Rotary PM Motor Attributes

These are the motor configuration attributes that apply specifically to rotary motor types.

PM Motor Rated Torque

Usage	Access	Data Type	Default	Min	Max	Semantics of Values
Optional	Set/GSV	REAL	0 DB	0	∞	N-m

The PM Motor Rated Torque attribute is a float that specifies the nameplate continuous torque rating of a rotary permanent magnet motor.

PM Motor Torque Constant

Usage	Access	Data Type	Default	Min	Max	Semantics of Values
Optional	Set/SSV*	REAL	0 DB	0	∞	N-m/Amp (RMS)

** Indicates the attribute cannot be set while the drive power structure is enabled (Power Structure Enable bit in CIP Axis Status is true).*

The PM Motor Torque Constant attribute is a float that specifies the torque constant, Kt, of a rotary permanent magnet motor in Newton-meters per RMS Amp.

PM Motor Rotary Voltage Constant

Usage	Access	Data Type	Default	Min	Max	Semantics of Values
Required	Set/SSV*	REAL	0 DB	0	∞	Volts (RMS) / KRPM

** Indicates the attribute cannot be set while the drive power structure is enabled (Power Structure Enable bit in CIP Axis Status is true).*

The PM Motor Rotary Voltage Constant attribute is a float that specifies the voltage, or back-EMF, constant of a rotary permanent magnet motor in phase-to-phase RMS Volts per KRPM.

If the optional PM Motor Torque Constant, Kt, is not explicitly supported in the implementation the value may be computed from the PM Motor Rotary Voltage Constant, Ke, according to this equation: Kt (N-m/A_{rms}) = 0.01654 * Ke (V_{rms}/Krpm).

PM Motor Rotary Bus Overvoltage Speed

Usage	Access	Data Type	Default	Min	Max	Semantics of Values
Optional - PVT PM Only	Set/GSV	REAL	0 FD	0	∞	RPM

This value corresponds to the rotary motor speed at which the back-EMF of the motor equals the maximum operational bus voltage of the drive. When the extended speed

equals the maximum operational bus voltage of the drive. When the extended speed range of a PM motor is not permitted, this value can be used to limit motor speed to protect the drive from damage caused from bus overvoltage conditions that occur when disabling a PM motor at high speed.

When configured for Position Loop or Velocity Loop operation, this bus overvoltage protection includes limiting the magnitude of the velocity reference value allowed into the velocity summing junction to the Bus Overvoltage Speed Limit value using the velocity limiter function. If the signal entering the velocity limiter exceeds this velocity limit value, and the PM Motor Extended Speed Permissive is False, the velocity limiter clamps the velocity reference to this value and sets the Velocity Limit status bit. If the PM Motor Extended Speed Permissive is True, or the value of this attribute is 0, this limit is not applied.

When the extended speed range of a PM motor is not permitted, overvoltage protection is also provided through motor overspeed detection based on the Motor Overspeed Factory Limit and Motor Overspeed User Limit. Exceeding these limits results in a Motor Overspeed FL or UL Axis Exception. Overspeed detection is the only source of protection when the axis is configured for Torque Loop operation.

PM Motor Rotary Max Extended Speed

Usage	Access	Data Type	Default	Min	Max	Semantics of Values
Optional - PVT PM only	Set/SSV	REAL	0 FD	0	or Rotary Motor Max Speed	RPM

When the extended speed range of a PM motor is permitted (PM Motor Extended Speed Permissive is True), this value can be used to limit the speed of a rotary motor to protect the motor or load from damage due to an overspeed condition.

When configured for Position Loop or Velocity Loop operation, this overspeed protection includes limiting the magnitude of the velocity reference value allowed into the velocity summing junction using the velocity limiter function. If the signal entering the velocity limiter exceeds this velocity limit value, the velocity limiter clamps the velocity reference to this value and sets the Velocity Limit status bit. If the value of this attribute is 0, this limit is not applied.

When the extended speed range of a PM motor is permitted, overspeed protection is also provided through motor overspeed detection based on the Motor Overspeed Factory Limit and Motor Overspeed User Limit. Exceeding these limits results in a Motor Overspeed FL or UL Axis Exception. Overspeed detection is the only source of protection when the axis is configured for Torque Loop operation.

If the related optional attribute, Rotary or Linear Motor Max Speed, is supported, software will apply this maximum speed value as the Max Value for this attribute.

See also

General Motor Attributes

General Permanent Magnet Motor Attributes

General Rotary Motor Attributes

Motor Attributes Model

Velocity Loop Signal Attributes

How are we doing?