



Automation for a Changing World

Delta AC Servo Drive & Motor ASDA-B3 Series

Delta Standard Servo System ASDA-B3

High Efficiency, User-Friendly, and Stable

The high tolerance and stable operation of the Delta standard servo system ASDA-B3 series creates a highly efficient and user-friendly operation environment with precise motion control functions that optimize production efficiency and output value.

With the best motion control solutions, Delta boosts industry momentum and works with customers to create an innovative future.





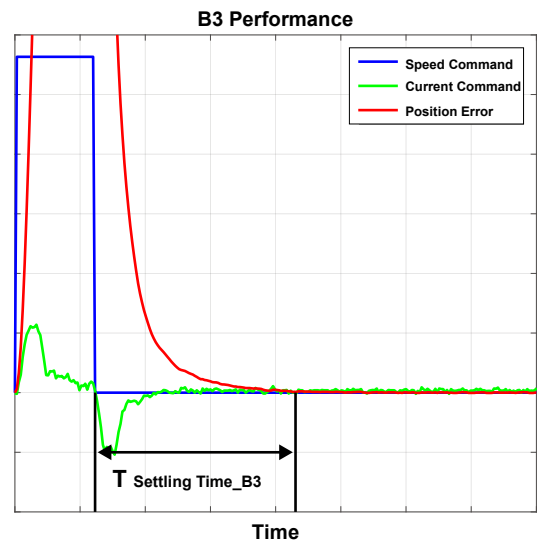
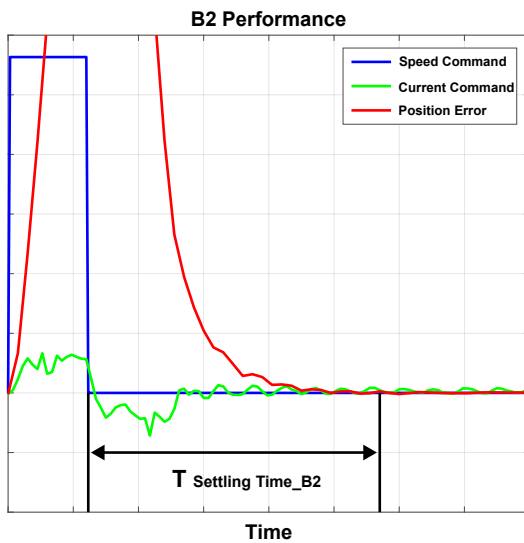
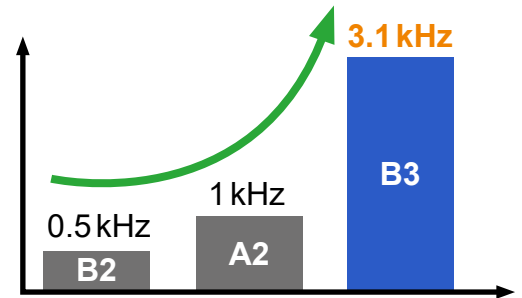
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Optimized Performance

High Response Bandwidth

- Higher responsiveness: from 0.5 kHz of the B2 series to 3.1 kHz of the B3 series
- Increased productivity: settling time decreased by 40%



Higher Load Tolerance

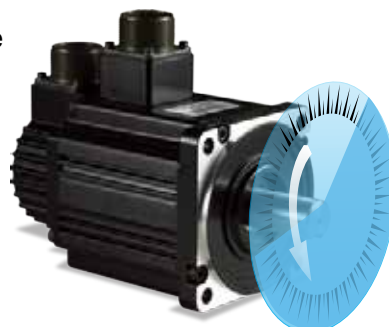
- Improves control resolution and optimizes system stability
- Higher response bandwidth with the same load conditions

| | B2 | B3 | B2 | B3 | B2 | B3 |
|--|----------------|----------------|---------------|----------------|------------------|---------------|
| Actual Load Inertia Ratio | 30 times | | 50 times | | 70 times | |
| Speed Loop Bandwidth in Position Mode | Approx. 150 Hz | Approx. 250 Hz | Approx. 30 Hz | Approx. 150 Hz | Max. performance | Approx. 20 Hz |

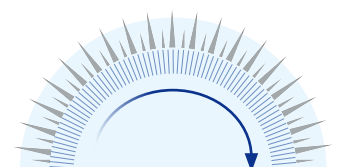
24-bit Absolute Encoder

- The positioning precision is enhanced by the encoder of 16,777,216 pulses per turn
- The stable low-speed output improves machine performance
- Absolute encoder retains the motor's position when the power is off

16,777,216 pulses for one single turn

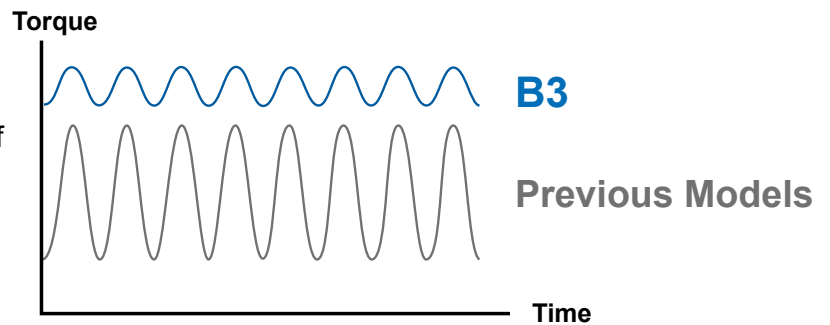


46,603 pulses in one degree



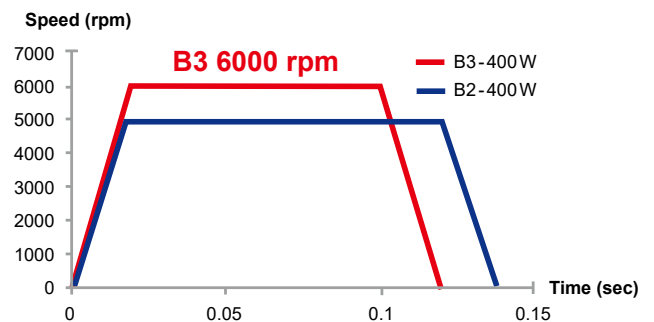
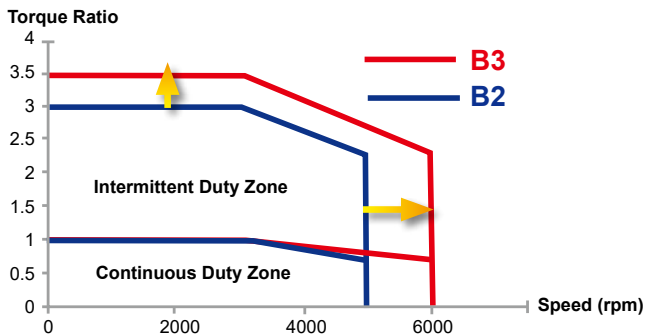
Low Cogging Torque

The cogging torque is 50% of the previous models which increases the smoothness of constant speed operation and low speed machining



Increased Speed and Torque

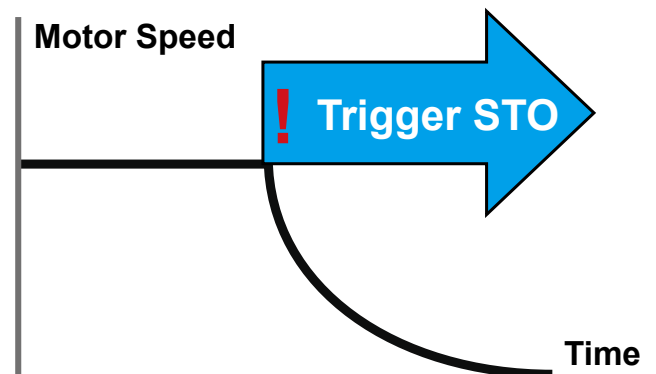
- Motor speed increased to 6,000 rpm
- Torque overload ratio increased to 3.5 times and the time required for acceleration and deceleration is shortened
- Significantly increases productivity and efficiency



Safe Torque Off (STO) Function

- Built-in STO function ensures personnel safety
- Complies with IEC/EN 61800-5-2
- SIL2 Level

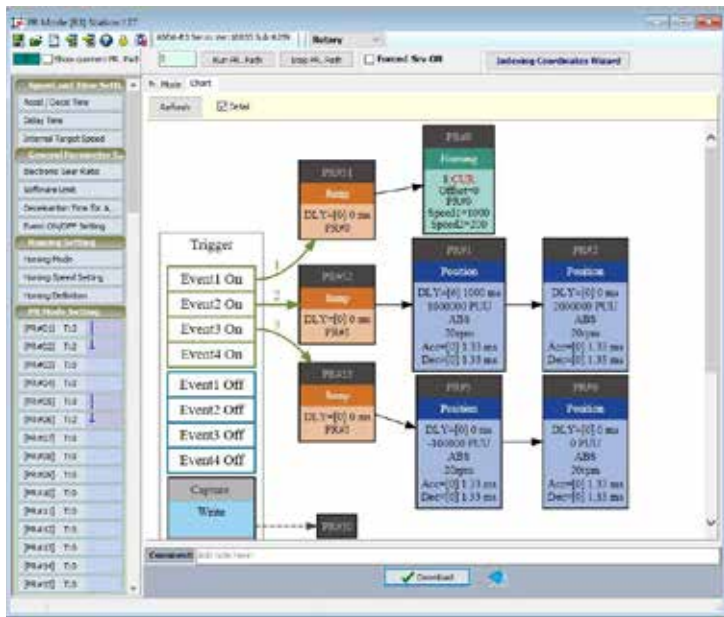
Note: STO certification in process



Various Motion Functions

PR Mode

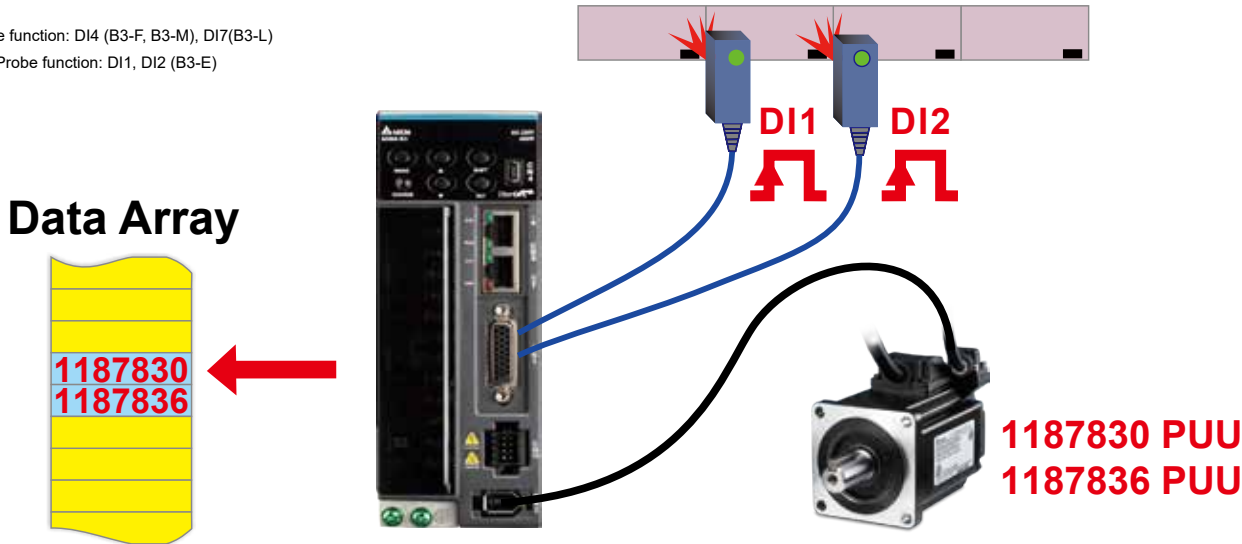
- Supports up to 99 PR paths for flexible motion command planning
- Intuitive operation interface with graphics
- Homing modes, Position commands, and Speed commands
- Overlap command, Interrupt command, Jump command, and parameter settings



High-Speed Capture Function

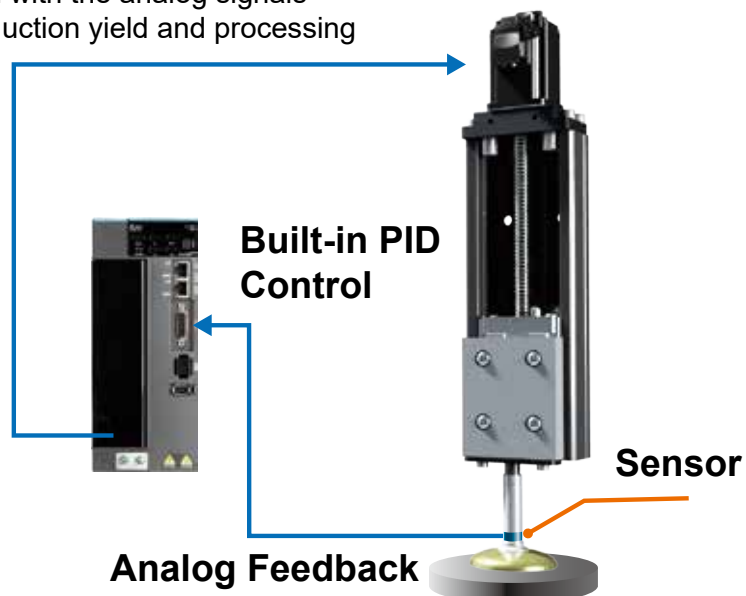
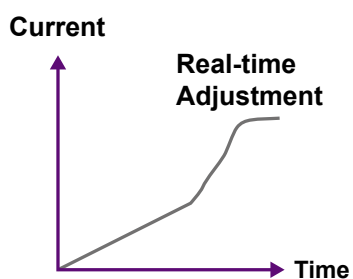
- Supports the Capture function for instantly capturing position coordinates with one set of DI
- Supports the touch probe function with two sets of DIs in the EtherCAT communication mode

Note:
 Capture function: DI4 (B3-F, B3-M), DI7(B3-L)
 Touch Probe function: DI1, DI2 (B3-E)



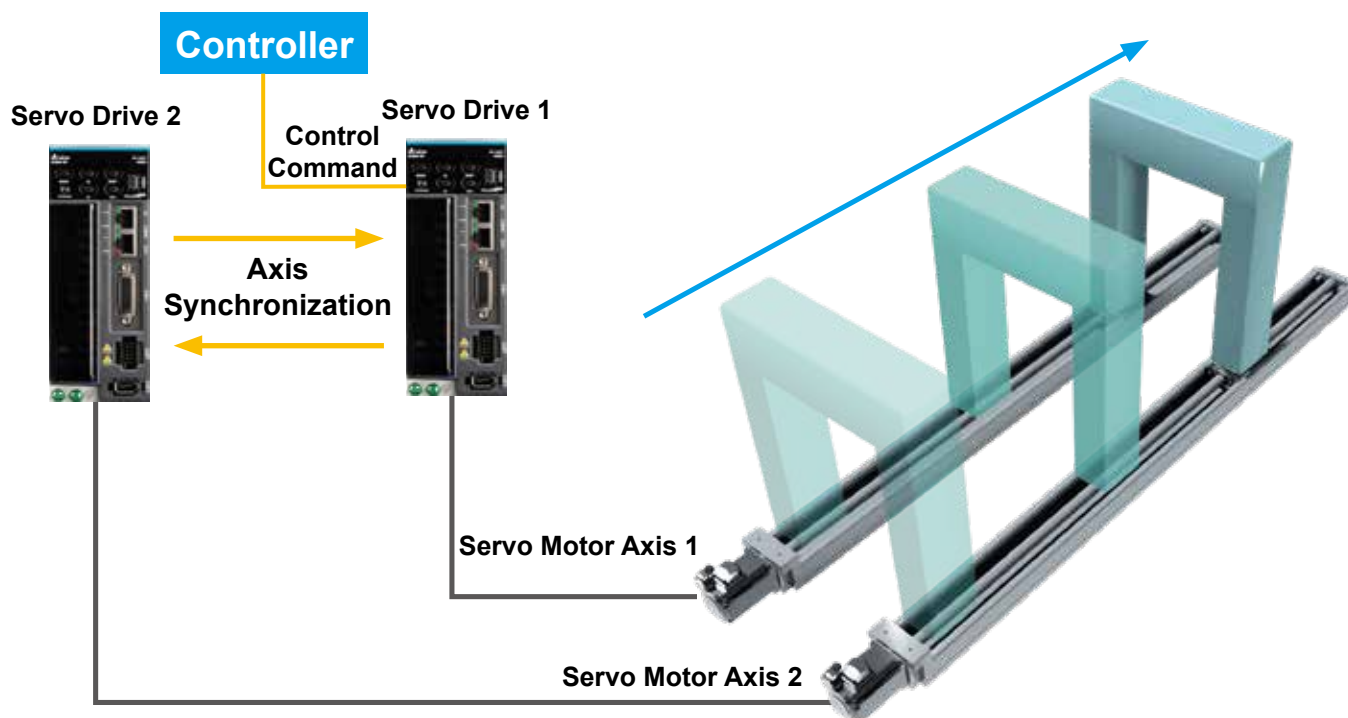
Analog Feedback PID Control

- Supports analog signal input
- Achieves real-time and precise PID control with the analog signals from the external sensor for improved production yield and processing performance



Axis Synchronization Function

- Easy gantry control with the EtherCAT high-speed inter-axis data exchange

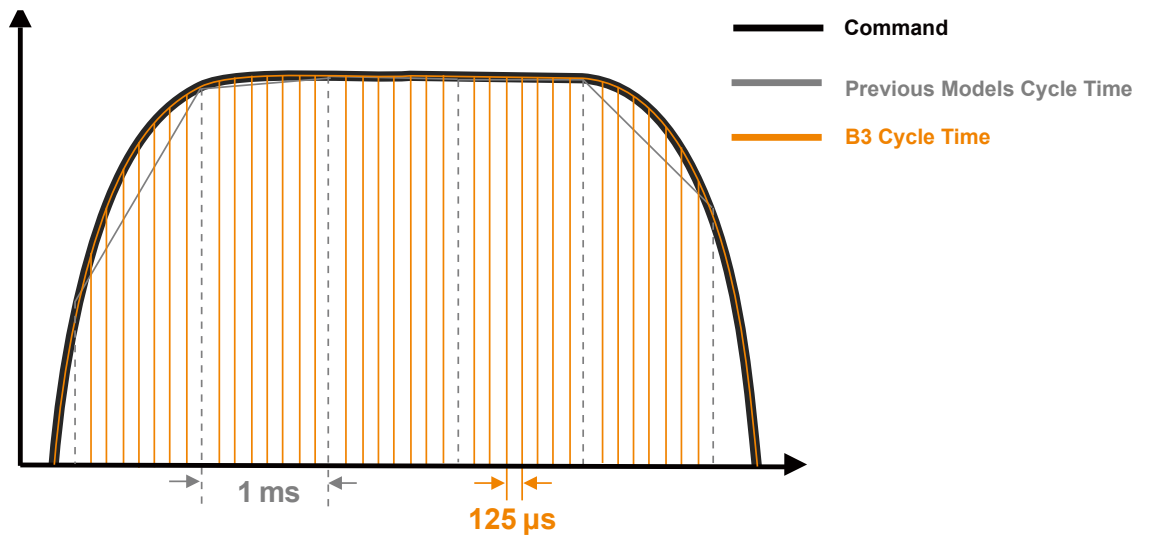


EtherCAT Communication Functions

Complies with the IEC 61158 and IEC 61800-7 fieldbus standards

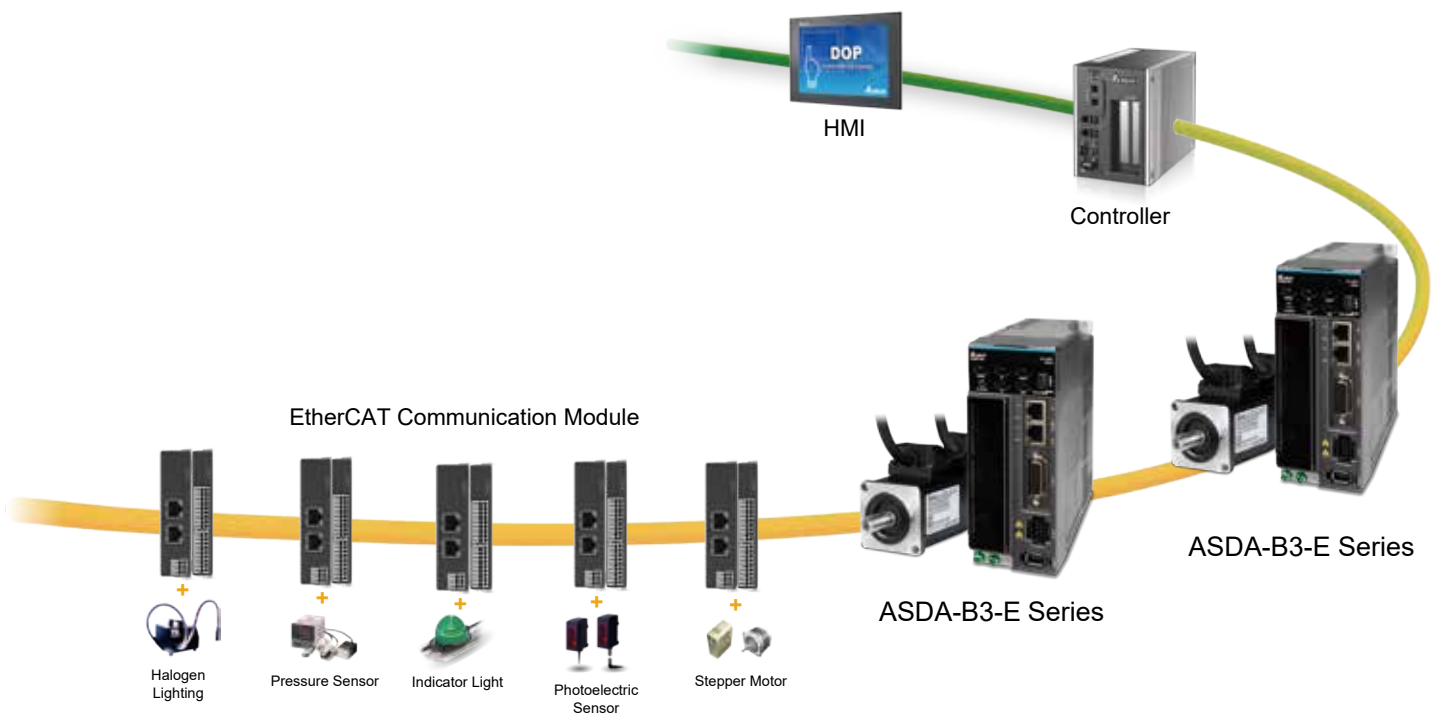
Shorter Synchronization Cycle

- The synchronization cycle of the ASDA-B3 series is 125 μ s, which is 8 times faster than that of the ASDA-A2 series



Simplified Wiring

In contrast to single-axis pulse wiring which is complicated and difficult to repair, the EtherCAT high-speed communication greatly reduces the wiring and inspection time. It is suitable for multi-axis control and can also connect remote I/O modules with a single wiring.



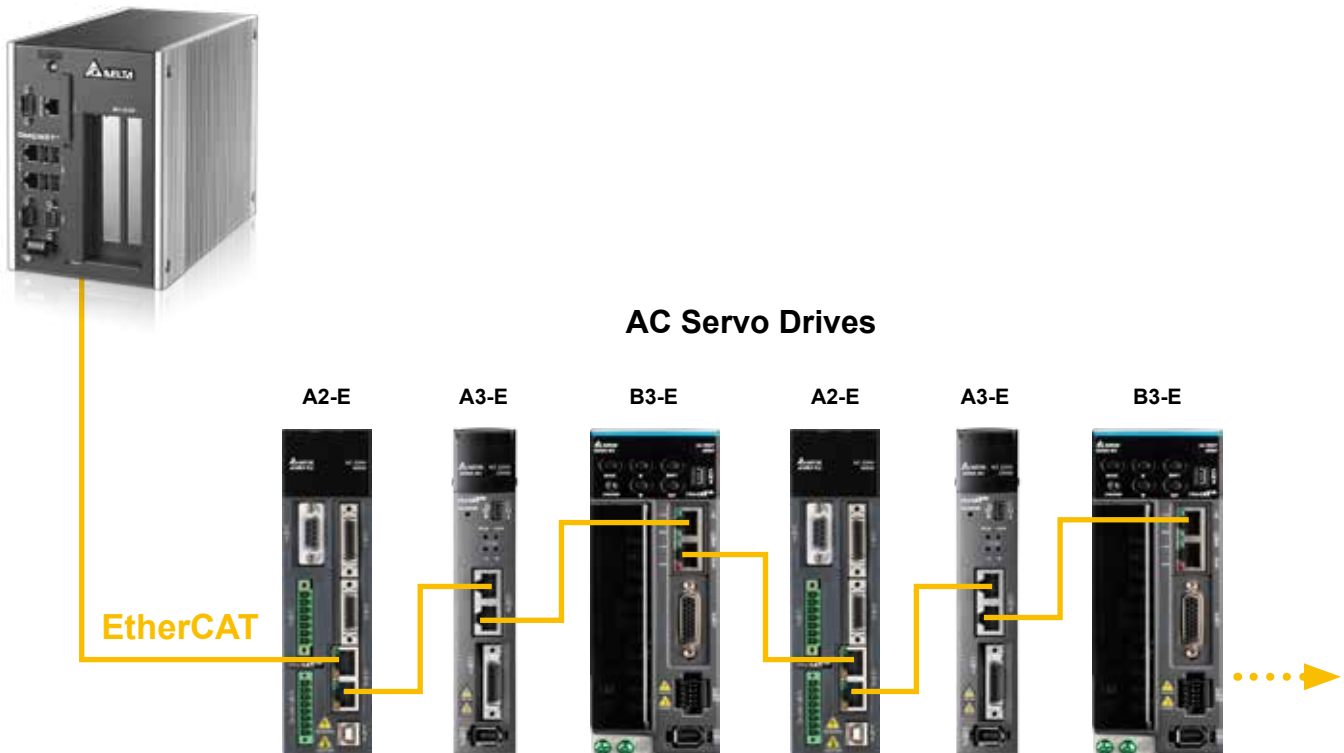
Longer Connection Distance

The maximum distance between two stations is 100m and the servo can connect to a maximum of 65,536 axes.

Compatible with Previous Models

The ASDA-B3 series models are compatible with the ASDA-A2 and ASDA-A3 series models.

Note: The communication cycle of the A2 series is 1 ms, so when previous and new models are used together, the set value cannot be lower than this specification

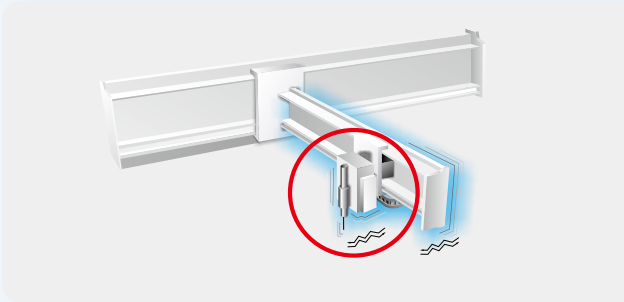


Vibration Suppression Functions

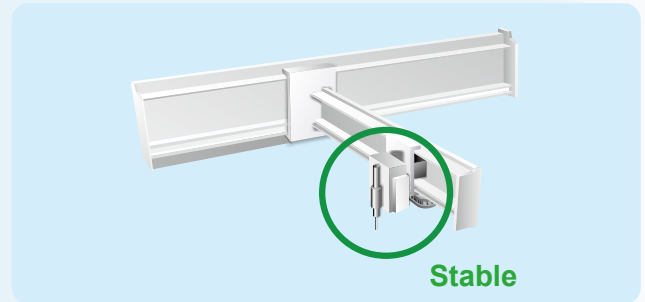
Vibration Elimination

- Low frequency vibration suppression applies Delta's unique algorithm to adjust low rigidity machine structures
- Two sets of built-in vibration elimination settings reduce jitter at the machine endpoint while maintaining a good command response

Without Vibration Elimination - Machine endpoint vibrates when settling

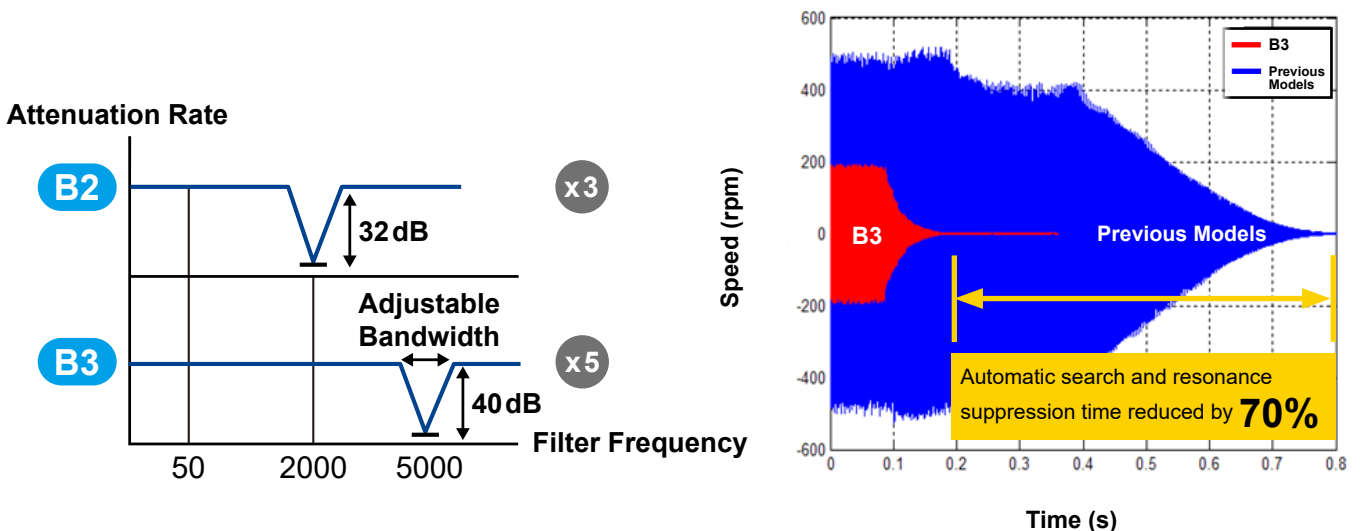


With Vibration Elimination - Machine endpoint is stable when settling



Advanced Notch Filter

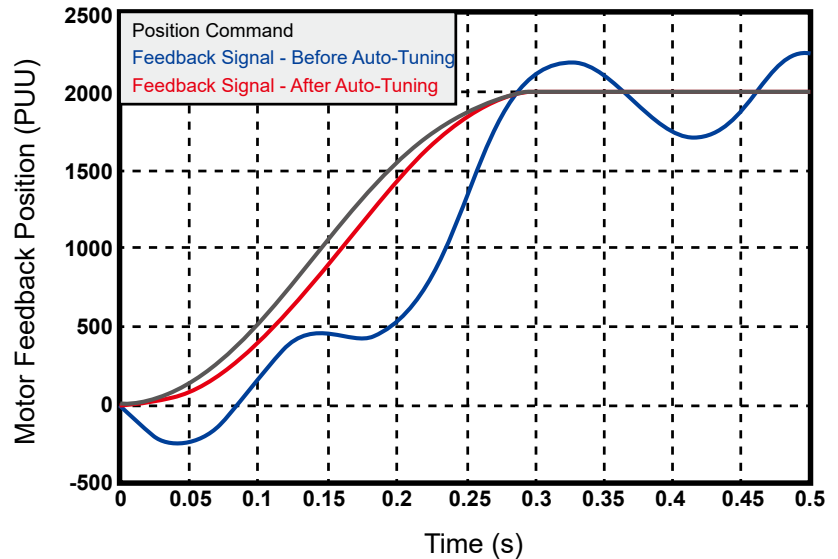
- High frequency resonance suppression increased from 3 sets to 5 sets compared with previous models
- Filter bandwidth increased to 5,000 Hz
- Automatically searches for the resonance frequency point and completes the resonance suppression; this reduces the time by 70% compared with previous models and is less likely to damage the machine



Self-Diagnosis and Adaptation

Excellent Self-Adjusting Capability

- Completes tuning with the built-in algorithm and simple settings in the software which improve efficiency for equipment assembly and testing
- Suitable for applications with flexible machine structures and large variations in inertia



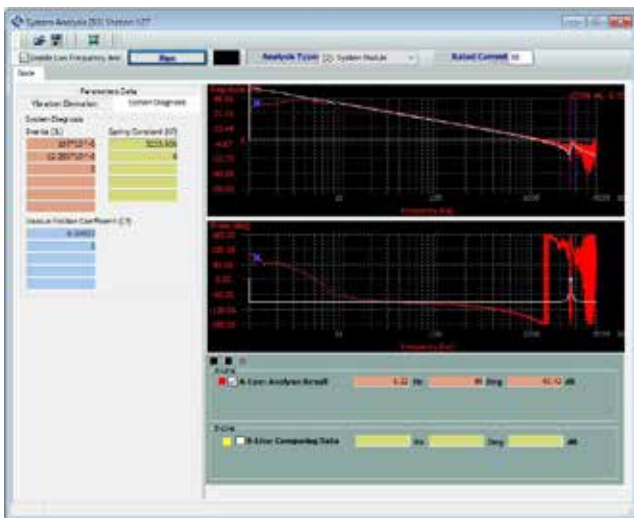
System Analysis Tool

Mechanical Stiffness Diagnosis

- Diagnoses the mechanism elasticity and damping coefficient, and converts the machine structure characteristics to data
- Ensures consistency of the mass production machines through data collection

Frequency Domain Response Analysis

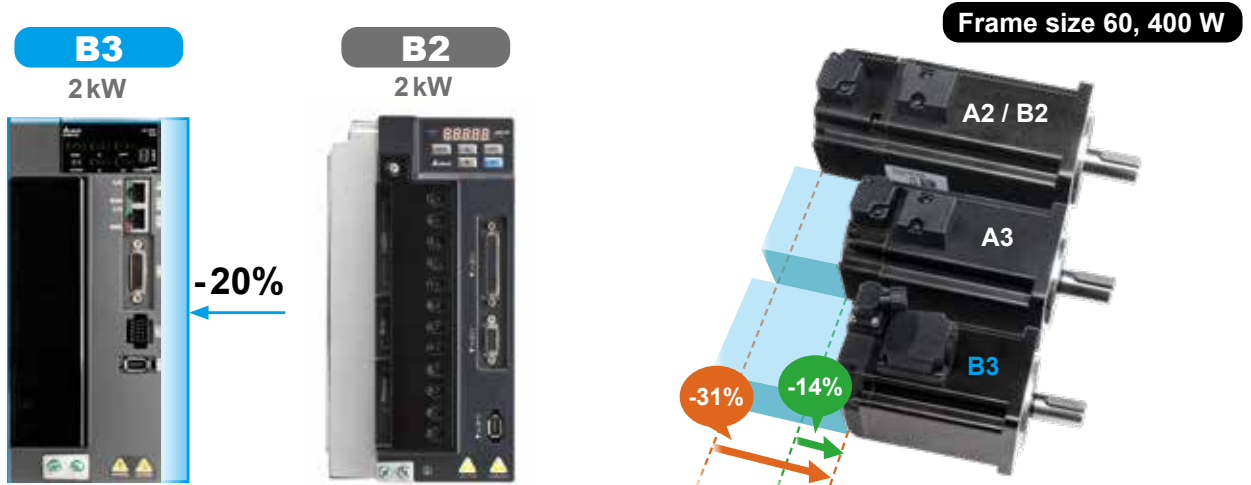
- Ensures system stability
- Compares the phases before and after gain adjustment to ensure the safety of the system



Energy-Saving and Compact Size Design

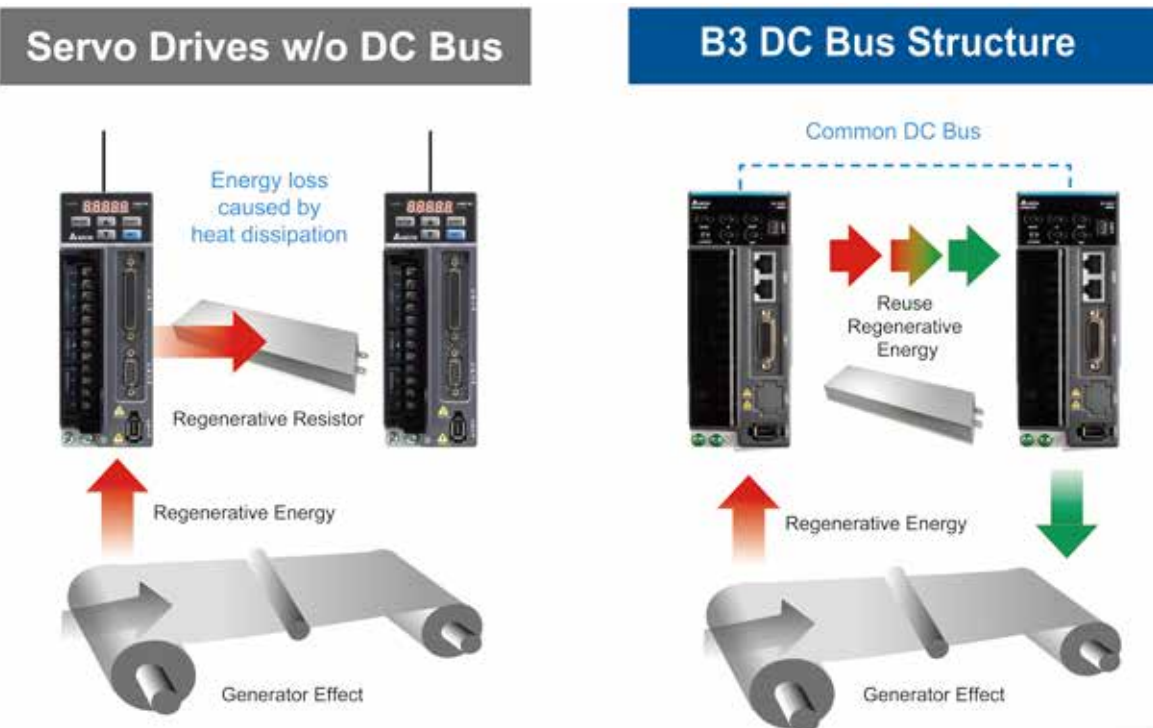
Compact Size

- The size of the servo drive is reduced up to 20%, so it requires less space in the distribution board which meets the need for smaller equipment
- The size of the servo motor is reduced up to 31% which takes up less space and lowers the cost



Common DC Bus

- The servo drives can share the DC Bus to reuse regenerative energy for reducing energy consumption
- When multiple servo drives share the common DC Bus, fewer regenerative resistors are required which reduces the cost

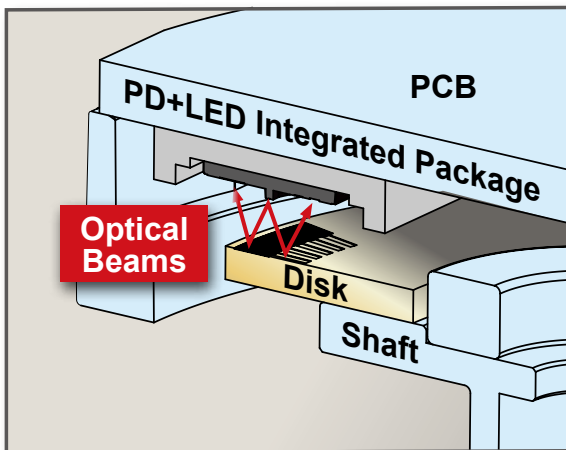


Various Selections

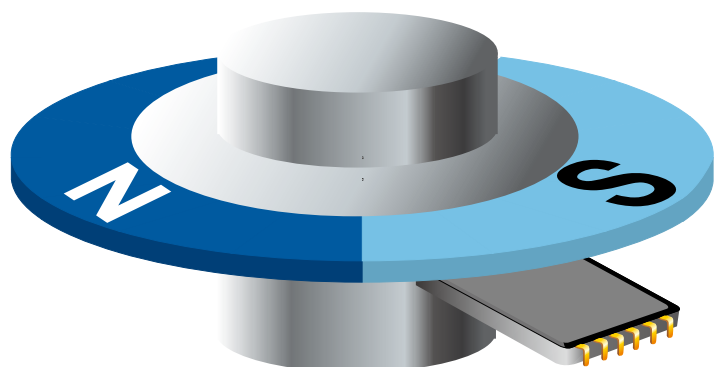
High Resolution Encoder

- High resolution for more precise positioning
- The incremental encoder can retain the single-turn absolute position without the need to execute homing after cycling the power
- After the absolute encoder is powered off, the number of turns and position are retained
- 24-bit optical encoder: the encoder is lighter and thinner with the reflective sensor technology; the exclusive optical sensor compensation function improves product reliability
- 17-bit magnetic encoder: the magnetic induction technology improves the capability to prevent vibration and increases the oil resistant level

Optical Encoder



Magnetic Encoder



High Compatibility

- Compatible with the A2 / B2 / A3 series motors for easier replacement
- Motors of high, medium, and low inertia are available for different applications

High inertia motor: Suitable for applications that require speed stability or resistance to external forces

Medium inertia motor: Suitable for applications with general mechanical equipment

Low inertia motor: Suitable for high-speed positioning and high response applications



ECM-B3 Motor



ECM-A3 Motor

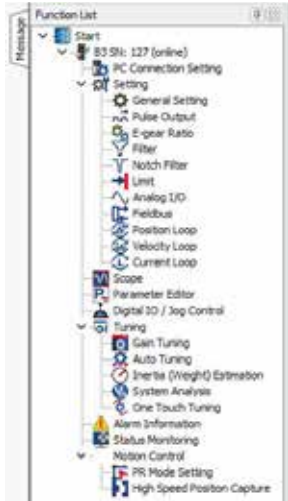


ECMA/ECMC Motor

User-Friendly Software

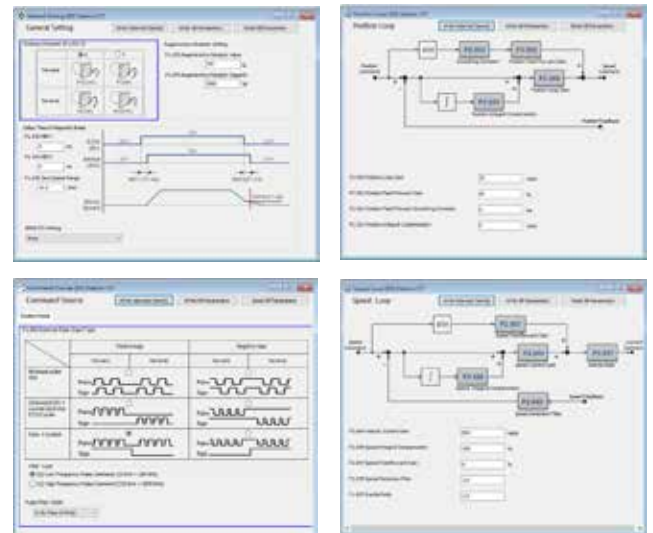
Function List Tree View

- Well-organized function list for quick access
- Expandable and collapsible nodes for easier and more efficient operation



Graphical Parameter Setting

- Intuitive graphic illustrations for gain adjustment and parameter settings



Auto Tuning Function

- Step-by-step and conversational UI for servo gain adjustment



Advanced Gain Adjustment Function

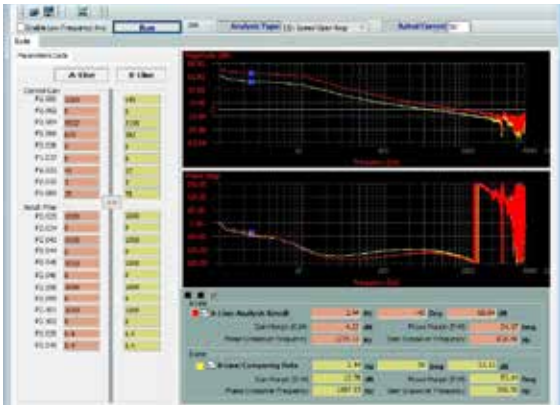
- Provides advanced gain adjustment modes for fine tuning according to different applications and operating characteristics
- Step-by-step software interface to guide users



System Analysis Interface

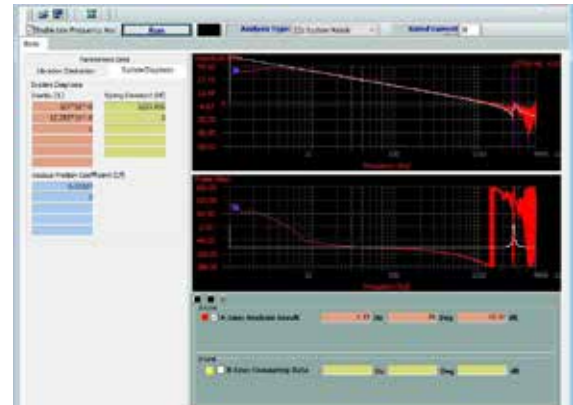
- **Speed Open-Loop Mode**

Determines if the current system is the most optimized and thus improves the design



- **System Module Mode**

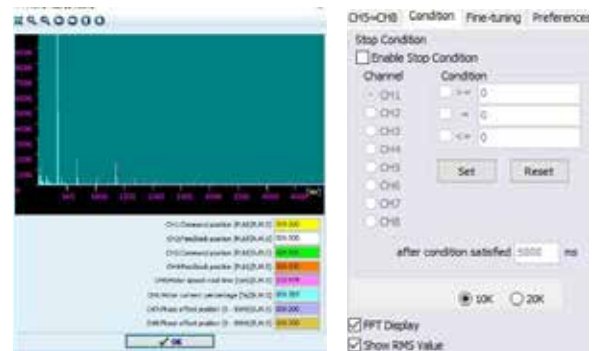
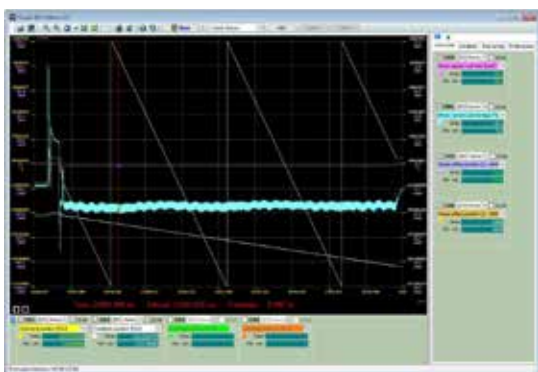
Measures the mechanical stiffness of the mechanism in this mode



Oscilloscope Function

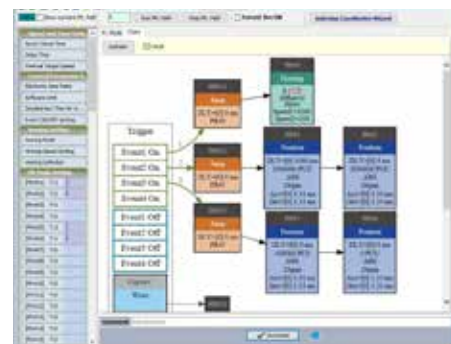
- Maximum of 8 channels with 16-bit data size and update frequency of 10 kHz
- 4 high-resolution channels with 32-bit data size and update frequency of 10 kHz
- 4 channels of high sampling rate with 16-bit data size and update frequency of 20 kHz

- Drag the cursor to specify the area for instant FFT (Fast Fourier Transform) and RMS calculation
- Set the triggering conditions for collecting data



Graphical PR Path Programming Interface

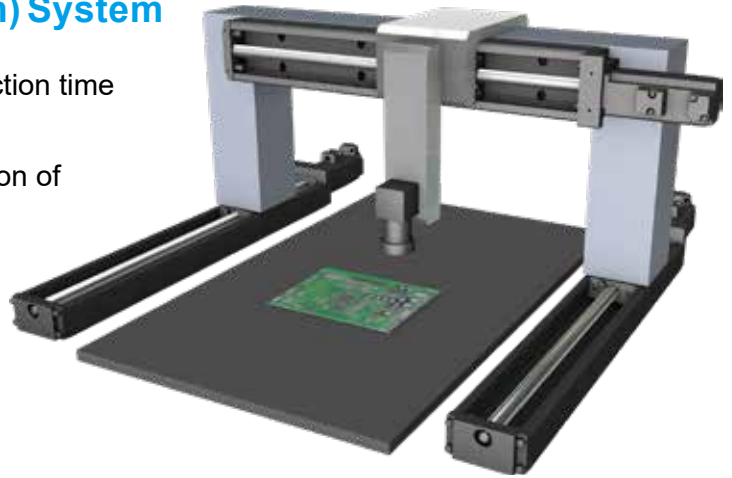
- Graphical PR procedures with detailed settings for better command programming and editing



Applications

AOI(Automatic Optical Inspection) System

- Shorter settling time of B3 shortens the detection time which also increases the production capacity
- Use with the inter-axis synchronization function of EtherCAT communication for quick gantry positioning



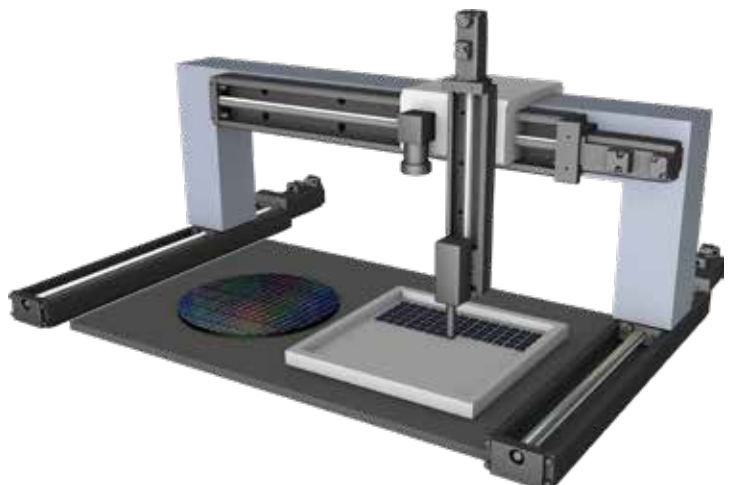
Tool Magazine and Turret

- Shorter response time of B3 significantly reduces the tool changing time
- New communication trigger function for the tool magazine increases the number of tools without occupying DI points
- Common DC Bus function for reducing the use of regenerative resistor and improving the power consumption efficiency



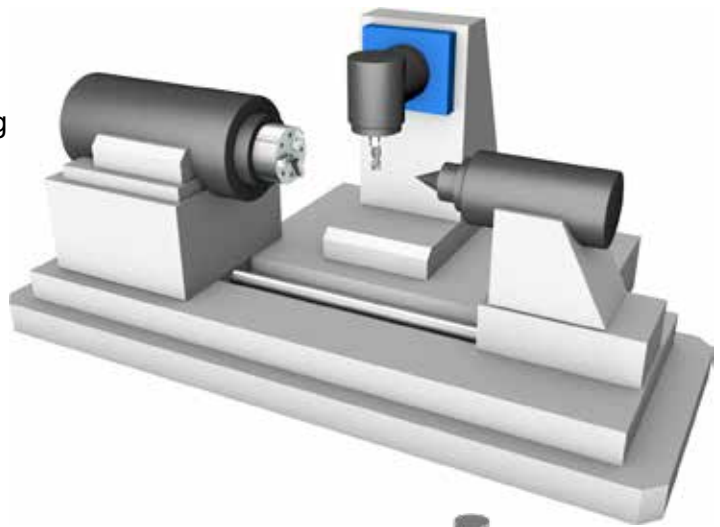
Wafer Pick and Place Machine

- Analog feedback of the PID control with external sensors for precision control of the downward pressure
- Two-stage downward motion planning with high speed and soft landing improves the productivity and yield



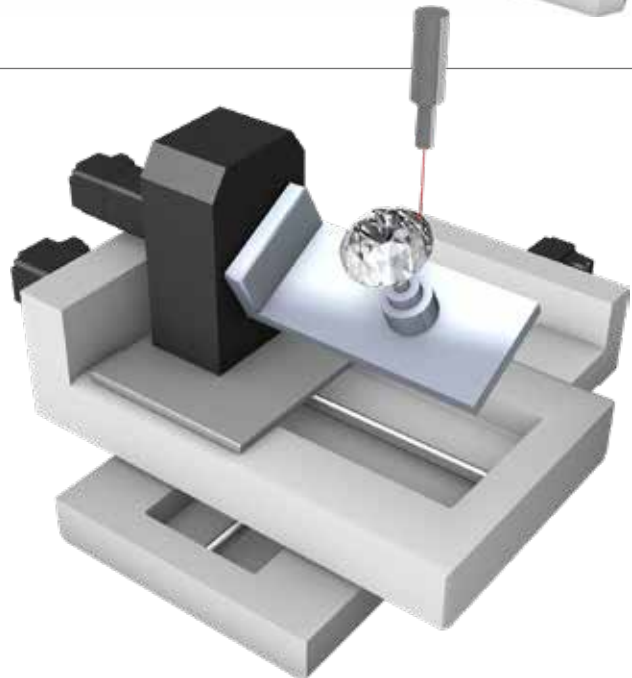
Machine Tool

- Low cogging torque for more stable machining
- Advanced friction compensation function for better performance when changing directions
- Two-degrees-of-freedom control architecture for optimized trajectory tracking



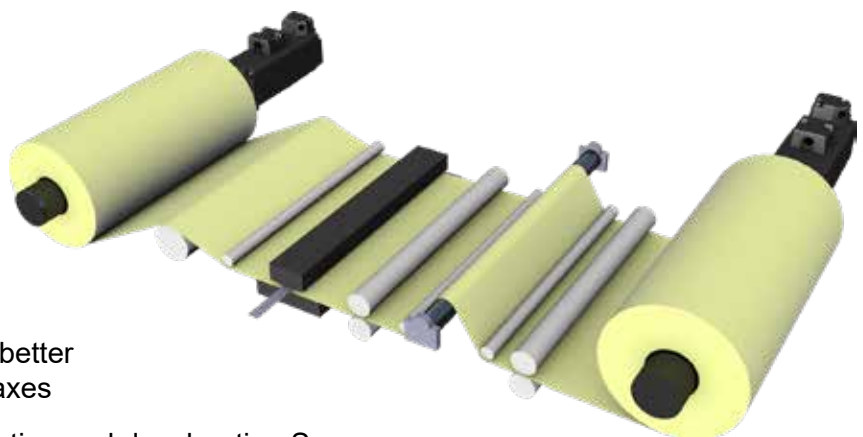
Diamond Cutting Machine

- High inertia motor facilitates the diamond polishing process with high precision and stability
- Low cogging torque feature for higher machining stability
- Two-degrees-of-freedom control architecture for optimized trajectory tracking

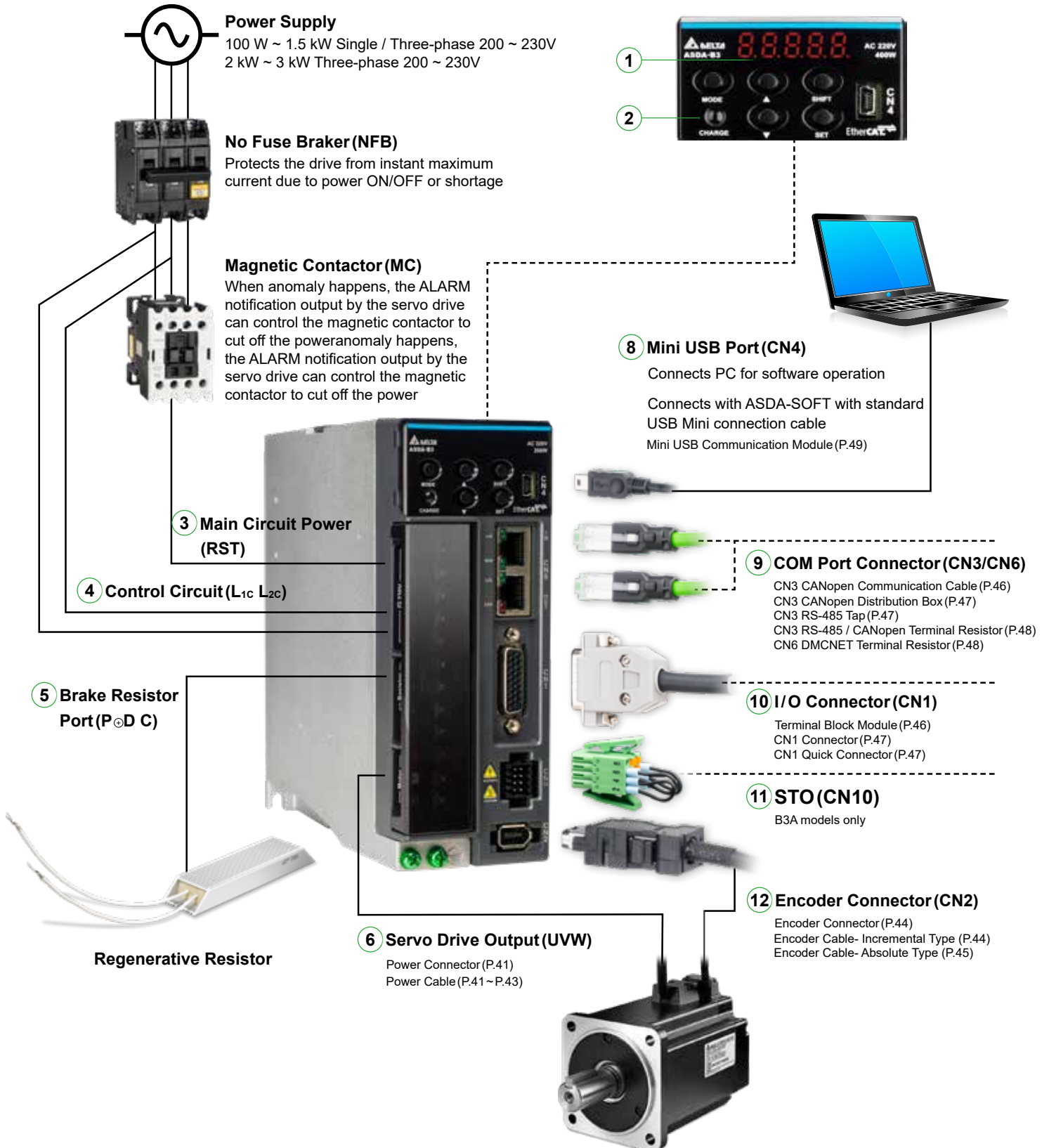


Winding Machine

- Communication type servo drives support the analog input function, facilitating tension control with multi-axis and communication
- High-speed fieldbus with the communication cycle of 125 μ s for better synchronization between multiple axes
- Stable tension control with acceleration and deceleration S-curve



Servo Drive & Accessories



Servo Drive Interface

| No. | Name | Description |
|-----|-----------------------|---|
| ① | - | 7-segment display |
| ② | CHARGE | Power indicator |
| ③ | RST | Main circuit terminal; connects to the power supply (200 - 230 V _{AC} , 50/60 Hz) |
| ④ | L1C, L2C | Control circuit terminal; connects to single-phase power supply (200 - 230 V _{AC} , 50/60 Hz) |
| ⑤ | Regenerative Resistor | Connects to an external regenerative resistor, external regenerative braking unit, or the built-in regenerative resistor |
| ⑥ | UVW | Servo drive current output; connects to the motor power connector U, V, W. Do not connect to the main circuit power. Incorrect wiring will cause damage to the servo drive. |
| ⑦ | Ground Terminal | Connects to the ground wire for the power and servo motor |
| ⑧ | CN4 | USB connector (Mini USB); connects to PC |
| ⑨ | CN3 | Modbus communication port (B3-L) |
| | CN3 | CANopen high-speed communication port (B3-M) |
| | CN6 | DMCNET high-speed communication port (B3-F) |
| | CN6 | EtherCAT high-speed communication port (B3-E) |
| ⑩ | CN1 | I/O signal interface; connects to the PLC or controls I/O |
| ⑪ | CN10 | STO connector; only available on B3A models |
| ⑫ | CN2 | Encoder connector; connects to the encoder of the servo motors |

Accessories

Power Cables

- 3m, 5m, 10m, and 20m standard cables are available
- Standard power connector and IP67 waterproof connector are available
- With options of brake and without brake

Encoder Cables

- 3m, 5m, 10m, and 20m standard cables are available
- Standard power connector and IP67 waterproof connector are available

USB Cables

- Connects the PC and the servo drive for ASDA-Soft operation
- USB1.1 is equipped as standard interface

Regenerative Resistor

- Refer to Section 2.7 in the ASDA-B3 user manual for selection

Servo System Combination Table

| | | Motor | | | | | Drive | | Power Cable | |
|----------------|------------------------------|--------------|------------------------------|---|-----------------------------|------------------------------|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Type | Power Supply | Output (W) | Model Name | Rotor Inertia (x10 ⁻⁴ kg.m ²) Standard/ With Brake | Rated / Max. Speed (rpm) | Rated / Max. Torque (N-m) | Model Name | Standard | Torsion-resistant | |
| Low Inertia | ECM-A3L | 50 | ECM-A3L-C [2] 040F [3][4][5] | 0.0229/0.0255 | 3000/6000 | 0.159/0.557 | ASD-B3 ① -0121-② | ACS3-CAPW31XX W ACS3-CAPW3AXX | ACS3-CAPF31XX W ACS3-CAPF3AXX | |
| | | 100 | ECM-A3L-C [2] 0401 [3][4][5] | 0.04/0.0426 | | 0.32/1.12 | | | | |
| | | 200 | ECM-A3L-C [2] 0602 [3][4][5] | 0.09/0.12 | | 0.64/2.24 | ASD-B3 ① -0221-② | | | |
| | | 400 | ECM-A3L-C [2] 0604 [3][4][5] | 0.15/0.18 | | 1.27/4.45 | ASD-B3 ① -0421-② | | | |
| | | 400 | ECM-A3L-C [2] 0804 [3][4][5] | 0.352/0.408 | | 1.27/4.44 | | | | |
| | ECM-B3L | 750 | ECM-A3L-C [2] 0807 [3][4][5] | 0.559/0.614 | | 2.39/8.36 | ASD-B3 ① -0721-② ASD-B3 ① -1021-② | | | |
| | | 100 | ECM-B3L-C [2] 0401 [3][4][5] | 0.0299/0.0315 | | 0.32/1.12 | ASD-B3 ① -0121-② | | | |
| | | 200 | ECM-B3M-C [2] 0602 [3][4][5] | 0.141/0.151 | | 0.64/2.24 | ASD-B3 ① -0221-② | | | |
| | | 400 | ECM-B3M-C [2] 0604 [3][4][5] | 0.254/0.264 | | 1.27/4.45 | ASD-B3 ① -0421-② | | | |
| | | 400 | ECM-B3M-C [2] 0804 [3][4][5] | 0.648/0.695 | | 1.27/4.45 | | | | |
| Medium Inertia | ECM-B3M | 750 | ECM-B3M-C [2] 0807 [3][4][5] | 1.07/1.13 | 2.4/8.4 | ASD-B3 ① -0721-② | ACS3-CAPW32XX | ACS3-CAPF32XX | | |
| | | 1000 | ECM-B3M-E [2] 1310 [3][4][5] | 7.79/7.94 | 4.77/14.3 | ASD-B3 ① -1021-② | | | | |
| | | 1500 | ECM-B3M-E [2] 1315 [3][4][5] | 11.22/11.37 | 7.16/21.48 | ASD-B3 ① -1521-② | | | | |
| | | 2000 | ECM-B3M-E [2] 1320 [3][4][5] | 14.65/14.8 | 9.55/28.65 | ASD-B3 ① -2023-② | | | | |
| | | 2000 | ECM-B3M-E [2] 1820 [3][4][5] | 29.11/30.38 | 9.55/28.65 | | | | | |
| | ECM-B3F | 3000 | ECM-B3M-F [2] 1830 [3][4][5] | 53.63/54.9 | 1500/3000 | 19.1/57.29 | ASD-B3 ① -3023-② | ACS3-CAPW34XX | ACS3-CAPF34XX | |
| | | High Inertia | ECM-A3H | Single- / Three- phase | 50 | ECM-A3H-C [2] 040F [3][4][5] | 0.0455/0.0517 | 0.159/0.557 | ASD-B3 ① -0121-② | ACS3-CAPW31XX W ACS3-CAPW3AXX |
| 100 | ECM-A3H-C [2] 0401 [3][4][5] | | | | 0.0754/0.0816 | 0.32/1.12 | | | | |
| 200 | ECM-A3H-C [2] 0602 [3][4][5] | | | | 0.25/0.28 | 0.64/2.24 | ASD-B3 ① -0221-② | | | |
| 400 | ECM-A3H-C [2] 0604 [3][4][5] | | | | 0.45/0.48 | 1.27/4.45 | ASD-B3 ① -0421-② | | | |
| 400 | ECM-A3H-C [2] 0804 [3][4][5] | | | | 0.92/1.07 | 1.27/4.44 | | | | |
| 750 | ECM-A3H-C [2] 0807 [3][4][5] | | | | 1.51/1.66 | 2.39/8.36 | ASD-B3 ① -0721-② | | | |

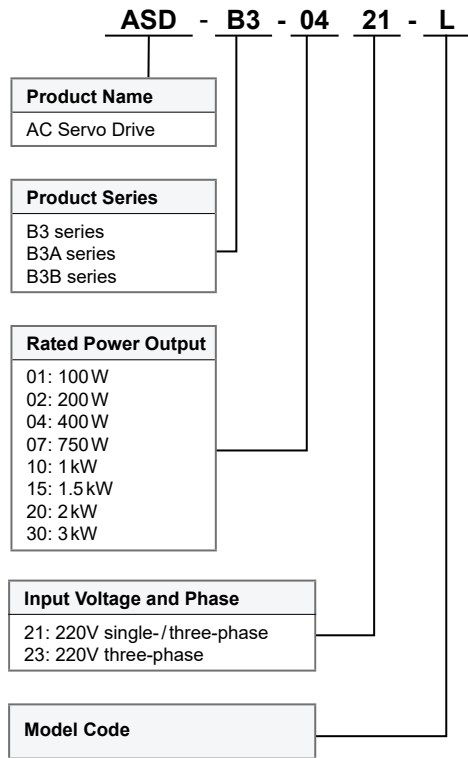
Note:

- Model name with W = IP67 water-proof connector; D = drive connector; M = motor connector; S = straight connector; R = angular connector; B = single brake connector, power connector required
- Cable model name: The "XX" stands for cable length. 03 = 3 m, 05 = 5 m, 10 = 10 m, 20 = 20 m.
- Servo motor model name: [2] = encoder type, [3] = type of shaft and oil seal, [4] = shaft diameter and connector type, [5] = special code.
- Servo drive model name: ① = product series, ② = model code.

| Connector & Cable | | | | | | Cable Only (No Connector) | | |
|--------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|---|---|--|
| Power Cable with Brake | | Encoder Cable (Incremental Type) | | Encoder Cable (Absolute Type) | | Power Connector | Power Connector (with brake)/ Brake Connector | Encoder Connector |
| Standard | Torsion-resistant | Standard | Torsion-resistant | Standard | Torsion-resistant | | | |
| ACS3-CAPW41XX ACS3-CAPW4AXX | ACS3-CAPF41XX W ACS3-CAPF4AXX | ACS3-CAEN10XX W ACS3-CAEN2AXX | ACS3-CAEF10XX W ACS3-CAEF2AXX | ACS3-CAEA10XX W ACS3-CAEA2AXX | ACS3-CAEB10XX W ACS3-CAEB2AXX | ASDBCAPW0000 W ACS3-CNPW1A00 | ASDBCAPW0100 W ACS3-CNPW2A00 | D ACS3-CNENC200 + M ACS3-CNEN1000 M W ACS3-CNEN2A00 |
| ACS3-CAPW42XX | ACS3-CAPF42XX | ACS3-CAEN27XX | ACS3-CAEF27XX | ACS3-CAEA27XX | ACS3-CAEB27XX | S ACS3-CNPW5200 R ACS3-CNPW5C00 R ACS3-CNPW5C00 | S ACS3-CNPW5200 R ACS3-CNPW5C00 + B S ACS3-CNPW6300 B R ACS3-CNPW6D00 | D ACS3-CNENC200 + M S ACS3-CNEN2700 M R ACS3-CNEN2C00 |
| ACS3-CAPW44XX | ACS3-CAPF44XX | | | | | | | |
| ACS3-CAPW41XX ACS3-CAPW4AXX | ACS3-CAPF41XX W ACS3-CAPF4AXX | ACS3-CAEN10XX W ACS3-CAEN2AXX | ACS3-CAEF10XX W ACS3-CAEF2AXX | ACS3-CAEA10XX W ACS3-CAEA2AXX | ACS3-CAEB10XX W ACS3-CAEB2AXX | ASDBCAPW0000 W ACS3-CNPW1A00 | ASDBCAPW0100 W ACS3-CNPW2A00 | D ACS3-CNENC200 + M ACS3-CNEN1000 M W ACS3-CNEN2A00 |

Servo Drive Model Name

ASD-B3 Series Servo Drive



ASD-B3

| Code | PT Mode Pulse Input | PR Mode | RS-485 | Analog Voltage Control | CANopen | DMCNET | EtherCAT | STO |
|------|---------------------------|---------|--------|------------------------------|---------|--------|----------|-----|
| L | ○ | ○ | ○ | ○ | X | X | X | X |
| M | X | ○ | X | ○ | ○ | X | X | X |
| F | X | ○ | X | ○ | X | ○ | X | X |
| E | X | ○ | X | ○ | X | X | ○ | X |

ASD-B3A *1

| Code | PT Mode Pulse Input | PR Mode | RS-485 | Analog Voltage Control | CANopen | DMCNET | EtherCAT | STO ² |
|------|---------------------------|---------|--------|------------------------------|---------|--------|----------|------------------|
| L | ○ | ○ | ○ | ○ | X | X | X | ○ |
| M | ○ | ○ | ○ | ○ | ○ | X | X | ○ |
| F | ○ | ○ | X | ○ | X | ○ | X | ○ |
| E | ○ | ○ | X | ○ | X | X | ○ | ○ |



ASD-B3B *3

| Code | PT Mode Pulse Input | PR Mode | RS-485 | Analog Voltage Control | CANopen | DMCNET | EtherCAT | STO |
|------|---------------------------|---------|--------|------------------------------|---------|--------|----------|-----|
| L | ○ | X | ○ | ○ | X | X | X | X |

*1: This series has the dynamic brake function
 *2: STO certification pending
 *3: Coming soon



Servo Drive Specifications

| ASD-B3 | | 100 W 01 | 200 W 02 | 400 W 04 | 750 W 07 | 1 kW 10 | 1.5 kW 15 | 2 kW 20 | 3 kW 30 | |
|--------------------------------------|---|--|--------------------------|-------------|-------------|-------------|--------------|---|------------|--|
| Power Supply | Phase / Voltage | Single-phase / Three-phase 220V _{AC} | | | | | | Three-phase 220V _{AC} | | |
| | Permissible Voltage | Single-phase / Three-phase 200 - 230V _{AC} , -15% to 10% | | | | | | Three-phase 200 - 230V _{AC} , -15% to 10% | | |
| | Input Current (3PH) (Unit: Arms) | 0.81 | 1.61 | 4.32 | 8.76 | 9.21 | 9.72 | 14.7 | 16.68 | |
| | Input Current (1PH) (Unit: Arms) | 1.39 | 2.77 | 8.28 | 16.68 | 17.49 | 18.72 | | | |
| | Continuous Output Current (Unit: Arms) | 0.9 | 1.55 | 2.65 | 5.1 | 7.3 | 8.3 | 13.4 | 19.4 | |
| | Max. Instantaneous Output Current (Unit: Arms) | 3.88 | 7.07 | 10.6 | 16.4 | 21.21 | 27 | 38.3 | 58.9 | |
| Cooling Method | Natural cooling | | | | | Fan cooling | | | | |
| Drive Resolution | 24-bit (16,777,216 pls/rev) | | | | | | | | | |
| Main Circuit Control | SVPWM control | | | | | | | | | |
| Tuning Mode | Auto / Manual | | | | | | | | | |
| Regenerative Resistor | N/A | | | Built-in | | | | | | |
| Position Control Mode | Pulse Type (only for pulse control mode) | Pulse + Direction; A phase + B phase; CCW pulse + CW pulse | | | | | | | | |
| | Max. Output Pulse Frequency (only for pulse control mode) | Pulse + direction: 4 Mpps; CCW pulse + CW pulse: 4 Mpps; A phase + B phase: single-phase 4 Mpps; Open collector: 200 Kpps | | | | | | | | |
| | Command Source | External pulse (only for pulse control mode) / Internal register (PR mode) | | | | | | | | |
| | Smoothing Method | Low-pass, S-curve, and moving filters | | | | | | | | |
| | E-Gear Ratio | E-Gear ratio: N / M times, limited to (1 / 4 < N / M < 262144) N: 1 - 536870911/M: 1 - 2147483647 | | | | | | | | |
| | Torque Limit | Parameter settings | | | | | | | | |
| Feed Forward Compensation | Parameter settings | | | | | | | | | |
| Speed Control Mode | Analog Command Input | Voltage Range | 0 to ±10 V _{DC} | | | | | | | |
| | | Resolution | 12-bit | | | | | | | |
| | | Input Impedance | 1 MΩ | | | | | | | |
| | | Time Constant | 25 μs | | | | | | | |
| | Speed Control Range ¹ | 1 : 6000 | | | | | | | | |
| | Command Source | External analog command / Internal register | | | | | | | | |
| Smoothing Method | Low-pass and S-curve filters | | | | | | | | | |
| Torque Limit | Parameter settings or analog input | | | | | | | | | |
| Bandwidth | Maximum 3.1 kHz | | | | | | | | | |
| Speed Calibration Ratio ² | ±0.01% at 0% to 100% load fluctuation | | | | | | | | | |
| | ±0.01% at ±10% power fluctuation | | | | | | | | | |
| | ±0.01% at 0°C to 50°C ambient temperature fluctuation | | | | | | | | | |
| Torque Control Mode | Analog Command Input | Voltage Range | 0 to ±10 V _{DC} | | | | | | | |
| | | Input Impedance | 1 MΩ | | | | | | | |
| | | Time Constant | 25 μs | | | | | | | |
| | Command Source | External analog command / Internal register | | | | | | | | |
| Smoothing Method | Low-pass filter | | | | | | | | | |
| Speed Limit | Parameter settings or analog input | | | | | | | | | |
| Analog Monitor Output | Monitoring signal can be set with parameters (voltage output range: ±8V); resolution: 10-bit | | | | | | | | | |
| Digital Input / Output | Input | Servo on, Fault reset, Gain switch, Pulse clear, Zero speed clamping, Command input reverse control, Internal position command trigger, Torque limit, Speed limit, Internal position command selection, Motor stop, Speed command selection, Speed / Position mode switching, Speed / Torque command switching, Torque / Position mode switching, PT / PR command switching, Emergency stop, Forward / reverse limit, Original point, Forward / reverse operation torque limit, Homing activated, Forward / reverse JOG input, Event trigger, E-Gear N selection, Pulse input prohibition *The DI mentioned above are only used in pulse control mode. When controlling through communication, it is suggested that you use communication for DI input. DI only supports emergency stop, forward / reverse limit, and homing. | | | | | | | | |
| | Output | A, B, Z line driver output Servo ready, Servo on, Zero speed detection, Target speed reached, Target position reached, Torque limiting, Servo alarm, Magnetic brake control, Homing complete, Early warning for overload, Servo warning, Position command overflows, Software limit (reverse direction), Software limit (forward direction), Internal position command complete, Servo procedure complete, Capture procedure complete | | | | | | | | |
| Protection Function | Overcurrent, Overvoltage, Undervoltage, Overheat, Regeneration error, Overload, Excessive speed deviation, Excessive position deviation, Encoder error, Adjustment error, Emergency stop, Forward / reverse limit error, Serial communication error, RST leak phase, Serial communication timeout, Short-circuit protection for terminals U, V, W | | | | | | | | | |
| Communication Interface | USB/RS-485/CANopen/DMCNET/EtherCAT | | | | | | | | | |
| Environment | Installation Site | Indoors (avoid direct sunlight), no corrosive vapor (avoid fumes, flammable gases, and dust) | | | | | | | | |
| | Altitude | Altitude 2000 m or lower above sea level | | | | | | | | |
| | Atmospheric Pressure | 86 kPa - 106 kPa | | | | | | | | |
| | Operating Temperature | 0°C to 55°C (if operating temperature is above 45°C, forced cooling is required) | | | | | | | | |
| | Storage Temperature | -20°C to 65°C | | | | | | | | |
| | Humidity | 0 to 90% RH (non-condensing) | | | | | | | | |
| | Vibration | 9.80665 m/s ² (1 G) less than 20 Hz, 5.88 m/s ² (0.6 G) 20 to 50 Hz | | | | | | | | |
| | IP Rating | IP20 | | | | | | | | |
| Power System | TN system ^{*3,4} | | | | | | | | | |
| Certifications | IEC/EN 61800-5-1, UL 508C   | | | | | | | | | |

Note:

*1. Within the rated load, the speed ratio is: the minimum speed (smooth operation) / rated speed.

*2. Within the rated speed, the speed calibration ratio is: (rotational speed with no load - rotational speed with full load) / rated speed.

*3. TN system: the neutral point of the power system connects directly to the ground. The exposed metal components connect to the ground through the protective ground conductor.

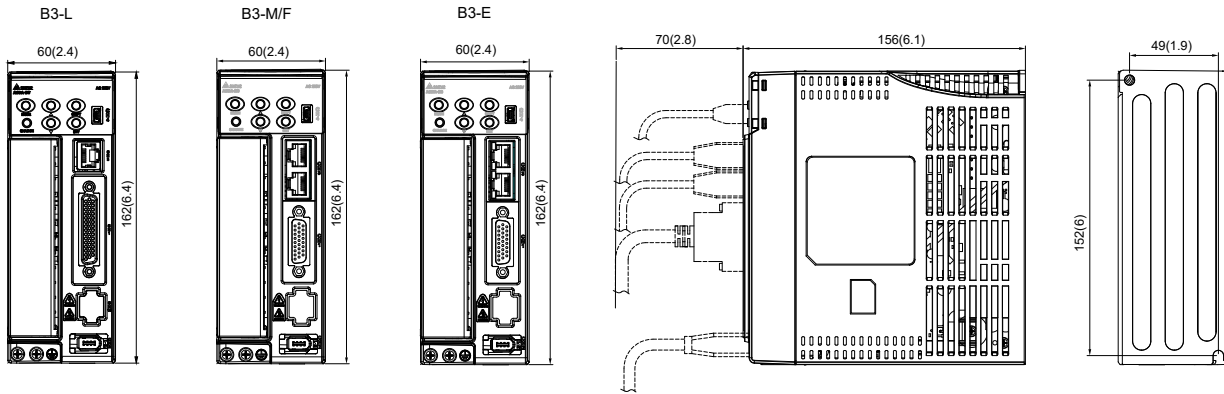
*4. Use a single-phase three-wire power system for the single-phase power model.

Servo Drive Specifications

Dimensions

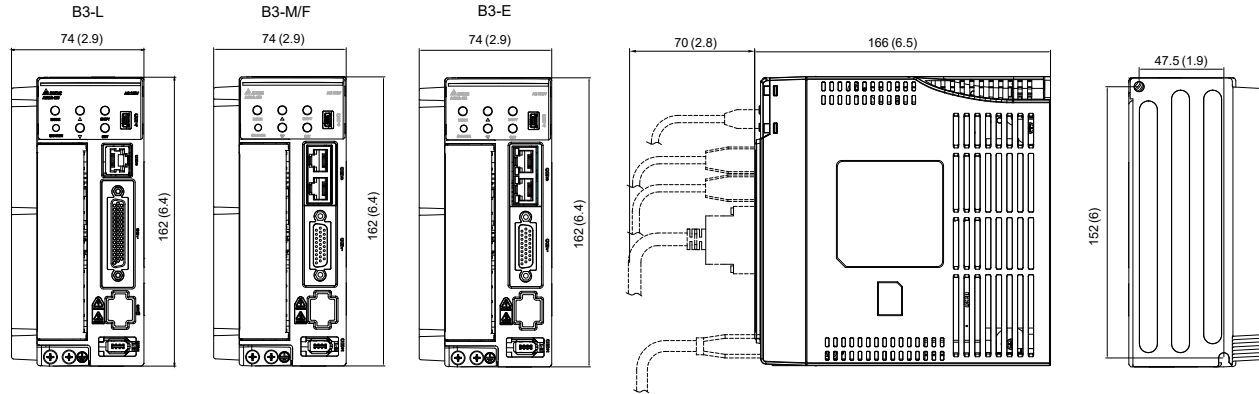
100 W / 200 W / 400 W

| | |
|---------------|-----------------|
| Weight | Unit: mm (inch) |
| 0.9 kg | |



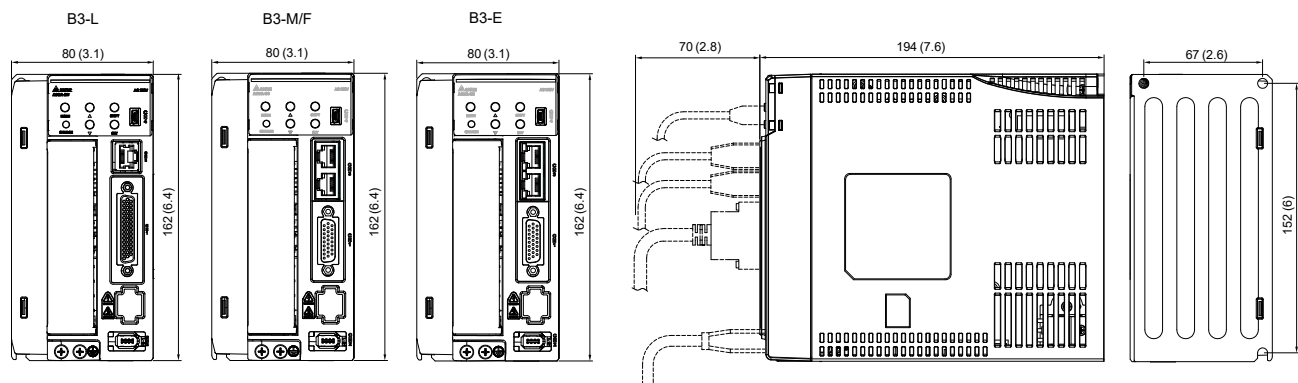
750 W

| | |
|---------------|-----------------|
| Weight | Unit: mm (inch) |
| 1.2 kg | |



1 kW / 1.5 kW

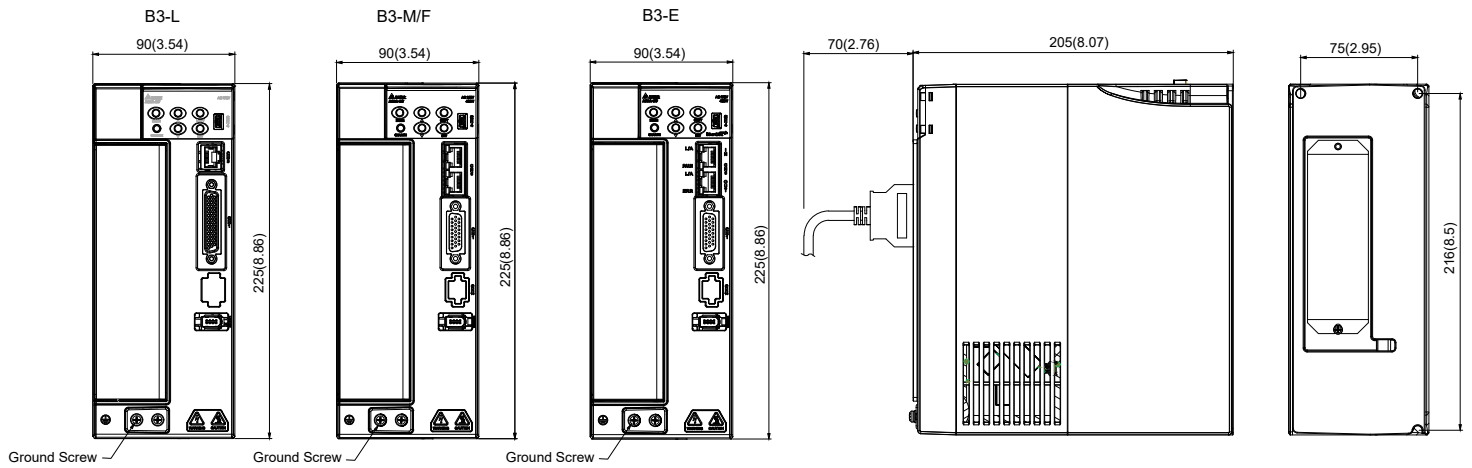
| | |
|---------------|-----------------|
| Weight | Unit: mm (inch) |
| 1.8 kg | |



2 kW/3 kW

| |
|---------------|
| Weight |
| 2.8 kg |

Unit: mm (inch)



Regenerative Resistor Specifications

| Servo Drive (kW) | Specifications of the Built-In Regenerative Resistor | | Capacity of the Built-In Regenerative Resistor (Watt) | Minimum Allowable Resistance Value (Ohm) (reference for external resistors) |
|------------------|--|-----------------|---|--|
| | Resistance (Ohm) | Capacity (Watt) | | |
| 0.1 | - | - | - | 60 |
| 0.2 | - | - | - | 60 |
| 0.4 | 100 | 40 | 20 | 60 |
| 0.75 | 100 | 40 | 20 | 60 |
| 1.0 | 100 | 40 | 20 | 30 |
| 1.5 | 100 | 40 | 20 | 30 |
| 2.0 | 20 | 80 | 40 | 15 |
| 3.0 | 20 | 80 | 40 | 15 |

Servo Motor Model Name

ECM-B3 Series Servo Motor

ECM - B3 M - C A 06 04 R S 1

| Product Name | ECM: Electronic Commutation Motor | | | | | | | | | | | | | | | |
|--|---|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|--|---|---|----|----|---------------------------------------|----|----|---|---|
| Series | B3 series | | | | | | | | | | | | | | | |
| Inertia | M: Medium inertia L: Low inertia | | | | | | | | | | | | | | | |
| Rated Voltage and Speed | C: 220V/3000 rpm E: 220V/2000 rpm F: 220V/1500 rpm | | | | | | | | | | | | | | | |
| Encoder Type | A: 24-bit absolute magnetic optical encoder Resolution of single turn: 24-bit Resolution of multiple turns ^{*1} : 16-bit 2: 24-bit incremental magnetic optical encoder ^{*2} P: 17-bit absolute magnetic encoder Resolution of single turn: 17-bit Resolution of multiple turns ^{*1} : 16-bit M: 17-bit incremental magnetic encoder ^{*2} | | | | | | | | | | | | | | | |
| Motor Frame Size | 04: 40 mm 06: 60 mm 08: 80 mm 13: 130 mm 18: 180 mm | | | | | | | | | | | | | | | |
| Rated Power Output | 01: 100 W 02: 200 W 04: 400 W 07: 750 W 10: 1 kW 15: 1.5 kW 20: 2 kW 30: 3 kW | | | | | | | | | | | | | | | |
| Type of Shaft and Oil Seal | <table border="1"> <thead> <tr> <th>Type of Shaft and Oil Seal</th> <th>w/o Brake w/o Oil Seal</th> <th>with Brake w/o Oil Seal</th> <th>w/o Brake with Oil Seal</th> <th>with Brake with Oil Seal</th> </tr> </thead> <tbody> <tr> <td>Round Shaft (with fixed screw holes)</td> <td>-</td> <td>-</td> <td>C*</td> <td>D*</td> </tr> <tr> <td>Keyway (with fixed screw holes)</td> <td>P*</td> <td>Q*</td> <td>R</td> <td>S</td> </tr> </tbody> </table> | Type of Shaft and Oil Seal | w/o Brake w/o Oil Seal | with Brake w/o Oil Seal | w/o Brake with Oil Seal | with Brake with Oil Seal | Round Shaft (with fixed screw holes) | - | - | C* | D* | Keyway (with fixed screw holes) | P* | Q* | R | S |
| Type of Shaft and Oil Seal | w/o Brake w/o Oil Seal | with Brake w/o Oil Seal | w/o Brake with Oil Seal | with Brake with Oil Seal | | | | | | | | | | | | |
| Round Shaft (with fixed screw holes) | - | - | C* | D* | | | | | | | | | | | | |
| Keyway (with fixed screw holes) | P* | Q* | R | S | | | | | | | | | | | | |
| Shaft Diameter | S: Standard connector and standard shaft diameter 7: Standard connector and special shaft diameter (14 mm)* J: IP67 waterproof connector and standard shaft diameter K: IP67 waterproof connector and special shaft diameter (14 mm)* | | | | | | | | | | | | | | | |
| Special Code | 1: Standard products | | | | | | | | | | | | | | | |

*1. Number of turns.
*2. Can be used as a single-turn absolute encoder.

Note: Models with an * are coming soon.

*Shafts of special diameter are used for 400 W motors with the frame size of 80 mm.

ECM-A3 Series Servo Motor

ECM - A3 H - C Y 06 04 R S 1

| Product Name | ECM: Electronic Commutation Motor | | | | | | | | | | | | | | | |
|--|---|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|--|---|---|---|---|---------------------------------------|----|----|---|---|
| Series | A3 series | | | | | | | | | | | | | | | |
| Inertia | H: High inertia L: Low inertia | | | | | | | | | | | | | | | |
| Rated Voltage and Speed | C: 220V/3000 rpm | | | | | | | | | | | | | | | |
| Encoder Type | Y: 24-bit absolute optical encoder Resolution of single turn: 24-bit Resolution of multiple turns ^{*1} : 16-bit 1: 24-bit incremental optical encoder ^{*2} A: 24-bit absolute magnetic optical encoder Resolution of single turn: 24-bit Resolution of multiple turns ^{*1} : 16-bit 2: 24-bit incremental magnetic optical encoder ^{*2} | | | | | | | | | | | | | | | |
| Motor Frame Size | 04: 40 mm 06: 60 mm 08: 80 mm | | | | | | | | | | | | | | | |
| Rated Power Output | 0F: 50 W 01: 100 W 02: 200 W 04: 400 W 07: 750 W | | | | | | | | | | | | | | | |
| Type of Shaft and Oil Seal | <table border="1"> <thead> <tr> <th>Type of Shaft and Oil Seal</th> <th>w/o Brake w/o Oil Seal</th> <th>with Brake w/o Oil Seal</th> <th>w/o Brake with Oil Seal</th> <th>with Brake with Oil Seal</th> </tr> </thead> <tbody> <tr> <td>Round Shaft (with fixed screw holes)</td> <td>-</td> <td>-</td> <td>C</td> <td>D</td> </tr> <tr> <td>Keyway (with fixed screw holes)</td> <td>P*</td> <td>Q*</td> <td>R</td> <td>S</td> </tr> </tbody> </table> | Type of Shaft and Oil Seal | w/o Brake w/o Oil Seal | with Brake w/o Oil Seal | w/o Brake with Oil Seal | with Brake with Oil Seal | Round Shaft (with fixed screw holes) | - | - | C | D | Keyway (with fixed screw holes) | P* | Q* | R | S |
| Type of Shaft and Oil Seal | w/o Brake w/o Oil Seal | with Brake w/o Oil Seal | w/o Brake with Oil Seal | with Brake with Oil Seal | | | | | | | | | | | | |
| Round Shaft (with fixed screw holes) | - | - | C | D | | | | | | | | | | | | |
| Keyway (with fixed screw holes) | P* | Q* | R | S | | | | | | | | | | | | |
| Shaft Diameter | S: Standard connector and standard shaft diameter 7: Standard connector and special shaft diameter (14 mm)* J: IP67 waterproof connector and standard shaft diameter K: IP67 waterproof connector and special shaft diameter (14 mm)* | | | | | | | | | | | | | | | |
| Special Code | 1: Standard products Z: Refer to the note for dimensions on page 33 | | | | | | | | | | | | | | | |

*1. Number of turns.
*2. Can be used as a single-turn absolute encoder.

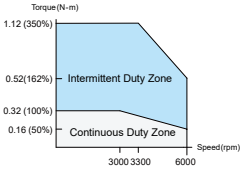
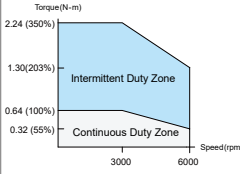
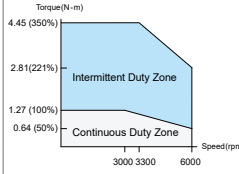
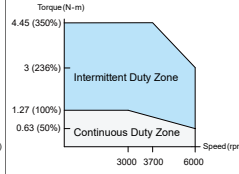

*Note: Models with an * are coming soon.

*Shafts of special diameter are used for 400 W motors with the frame size of 80 mm.

ECM-B3 Series Servo Motor Specifications

Electrical Specifications

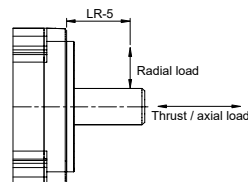
Low Inertia Motor ECM-B3L Series / Medium Inertia Motor ECM-B3M Series

| | ECM-B3L-C [2] 0401 ^{*1} | ECM-B3M-C [2] 0602 ^{*1} | ECM-B3M-C [2] 0604 ^{*1} | ECM-B3M-C [2] 0804 ^{*1} |
|---|---|---|--|---|
| Rated Power (kW) | 0.1 | 0.2 | 0.4 | 0.4 |
| Rated Torque (N-m) ² | 0.32 | 0.64 | 1.27 | 1.27 |
| Maximum Torque (N-m) | 1.12 | 2.24 | 4.45 | 4.45 |
| Rated Speed (rpm) | 3000 | | | |
| Maximum Speed (rpm) | 6000 | | | |
| Rated Current (Arms) | 0.857 | 1.42 | 2.40 | 2.53 |
| Max. Instantaneous Current (Arms) | 3.44 | 6.62 | 9.47 | 9.42 |
| Rated Power Rate (kW/s) ³ | 34.25 (32.51) | 29.05 (27.13) | 63.50 (61.09) | 24.89 (23.21) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ³ | 0.0299 (0.0315) | 0.141 (0.151) | 0.254 (0.264) | 0.648 (0.695) |
| Mechanical Time Constant (ms) ³ | 0.50 (0.53) | 0.91 (0.97) | 0.52 (0.54) | 0.8 (0.86) |
| Torque Constant -KT (N-m/A) | 0.374 | 0.45 | 0.53 | 0.5 |
| Voltage Constant -KE (mV/(rpm)) | 13.8 | 16.96 | 19.76 | 18.97 |
| Armature Resistance (Ohm) | 8.22 | 4.71 | 2.04 | 1.125 |
| Armature Inductance (mH) | 19.1 | 12.18 | 6.50 | 5.14 |
| Electrical Time Constant (ms) | 2.32 | 2.59 | 3.19 | 4.57 |
| Brake Holding Torque [Nt-m (min)] ⁴ | 0.3 | 1.3 | 1.3 | 2.5 |
| Brake Power Consumption (at 20°C)[W] | 6.1 | 7.6 | 7.6 | 8 |
| Brake Release Time [ms (Max.)] | 20 | 20 | 20 | 20 |
| Brake Pull-In Time [ms (Max.)] | 35 | 50 | 50 | 60 |
| Max. Radial Loading (N) ⁶ | 78 | 245 | 245 | 392 |
| Max. Axial Loading (N) ⁶ | 54 | 74 | 74 | 147 |
| Weight (kg) ³ | 0.5 (0.7) | 0.9 (1.3) | 1.2 (1.6) | 1.7 (2.51) |
| Derating (%) (with oil seal) | 10 | 10 | 5 | 5 |
| Torque Feature (T-N Curve) |  |  |  |  |
| Insulation Class | Class A (UL), Class B (CE) | | | |
| Insulation Resistance | > 100 MΩ, DC 500V | | | |
| Insulation Strength | 1.8 kVac, 1 sec | | | |
| Vibration Level (μm) | V15 | | | |
| Operating Temperature | -20°C ~ 60°C ⁵ | | | |
| Storage Temperature | -20°C ~ 80°C ⁵ | | | |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) | | | |
| Vibration Capacity | 2.5 G | | | |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) | | | |
| Certifications |  | | | |

Note:

- In the servo motor model name, [1] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F40, F60, F80: 250 mm x 250 mm x 6 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake
- If the operating temperature is over 40°C, refer to the power derating curves of B3 motors on page 27.

- Please follow the max. tolerating loading of the motor shaft end listed below during operation

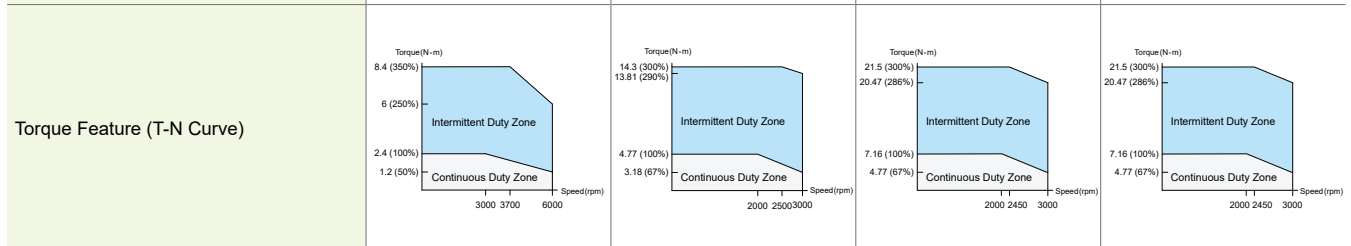


ECM-B3 Series Servo Motor Specifications

Electrical Specifications

Medium Inertia Motor ECM-B3M Series

| | ECM-B3-C [2] 0807 ^{*1} | ECM-B3-E [2] 1310 ^{*1} | ECM-B3-E [2] 1315 ^{*1} | ECM-B3-E [2] 1320 ^{*1} |
|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Rated Power (kW) | 0.75 | 1 | 1.5 | 2 |
| Rated Torque (N-m) ^{*2} | 2.4 | 4.77 | 7.16 | 9.55 |
| Maximum Torque (N-m) | 8.4 | 14.3 | 21.48 | 28.65 |
| Rated Speed (rpm) | 3000 | | 2000 | |
| Maximum Speed (rpm) | 6000 | | 3000 | |
| Rated Current (Arms) | 4.27 | 5.96 | 8.17 | 10.59 |
| Max. Instantaneous Current (Arms) | 15.8 | 19.9 | 26.82 | 34.20 |
| Rated Power Rate (kW/s) ^{*3} | 53.83(50.97) | 29.21 (28.66) | 45.69 (45.09) | 62.25 (61.62) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ^{*3} | 1.07 (1.13) | 7.79 (7.94) | 11.22 (11.37) | 14.65 (14.8) |
| Mechanical Time Constant (ms) ^{*3} | 0.54 (0.57) | 1.46 (1.49) | 1.10 (1.12) | 1.03 (1.04) |
| Torque Constant -KT (N-m/A) | 0.56 | 0.80 | 0.88 | 0.90 |
| Voltage Constant -KE (mV/(rpm)) | 20.17 | 29.30 | 31.69 | 32.70 |
| Armature Resistance (Ohm) | 0.55 | 0.419 | 0.260 | 0.198 |
| Armature Inductance (mH) | 2.81 | 4 | 2.81 | 2.18 |
| Electrical Time Constant (ms) | 5.11 | 9.55 | 10.81 | 11.01 |
| Brake Holding Torque [Nt-m (min)] ^{*4} | 2.5 | 10 | 10 | 10 |
| Brake Power Consumption (at 20°C)[W] | 8 | 21.5 | 21.5 | 21.5 |
| Brake Release Time [ms (Max.)] | 20 | 50 | 50 | 50 |
| Brake Pull-In Time [ms (Max.)] | 60 | 110 | 110 | 110 |
| Max. Radial Loading (N) ^{*6} | 392 | 490 | 686 | 980 |
| Max. Axial Loading (N) ^{*6} | 147 | 98 | 343 | 392 |
| Weight (kg) ^{*3} | 2.34 (3.15) | 4.9 (6.3) | 6.0 (7.4) | 7 (8.5) |
| Derating (%) (with oil seal) | 5 | 5 | 5 | 5 |

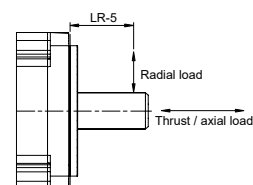


| | |
|------------------------------|---|
| Insulation Class | Class A (UL), Class B (CE) |
| Insulation Resistance | > 100 MΩ, DC 500V |
| Insulation Strength | 1.8 kVac, 1 sec |
| Vibration Level (μm) | V15 |
| Operating Temperature | -20°C ~ 60°C*5 |
| Storage Temperature | -20°C ~ 80°C*5 |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) |
| Vibration Capacity | 2.5 G |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) |
| Certifications | |

Note:

- In the servo motor model name, [] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F80: 250 mm x 250 mm x 6 mm
F130: 400 mm x 400 mm x 20 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake
- If the operating temperature is over 40°C, refer to the power derating curves of B3 motors on page 27.

- Please follow the max. tolerant loading of the motor shaft end listed below during operation

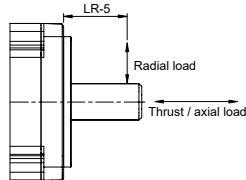


Medium Inertia Motor ECM-B3M Series

| ECM-B3 [1] | ECM-B3M-E [2] 1820*1 | ECM-B3M-F [2] 1830*1 |
|---|---|----------------------|
| Rated Power (kW) | 2 | 3 |
| Rated Torque (N-m) ² | 9.55 | 19.1 |
| Maximum Torque (N-m) | 28.65 | 57.29 |
| Rated Speed (rpm) | 2000 | 1500 |
| Maximum Speed (rpm) | 3000 | 3000 |
| Rated Current (Arms) | 11.43 | 18.21 |
| Max. Instantaneous Current (Arms) | 36.21 | 58.9 |
| Rated Power Rate (kW/s) ³ | 31.33 (30.02) | 68.02 (66.45) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ³ | 29.11 (30.38) | 53.63 (54.9) |
| Mechanical Time Constant (ms) ³ | 1.74 (1.81) | 1.21 (1.24) |
| Torque Constant -KT (N-m/A) | 0.88 | 1.05 |
| Voltage Constant -KE (mV/(rpm)) | 31.6 | 37.9 |
| Armature Resistance (Ohm) | 0.159 | 0.086 |
| Armature Inductance (mH) | 2.34 | 1.52 |
| Electrical Time Constant (ms) | 14.72 | 17.67 |
| Brake Holding Torque [Nt-m (min)] ⁴ | 25 | 25 |
| Brake Power Consumption (at 20°C)[W] | 31 | 31 |
| Brake Release Time [ms (Max.)] | 30 | 30 |
| Brake Pull-In Time [ms (Max.)] | 120 | 120 |
| Max. Radial Loading (N) ⁶ | 1470 | 1470 |
| Max. Axial Loading (N) ⁶ | 490 | 490 |
| Weight (kg) ³ | 10 (13.7) | 13.9 (17.6) |
| Derating (%) (with oil seal) | 5 | 5 |
| Torque Feature (T-N Curve) | | |
| Insulation Class | Class A (UL), Class B (CE) | |
| Insulation Resistance | > 100 MΩ, DC 500V | |
| Insulation Strength | 1.8 kVac, 1 sec | |
| Vibration Level (μm) | V15 | |
| Operating Temperature | -20°C ~ 60°C*5 | |
| Storage Temperature | -20°C ~ 80°C*5 | |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) | |
| Vibration Capacity | 2.5 G | |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) | |
| Certifications | | |

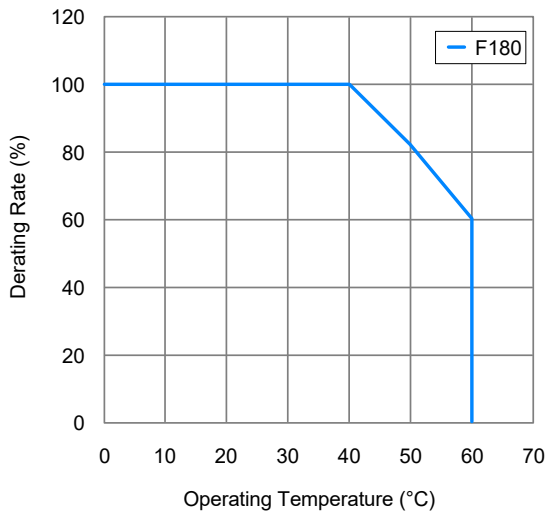
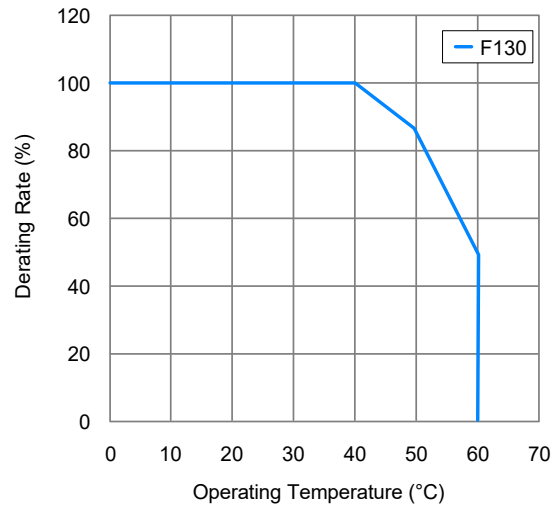
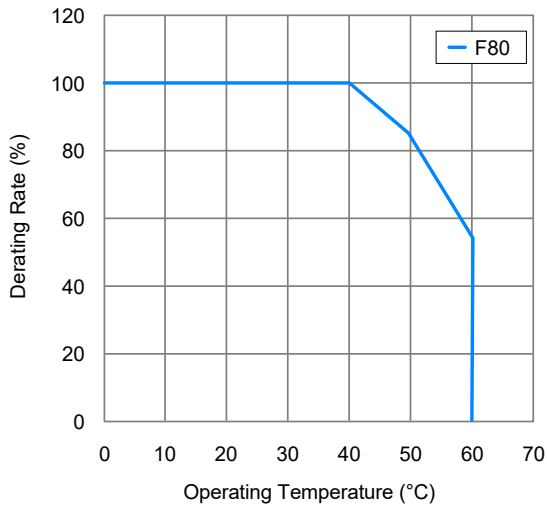
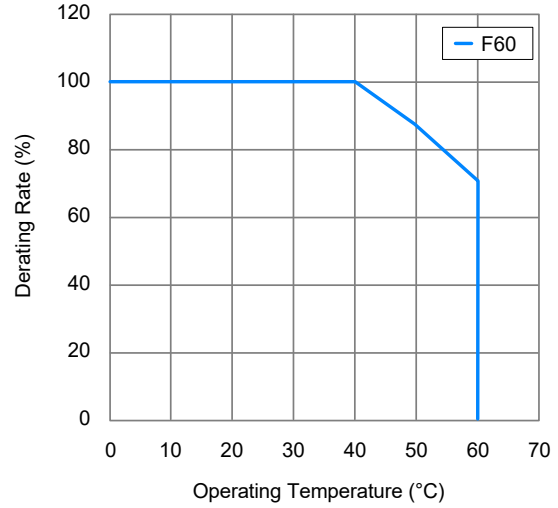
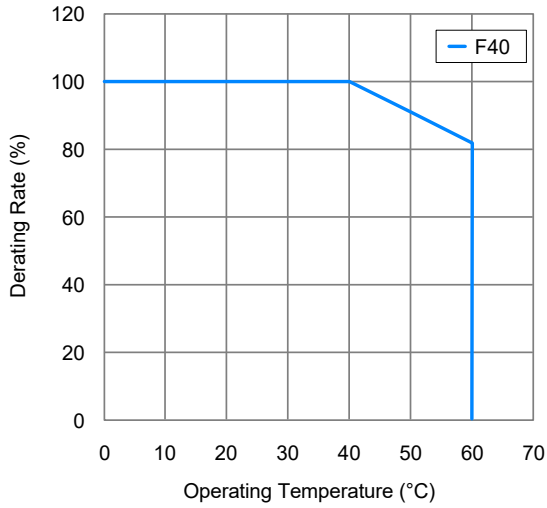
Note:

- In the servo motor model name, [1] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F180 : 550 mm x 550 mm x 30 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake
- If the operating temperature is over 40°C, refer to the power derating curves of B3 motors on page 27.
- Please follow the max. tolerant loading of the motor shaft end listed below during operation

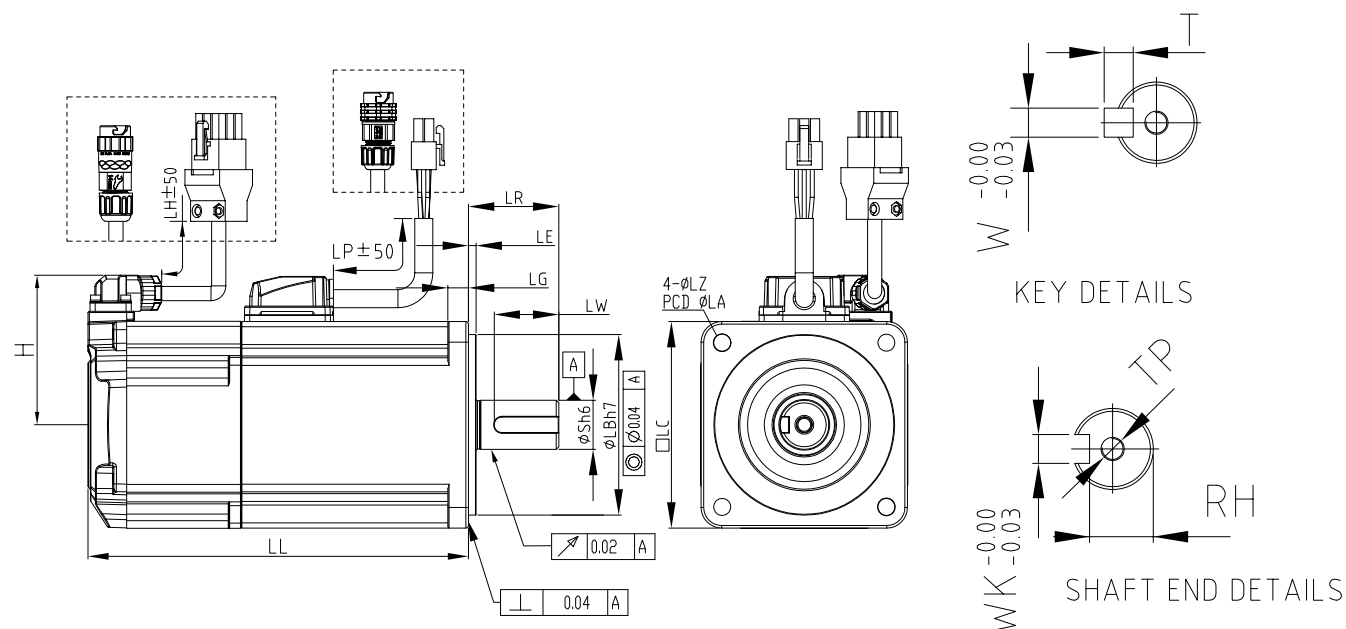


ECM-B3 Series Servo Motor Specifications

Power Derating Curves



Dimensions of Motors with Frame Size of 80 mm or Below



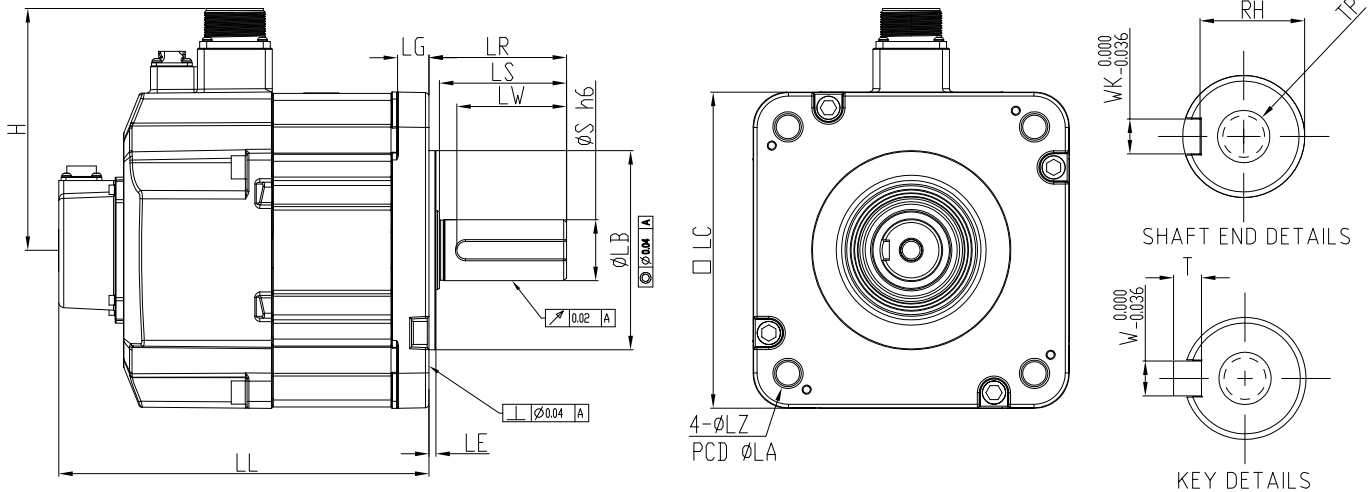
| Model | C 2 0401 3 4 5 | C 2 0602 3 4 5 | C 2 0604 3 4 5 | C 2 0804 3 4 5 | C 2 0807 3 4 5 |
|-----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| LC | 40 | 60 | 60 | 80 | 80 |
| LZ | 4.5 | 5.5 | 5.5 | 6.6 | 6.6 |
| LA | 46 | 70 | 70 | 90 | 90 |
| S | 8($^{+0}_{-0.009}$) | 14($^{+0}_{-0.011}$) | 14($^{+0}_{-0.011}$) | 14($^{+0}_{-0.011}$) | 19($^{+0}_{-0.013}$) |
| LB | 30($^{+0}_{-0.021}$) | 50($^{+0}_{-0.025}$) | 50($^{+0}_{-0.025}$) | 70($^{+0}_{-0.030}$) | 70($^{+0}_{-0.030}$) |
| LL (w/o brake) | 77.6 | 72.5 | 91 | 86.7 | 105.2 |
| LL (with brake) | 111.7 | 109.4 | 127.9 | 126.3 | 144.8 |
| LH | 300 | 300 | 300 | 300 | 300 |
| LP | 300 | 300 | 300 | 300 | 300 |
| H | 40 | 48.5 | 48.5 | 58.5 | 58.5 |
| LR | 25 | 30 | 30 | 30 | 35 |
| LE | 2.5 | 3 | 3 | 3 | 3 |
| LG | 5 | 7.5 | 7.5 | 8 | 8 |
| LW | 16 | 20 | 20 | 20 | 25 |
| RH | 6.2 | 11 | 11 | 11 | 15.5 |
| WK | 3 | 5 | 5 | 5 | 6 |
| W | 3 | 5 | 5 | 5 | 6 |
| T | 3 | 5 | 5 | 5 | 6 |
| TP | M3 Depth 8 | M4 Depth 15 | M4 Depth 15 | M4 Depth 15 | M6 Depth 20 |

Note:

- In the servo motor model name, [2] represents the encoder type, [2] represents the brake or keyway / oil seal type, [4] represents the shaft diameter and connector type, and [5] represents the special code.
- When [3] in the servo motor model name is J or K, the connector is an IP67 waterproof connector.

ECM-B3 Series Servo Motor Specifications

Dimensions of Motors with Frame Size of 130 to 180 mm



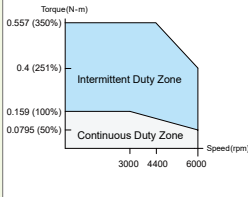
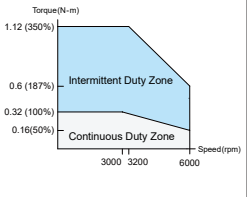
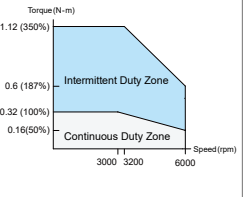
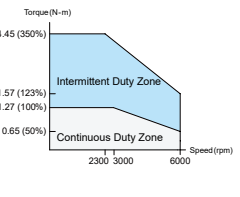

| Model | E 2 1310 3 4 5 | E 2 1315 3 4 5 | E 2 1320 3 4 5 | E 2 1820 3 4 5 | F 2 1830 3 4 5 |
|-----------------|--|--|--|--|--|
| LC | 130 | 130 | 130 | 180 | 180 |
| LZ | 9 | 9 | 9 | 13.5 | 13.5 |
| LA | 145 | 145 | 145 | 200 | 200 |
| S | 22(⁺⁰ / _{-0.013}) | 22(⁺⁰ / _{-0.013}) | 22(⁺⁰ / _{-0.013}) | 35(⁺⁰ / _{-0.016}) | 35(⁺⁰ / _{-0.016}) |
| LB | 110(⁺⁰ / _{-0.035}) | 110(⁺⁰ / _{-0.035}) | 110(⁺⁰ / _{-0.035}) | 114.3(⁺⁰ / _{-0.035}) | 114.3(⁺⁰ / _{-0.035}) |
| LL (w/o brake) | 127.9 | 139.9 | 151.9 | 137.5 | 160.5 |
| LL (with brake) | 168.5 | 180.5 | 192.5 | 189.5 | 212.5 |
| H | 115 | 115 | 115 | 139 | 139 |
| LS | 47 | 47 | 47 | 73 | 73 |
| LR | 55 | 55 | 55 | 79 | 79 |
| LE | 6 | 6 | 6 | 4 | 4 |
| LG | 12.5 | 12.5 | 12.5 | 18 | 18 |
| LW | 36 | 36 | 36 | 63 | 63 |
| RH | 18 | 18 | 18 | 30 | 30 |
| WK | 8 | 8 | 8 | 10 | 10 |
| W | 8 | 8 | 8 | 10 | 10 |
| T | 7 | 7 | 7 | 8 | 8 |
| TP | M6 Depth 12 | M6 Depth 12 | M6 Depth 12 | M12 Depth 25 | M12 Depth 25 |

Note:
In the servo motor model name, [2] represents the encoder type, [3] represents the brake or keyway / oil seal type, [4] represents the shaft diameter and connector type, and [5] represents the special code.

ECM-A3 Series Servo Motor Specifications

Electrical Specifications

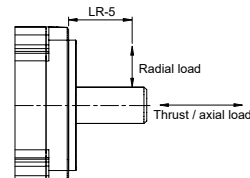
ECM-A3L Low Inertia Series Servo Motor

| | ECM-A3L-C [2] 040F ^{*1} | ECM-A3L-C [2] 040I ^{*1} | ECM-A3L-C [2] 0602 ^{*1} | ECM-A3L-C [2] 0604 ^{*1} |
|--|---|---|--|---|
| Rated Power (kW) | 0.05 | 0.1 | 0.2 | 0.4 |
| Rated Torque (N-m) ^{*1} | 0.159 | 0.32 | 0.64 | 1.27 |
| Maximum Torque (N-m) | 0.557 | 1.12 | 2.24 | 4.45 |
| Rated Speed (rpm) | 3000 | | | |
| Maximum Speed (rpm) | 6000 | | | |
| Rated Current (Arms) | 0.66 | 0.9 | 1.45 | 2.65 |
| Max. Instantaneous Current (Arms) | 2.82 | 3.88 | 6.2 | 10.1 |
| Rated Power Rate (kW/s) ^{*5} | 11 (9.9) | 25.6 (24) | 45.5 (34.1) | 107.5 (89.6) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ^{*5} | 0.0229 (0.0255) | 0.04 (0.0426) | 0.09 (0.12) | 0.15 (0.18) |
| Mechanical Time Constant (ms) ^{*5} | 1.28 (1.44) | 0.838 (0.892) | 0.64 (0.85) | 0.41 (0.5) |
| Torque Constant -KT (N-m/A) | 0.241 | 0.356 | 0.441 | 0.479 |
| Voltage Constant -KE (mV/(rpm)) | 9.28 | 13.3 | 16.4 | 18 |
| Armature Resistance (Ohm) | 12.1 | 9.47 | 4.9 | 2.27 |
| Armature Inductance (mH) | 18.6 | 16.2 | 18.52 | 10.27 |
| Electrical Time Constant (ms) | 1.54 | 1.71 | 3.78 | 4.52 |
| Brake Holding Torque [Nt-m (min)] ^{*2} | 0.32 | 0.32 | 1.3 | 1.3 |
| Brake Power Consumption (at 20°C)[W] | 6.1 | 6.1 | 7.2 | 7.2 |
| Brake Release Time [ms (Max.)] | 20 | 20 | 20 | 20 |
| Brake Pull-In Time [ms (Max.)] | 35 | 35 | 50 | 50 |
| Max. Radial Loading (N) | 78 | 78 | 245 | 245 |
| Max. Axial Loading (N) | 54 | 54 | 74 | 74 |
| Weight (kg) ^{*5} | 0.38 (0.68) | 0.5 (0.8) | 1.1 (1.6) | 1.4 (1.9) |
| Derating (%) (with oil seal) | 20 | 10 | 10 | 5 |
| Torque Feature (T-N Curve) |  |  |  |  |
| Insulation Class | Class A (UL), Class B (CE) | | | |
| Insulation Resistance | > 100 MΩ, DC 500V | | | |
| Insulation Strength | 1.8 kVac, 1 sec | | | |
| Vibration Level (μm) | V15 | | | |
| Operating Temperature | 0°C ~ 40°C*3 | | | |
| Storage Temperature | -10°C ~ 80°C*3 | | | |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) | | | |
| Vibration Capacity | 2.5 G | | | |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) | | | |
| Certifications |  | | | |

Note:

- In the servo motor model name, [1] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F40, F60, F80: 250 mm x 250 mm x 6 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake

5. Please follow the max. tolerant loading of the motor shaft end listed below during operation



ECM-A3 Series Servo Motor Specifications

Electrical Specifications

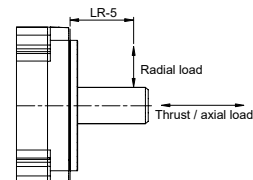
ECM-A3L Low Inertia Series Servo Motor / ECM-A3H High Inertia Series Servo Motor

| | ECM-A3L-C [2] 0804 ^{†1} | ECM-A3L-C [2] 0807 ^{†1} | ECM-A3H-C [2] 040F ^{†1} | ECM-A3H-C [2] 0401 ^{†1} |
|--|---|----------------------------------|----------------------------------|----------------------------------|
| Rated Power (kW) | 0.4 | 0.75 | 0.05 | 0.1 |
| Rated Torque (N-m) ^{†1} | 1.27 | 2.39 | 0.159 | 0.32 |
| Maximum Torque (N-m) | 4.44 | 8.36 | 0.557 | 1.12 |
| Rated Speed (rpm) | 3000 | | | |
| Maximum Speed (rpm) | 6000 | | | |
| Rated Current (Arms) | 2.6 | 5.1 | 0.64 | 0.9 |
| Max. Instantaneous Current (Arms) | 10.6 | 20.6 | 2.59 | 3.64 |
| Rated Power Rate (kW/s) ^{†5} | 45.8 (39.5) | 102.2 (93) | 5.56 (4.89) | 13.6 (12.5) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ^{†5} | 0.352 (0.408) | 0.559 (0.614) | 0.0455 (0.0517) | 0.0754 (0.0816) |
| Mechanical Time Constant (ms) ^{†5} | 0.68 (0.78) | 0.44 (0.48) | 2.52 (2.86) | 1.43 (1.55) |
| Torque Constant -KT (N-m/A) | 0.488 | 0.469 | 0.248 | 0.356 |
| Voltage Constant -KE (mV/(rpm)) | 17.9 | 17 | 9.54 | 12.9 |
| Armature Resistance (Ohm) | 1.6 | 0.6 | 12.5 | 8.34 |
| Armature Inductance (mH) | 10.6 | 4.6 | 13.34 | 11 |
| Electrical Time Constant (ms) | 6.63 | 7.67 | 1.07 | 1.32 |
| Brake Holding Torque [N-t-m (min)] ^{†4} | 2.5 | 2.5 | 0.32 | 0.32 |
| Brake Power Consumption (at 20°C)[W] | 8 | 8 | 6.1 | 6.1 |
| Brake Release Time [ms (Max.)] | 20 | 20 | 20 | 20 |
| Brake Pull-In Time [ms (Max.)] | 60 | 60 | 35 | 35 |
| Max. Radial Loading (N) | 392 | 392 | 78 | 78 |
| Max. Axial Loading (N) | 147 | 147 | 54 | 54 |
| Weight (kg) ^{†5} | 2.05 (2.85) | 2.8 (3.6) | 0.38 (0.68) | 0.5 (0.8) |
| Derating (%) (with oil seal) | 5 | 5 | 20 | 10 |
| Torque Feature (T-N Curve) | | | | |
| Insulation Class | Class A (UL), Class B (CE) | | | |
| Insulation Resistance | 100 MΩ · DC 500 V 以上 | | | |
| Insulation Strength | > 100 MΩ, DC 500V | | | |
| Vibration Level (μm) | V15 | | | |
| Operating Temperature | 0°C ~ 40°C* ³ | | | |
| Storage Temperature | -10°C ~ 80°C* ³ | | | |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) | | | |
| Vibration Capacity | 2.5 G | | | |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) | | | |
| Certifications | | | | |

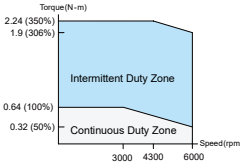
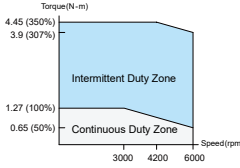
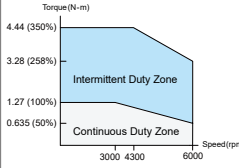
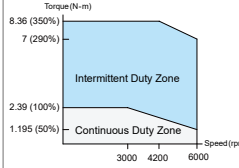

Note:

- In the servo motor model name, [] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F40, F60, F80: 250 mm x 250 mm x 6 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake

- Please follow the max. tolerating loading of the motor shaft end listed below during operation



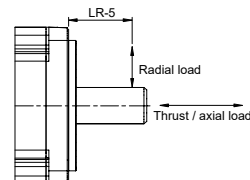
ECM-A3H High Inertia Series Servo Motor

| | ECM-A3H-C [2] 0602 ¹ | ECM-A3H-C [2] 0604 ¹ | ECM-A3H-C [2] 0804 ¹ | ECM-A3H-C [2] 0807 ¹ |
|---|---|---|--|---|
| Rated Power (kW) | 0.2 | 0.4 | 0.4 | 0.75 |
| Rated Torque (N-m) ¹ | 0.64 | 1.27 | 1.27 | 2.39 |
| Maximum Torque (N-m) | 2.24 | 4.45 | 4.44 | 8.36 |
| Rated Speed (rpm) | 3000 | | | |
| Maximum Speed (rpm) | 6000 | | | |
| Rated Current (Arms) | 1.45 | 2.65 | 2.6 | 4.61 |
| Max. Instantaneous Current (Arms) | 5.3 | 9.8 | 9.32 | 16.4 |
| Rated Power Rate (kW/s) ⁵ | 16.4 (14.6) | 35.8 (33.6) | 17.5 (15.07) | 37.8 (34.41) |
| Rotor Inertia ($\times 10^{-4}$ kg.m ²) ⁵ | 0.25 (0.28) | 0.45 (0.48) | 0.92 (1.07) | 1.51 (1.66) |
| Mechanical Time Constant (ms) ⁵ | 1.38 (1.54) | 0.96 (1.02) | 1.32 (1.54) | 0.93 (1.02) |
| Torque Constant -KT (N-m/A) | 0.441 | 0.479 | 0.49 | 0.52 |
| Voltage Constant -KE (mV/(rpm)) | 16.4 | 17.2 | 17.9 | 18.7 |
| Armature Resistance (Ohm) | 3.8 | 1.68 | 1.19 | 0.57 |
| Armature Inductance (mH) | 8.15 | 4.03 | 4.2 | 2.2 |
| Electrical Time Constant (ms) | 2.14 | 2.40 | 3.53 | 3.86 |
| Brake Holding Torque [Nt-m (min)] ⁷² | 1.3 | 1.3 | 2.5 | 2.5 |
| Brake Power Consumption (at 20°C)[W] | 7.2 | 7.2 | 8 | 8 |
| Brake Release Time [ms (Max.)] | 20 | 20 | 20 | 20 |
| Brake Pull-In Time [ms (Max.)] | 50 | 50 | 60 | 60 |
| Max. Radial Loading (N) | 245 | 245 | 392 | 392 |
| Max. Axial Loading (N) | 74 | 74 | 147 | 147 |
| Weight (kg) ⁵ | 1.1 (1.6) | 1.4 (1.9) | 2.05 (2.85) | 2.8 (3.6) |
| Derating (%) (with oil seal) | 10 | 5 | 5 | 5 |
| Torque Feature (T-N Curve) |  |  |  |  |
| Insulation Class | Class A (UL), Class B (CE) | | | |
| Insulation Resistance | 100 MΩ · DC 500 V 以上 | | | |
| Insulation Strength | > 100 MΩ, DC 500V | | | |
| Vibration Level (μm) | V15 | | | |
| Operating Temperature | 0°C ~ 40°C*3 | | | |
| Storage Temperature | -10°C ~ 80°C*3 | | | |
| Storage & Operation Humidity | 20 ~ 90%RH (non-condensing) | | | |
| Vibration Capacity | 2.5 G | | | |
| IP Rating | IP67 (when using waterproof connections and when an oil seal is fitted to the rotating shaft (for an oil seal model)) | | | |
| Certifications |  | | | |

Note:

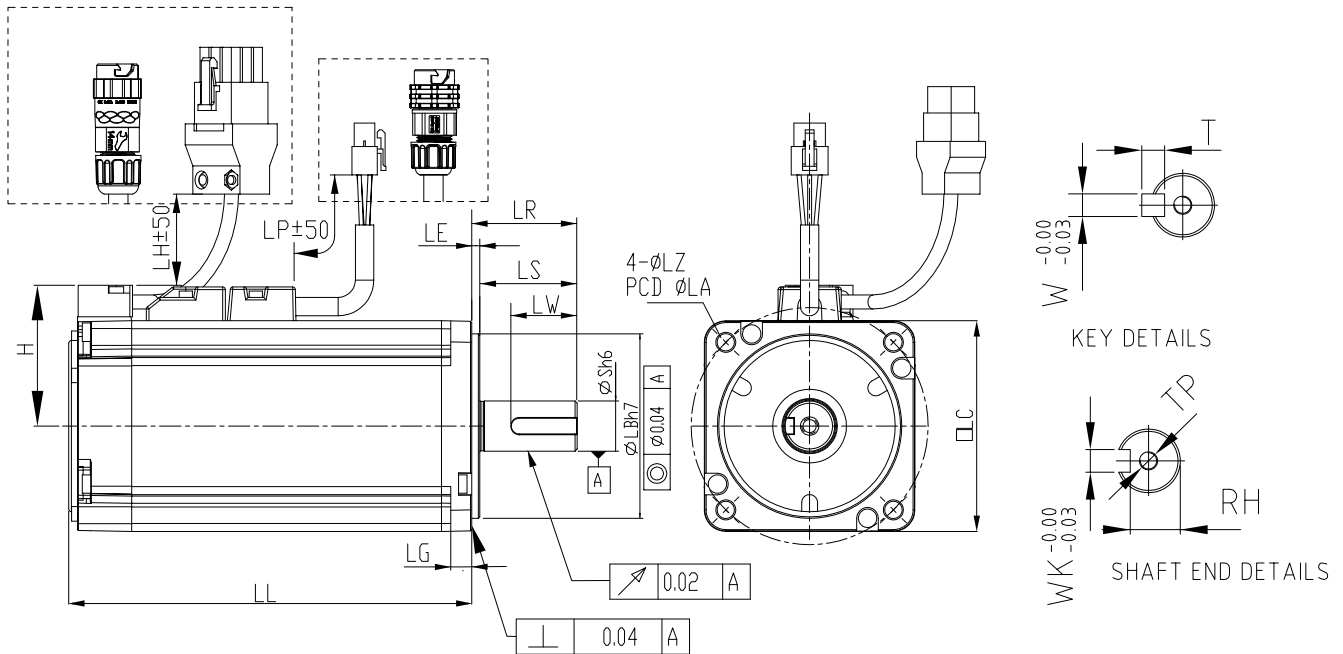
- In the servo motor model name, [1] represents the motor inertia and [2] represents the encoder type.
- The rated torque is the continuous permissible torque between 0 to 40°C operating temperature which is suitable for the servo motor mounted with the following heat sink dimensions.
F40, F60, F80: 250 mm x 250 mm x 6 mm
Material: aluminum
- () = motor with brake
- The built-in servo motor brake is only for keeping the object in a stopped state.
Do not use it for deceleration or as a dynamic brake

5. Please follow the max. tolerant loading of the motor shaft end listed below during operation



ECM-A3 Series Servo Motor Specifications

Dimensions of Motors with Frame Size of 80 mm and Below



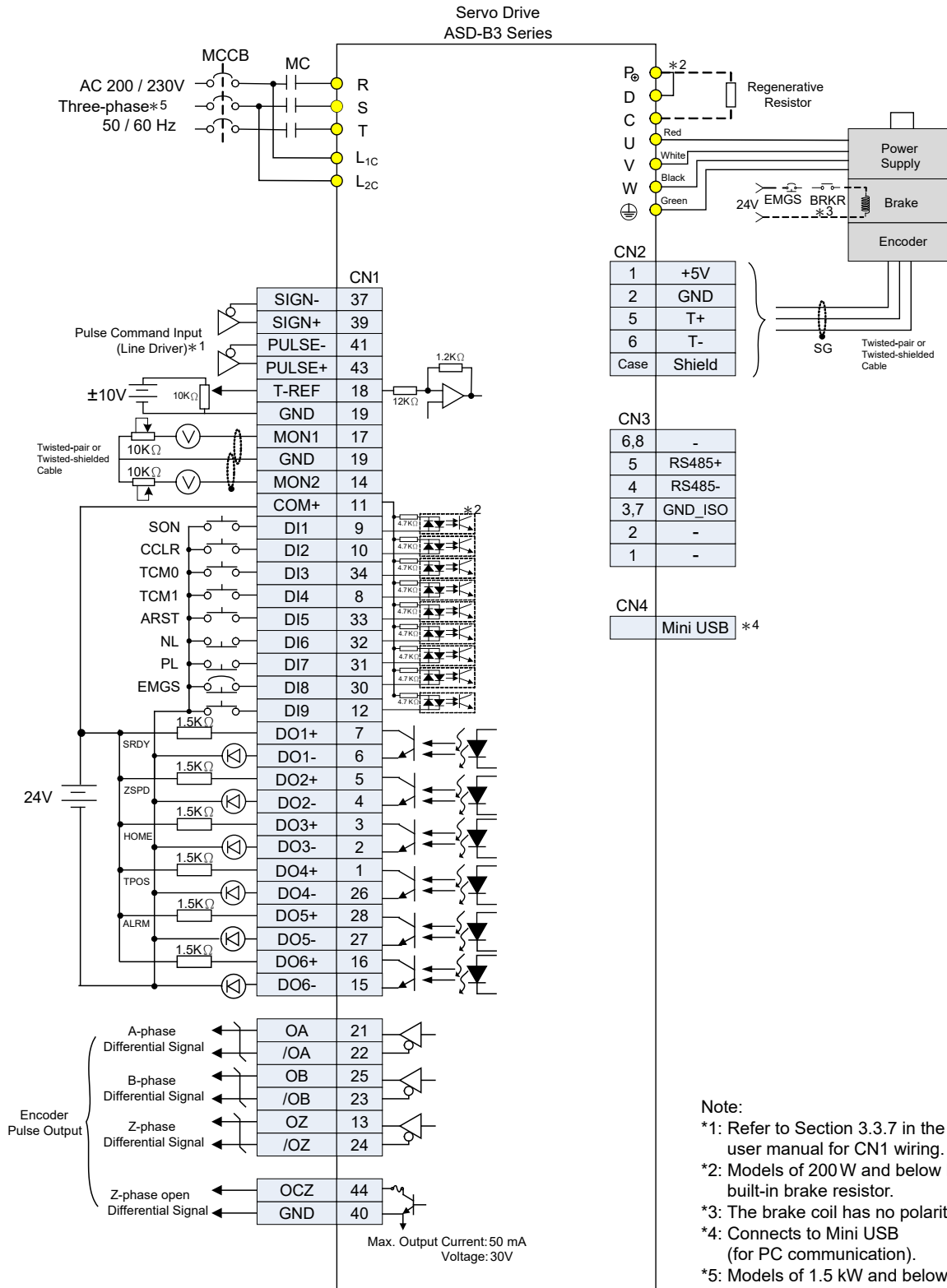
| Model | C 2 040F 3 4 5 | C 2 0401 3 4 5 | C 2 0602 3 4 5 | C 2 0604 3 4 5 | C 2 0804 3 4 5 | C 2 0807 3 4 5 |
|-----------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| LC | 40 | 40 | 60 | 60 | 80 | 80 |
| LZ | 4.5 | 4.5 | 5.5 | 5.5 | 6.6 | 6.6 |
| LA | 46 | 46 | 70 | 70 | 90 | 90 |
| S | 8 ^(+0/-0.009) | 8 ^(+0/0.009) | 14 ^(+0/-0.011) | 14 ^(+0/-0.011) | 14 ^(+0/-0.011) | 19 ^(+0/-0.013) |
| LB | 30 ^(+0/-0.021) | 30 ^(+0/-0.021) | 50 ^(+0/-0.025) | 50 ^(+0/-0.025) | 70 ^(+0/-0.030) | 70 ^(+0/-0.030) |
| LL (w/o brake) | 70.6 | 85.3 | 84 | 106 | 93.7 | 115.8 |
| LL (with brake) | 105.4 | 120.1 | 117.6 | 139.7 | 131.2 | 153.2 |
| LH | 300 | 300 | 300 | 300 | 300 | 300 |
| LP | 300 | 300 | 300 | 300 | 300 | 300 |
| H | 34 | 34 | 43.5 | 43.5 | 54.5 | 54.5 |
| LS | 21.5 | 21.5 | 27 | 27 | 27 | 37 |
| LR | 25 | 25 | 30 | 30 | 30 | 40 |
| LE | 2.5 | 2.5 | 3 | 3 | 3 | 3 |
| LG | 5 | 5 | 7.5 | 7.5 | 8 | 8 |
| LW | 16 | 16 | 20 | 20 | 20 | 25 |
| RH | 6.2 | 6.2 | 11 | 11 | 11 | 15.5 |
| WK | 3 | 3 | 5 | 5 | 5 | 6 |
| W | 3 | 3 | 5 | 5 | 5 | 6 |
| T | 3 | 3 | 5 | 5 | 5 | 6 |
| TP | M3 Depth 6 | M3 Depth 6 | M4 Depth 8 | M4 Depth 8 | M4 Depth 8 | M6 Depth 10 |

Note:

- In the servo motor model name, [2] represents the encoder type, [3] represents the brake or keyway / oil seal type, [4] represents the shaft diameter and connector type, and [5] represents the special code.
- When the special code of the C 2 0807 [3] [4] [5] model is Z, then its LS = 32 and LR = 35.
- When the [4] in the motor model name is J or K, the connector is an IP67 waterproof connector.

Control Mode Wiring

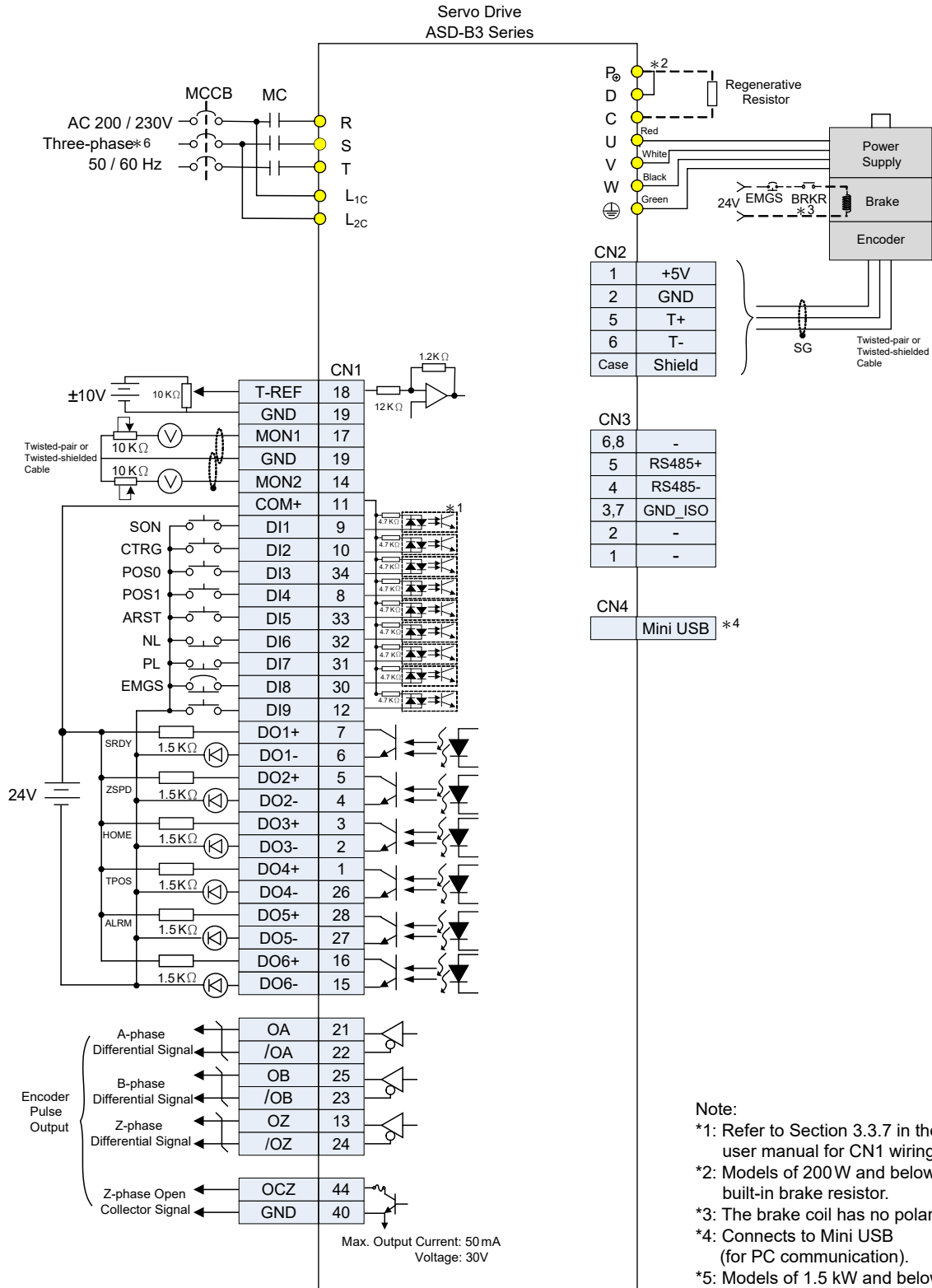
Position (PT) Mode Standard Wiring (for Pulse Command Input)



- Note:
- *1: Refer to Section 3.3.7 in the ASDA-B3 user manual for CN1 wiring.
 - *2: Models of 200 W and below have no built-in brake resistor.
 - *3: The brake coil has no polarity.
 - *4: Connects to Mini USB (for PC communication).
 - *5: Models of 1.5 kW and below can use single-phase power supply.

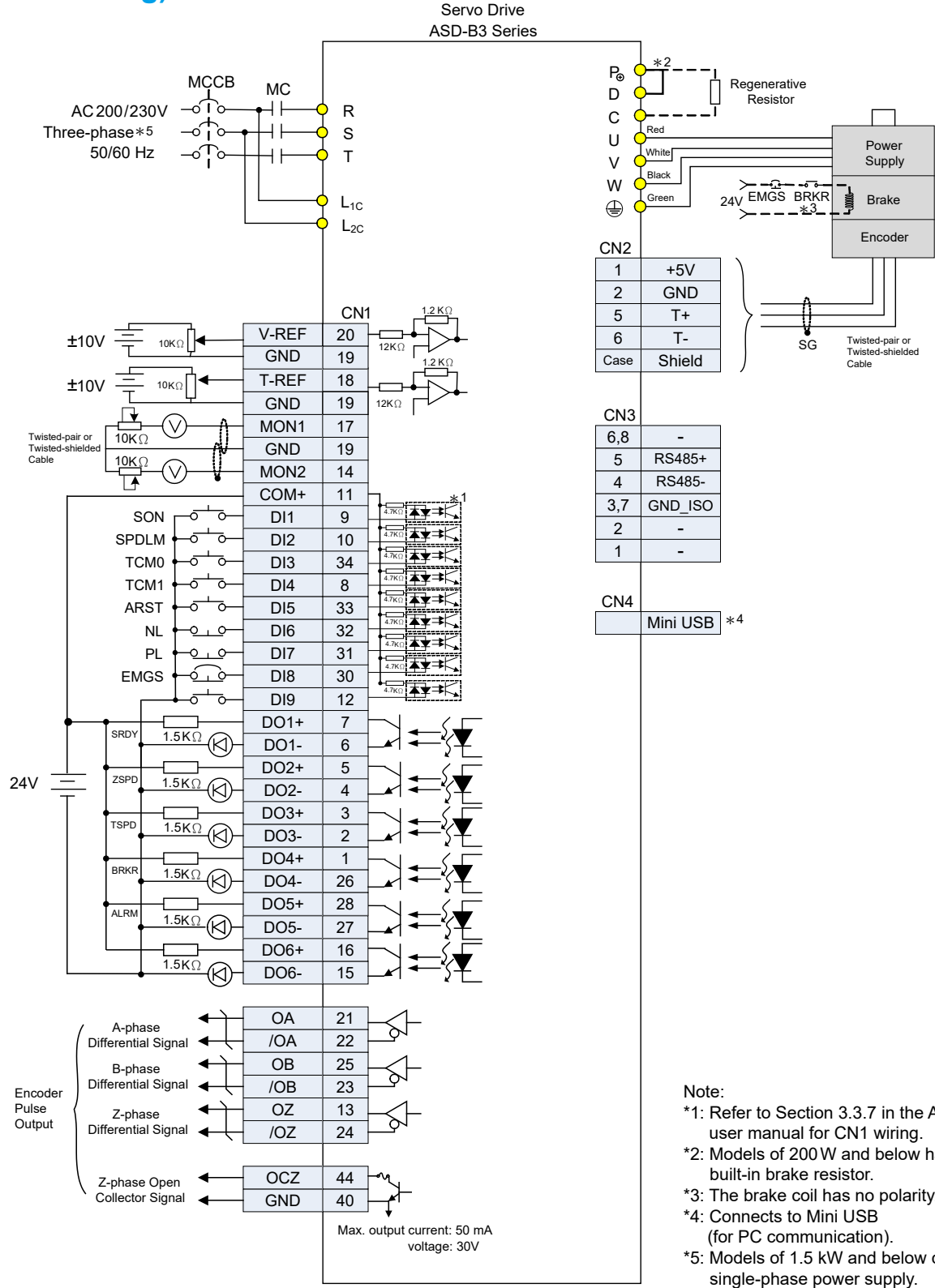
Control Mode Wiring

Position (PR) Mode Standard Wiring (for Internal Position Command)



- Note:
- *1: Refer to Section 3.3.7 in the ASDA-B3 user manual for CN1 wiring.
 - *2: Models of 200W and below have no built-in brake resistor.
 - *3: The brake coil has no polarity.
 - *4: Connects to Mini USB (for PC communication).
 - *5: Models of 1.5 kW and below can use single-phase power supply.

Torque (T) Mode Standard Wiring (for Analog Voltage Input and Internal Register Setting)

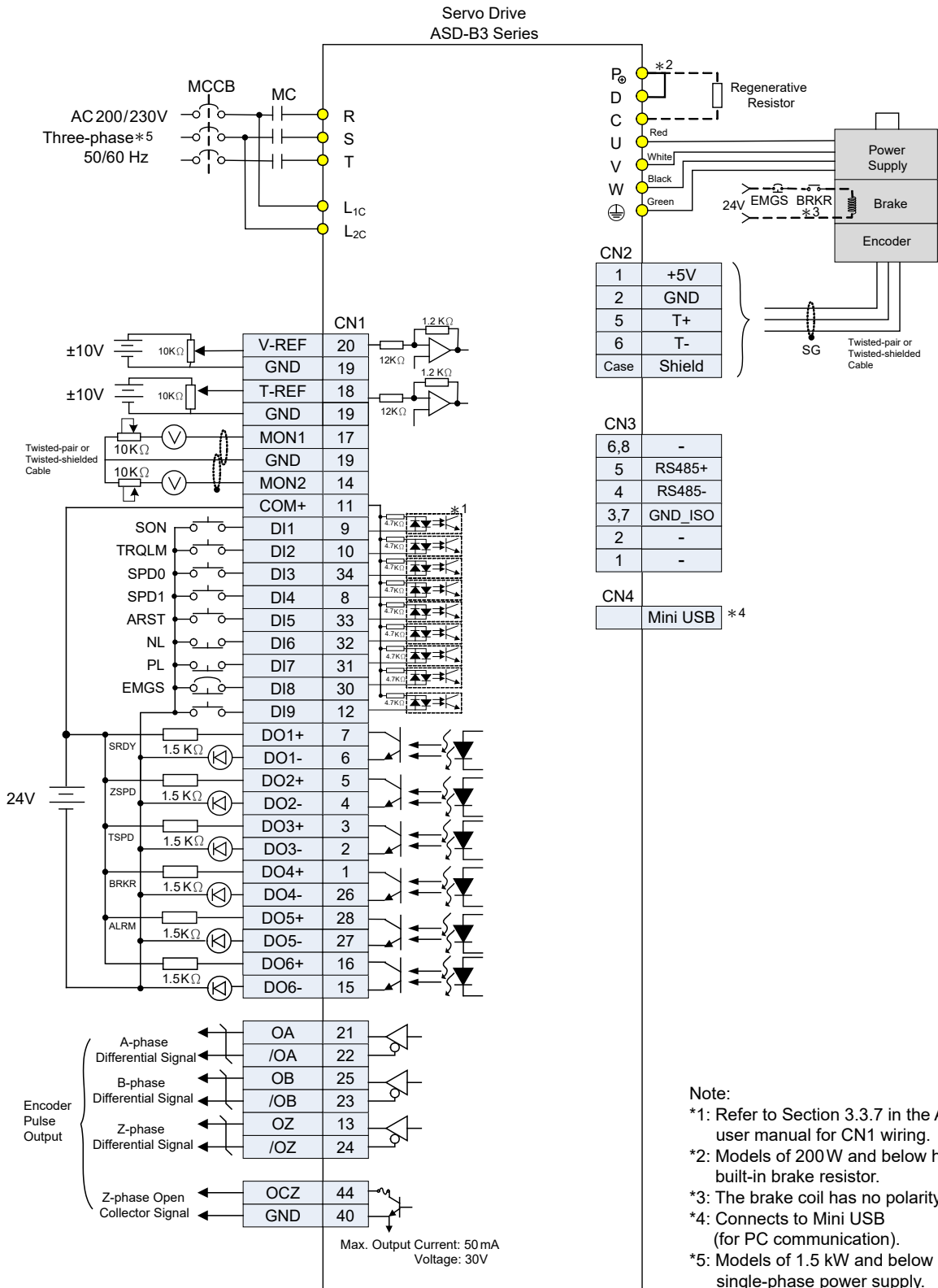


- Note:
- *1: Refer to Section 3.3.7 in the ASDA-B3 user manual for CN1 wiring.
 - *2: Models of 200 W and below have no built-in brake resistor.
 - *3: The brake coil has no polarity.
 - *4: Connects to Mini USB (for PC communication).
 - *5: Models of 1.5 kW and below can use single-phase power supply.

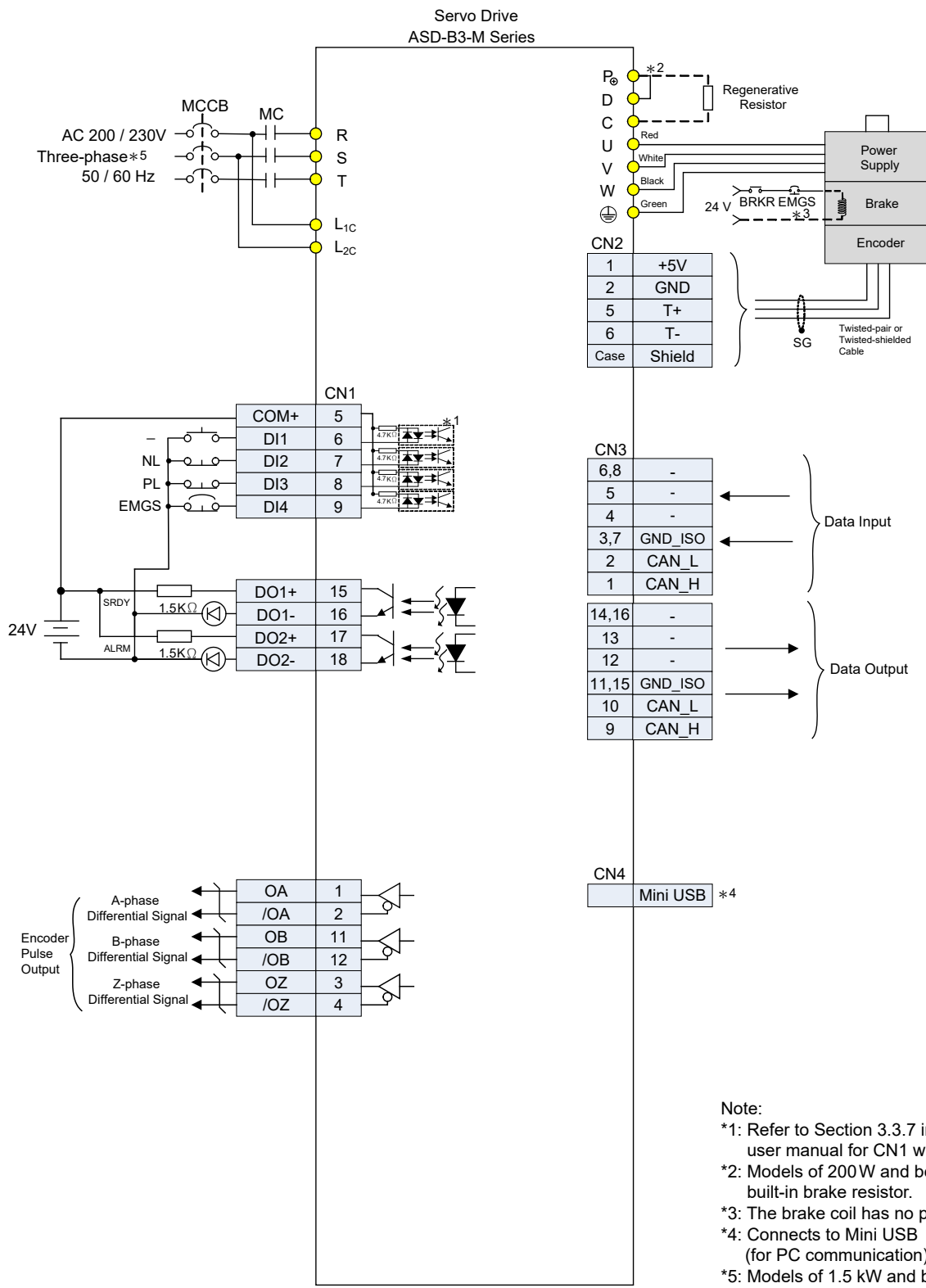


Control Mode Wiring

Speed (S) Mode Standard Wiring (for Analog Voltage Input and Internal Register Setting)

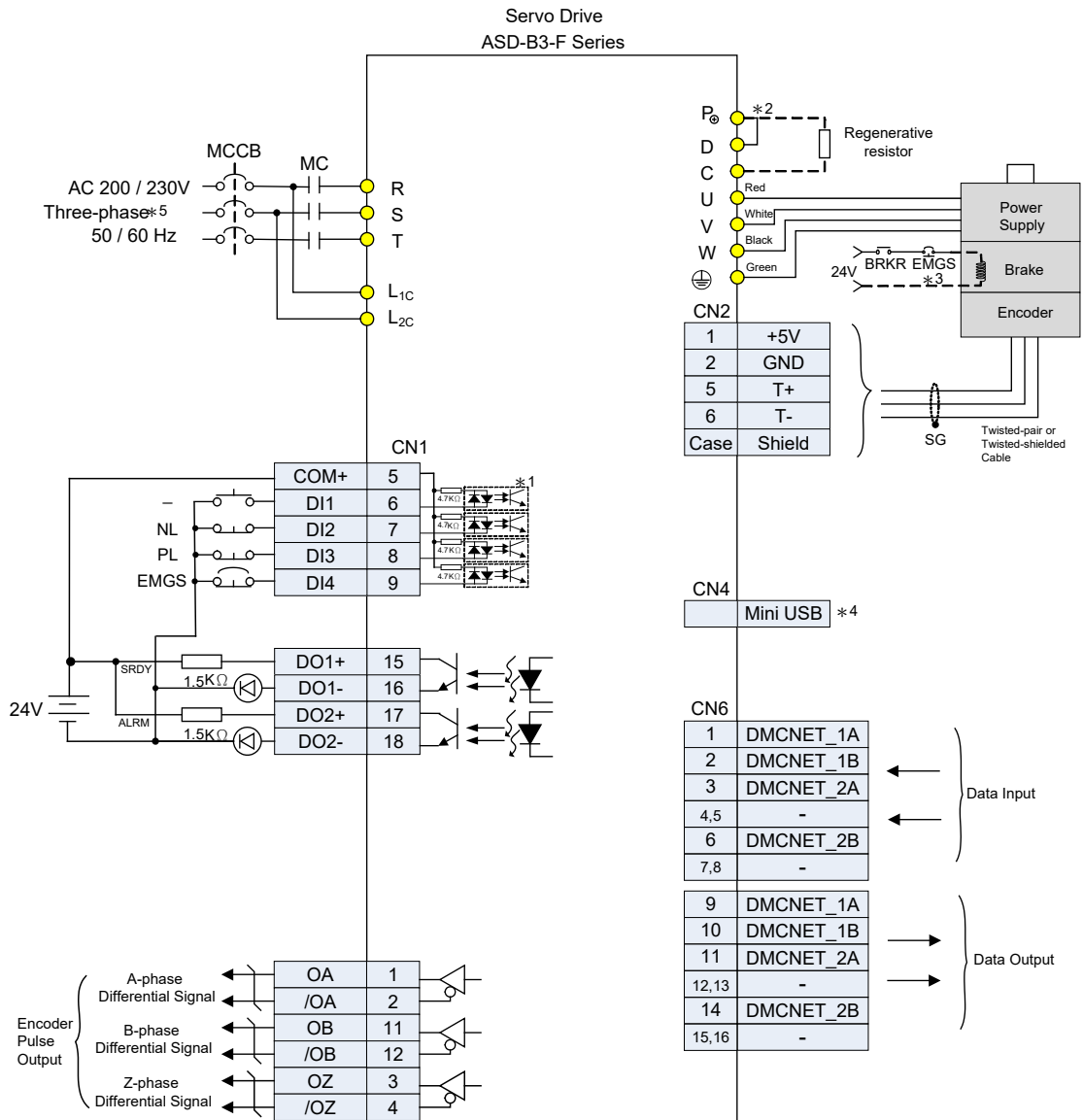


CANopen Communication Mode Standard Wiring



Control Mode Wiring

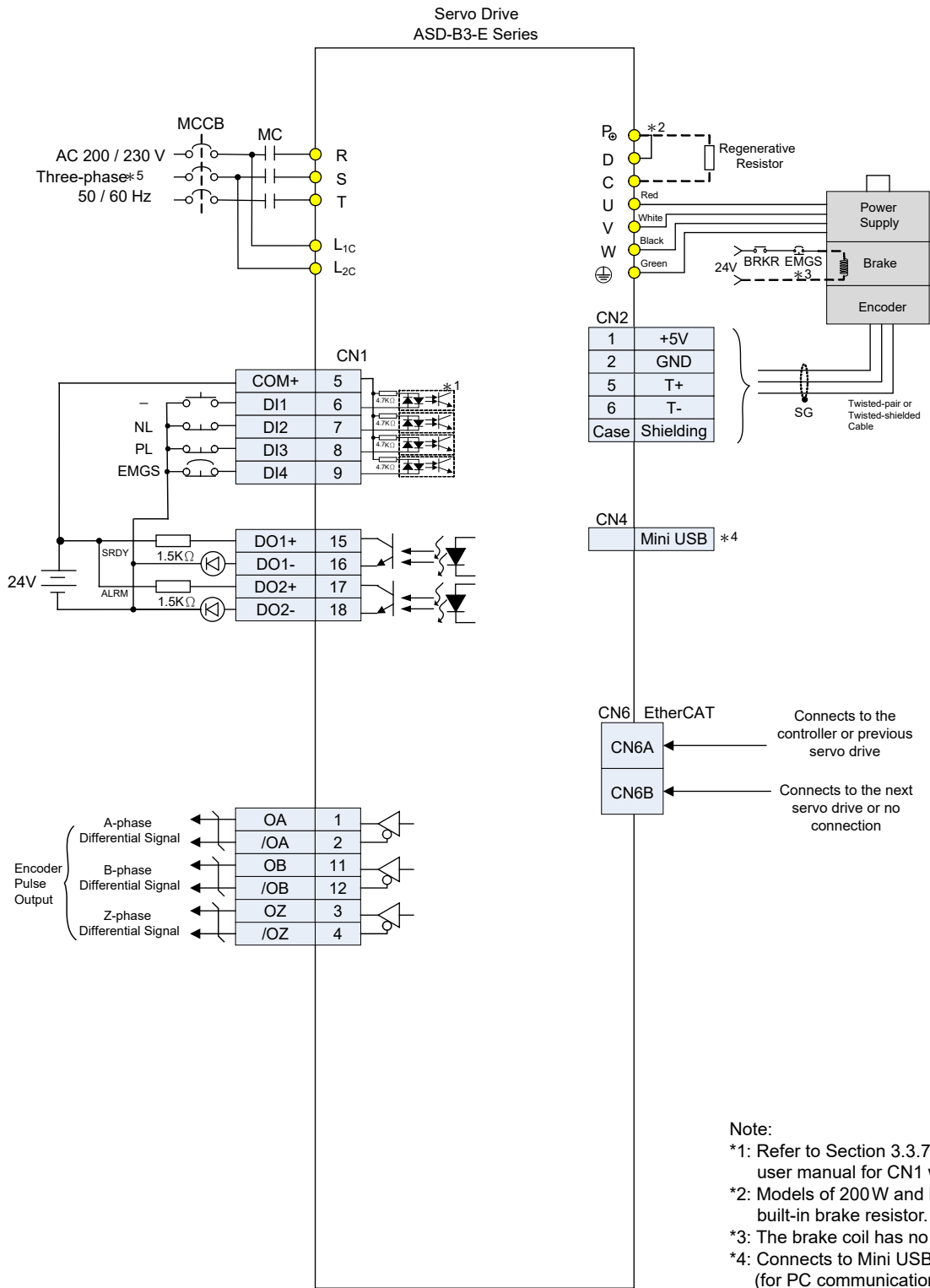
DMCNET Communication Mode Standard Wiring



Note:

- *1: Refer to Section 3.3.7 in the ASDA-B3 user manual for CN1 wiring.
- *2: Models of 200W and below have no built-in brake resistor.
- *3: The brake coil has no polarity.
- *4: Connects to Mini USB (for PC communication).
- *5: Models of 1.5 kW and below can use single-phase power supply.

EtherCAT Communication Mode Standard Wiring



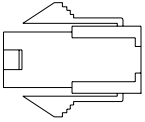
- Note:
- *1: Refer to Section 3.3.7 in the ASDA-B3 user manual for CN1 wiring.
 - *2: Models of 200W and below have no built-in brake resistor.
 - *3: The brake coil has no polarity.
 - *4: Connects to Mini USB (for PC communication).
 - *5: Models of 1.5 kW and below can use single-phase power supply.

Ordering Information

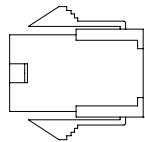
Accessories

Power Connectors

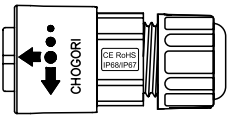
ASDBCAPW0000
(for F80 and below)



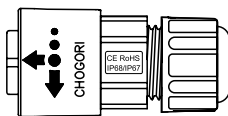
ASDBCAPW0100
(for F80 and below with brake)



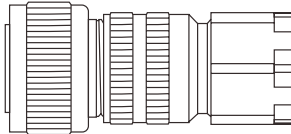
ACS3-CNPW1A00
(for F80 and below)
IP67 waterproof connector



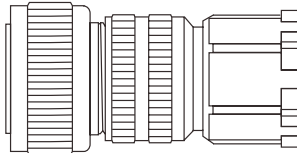
ACS3-CNPW2A00
(for F80 and below with brake)
IP67 waterproof connector



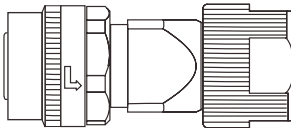
ACS3-CNPW5200
(for F100 ~ F130)
Mil-Spec: MIL 3106A18-10S



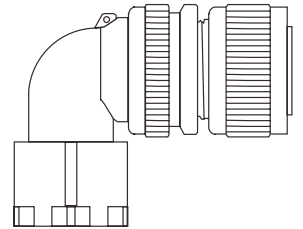
ACS3-CNPW5300
(for F180)
Mil-Spec: MIL 3106A22-22S



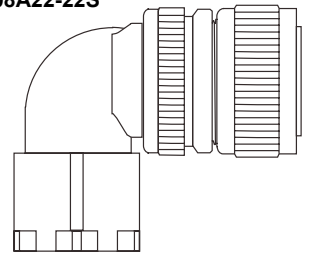
ACS3-CNPW6300
(F100 ~ F180 with brake)
Mil-Spec: CMV1-SP2S



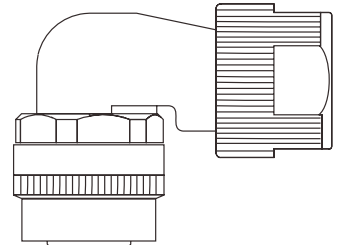
ACS3-CNPW5C00
(for F100 ~ F130 models)
Mil-Spec: MIL 3108A18-10S



ACS3-CNPW5D00
(for F180)
Mil-Spec: MIL 3108A22-22S

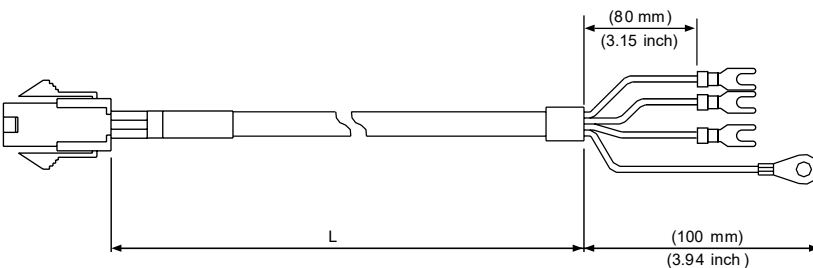


ACS3-CNPW6D00
(F100 ~ F180 with brake)
Mil-Spec: CMV1-AP2S



Power Cables

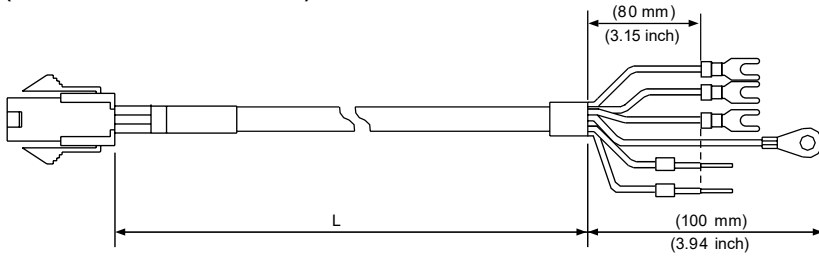
ACS3-CAPW3103, ACS3-CAPW3105, ACS3-CAPW3110, ACS3-CAPW3120,
ACS3-CAPF3103, ACS3-CAPF3105, ACS3-CAPF3110, ACS3-CAPF3120
(for F80 and below)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW3103 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW3105 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW3110 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW3120 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF3103 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF3105 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF3110 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF3120 | 20000 ± 100 | 788 ± 4 |

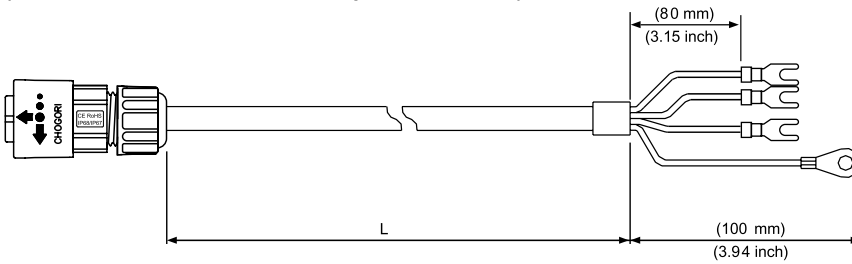
Power Cables

**ACS3-CAPW4103, ACS3-CAPW4105, ACS3-CAPW4110, ACS3-CAPW4120,
ACS3-CAPF4103, ACS3-CAPF4105, ACS3-CAPF4110, ACS3-CAPF4120**
(for F80 and below with brake)



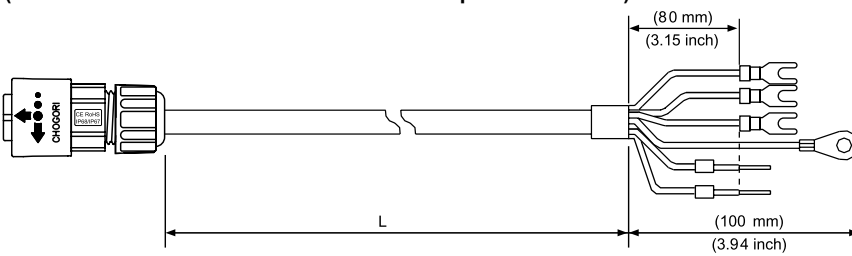
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW4103 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW4105 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW4410 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW4120 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF4103 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF4105 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF4110 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF4120 | 20000 ± 100 | 788 ± 4 |

**ACS3-CAPW3A03, ACS3-CAPW3A05, ACS3-CAPW3A10, ACS3-CAPW3A20,
ACS3-CAPF3A03, ACS3-CAPF3A05, ACS3-CAPF3A10, ACS3-CAPF3A20**
(for F80 and below with IP67 waterproof connector)



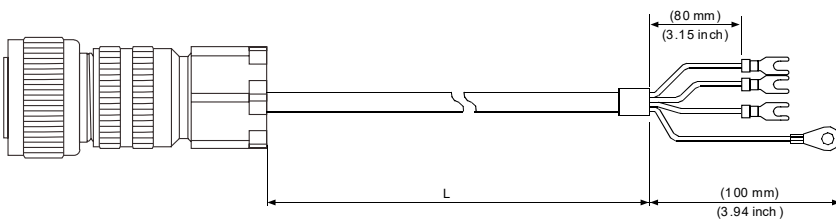
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW3A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW3A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW3A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW3A20 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF3A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF3A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF3A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF3A20 | 20000 ± 100 | 788 ± 4 |

**ACS3-CAPW4A03, ACS3-CAPW4A05, ACS3-CAPW4A10, ACS3-CAPW4A20,
ACS3-CAPF4A03, ACS3-CAPF4A05, ACS3-CAPF4A10, ACS3-CAPF4A20**
(for F80 and below with brake and IP67 waterproof connector)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW4A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW4A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW4A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW4A20 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF4A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF4A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF4A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF4A20 | 20000 ± 100 | 788 ± 4 |

**ACS3-CAPW3203, ACS3-CAPW3205, ACS3-CAPW3210, ACS3-CAPW3220,
ACS3-CAPF3203, ACS3-CAPF3205, ACS3-CAPF3210, ACS3-CAPF3220**
(for F100 - F130)



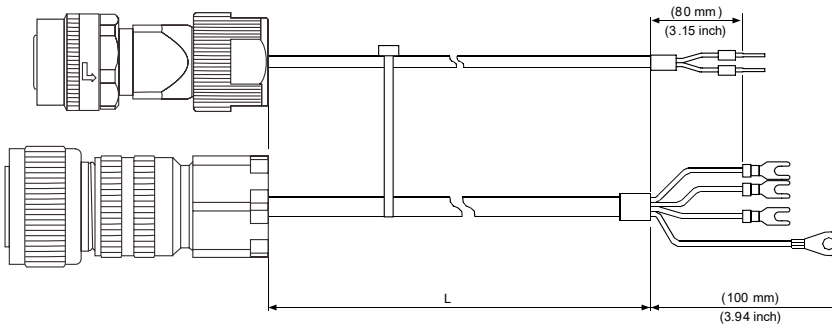
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW3203 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW3205 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW3210 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW3220 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF3203 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF3205 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF3210 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF3220 | 20000 ± 100 | 788 ± 4 |

Ordering Information

Accessories

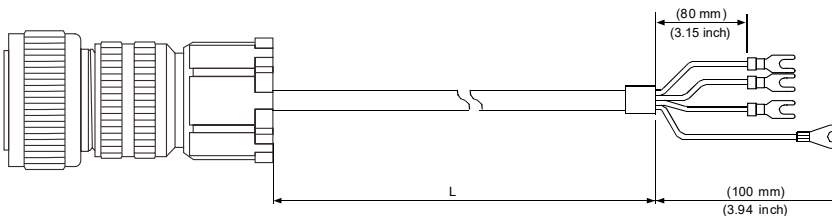
Power Cables

ACS3-CAPW4203, ACS3-CAPW4205, ACS3-CAPW4210, ACS3-CAPW4220,
ACS3-CAPF4203, ACS3-CAPF4205, ACS3-CAPF4210, ACS3-CAPF4220
(for F100 - F130 with brake)



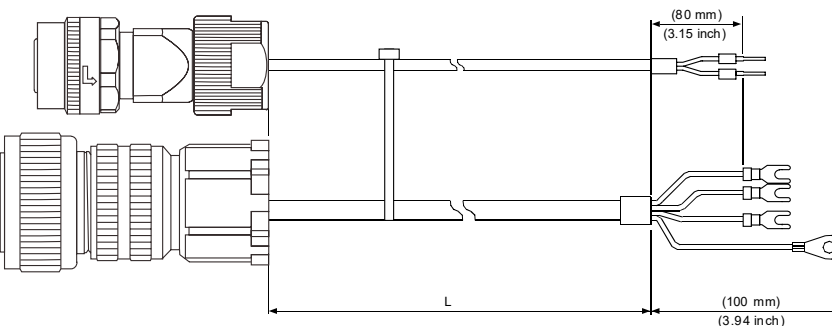
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW4203 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW4205 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW4210 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW4220 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF4203 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF4205 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF4210 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF4220 | 20000 ± 100 | 788 ± 4 |

ACS3-CAPW3403, ACS3-CAPW3405, ACS3-CAPW3410, ACS3-CAPW3420,
ACS3-CAPF3403, ACS3-CAPF3405, ACS3-CAPF3410, ACS3-CAPF3420
(for F180)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW3403 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW3405 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW3410 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW3420 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF3403 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF3405 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF3410 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF3420 | 20000 ± 100 | 788 ± 4 |

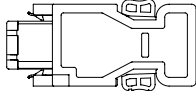
ACS3-CAPW4403, ACS3-CAPW4405, ACS3-CAPW4410, ACS3-CAPW4420,
ACS3-CAPF4403, ACS3-CAPF4405, ACS3-CAPF4410, ACS3-CAPF4420
(for F180 with brake)



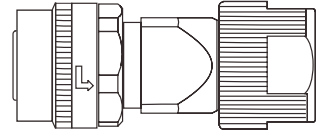
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAPW4403 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPW4405 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPW4410 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPW4420 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAPF4403 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAPF4405 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAPF4410 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAPF4420 | 20000 ± 100 | 788 ± 4 |

Encoder Connectors

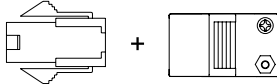
ACS3-CNENC200
(connecting to drive)



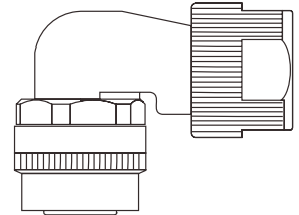
ACS3-CNEN2700
(for F100 ~ F180)
Mil-Spec: CMV1-SP10S



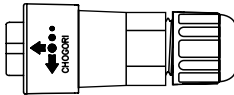
ACS3-CNEN1000
(for F80 and below)



ACS3-CNEN2C00
(for F100 ~ F180)
Mil-Spec: CMV1-AP10S

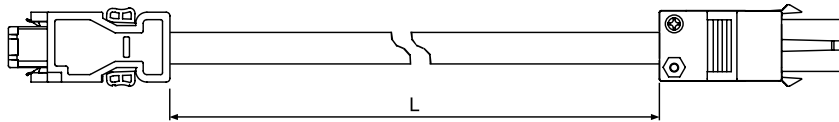


ACS3-CNEN2A00
(for F80 and below)
IP67 waterproof connector



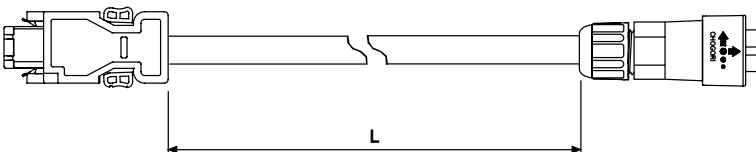
Encoder Cables (Incremental Type)

ACS3-CAEN1003, ACS3-CAEN1005, ACS3-CAEN1010, ACS3-CAEN1020,
ACS3-CAEF1003, ACS3-CAEF1005, ACS3-CAEF1010, ACS3-CAEF1020
(for F80 and below)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEN1003 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEN1005 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEN1010 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEN1020 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEF1003 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEF1005 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEF1010 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEF1020 | 20000 ± 100 | 788 ± 4 |

ACS3-CAEN2A03, ACS3-CAEN2A05, ACS3-CAEN2A10, ACS3-CAEN2A20,
ACS3-CAEF2A03, ACS3-CAEF2A05, ACS3-CAEF2A10, ACS3-CAEF2A20
(for F80 and below with IP67 waterproof connector)



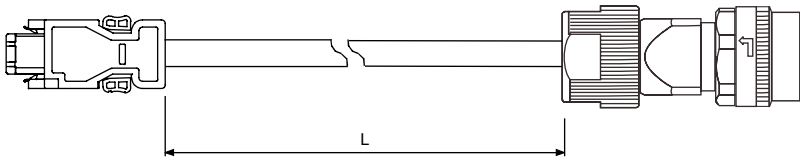
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEN2A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEN2A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEN2A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEN2A20 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEF2A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEF2A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEF2A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEF2A20 | 20000 ± 100 | 788 ± 4 |

Ordering Information

Accessories

Encoder Cables (Incremental Type)

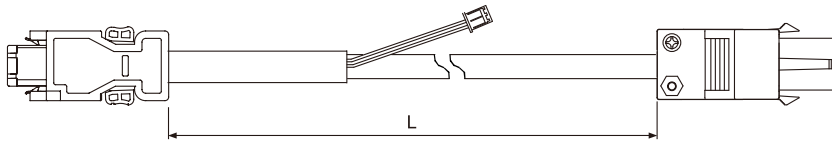
ACS3-CAEN2703, ACS3-CAEN2705, ACS3-CAEN2710, ACS3-CAEN2720,
ACS3-CAEF2703, ACS3-CAEF2705, ACS3-CAEF2710, ACS3-CAEF2720
(for F100 - F180)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEN2703 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEN2705 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEN2710 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEN2720 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEF2703 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEF2705 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEF2710 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEF2720 | 20000 ± 100 | 788 ± 4 |

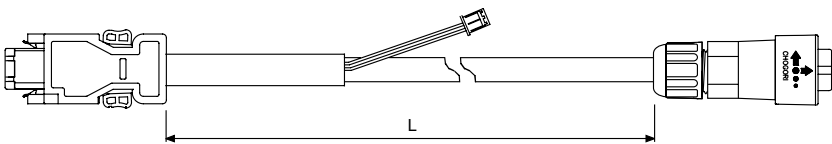
Encoder Cables (Absolute Type)

ACS3-CAEA1003, ACS3-CAEA1005, ACS3-CAEA1010, ACS3-CAEA1020,
ACS3-CAEB1003, ACS3-CAEB1005, ACS3-CAEB1010, ACS3-CAEB1020
(for F80 and below)



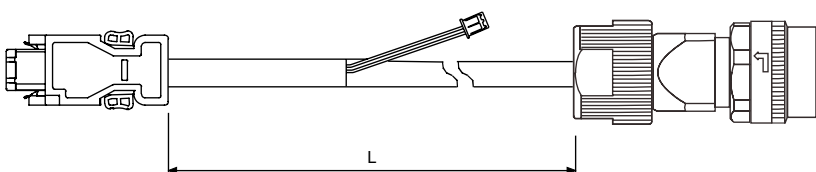
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEA1003 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEA1005 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEA1010 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEA1020 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEB1003 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEB1005 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEB1010 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEB1020 | 20000 ± 100 | 788 ± 4 |

ACS3-CAEA2A03, ACS3-CAEA2A05, ACS3-CAEA2A10, ACS3-CAEA2A20,
ACS3-CAEB2A03, ACS3-CAEB2A05, ACS3-CAEB2A10, ACS3-CAEB2A20
(for F80 and below with IP67 waterproof connector)



| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEA2A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEA2A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEA2A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEA2A20 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEB2A03 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEB2A05 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEB2A10 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEB2A20 | 20000 ± 100 | 788 ± 4 |

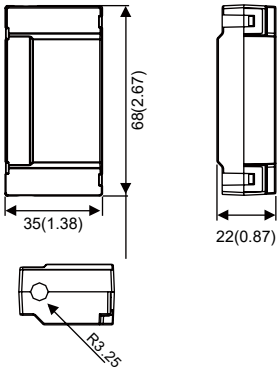
ACS3-CAEA2703, ACS3-CAEA2705, ACS3-CAEA2710, ACS3-CAEA2720,
ACS3-CAEB2703, ACS3-CAEB2705, ACS3-CAEB2710, ACS3-CAEB2720
(for F100 ~ F180)



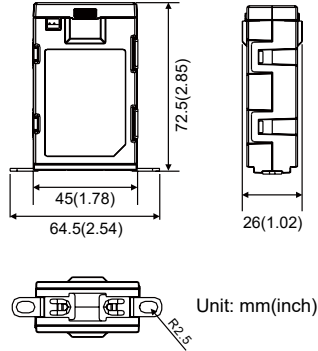
| Cable | Part No. | L | |
|-------------------|---------------|-------------|---------|
| | | mm | inch |
| Standard | ACS3-CAEA2703 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEA2705 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEA2710 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEA2720 | 20000 ± 100 | 788 ± 4 |
| Torsion-Resistant | ACS3-CAEB2703 | 3000 ± 50 | 118 ± 2 |
| | ACS3-CAEB2705 | 5000 ± 50 | 197 ± 2 |
| | ACS3-CAEB2710 | 10000 ± 100 | 394 ± 4 |
| | ACS3-CAEB2720 | 20000 ± 100 | 788 ± 4 |

Absolute Battery Box

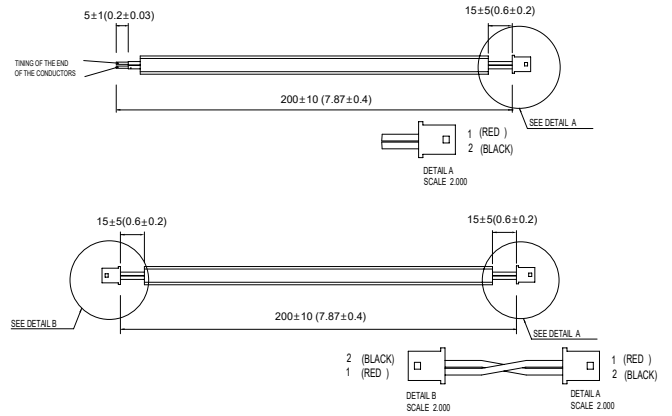
**Single Battery Box
ASD-MDBT0100**



**Double Battery Box
ASD-MDBT0200**



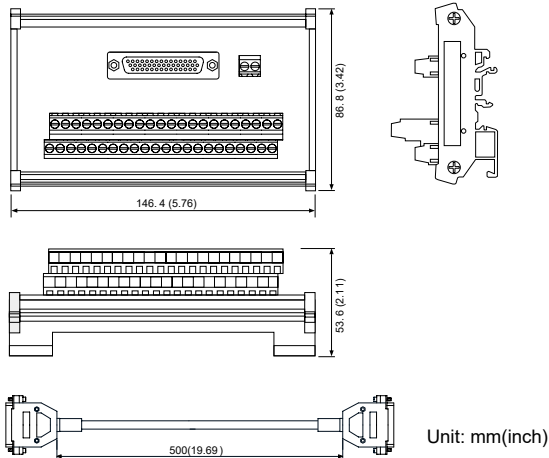
Unit: mm(inch)



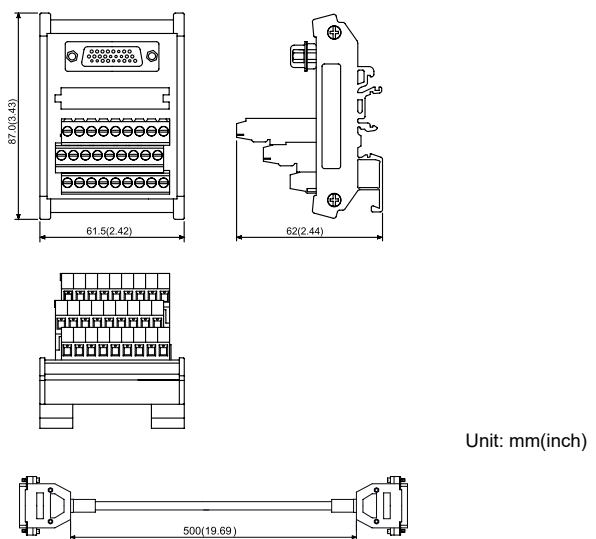
Note: Contact Delta Global Service team if ordering battery box cord only.

Terminal Block Module

ACS3-MDTB4400 (for B3-L)

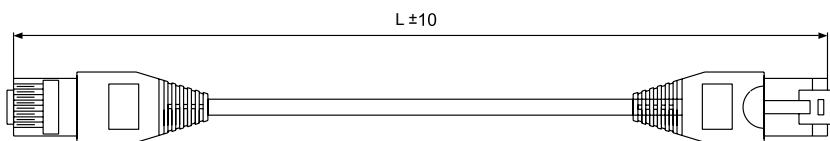


ACS3-MDTD2600 (for B3-M, F, and E)



CN3 CANopen Communication Cable

UC-CMC030-01A 、 UC-CMC050-01A



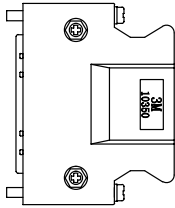
| Item | Part No. | L | |
|------|---------------|-----------|----------|
| | | mm | inch |
| 1 | UC-CMC030-01A | 3000 ± 10 | 11 ± 0.4 |
| 2 | UC-CMC050-01A | 5000 ± 10 | 19 ± 0.4 |

Ordering Information

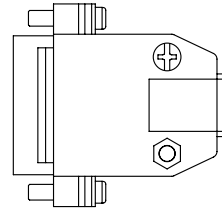
Accessories

CN1 Connectors

ACS3-CNTB0400 (for B3-L)

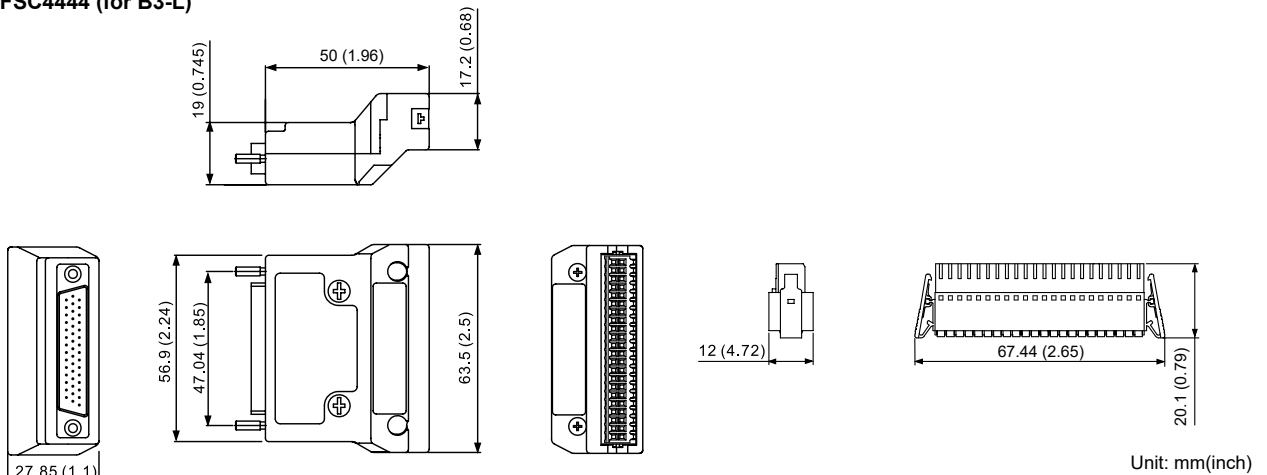


ACS3-CNTB0500 (for B3-M, F, and E)



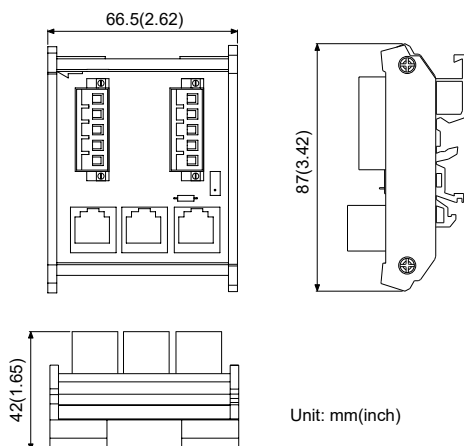
CN1 Quick Connector

ACS3-IFSC4444 (for B3-L)



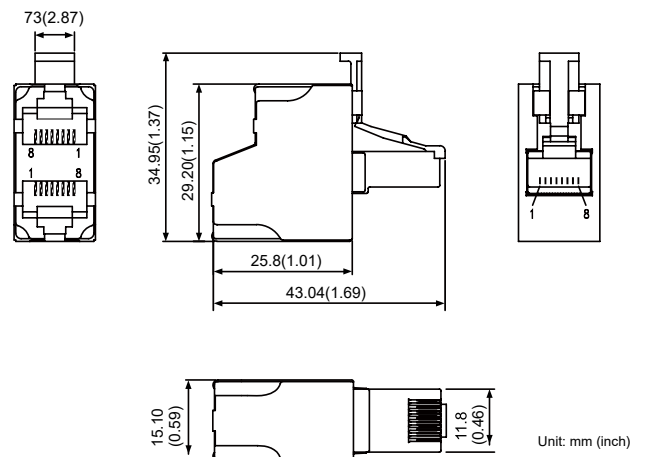
CN3 CANopen Distribution Box

TAP-CN03



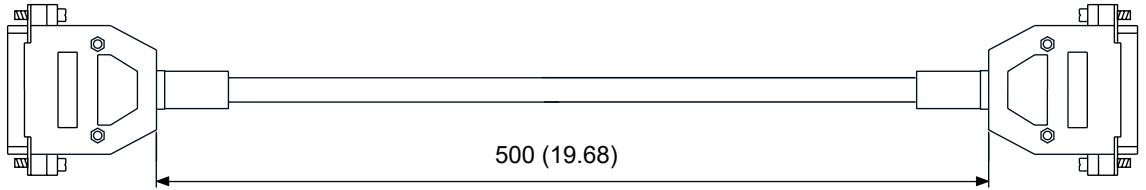
CN3 RS-485 Tap

ACS3-CNADC3RC

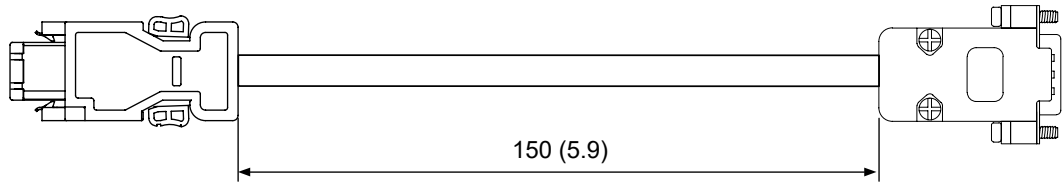


B3/B2 Conversion Cables

B3/B2 CN1 conversion cable (for B3-L)
ACS3-CABDC1



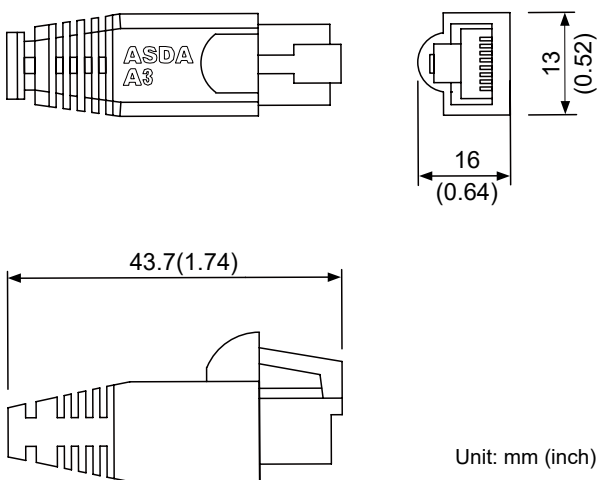
B3/B2 CN2 conversion cable
ACS3-CABDC2



Unit: mm (inch)

CN3 RS-485/ CANopen Terminal Resistor

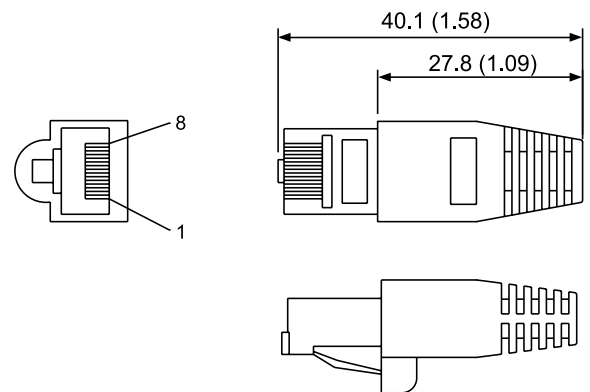
ACS3-CNADC3TR



Unit: mm (inch)

CN6 DMCNET Terminal Resistor

ASD-TR-DM0008



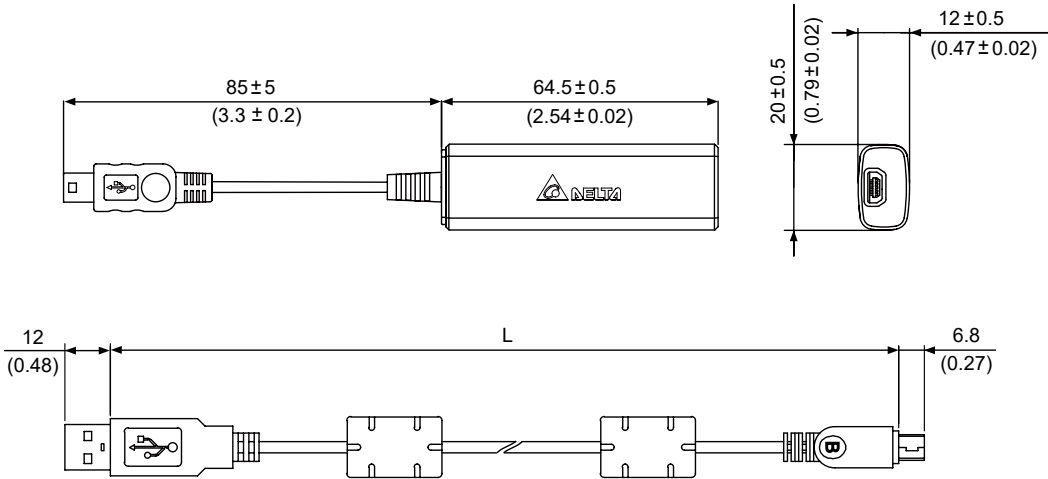
Unit: mm (inch)

Ordering Information

Accessories

CN4 Mini USB Communication Module

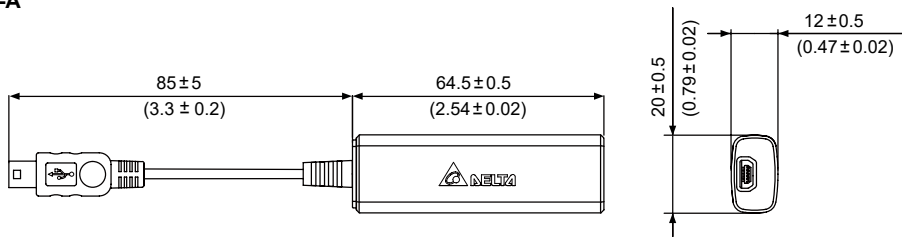
UC-PRG015-01B, UC-PRG030-01B



Unit: mm (inch)

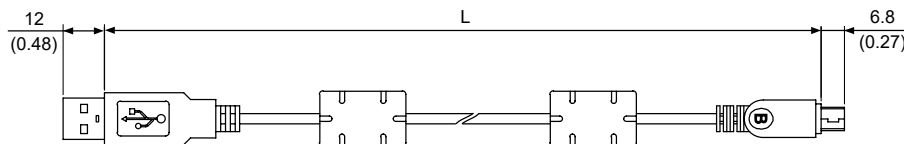
| Item | Part No. | L | |
|------|---------------|-----------|---------|
| | | mm | inch |
| 1 | UC-PRG015-01B | 1500 ± 10 | 59 ± 4 |
| 2 | UC-PRG030-01B | 3000 ± 10 | 118 ± 4 |

UC-ADP01-A



Unit: mm (inch)

UC-PRG015-01A/ UC-PRG030-01A



Unit: mm (inch)

| Item | Part No. | L | |
|------|---------------|-----------|---------|
| | | mm | inch |
| 1 | UC-PRG015-01A | 1500 ± 10 | 59 ± 4 |
| 2 | UC-PRG030-01A | 3000 ± 10 | 118 ± 4 |

Servo Drive Standards

| | |
|---|---|
| Standard | ASD-B3 servo drive conforms to the highest standards and recommendations for electrical industrial control equipment (IEC, EN) |
| EMC Immunity | EN61000-4-6 Level 3 |
| | EN61000-4-3 Level 3 |
| | EN61000-4-2 Level 2 and 3 |
| | EN61000-4-4 Level 3 |
| | EN61000-4-8 Level 4 |
| | EN61000-4-5 Level 3 |
| Conducted and Radiated EMC Interference of Servo Drive | EN61800-3 Level 3 · with external EMC filter |
| CE Marking | B3 series servo drives have the CE marking and conform to the European Union Low Voltage Directive(2014/35/EU) and EMC Directive (2014/30/EU) |
| Product Certification | UL (USA); cUL (CA) |
| Protection Level | IEC/EN50178, IP20 |
| Vibration Resistance Protection | 20 Hz and below (1G), 20 - 50 Hz (0.6G), conforms to IEC/EN50178 |
| Shock Resistance Protection | 15 gn 11 ms; conforms to IEC/EN600028-2-27 |
| Pollution Degree | Degree 2 conforms to IEC/EN61800-5-1 |

Global Sites

ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)

ASIA (China)



Wujiang Plant 3



Shanghai Office



ASIA (Japan)



Tokyo Office



ASIA (India)



Rudrapur Plant (Green Building)

EUROPE



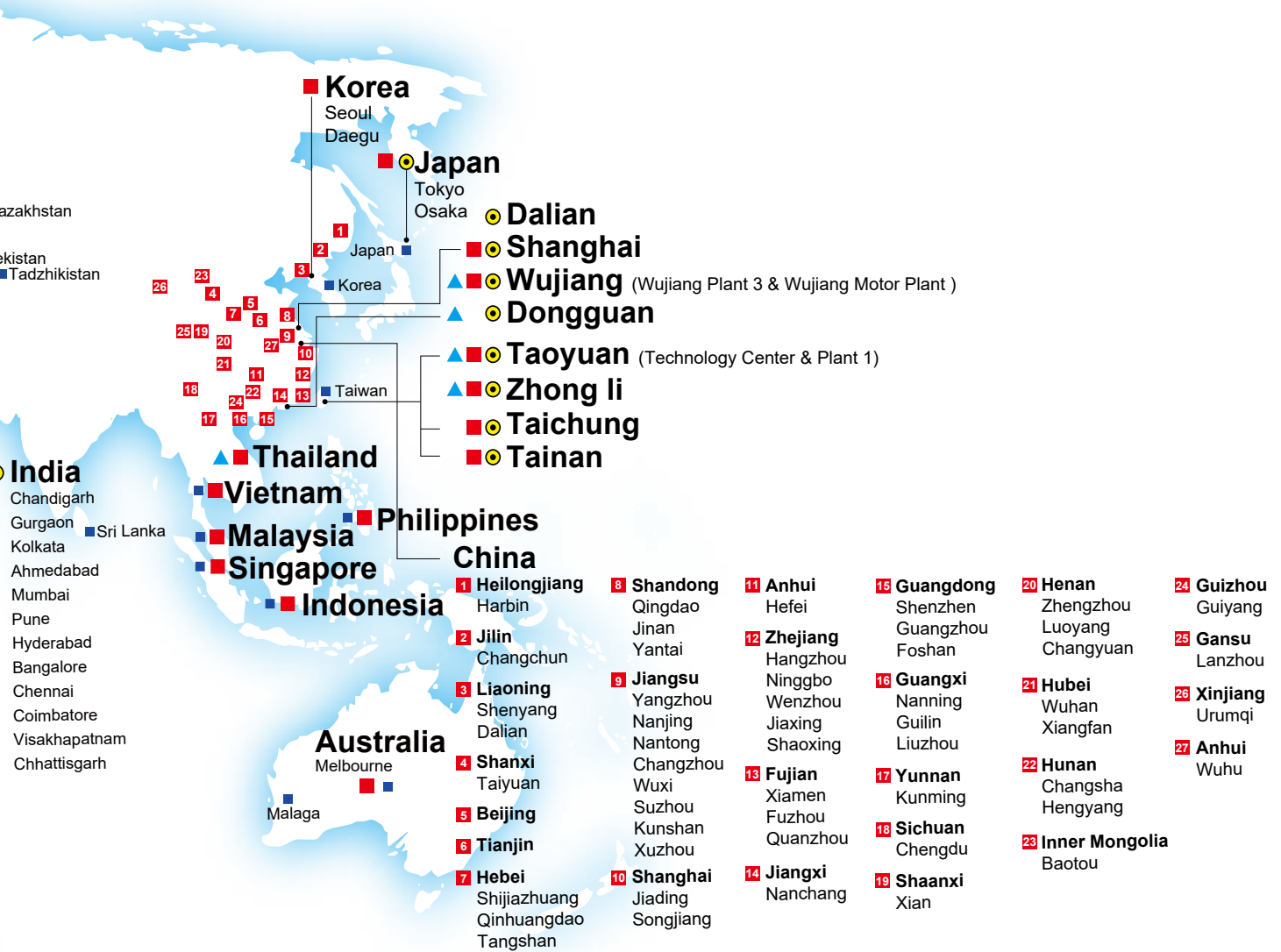
Amsterdam, the Netherlands

AMERICA



Research Triangle Park, U.S.A.

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