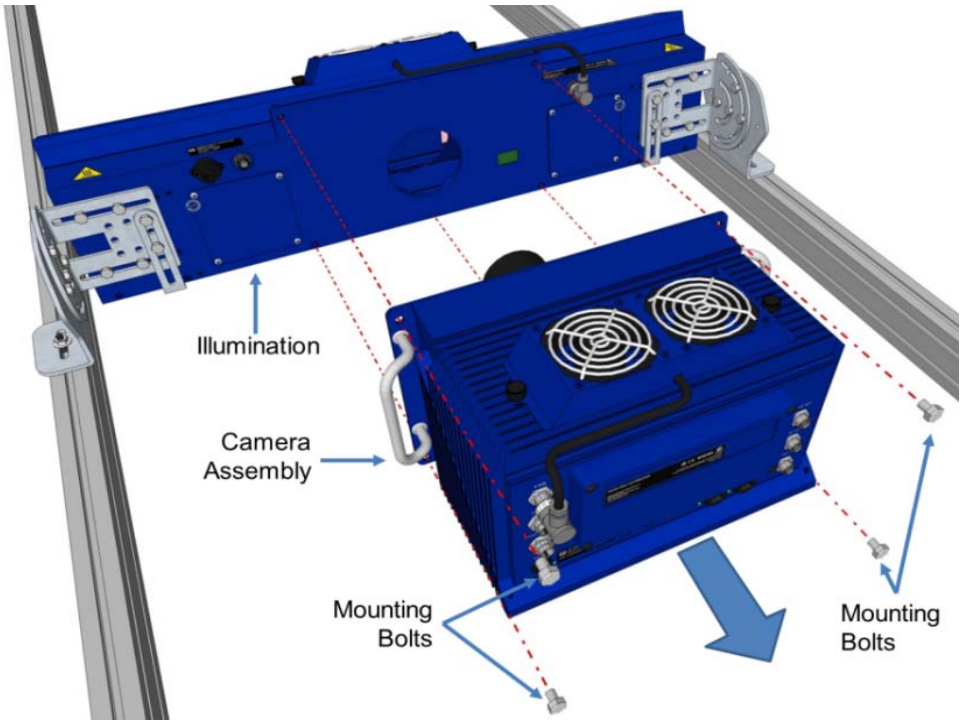
Use the following procedures to replace an AV7000 Camera, either a stand-alone unit, a Master in a tunnel/array, or a Slave unit in a tunnel/array.

You will need an AV7000 Controller Key.

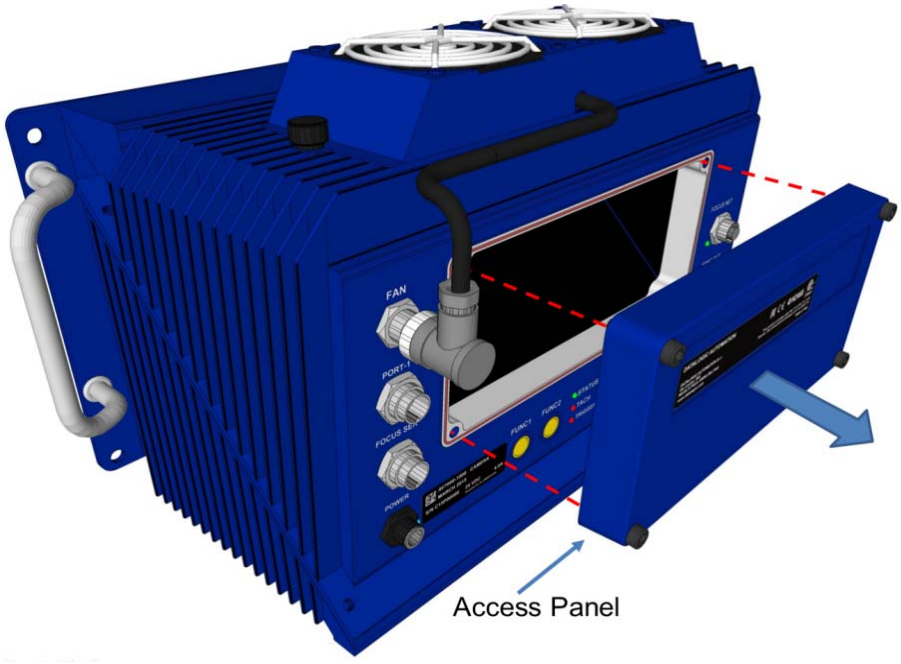
Observe precautions to prevent Electrostatic Discharge (ESD). Use an ESD grounding wrist strap and avoid direct contact with circuit boards, which could be damaged by ESD.

1. Disconnect the power source from the camera.
2. Disconnect all the cables except for the fan cable from the camera.

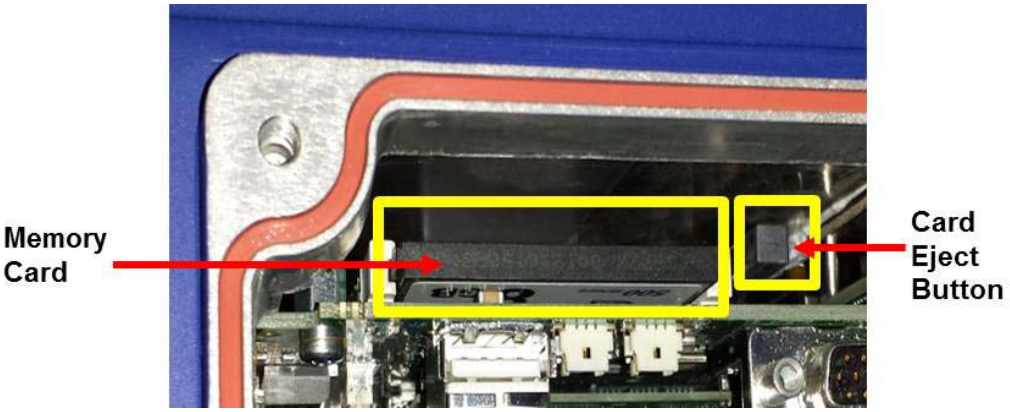
3. Remove the camera from the illumination by unscrewing the four (4) mounting bolts.



4. Place the old camera on a flat surface and remove the back access panel by loosening the retaining screws.



5. Locate the memory card inside the access opening on the upper left side.



6. Press the card eject button and remove the memory card from the camera.

7. Place the replacement camera on a flat surface, and remove the back access panel.
8. Insert the memory card firmly into the card slot in the replacement camera.
9. Reattach the back access panels and secure it with the retaining screws.
10. Attach the replacement camera assembly to the illumination. Lift the camera into place, inserting the lens through the lens hole and the Locator Pin into the Locator Pin Hole.
11. Screw the mounting bolts in place to secure the camera
12. Reattach the cables to the camera in their original locations.
13. Apply power to the AV7000 Camera.

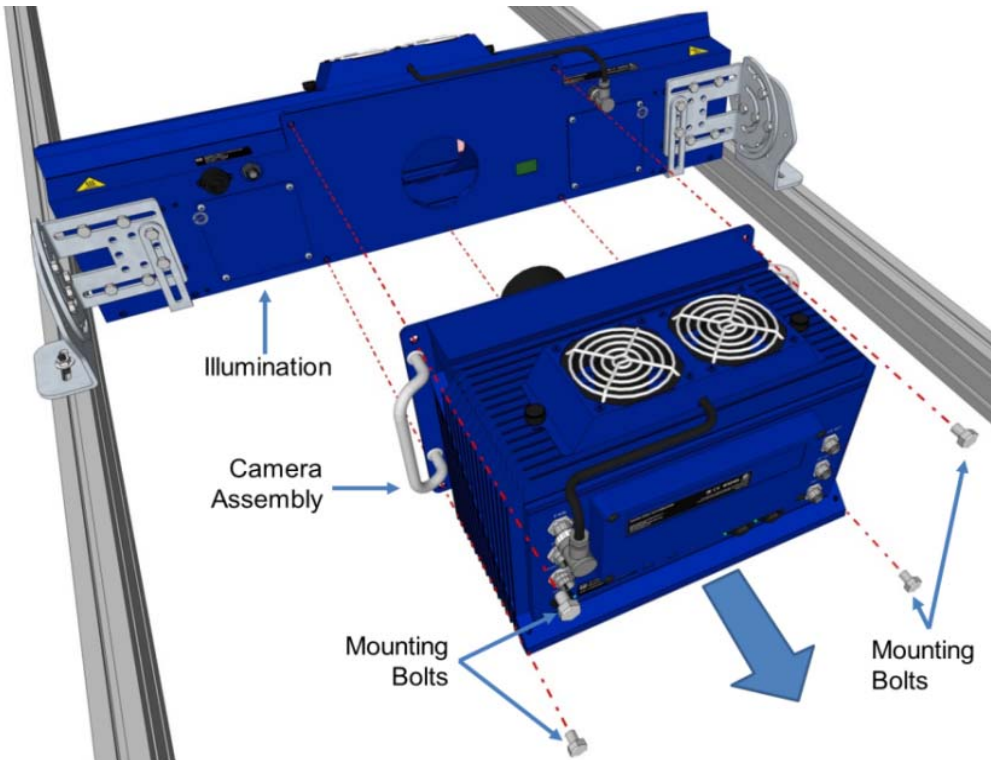
REPLACING AV7000 WITH A FAILED MEMORY CARD

Sometimes a failed memory card can cause a Camera Assembly to fail. In this case replacing the camera assembly and transferring its memory card to a replacement unit will not resolve the problem. In these situations, you need to replace an AV7000 Camera with a failed Memory Card.

This procedure works for both a controller and a client in a tunnel/array. A standalone unit will be handled differently.

1. Disconnect the power source from the camera.
2. Disconnect all the cables except for the fan cable from the camera.

3. Remove the camera from the illumination assembly by unscrewing the four (4) mounting bolts.



4. Attach the replacement camera assembly to the illumination.

5. Lift the camera into place, inserting the lens through the lens hole and the Locator Pin into the Locator Pin Hole.

6. Screw the mounting bolts back in place to secure the camera.

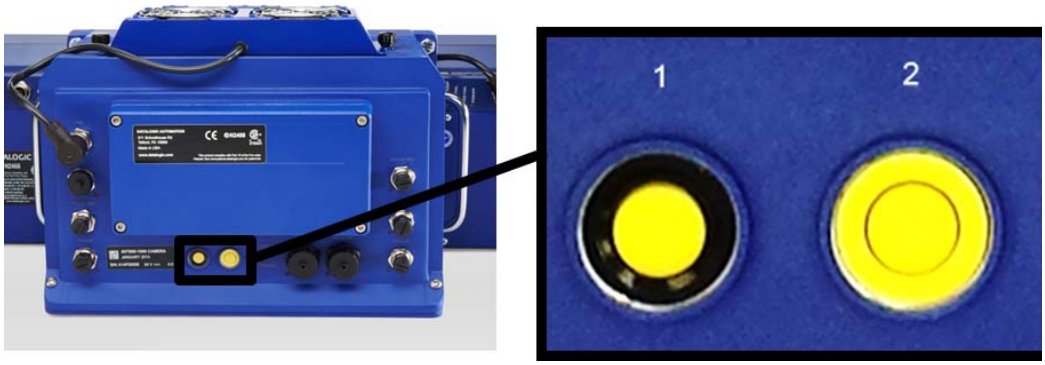
7. Connect only the power cable to the camera assembly.

WARNING

DO NOT CONNECT ANY OTHER CABLES UNTIL THE FOLLOWING STEPS ARE COMPLETED.
If other cables are connected there is a risk that the existing tunnel parameters may get corrupted.

8. Connect the Controller Key (tach dongle) to the I/O port of the AV7000.

9. With the unit powered up, hold down buttons 1 and 2 at the same time. The STATUS LED (located to the right of button #2) will blink GREEN and then RED to indicate that the unit has been defaulted.



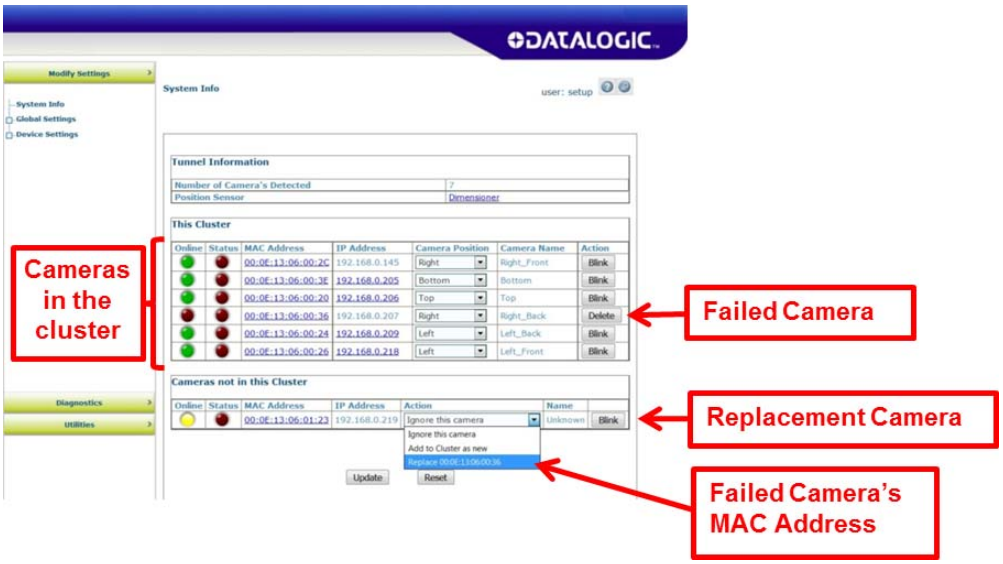
10. Disconnect the power connection from the camera assembly.
11. Remove the CONTROLLER KEY from the I/O port of the AV7000.
12. Re-attach all of the cables to the camera in their original locations.
13. Apply power to the AV7000 Camera.
14. Connect the browser to any AV7000 in the tunnel EXCEPT the unit being replaced.

15. Navigate to the System Info page.

16. In the “This Cluster” section of the page the failed camera will show up with the “Delete” option in the Action column. Note the MAC address of this camera.

17. The replacement AV7000 will be found in the “Cameras not in the Cluster” portion of the page.

18. Under the “Action” section select Replace (The MAC address of the failed camera).



CONNECTING A DEFAULTED AV7000 BACK INTO A CLUSTER

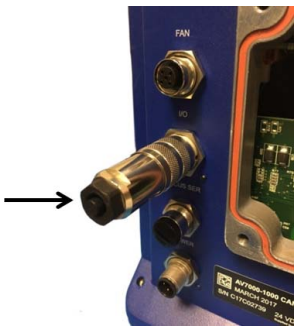
When replacing a repaired, **defaulted** AV7000, you must load parameters before you can place it back into an existing cluster. This procedure also assumes you know how to mount, reconnect and access the e-Genius application of an AV7000. See Reference Manual and Installation Guide for more information.

The following procedure describes the steps to follow in order to restore the AV7000 back into the cluster. To proceed with these steps, you will need to save a copy of the XML file from the cluster to an accessible location.

NOTE

You will need an AV7000 Controller Key.

1. Connect a Controller Key into the I/O Port of the AV7000 being placed back into the cluster.

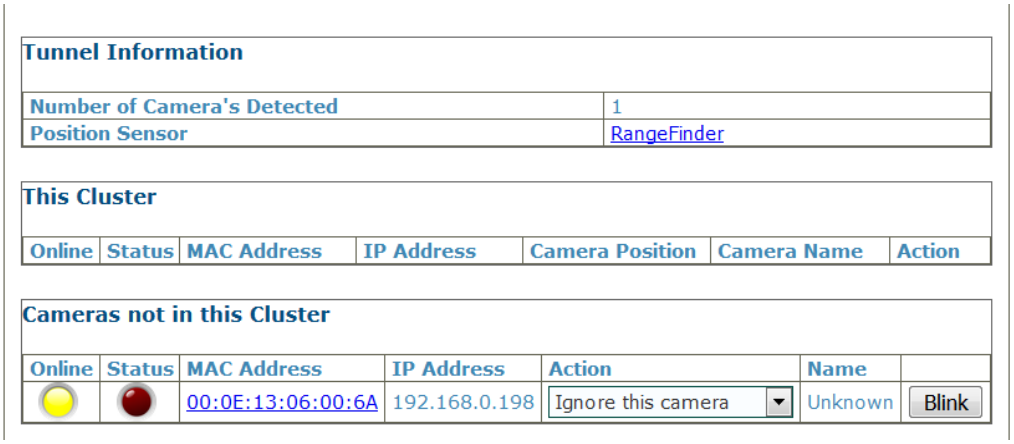


2. **DO NOT** reconnect the sync network cables at this time. They will be reconnected in a later step.

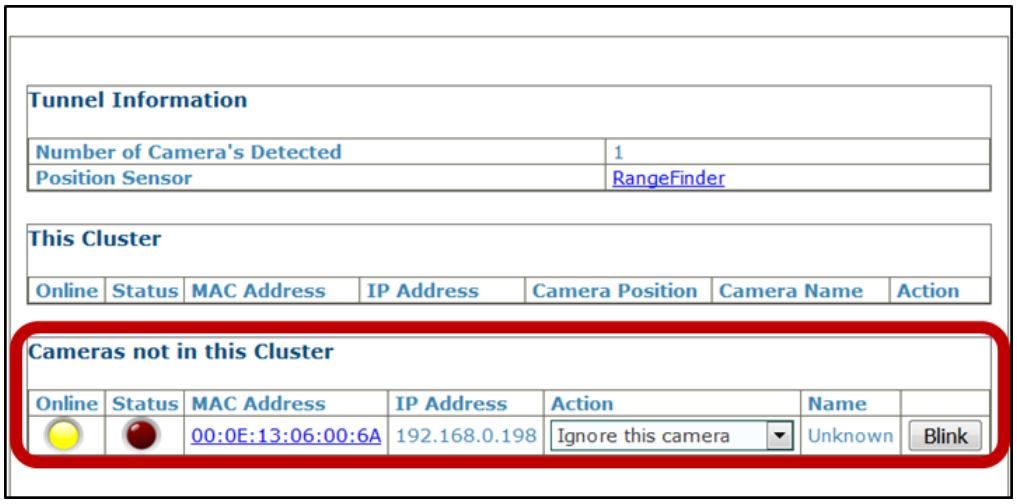
3. Apply power to the AV7000.

4. Connect a PC to the Image Ethernet port (10.0.40.20) of the AV7000.

5. Access the AV7000 e-Genius application, **System Info.**

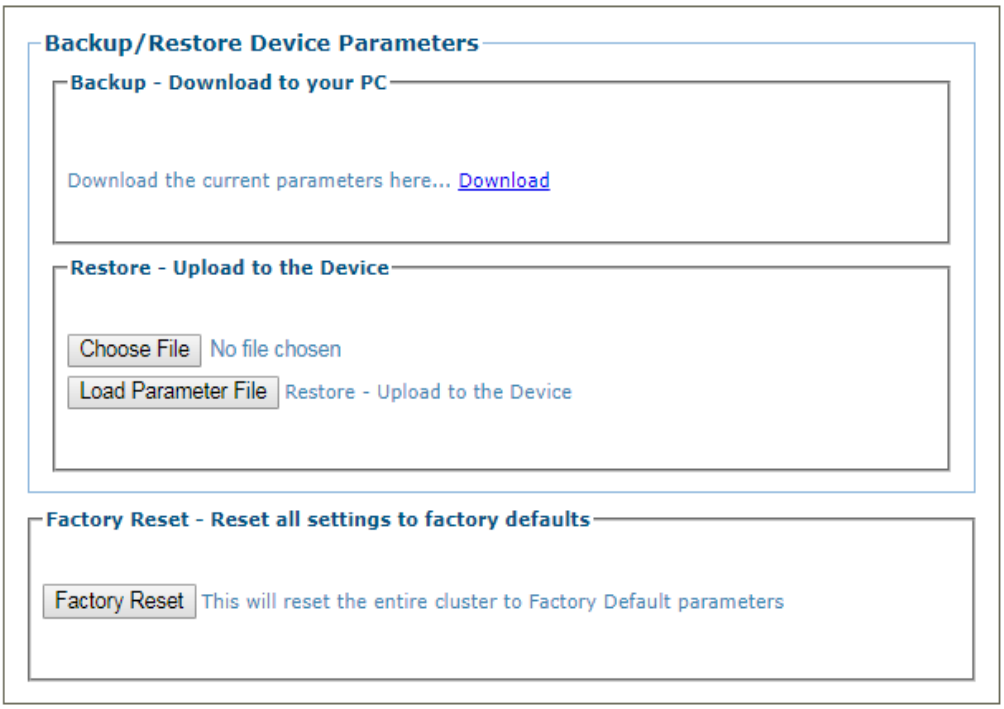


6. This screen snapshot shows the **System Info** screen of the problem AV7000. Because of its defaulted state, it is not considered part of this cluster.



7. You need to load the XML (parameters) file that was retrieved from one of the other cameras in the tunnel

8. Access **Utilities | Backup/Restore Device Parameters**.



9. Click **Choose File** to locate the XML you saved previously.
10. Click **Load Parameter File** to upload the XML file to the replaced camera.
11. Once the parameter file has been uploaded, power down the AV7000.
12. Remove the Controller Key.
13. Reconnect the sync network cables.
14. Re-apply power to the AV7000.
15. The AV7000 should now be restored in this Cluster.

CHAPTER 10
TECHNICAL FEATURES

This chapter provides detailed specifications for the AV7000 Barcode Reading Systems. It provides specific information on:

- Electrical Features
- Optical Features
- Reading Features
- Human Machine Interface
- Software Features
- Environmental Features
- Physical Features

ELECTRICAL FEATURES		
Supply Voltage	23-26VDC at illumination connector	
	24 VDC ± 2% at power supply connector	
Power Consumption		
AV7000 Camera	4A	
Illumination Color:	Red	White
AV7000 Camera + AI7000-800 Illumination	12A	15.3A
AV7000 Camera + AI7000-1100 Illumination	16.5A	20A
AV7000 Camera + AI7000-1500 Illumination	20A	22A
Electrical Protection	Internal Electronic Polarity Inversion Protection for both AV7000 cameras and AV7000 illuminators	

ELECTRICAL FEATURES		
Supply Voltage	23-26VDC at illumination connector	
Common Communication Interfaces	Main	Baud Rate
	RS232/RS422 up to 115.2 Kbit/s	1200 to 115200
	Auxiliary	
	RS232 up to 115.2 Kbit/s	1200 to 115200
	Ethernet	2 x Ethernet TCP/IP 1 Ethernet Gigabit for decoding data to Host (may also be used for setup) 1 Ethernet Gigabit for image file transfer to Host
Digital Inputs	3 x Inputs (2 + 1 x "Encoder"), optocoupled, NPN/PNP (5-30 Vdc) 1 Presence Sensor opto-isolated (polarity insensitive) 1 Optical Encoder opto-isolated (polarity insensitive) 1 General Purpose opto-isolated (polarity insensitive)	
Digital Outputs	2 x Outputs SW programmable, optocoupled, event driven, NPN 2 General Purpose opto-isolated open collector or open emitter	
Optional Setup Interface	1 USB 2.0 port for Keyboard/Mouse Hub + 1 VGA port for System Monitor	
Internal Communication System	SyncNet Technology	
Fieldbus	All common Fieldbus communications supported through various Fieldbus modules installed in the CBX800 connection box.	

OPTICAL FEATURES	
Sensor Type	High Speed CMOS Line Scan - 8192 pixels
Optical Lens	90 mm, 110 mm and 140 mm *
View Angle	8° to 45° *
Max Scan Rate	30 kHz scans/sec
FOV from Top	up to 1400 mm *
DOF from Top	up to 1200 mm *
Resolution	110 to 260 pixels/inch (DPI) *
Focus	Dynamic
	* Depends on model and/or application type

ELECTRICAL FEATURES	
Supply Voltage	23-26VDC at illumination connector

HUMAN MACHINE INTERFACE	
Keypad	2 buttons
LED Indicators	Status, Tach,Trigger

HARDWARE FEATURES	
Decoder CPU	Dual-core Intel® Celeron®, optional Intel® Core™ i5
Operating System	Linux
RAM	8 Gb
Parameter Storage	4 Gb Non-volatile internal FLASH

SOFTWARE FEATURES	
Device Programming	Multilanguage, browser-based, on board HTML web server interface
Readable Barcodes	All Standard 1D and 2D Symbologies

ENVIRONMENTAL FEATURES	
Temperature	Operating: 0° to 50° C [32° to 122° F] Storage: -20° to 70° C [-4° to 158° F]
Relative Humidity	95% non condensing
Vibration Resistance	SINE vibration as per EN60068-2-6 5-9Hz : 1.5mm / 9-150Hz :0.5g 2h on the primary axis (perpendicular to the face of the camera)
Shock Resistance	As per EN60068-2-27, 15g / 11ms / 3 times up and 3 times down on the primary axis.
Protection Class	IP65
Fan Life	L10 @ 50°C : 50000h

PHYSICAL FEATURES	
Mechanical Dimensions:	
AV7000 with external fans and Short Illumination	845x416x237 mm [33.3x16.4x9.3 in]
AV7000 with external fans and Medium Illumination	1150x416x237 mm [45.3x16.4x9.3 in]
AV7000 with external fans and long Illumination	1480x416x237 mm [58.3x16.4x9.3 in]
Weight	
AV7000	11 kg [24 lbs]
Illumination Short, Medium, Long	12 kg [26 lbs], 15 kg [33 lbs], 19 kg [41 lbs]
Enclosure	Aluminum Alloy
Connections	FAN, I/O, FOCUS SER, POWER, HOST NET, IMAGE NET, FOCUS NET, SYNC OUT, SYNC IN

ELECTRICAL FEATURES	
Supply Voltage	23-26VDC at illumination connector

OTHER	
Service Options	Installation services and on-site training
Warranty	2-year limited, parts and labor

DATALOGIC

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