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Power and Thermal Management Configuration Attributes

These are the power and thermal configuration related attributes associated with a Motion Control Axis.

Motor Overload Action

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - D	Set/SSV		USINT	0	-	-	Enumeration 0 = None (R) 1 = Current Foldback (O) 2...127 = Reserved 128...255 = Vendor specific

The Motor Overload Action attribute selects the device's response to a motor overload condition based on an I²T or motor thermal model based overload protection method. When a motor thermal model is employed, the motor overload condition occurs when the motor thermal model indicates that the Motor Capacity has exceeded the Motor Overload Limit. In the case of the I²T overload protection method, the motor overload condition occurs when the motor current, in percent of rated continuous motor current, exceeds the Motor Overload Limit. The Motor Overload Action provides opportunities to mitigate the overload condition without stopping operation.

Motor Overload Action functionality is independent of the motor overload exception action functionality.

No explicit action is taken by the device in the overload condition if None is the selected overload action. Selecting the Current Foldback action, however, results in a reduction of the motor current command in proportion to the percentage difference between Motor Capacity and the Motor Overload Limit,, or in the case of the I²T overload protection method, in proportion to the difference between the motor current, in percent of rated continuous motor current, and the Motor Overload Limit.

Inverter Overload Action

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Optional - D	Set/SSV		USINT	0	-	-	Enumeration 0 = None (R) 1 = Current Foldback (O) 2...127 = Reserved 128...255 = Vendor Specific 128 = Reduce PWM Rate 129 = PWM - Foldback

The Inverter Overload Action attribute selects the device's response to an inverter overload condition based on an I²t or inverter thermal model based overload protection method. When an inverter thermal model is employed the inverter overload alarm condition occurs when the inverter thermal model indicates that the Inverter Capacity has exceeded the Inverter Overload Limit. In the case of the I²T overload protection method, the inverter overload condition occurs when the inverter current, in percent of rated continuous inverter current, exceeds the Inverter Overload Limit.

The Inverter Overload Action provides opportunities to mitigate the overload condition without stopping operation. Inverter Overload Action functionality is independent of the motor overload exception action functionality.

An overload alarm condition can also be generated by exceeding the limits of the device's power block thermal model that includes switching losses that have a dependency on the PWM Frequency.

No explicit action is taken by the device in the overload condition if None is the selected overload action. Selecting the Current Foldback action, however, results in a reduction of the inverter current in proportion to the percentage difference between Inverter Capacity and the Inverter Overload Limit, or in the case of the I²T overload protection method, in proportion to the difference between the inverter current, in percent of rated continuous inverter current, and the Inverter Overload Limit.

If an inverter overload condition occurs due to the power block thermal model, two additional overload actions can be applied. Selecting Reduce PWM Rate can be used to reduce heat generated by switching losses in the inverter power structure. When PWM - Foldback is selected the device first reduces the PWM rate and then, if necessary, reduces the Inverter Thermal Current Limit.

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