

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

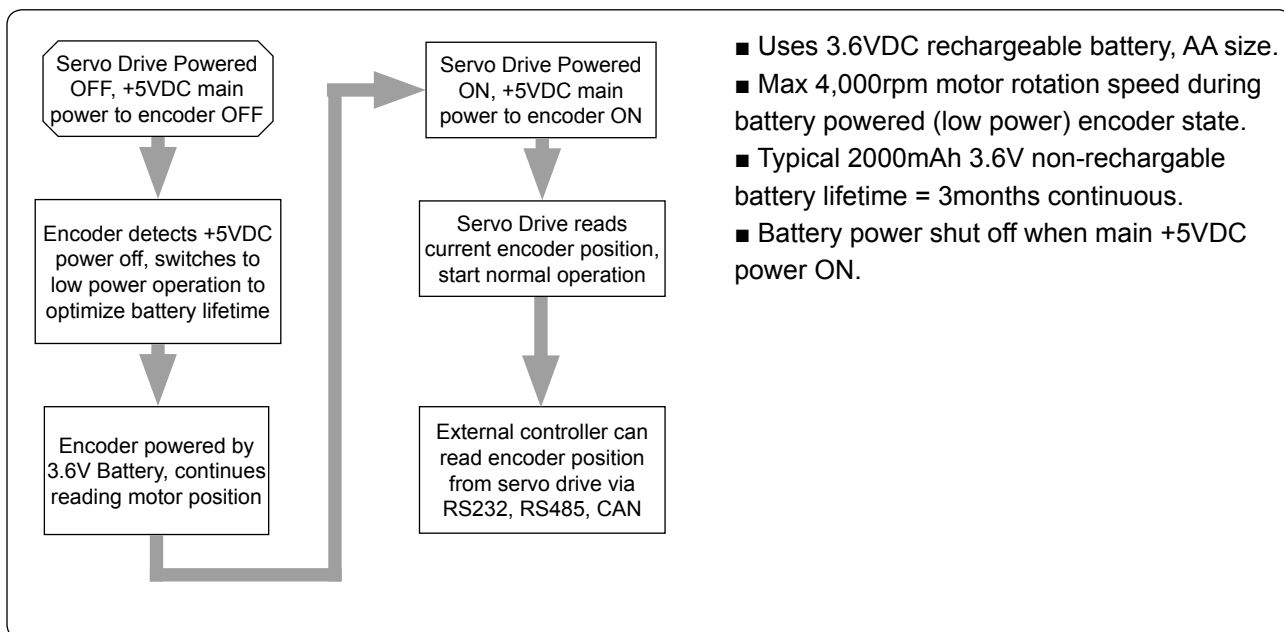
The multi-turn encoder is available in 2 models, with battery (MB1) and battery-less (ML1) type. The MB1 type uses an external battery to track encoder position when the servo drive is shut off. The ML1 type uses a super capacitor to delay encoder shut off, then stores multi-turn position in memory.

Battery

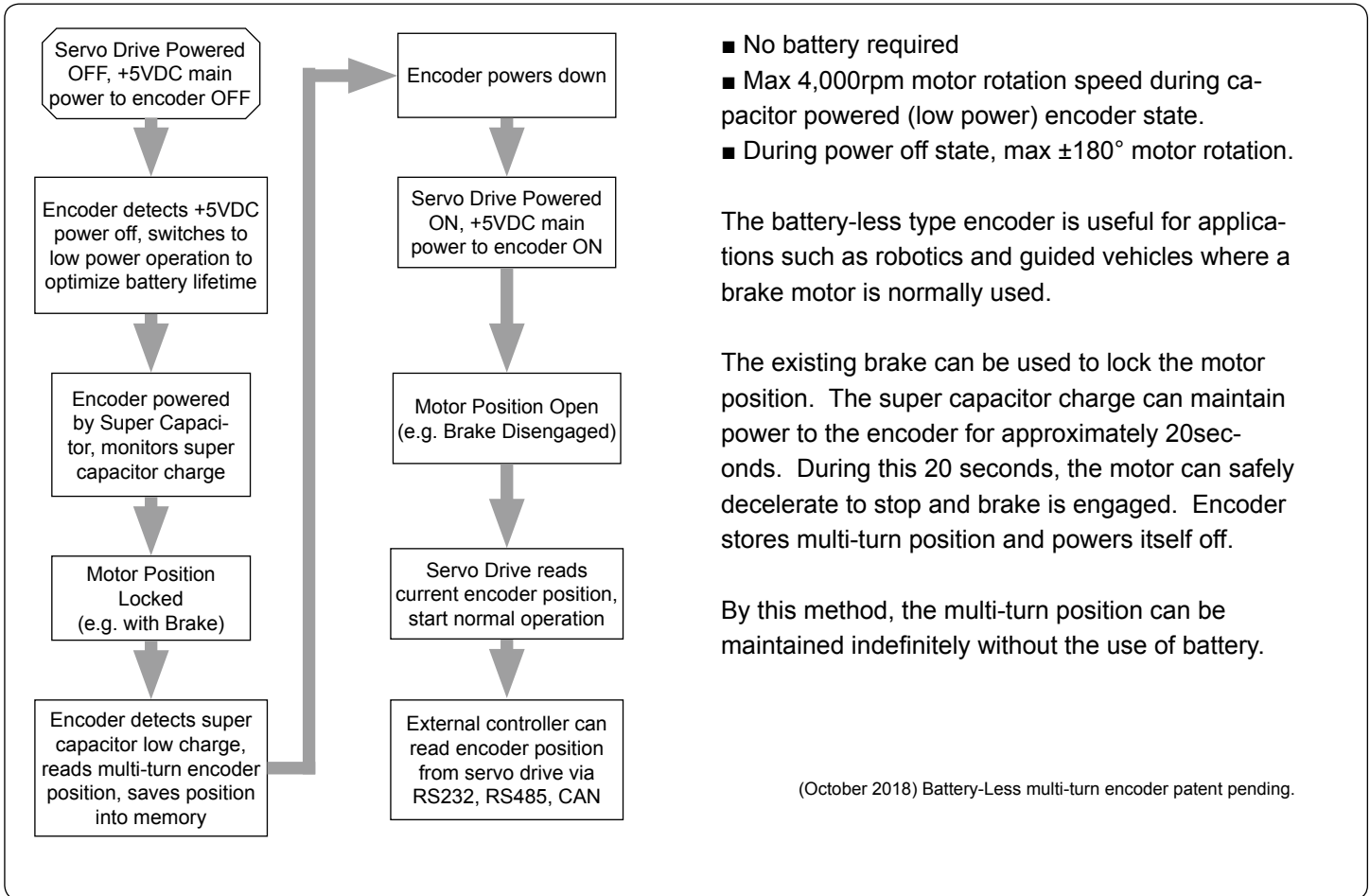
The MB1 battery type must use a rechargeable battery. Sample part numbers: Tadiran A4203, UltraFire 14500

Operation

With Battery MB1 type encoder:



Battery-Less ML1 type encoder:



Start-Up Operation

The motor position at start up can be defined in two ways. This is controlled by the *Start From ABS Zero* checkbox in the DMMDRV program.

Start from ABS Zero

If this checkbox is unchecked, the drive starts the motor at the current absolute position.

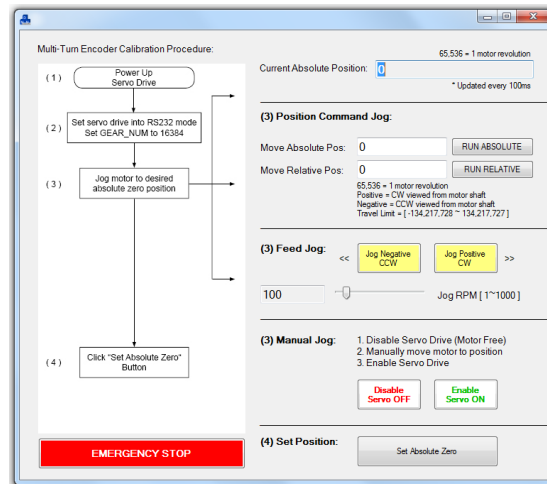
If this checkbox is checked, the servo drive automatically runs the motor to absolute zero position (home) when powered up and enabled. The homing speed and acceleration is determined by the *Max Speed* and *Max Acceleration* parameters.

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

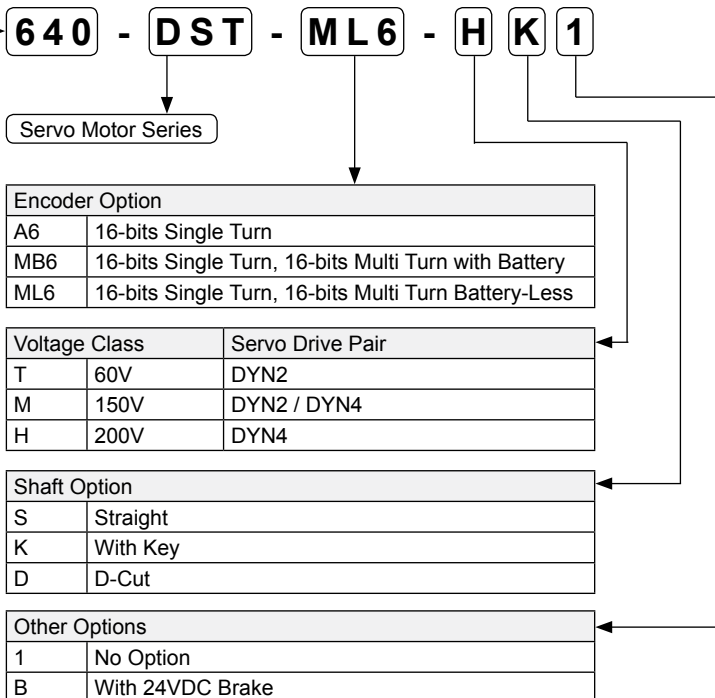
DYN4 AC Servo System (110~240VAC Input)

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

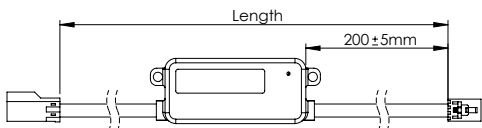
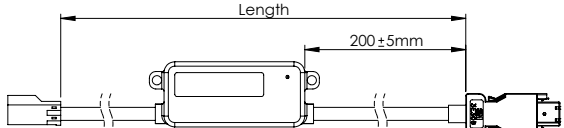
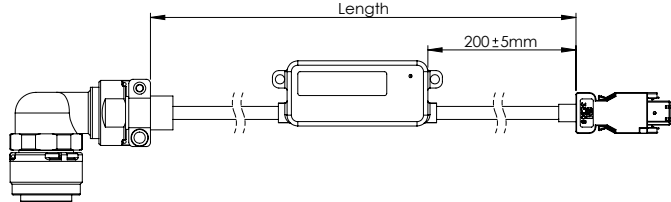
Model#	Rated Output	Flange	Shaft Diameter
405	50W	40mm	8mm
410	100W		8mm
620	200W	60mm	14mm
640	400W	130mm	19mm
880	750W		19mm
11A	1.0kW		22mm
115	1.3kW	86mm	14mm
120	1.8kW		14mm
57N	400W	NEMA23	6.35mm (1/4")
86L	220W	NEMA34	12.7mm (1/2")
86N	750W	NEMA34	
86M	750W	86mm	14mm
A15	1.3kW	NEMA42	15.87mm (5/8")



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
Battery Size: AA
Battery Type: Rechargeable 3.6V

