

Description

The multi-turn absolute encoder allows the DYN2 and DYN4 servo drive to store and track the absolute position of the servo motor beyond one rotation, even when power is shut off to the servo drive. The standard DMM single-turn encoder tracks absolute position within 1 revolution, so positions outside 1 revolution are lost when power is shut off to the servo drive. With the multi-turn encoder, the encoder stores or continuously tracks the position when servo drive power is shut off. Allowing the servo drive to read the exact encoder position when powering up and starting operation immediately, without the need for homing.

The single-turn resolution is 16-bits (65,536 counts). Multi-turn resolution is 16-bits (65,536 turns). Combined resolution is 32-bits.

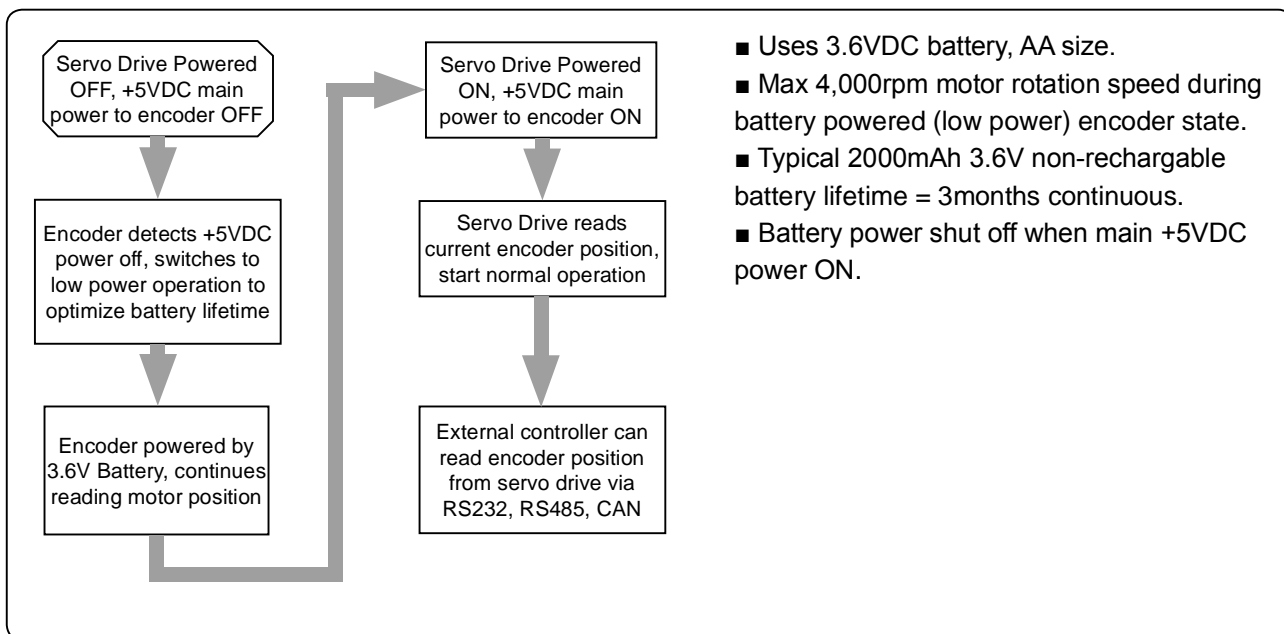
This multi-turn functionality is essential for high precision and extended movement applications such as machine tools and robotics.

Encoder Option

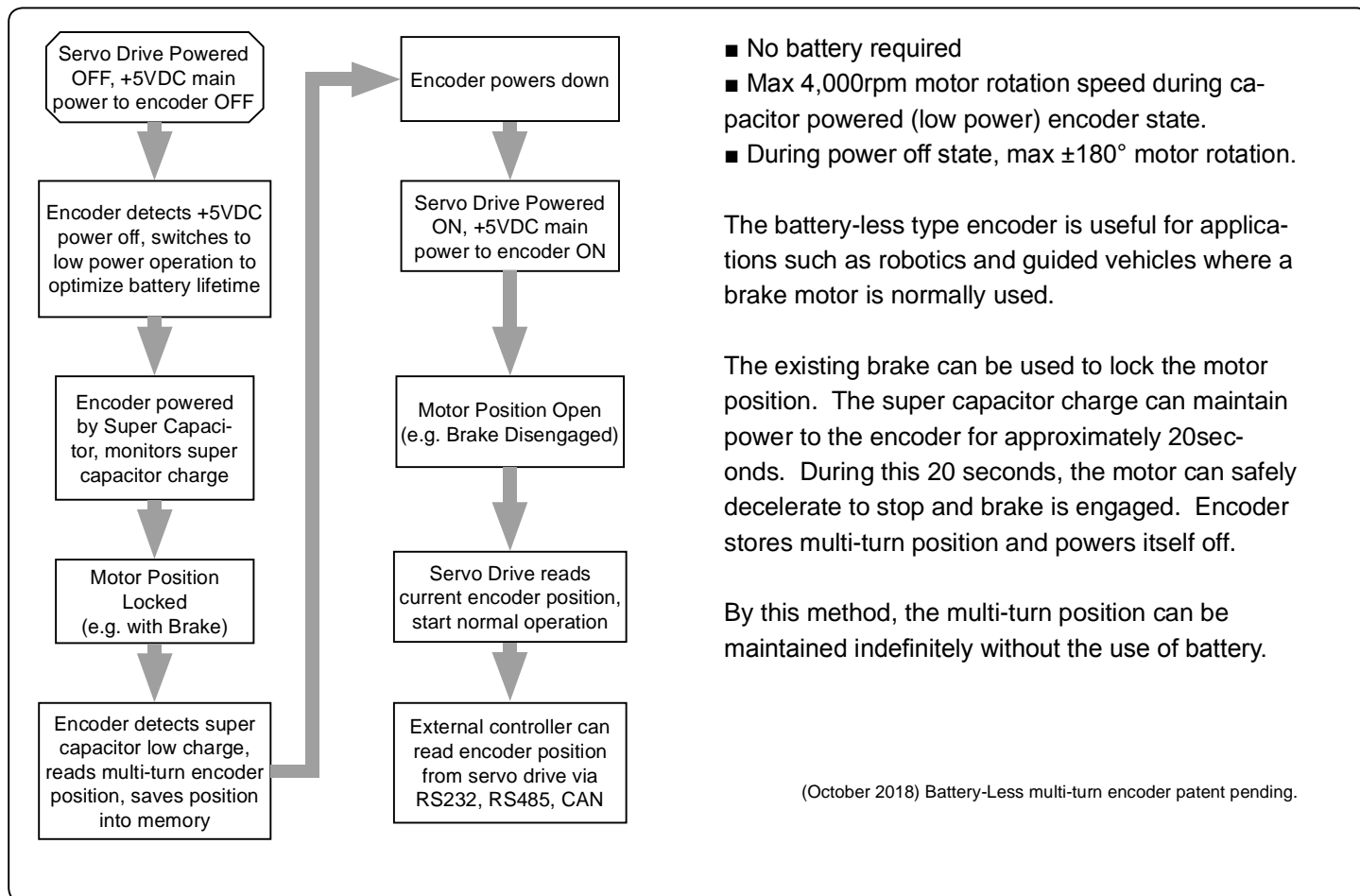
The multi-turn encoder is available in 2 models, with battery (MB1) and battery-less (ML1) type. The MB1 type uses an external battery to track encoder position when the servo drive is shut off. The ML1 type uses a super capacitor to delay encoder shut off, then stores multi-turn position in memory.

Operation

With Battery MB1 type encoder:



Battery-Less ML1 type encoder:



Operation

The DYN servo drive can be operated in Absolute or Incremental mode.

In **Incremental Mode**, the servo drive reads the multi-turn position at power up, then starts operation. The multi-turn position can be read from the servo drive.

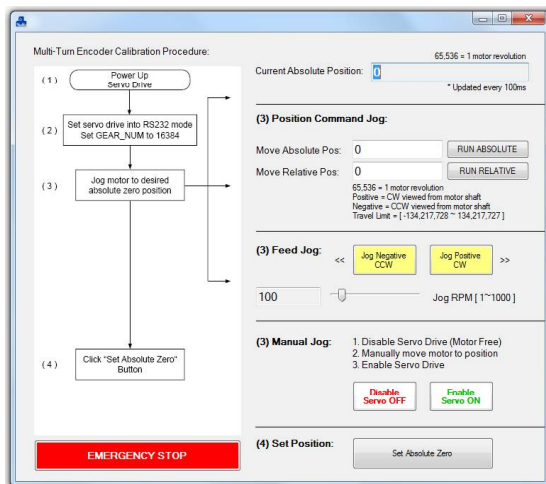
In **Absolute Mode**, the servo drive automatically returns to absolute zero position when powered up. When returning to absolute zero, the motor speed can be adjusted using the *max_speed* parameter of the servo drive.

Absolute Zero Calibration

The absolute zero position can be calibrated using the DMMDRV program. Absolute zero can also be calibrated through serial command *Set_Origin*.

The systems absolute zero position must be calibrated before proper operation of the multi-turn encoder. All multi-turn position is calculated in reference to the absolute zero position.

The DMMDRV program has a dedicated tool used to calibrate the multi-turn absolute zero. Use the various motion functions in the program to move the motor to the desired position, then click “Set Absolute Zero” to set.



DMMDRV program
absolute zero calibration tool.

Servo Drive Model Number

DYN2 AC Servo System (24~75VDC Input)

Note: The same servo drive model is used for both Battery and Battery-Less multi-turn encoder options.

| Model Number | Motor Output | Interface |
|---------------------|--------------|---------------------------------------|
| DYN2 - T1 A6S - MT1 | 50W~200W | RS232, Pulse/Analog |
| DYN2 - T1 B6S - MT1 | | RS232, RS485 Modbus RTU, Pulse/Analog |
| DYN2 - T1 C6S - MT1 | | RS232, CAN, Pulse/Analog |
| DYN2 - TL A6S - MT1 | 400W~750W | RS232, Pulse/Analog |
| DYN2 - TL B6S - MT1 | | RS232, RS485 Modbus RTU, Pulse/Analog |
| DYN2 - TL C6S - MT1 | | RS232, CAN, Pulse/Analog |

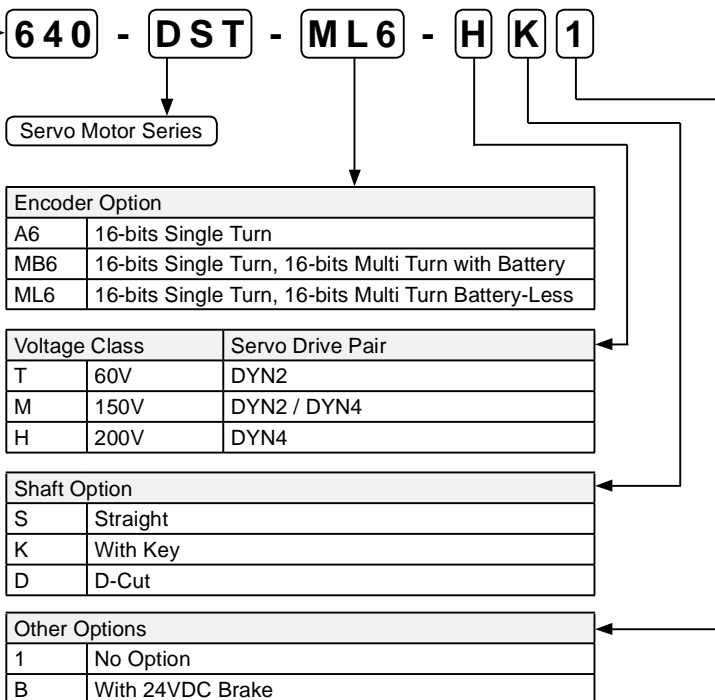
DYN4 AC Servo System (110~240VAC Input)

Note: The same servo drive model is used for both Battery and Battery-Less multi-turn encoder options.

| Model Number | Motor Output | Interface |
|--------------------|--------------|---------------------------------------|
| DYN4- L01 A2 - MT1 | 50W~400W | RS232, Pulse/Analog |
| DYN4- L01 B2 - MT1 | | RS232, RS485 Modbus RTU, Pulse/Analog |
| DYN4- L01 C2 - MT1 | | RS232, CAN, Pulse/Analog |
| DYN4- H01 A2 - MT1 | 750W~1.0kW | RS232, Pulse/Analog |
| DYN4- H01 B2 - MT1 | | RS232, RS485 Modbus RTU, Pulse/Analog |
| DYN4- H01 C2 - MT1 | | RS232, CAN, Pulse/Analog |
| DYN4- T01 A2 - MT1 | 1.3kW~1.8kW | RS232, Pulse/Analog |
| DYN4- T01 B2 - MT1 | | RS232, RS485 Modbus RTU, Pulse/Analog |
| DYN4- T01 C2 - MT1 | | RS232, CAN, Pulse/Analog |

Servo Motor Model Number

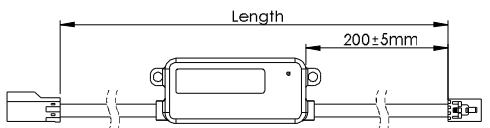
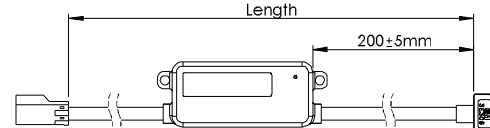
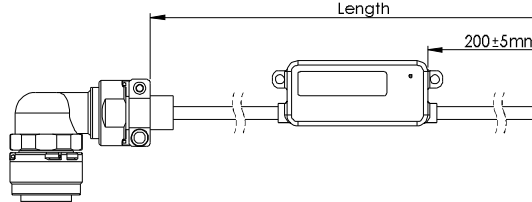
| Model# | Rated Output | Flange | Shaft Diameter | |
|--------|--------------|--------|----------------|------|
| 405 | 50W | 40mm | 8mm | |
| 410 | 100W | | | |
| 620 | 200W | 60mm | 14mm | |
| 640 | 400W | | | |
| 880 | 750W | 80mm | 19mm | |
| 11A | 1.0kW | | 130mm | 19mm |
| 115 | 1.3kW | | | 22mm |
| 120 | 1.8kW | | | |
| 57N | 400W | NEMA23 | 6.35mm (1/4") | |
| 86L | 220W | NEMA34 | 12.7mm (1/2") | |
| 86N | 750W | NEMA34 | | |
| 86M | 750W | 86mm | 14mm | |
| A15 | 1.3kW | NEMA42 | 15.87mm (5/8") | |



Battery Encoder Cable

Note: The Battery-Less multi-turn encoder uses the normal encoder cables.

The Battery Encoder cables is used only for the Battery Multi-Turn encoder (MB1 Type).

| Model Number | Length | Servo Drive / Motor Frame Pair | Model |
|----------------------|--------|---|--|
| CAEN - MB LH3 - TSP | 3m | DYN2 All motors |  |
| CAEN - MB LH5 - TSP | 5m | | |
| CAEN - MB LH10 - TSP | 10m | | |
| CAEN - MB LH15 - TSP | 15m | | |
| CAEN - MB HL3 - TSP | 3m | DYN4 40mm, 60mm, 80mm, 86mm, NEMA23, NEMA34 |  |
| CAEN - MB HL5 - TSP | 5m | | |
| CAEN - MB HL10 - TSP | 10m | | |
| CAEN - MB HL15 - TSP | 15m | | |
| CAEN - MB HH3 - TSP | 3m | DYN4 130mm |  |
| CAEN - MB HH5 - TSP | 5m | | |
| CAEN - MB HH10 - TSP | 10m | | |
| CAEN - MB HH15 - TSP | 15m | | |

Battery Case Dimensions

Units: mm

