



L7C Servo Drive & Motor

Xmotion



Beyond technology, the revolution of Industry 4.0! Achieve automation innovation with LSIS L7C Servo Drive

Compact size considering productivity improvement and system efficiency, various built-in functions, complete the innovation of automation at a competitive price.



L7C Servo Drive



Control power/Main power board

- Unification of power for internal power board
- 0.1 ~ 1kW Drive line-up for support



Optimal system implementation and competitive cost ratio

- Unused FPGA due to optimization



Maintain compatibility

- Compatibility with existing systems



Maintain and improve

- Maintain current control cycle control cycle (5kHz)
- Added operation model independent memory (1MB, L7P specific)



Power unification
Integrated control board and

single phase AC220V

Implementation with

Optimization of MCU usage

L7S I/O pin map

L7S specification

Circle (10kHz), speed/position

(Indexing mode) and improved
(Positioning)



Specification (L7C Servo Drive)

| Item | | L7CA001U | L7CA002U | L7CA004U | L7CA008U | L7CA010U |
|---------------------|---|--|----------|----------|----------|----------|
| Input power | | Single phase AC200 ~ 230[V] (-15~+10%), 50~60[Hz] | | | | |
| Rated current[A] | | 1.4 | 1.7 | 3.0 | 5.2 | 6.75 |
| Peak current[A] | | 4.2 | 5.1 | 9.0 | 15.6 | 20.25 |
| Encoder type | | Quadrature (Incremental), Biss-B, Biss-C (Absolute, Incremental) | | | | |
| Control performance | Speed control range | Maximum 1:5000 | | | | |
| | Frequency response | Maximum 1[KHz] or above (When using 19Bit Serial Encoder) | | | | |
| | Speed variation ratio | ±0.01 [%] or lower [when load changes between 0 and 100%] ±0.1[%] or lower [temperature 25 ±10°C] | | | | |
| | Accel/Decel time | Straight or S-curve acceleration/deceleration (0-10,000[ms], possible to be set by one[ms] unit) | | | | |
| | Input frequency | 1[Mpps], line driver / 200[kpps], open collector | | | | |
| | Input pulse type | Symbol + Pulse series, CW+CCW, A/B Phase | | | | |
| RS-422 | Specification | ANSI/TIA/EIA-422 standard specifications | | | | |
| | Protocol | MODBUS-RTU | | | | |
| | Synchro method | Asynchronous | | | | |
| | Power consumption | 100[mA] | | | | |
| | Transmission speed | 9,600/19,200/38,400/57,600bps | | | | |
| | Distance | Maximum 200[m] | | | | |
| | Terminating resistance | Connecting the outside connector (CN1 7Pin, 28Pin connection), Built-in 120Ω | | | | |
| | | | | | | |
| Digital In/Output | Digital input | Input voltage range : DC12V ~ DC24V Total 10 input channels (allocable) Total 34 function's input can be used selectively for assignment. (*SV_ON, *SPD/LVSF1, *SPD2/LVSF2, *SPD3, *A-RST, *JDIR, *POT, *NOT, *EMG, *STOP, *START, REGT, HOME, HSTART, ISEL0, ISEL1, ISEL2, ISEL3, ISEL4, ISEL5, PCON, GAIN2, P_CL, N_CL, MODE, PAUSE, ABSRQ, JSTART, PCLR, AOV, INHIBIT, EGEAR1, EGEAR2, ABS_RESET) * Basic allocation signal | | | | |
| | Digital output | Service rating : DC24V ±10%, 120mA 5 of 10 input channels are allocable, 3 channels are fixed with AL00, AL01, AL02 Total 19 function's input can be used selectively for assignment. (*ALARM, *READY, *ZSPD, *BREAK, *INPOS1, ORG, EOS, TGON, TLMT, VLMT, INSPD, WARN, INPOS2, IOUT0, IOUT1, IOUT2, IOUT3, IOUT4, IOUT5) * Basic allocation signal | | | | |
| Analog Input | | 2 Channel Analog speed input (Command/Override) ±10V Analog torque input (Command/Limit) ±10V | | | | |
| USB communication | Function | Firmware download, parameter setting, tuning, secondary function, parameter copy | | | | |
| | Connect | PC | | | | |
| | Communication standard | USB 2.0 full speed (Applies standard) | | | | |
| Internal function | Dynamic braking | Standard built-in brake (Activated when the servo alarm goes off or when the servo is off), | | | | |
| | Regenerative braking | Both default built-in and external installation possible | | | | |
| | Display function | 7 segments (5DIGIT) | | | | |
| | Additional function | Gain tuning, alarm history, JOG operation, origin search | | | | |
| | Protection function | Excessive current/voltage/overload/overheating/speed, excessive current limit, low voltage, encoder/position following/current sensing fail | | | | |
| Environment | Operating temperature / Storage temperature | 0~50°C / -20 ~ 65°C | | | | |
| | Operating humidity / Storage humidity | Below80[%]RH / Below 90[%]RH(Avoid dew-condensation) | | | | |
| | Environment | Indoor, avoid corrosive, inflammable gas or liquid, and electrically conductive dust. | | | | |

High resolution of magnetic sensing method Magnetic Absolute Serial Encoder



Magnetic Absolute Serial Encoder Built-in Motor



High speed serial communication

- Position data output by high-speed serial communication
- High compatibility maintenance by using the same communication method as existing products



High resolution position data output

- High resolution of magnetic sensing method
- Position data output of 17 bits (131,072 counts) per revolution
- Position data per revolution is always displayed in absolute position



High environmental protection

- High resistance to outside substances such as oil and dust
- High durability against external vibration and shock
- Motor shaft disk protection



Built-in auto gain tuning function

- Auto gain tuning in response to external environment
- Always keep optimal signal condition

Specification (Magnetic Absolute Serial Encoder Built-in Motor)

| Servo motor (APM-□□□□YK) | FALR5A | FAL01A | FAL015A | FBL01A | FBL02A | FBL04A | FCL04A | FCL06A | FCL08A | FCL10A | FCL03D | FCL05D | FCL06D | FCL07D | |
|------------------------------|--|--|---------|---------------------------|---------|---------|---------------------------|---------|--------|---------|---------|---------|--------|--------|-------|
| Applicable Drive | L7□A001 | | L7□A002 | L7□A001 | L7□A002 | L7□A004 | | L7□A008 | | L7□A010 | L7□A004 | L7□A008 | | | |
| Flange size(□) | □40 | | | □60 | | | | □80 | | | | | | | |
| Rated output | [kW] | 0.05 | 0.1 | 0.15 | 0.1 | 0.2 | 0.4 | 0.4 | 0.6 | 0.75 | 1 | 0.3 | 0.45 | 0.55 | 0.65 |
| | [N·m] | 0.16 | 0.32 | 0.48 | 0.32 | 0.64 | 1.27 | 1.27 | 1.91 | 2.39 | 3.18 | 1.43 | 2.15 | 2.63 | 3.1 |
| Rated torque | [kgf·cm] | 1.62 | 3.25 | 4.87 | 3.25 | 6.49 | 12.99 | 12.99 | 19.49 | 24.36 | 32.48 | 14.62 | 21.92 | 26.8 | 31.67 |
| | [N·m] | 0.48 | 0.96 | 1.43 | 0.96 | 1.91 | 3.82 | 3.82 | 5.73 | 7.16 | 9.55 | 4.3 | 6.45 | 7.88 | 9.31 |
| Max instantaneous | [kgf·cm] | 4.87 | 9.74 | 14.62 | 9.74 | 19.48 | 38.96 | 38.98 | 58.47 | 73.08 | 97.44 | 43.85 | 65.77 | 80.39 | 95.01 |
| | [A] | 0.95 | 1.25 | 1.73 | 0.95 | 1.45 | 2.6 | 2.58 | 3.81 | 5.02 | 5.85 | 2.5 | 3.05 | 3.06 | 3.83 |
| Max. current | [A] | 2.85 | 3.75 | 5.28 | 2.85 | 4.35 | 7.8 | 7.75 | 11.42 | 15.07 | 17.5 | 7.51 | 9.16 | 9.18 | 11.5 |
| Rated speed | [r/min] | 3,000 | | | | | | 2,000 | | | | | | | |
| Max. speed | [r/min] | 5,000 | | | | | | 3,000 | | | | | | | |
| Inertia | [kg·m ² ×10 ⁻⁴] | 0.023 | 0.042 | 0.063 | 0.091 | 0.147 | 0.248 | 0.53 | 0.897 | 1.264 | 1.632 | 0.53 | 0.897 | 1.264 | 1.63 |
| | [gfcms ²] | 0.024 | 0.043 | 0.065 | 0.093 | 0.15 | 0.253 | 0.541 | 0.915 | 1.29 | 1.665 | 0.541 | 0.915 | 1.29 | 1.66 |
| Allowable load inertia ratio | | 30 Times of Motor Inertia | | 20 Times of Motor Inertia | | | 30 Times of Motor Inertia | | | | | | | | |
| Rated power rate | [kW/s] | 10.55 | 23.78 | 35.34 | 11.09 | 27.6 | 27.07 | 30.6 | 40.66 | 45.09 | 62.08 | 38.73 | 51.47 | 54.56 | 59.03 |
| Speed/Position detector | Standard | Serial single-Turn built-In type (17bit) | | | | | | | | | | | | | |
| Specifications & features | Structure | Fully closed self cooling IP67 | | | | | | | | | | | | | |
| | Rated time | Continuous | | | | | | | | | | | | | |
| | Ambient temp | Operating: 0~40[°C] Storage: -10~60[°C] | | | | | | | | | | | | | |
| | Ambient humidity | 90[%]RH below [Avoid dew-condensation] | | | | | | | | | | | | | |
| | Atmosphere | Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust. | | | | | | | | | | | | | |
| | E/V | Elevation/Vibration 49[m/s ²] [5G] | | | | | | | | | | | | | |
| Weight | [kg] | 0.31 | 0.45 | 0.61 | 0.56 | 0.74 | 1.06 | 1.52 | 2.14 | 2.68 | 3.3 | 1.26 | 2.12 | 2.66 | 2.78 |

* Brake is not applicable for FAL015A