CIP Axis Status Attributes

These are the device status attributes associated with a Motion Control Axis. Any status bits that are not applicable are set to 0.

CIP Axis State

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Required - All	Get/GSV	T	USINT	-	-	-	Enumeration 0 = Unconnected 1 = Pre-Charge 2 = Stopped 3 = Starting 4 = Running 5 = Testing 6 = Stopping 7 = Aborting 8 = Faulted 9 = Start Inhibited 10 = Shutdown 11 = Axis Inhibited 12 = Not Grouped 13 = No Module 14 = Configuring 15 = Synchronizing 16 = Waiting for Group 17-255 = Reserved

Enumerated value indicating the state of the axis.

CIP Axis Status

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values

Required - All	Get/GSV	T	DWORD	-	-	-	Enumeration: 0 = Local Control 1 = Alarm 2 = DC Bus Up 3 = Power Structure Enabled 4 = Motor Flux Up 5 = Tracking Command 6 = Position Lock 7 = Velocity Lock 8 = Velocity Standstill 9 = Velocity Threshold 10 = Velocity Limit 11 = Acceleration Limit 12 = Deceleration Limit 13 = Torque Threshold 14 = Torque Limit 15 = Current Limit 16 = Thermal Limit 17 = Feedback Integrity 18 = Shutdown 19 = In Process 20 = DC Bus Unload 21 = AC Power Loss 22 = Position Control Mode 23 = Velocity Control Mode 24 = Torque Control Mode 25-31 = Reserved

The CIP Axis Status attribute is a 32-bit collection of standard bits indicating the internal status conditions of the axis.

CIP Status Bit Descriptions

Bit	Usage	Status Condition	Description
0	Required	Local Control	This bit is set if axis is taking command reference and services from local interface instead of the remote (CIP Motion) interface. This bit is based on the current state of the Remote Mode bit of the Node Status attribute.

Attributes

Converter Current Control Configuration Attributes
Converter Current Control Signal Attributes
Converter Current Reference Configuration Attributes
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Converter Types
Current Control Signal Attributes
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Cyclic Read and Cyclic Write
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Device Function Codes
Device Commissioning Attributes
Drive General Purpose I/O Attributes
Drive Output Attributes
Drive Parameters
Event Capture Attributes
Exception Factory Limit Info Attributes
Exception User Limit Configuration Attributes
Exception, Fault and Alarm Attributes
Exceptions
Fault and Alarm Behavior
Feedback Interface Types
Feedback Configuration Attributes
Frequency Control Configuration Attributes
Frequency Control Signal Attribute
General Feedback Info Attributes
General Feedback Signal Attributes
General Linear Motor Attributes
General Motor Attributes
General Permanent Magnet Motor Attributes
General Rotary Motor

1	Required	Alarm	This bit is set if the axis has detected one or more exception conditions configured to generate an alarm. This bit is clear if there are no current axis alarm conditions.
2	Required/ BD	DC Bus Up	This bit is set for a drive axis if the DC Bus has charged up to an operational voltage level based on direct measurement and, if applicable, the Converter Bus Up Status bit associated with external CIP Motion converter(s) supplying DC Bus power to this device is also set. If the drive's Bus Configuration attribute is set to "Shared DC - Non CIP Converter" the drive may also check the status of its associated external Non-CIP Motion converter. When a drive axis is in the Pre-Charge state, the transition of the DC Bus Up status bit from 0 to 1 initiates a state transition to the Stopped State. Once set, the DC Bus Up bit is cleared when the DC Bus voltage has dropped below an operational voltage level, or the Converter Bus Up Status bit associated with external CIP Motion converter(s) supplying DC Bus power to this device is cleared. For a converter axis, this bit is set if the DC Bus has charged up to an operational voltage level based on direct measurement alone. When a converter axis is in the Pre-Charge state, the transition of the DC Bus Up status bit from 0 to 1 initiates a state transition to the Running state. Once set, the DC Bus Up bit is cleared when the DC Bus voltage has dropped below an operational voltage level, independent of the state of the Converter Bus Up Status bit.
3	Required/ GD	Power Structure Enabled	This bit is set if the axis power structure is energized and capable of generating motor flux and torque for a drive axis, or regenerating power to the AC line for a converter axis. The value of the Power Structure Enabled bit is determined by the Axis State, and for the drive axis, the configured Stopping Action attribute value.
4	Required/ D	Motor Flux Up	This bit is set if motor flux for an induction motor has reached an operational level. Transition of the Motor Flux Up bit is initiated in the Starting State according to the configured Flux Up Control attribute value. This bit is only applicable to Induction Motor types.
5	Required/ GD	Tracking Command	This bit is set if the axis control structure is actively tracking the command reference from the motion planner associated with the drive axis, or the bus voltage setpoint associated converter axis. The Tracking Command bit is directly associated with the Running state of the Axis State Model.
6	Required/ P	Position Lock	This bit is set if the actual position is within the Position Lock Tolerance of the command position.
7	Optional/ PV	Velocity Lock	This bit is set if the velocity feedback signal is within the Velocity Lock Tolerance of the unlimited velocity reference.

8	Required/ ED	Velocity Standstill	This bit is set if the velocity feedback signal is within Velocity Standstill Window of 0. For a Frequency Control drive this bit is set if the velocity reference signal is within Velocity Standstill Window of 0.
9	Optional/ ED	Velocity Threshold	This bit is set if the absolute velocity feedback signal is below Velocity Threshold. For a Frequency Control drive this bit is set if the absolute velocity reference signal is below the Velocity Threshold.
10	Optional/ FPV	Velocity Limit	This bit is set if the velocity reference signal is currently being limited by the Velocity Limiter.
11	Optional/ C	Acceleration Limit	This bit is set if the acceleration reference signal is currently being limited by the Acceleration Limiter.
12	Optional/ C	Deceleration Limit	This bit is set if the acceleration reference signal is currently being limited by the Deceleration Limiter.
13	Optional/ C	Torque Threshold	This bit is set if the absolute filtered torque reference is above the Torque Threshold.
14	Required/ C	Torque Limit	This bit is set if the filtered torque reference is currently being limited by the Torque Limiter.
15	Optional/ D	Current Limit	This bit is set if the command current, Iq, is currently being limited by the Current Vector Limiter.
16	Optional/ D	Thermal Limit	This bit is set if Current Vector Limit condition of the axis is being limited by any of the axis's Thermal Models or I^2T Thermal Protection functions.
17	Required/ ED	Feedback Integrity	This bit, when set, indicates that the feedback device is accurately reflecting changes to axis position, and there have been no conditions detected that would compromise the quality of the feedback position value. The bit is set at power-up assuming that the feedback device passes any power-up self-test required. If, during operation, a feedback exception occurs that could impact the fidelity of axis position, the bit is immediately cleared. The bit remains clear until either a fault reset is executed by the drive or the drive is power cycled. Fault Resets can be generated directly by the drive or initiated by the controller using motion instructions. Note that the Feedback Integrity bit behavior applies to both absolute and incremental feedback device operation.
18	Required/ BD	Shutdown	This bit is set when the axis is in the shutdown state or in the faulted state but would transition to the shutdown state if the faults were cleared. Therefore, the Shutdown bit is closely associated with the Shutdown State of the Axis State Model.

			Shutdown State of the Axis State Model.
19	Required	In Process	This bit is set for the duration of an active process. An example of active process would be an operation initiated by a Run Motor Test, Run Hookup Test, or Run Inertia Test to request service. An active process that requires the enabling of the axis power structure results in a transition to the Testing State of the Axis State Model.
20	Optional/ BD	DC Bus Unload	This bit is set by a CIP Motion converter, or a CIP Motion drive containing an integral converter, or a CIP Motion drive connected to an external non-CIP converter, to indicate that the converter cannot continue supplying DC Bus power to other drives on a shared DC Bus. This is usually the result of a shutdown fault action initiated by the drive or converter, or a shutdown request from the controller. Thus, when the DC Bus Unload bit is set, the Shutdown bit (bit 18) in this case would also be set. The DC Bus Unload bit can also be set as a result of a start inhibit condition. When there is no AC Contactor Enable output to drop the DC Bus, a method is needed to unload the converter from all other drives sharing the DC Bus. By monitoring the DC Bus Unload status bit, the control system can use the Converter Bus Unload bit of Control Status to initiate Bus Power Sharing exceptions on all enabled drives on the shared DC Bus that are configured for Shared AC/DC or Shared DC operation. This Bus Power Sharing exception invokes the configured Exception Action that, by default, disables the drive power structure, thereby unloading the bus. All disabled drives sharing the DC Bus shall indicate a Converter Bus Unload start inhibit. Note that only the originating drive or converter with the DC Bus Unload condition can cause Bus Power Sharing Faults on other shared drives. In other words, no device with a Bus Power Sharing Fault can cause a Bus Power Sharing exception on other shared drives by setting its DC Bus Unload bit. This qualification prevents DC Bus recovery deadlock. To recover full DC Bus operation, the originating drive or converter with the DC Bus Unload condition must first be reset through a Shutdown Reset Request. Once clear, the controller then clears the Converter Bus Unload bit to all the shared drives. The Bus Power Sharing Faults on the shared drives can then be successfully cleared by either a Fault Reset Request, or a Shutdown Reset Request, allowing these drives to become operational.

▷ Select/Limit Instructions
▷ Sequential Function Chart (SFC) Instructions
▷ Statistical Instructions
▷ Safety Instructions
▷ Studio 5000 Logix Designer Glossary

21	Optional/ BD	AC Power Loss	This bit is set when a CIP Motion converter, or a CIP Motion drive containing an integral converter, or a CIP Motion drive connected to an external non-CIP converter, has detected a loss of AC input power. This bit is cleared when AC input power is determined to be sufficient for converter operation. When an AC Power Loss condition is detected by a converter supplying power to other drives over a shared DC Bus, a method is needed to generate a Converter AC Power Loss exception on any drive whose power structure is enabled. To accomplish this, the control system monitors the AC Power Loss status bits of converters supplying DC Bus power and propagates AC Power Loss status to all drives on the shared DC Bus, such as drives that are configured for Shared AC/DC or Shared DC operation. Upon notification of AC Power Loss, drives that have enabled power structures will assert a Converter AC Power Loss exception and invoke the programmed Axis Exception Action. Disabled drives will not generate an exception action on AC Power Loss. Thus, no drive faults will occur on removal of AC Power from a converter as long as no drive power structures drawing power from that converter are enabled.
22	Optional/ C	Position Control Mode	When set, this bit indicates that axis position is being actively controlled by the Position Loop. Position Control Mode is only applicable when the axis is enabled and using the PI Vector Control Method. The "Position Control Mode" status bit is cleared whenever the active Control Mode is changed from Position Control to Velocity Control or Torque Control. This status bit is clear if the drive axis is disabled.
23	Optional/ C	Velocity Control Mode	When set, this bit indicates that axis velocity is being actively controlled by the Velocity Loop. Velocity Control Mode is only applicable when the drive axis is enabled and using the PI Vector Control Method. The "Velocity Control Mode" status bit is cleared whenever the active Control Mode is changed from Velocity Control to Position Control or Torque Control. This status bit is clear if the drive axis is disabled.
24	Optional/ C	Torque Control Mode	When set, this bit indicates that axis velocity is being actively controlled by the Torque (Current) Loop. Torque Control Mode is only applicable when the drive axis is enabled and using the PI Vector Control Method. The "Torque Control Mode" status bit is cleared whenever the active Control Mode is changed from Torque Control to Position Control or Velocity Control. This status bit is clear if the drive axis is disabled.
25-31	-	Reserved	-

The naming convention for individual bits within the CIP Axis Status attributes is to append a 'Status' suffix to the CIP Axis Status condition. This table lists the resulting CIP Axis Status tags associated with the above status conditions.

Bit	Tag

0	LocalControlStatus
1	AlarmStatus
2	DCBusUpStatus
3	PowerStructureEnabledStatus
4	MotorFluxUpStatus
5	TrackingCommandStatus
6	PositionLockStatus
7	VelocityLockStatus
8	VelocityStandstillStatus
9	VelocityThresholdStatus
10	VelocityLimitStatus
11	AccelerationLimitStatus
12	DecelerationLimitStatus
13	TorqueThresholdStatus
14	TorqueLimitStatus
15	CurrentLimitStatus
16	ThermalLimitStatus
17	FeedbackIntegrityStatus
18	ShutdownStatus
19	InProcessStatus
20	DCBusUnloadStatus
21	ACPowerLossStatus
22	PositionControlMode
23	VelocityControlMode
24	TorqueControlMode

CIP Axis Status 2

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Required - G Optional - NED All	Get/GSV	T	DWORD	-	-	-	Enumeration: 0 = Monitoring 1 = Regenerating 2 = Ride Thru 3 = AC Line Sync 4 = Bus Voltage Lock 5 = Reactive Power Only Mode 6 = Voltage Control Mode 7 = Power Loss 8 = AC Line Voltage Sag 9 = AC Line Phase Loss 10 = AC Line Frequency Change 11 = AC Line Sync Loss 12 = Single Phase 13 = Bus Voltage Limit 14 = Bus Voltage Rate Limit 15 = Active Current Rate Limit 16 = Reactive Current Rate Limit 17 = Reactive Power Limit 18 = Reactive Power Rate Limit 19 = Active Current Limit 20 = Reactive Current Limit 21 = Motoring Power Limit 22 = Regenerative Power Limit 23 = Converter Thermal Limit 24-31 = Reserved

The CIP Axis Status 2 attribute is a collection of standard bits indicating the internal status conditions of the axis. This attribute provides a 32-bit extension to the CIP Axis Status attribute.

CIP Axis Status 2 Bit Descriptions

Bit	Usage	Status Condition	Description
0	Optional/ G	Motoring	This bit is set when regenerative converter is consuming power from the AC Line.
1	Optional/ G	Regenerating	This bit is set when regenerative converter is regenerating power to the AC Line.
2	Optional/ GD	Ride Thru	This bit is set when the device has initiated a Ride Thru action, temporarily suspending PWM modulation, as a result of detecting a problem with the power source.
3	Optional/ G	AC Line Sync	This bit is set when regenerative converter is phase locked to the AC Line voltage.
4	Optional/ G	Bus Voltage Lock	This bit is set if the measured DC Bus Voltage is within a vendor specific tolerance (that is 1%) of the Bus Voltage Reference.
5	Optional/ G	Reactive Power Only Mode	This bit is set when the regenerative converter is operating in Reactive Power Only Mode, supplying reactive power to the grid for Power Factor correction.
6	Optional/ G	Voltage Control Mode	When set, this bit indicates that DC bus voltage is being actively controlled by the Bus Voltage Loop of the regenerative converter. The Voltage Control Mode status bit is cleared whenever the active Converter Control Mode is changed from Bus Voltage Control to AC Line Current Control. This status bit is clear if the converter is disabled.
7	Optional/ GD	Power Loss	This bit is set when a Power Loss condition has been detected. For a drive, this may have initiated a Ride Thru action, where the PWM output to the motor is temporarily suspended, or has initiated a Decel Regen action, where drive attempts to hold the DC Bus voltage up by decelerating the motor. For a regenerative converter this may have initiated a Ride Thru action where PWM Modulation is suspended to the AC Line.
8	Optional/ G	AC Line Voltage Sag	This bit is set when a regenerative converter detects a sag in AC line voltage. If configured to do so, this may have initiated a Ride Thru action, where PWM modulation to the AC line is temporarily suspended.
9	Optional/ G	AC Line Phase Loss	This bit is set when a regenerative converter detects an AC line phase loss. If configured to do so, this may have initiated a Ride Thru action, where PWM modulation to the AC line is temporarily suspended.
10	Optional/ G	AC Line Frequency Change	This bit is set when a regenerative converter detects a high rate of change of the AC line frequency. If configured to do so, this may have initiated a Ride Thru action, where PWM modulation to the AC line is temporarily suspended.

11	Optional/ G	AC Line Sync Loss	This bit is set when a regenerative converter detects it has lost synchronization to the AC line. If configured to do so, this may have initiated a Ride Thru action, where PWM modulation to the AC line is temporarily suspended.
12	Optional/ BD	Single Phase	This bit is set when converter is operating on a single phase.
13	Optional/ G	Bus Voltage Limit	This bit is set if the bus voltage reference signal into the bus voltage control loop is currently being limited by the Bus Voltage Limiter block.
14	Optional/ G	Bus Voltage Rate Limit	This bit is set if the bus voltage Rate Limiter block is currently limiting the rate of change of the bus voltage set point signal into the bus voltage control loop.
15	Optional/ G	Active Current Rate Limit	This bit is set if the Rate Limiter block is currently limiting the rate of change of the Active Current Command signal.
16	O/G	Reactive Current Rate Limit	This bit is set if the Rate Limiter block is currently limiting the rate of change of the Reactive Current Command signal.
17	Optional/ G	Reactive Power Limit	This bit is set if the Power Limiter block is currently limiting the Reactive Power Set Point signal.
18	Optional/ G	Reactive Power Rate Limit	This bit is set if the Rate Limiter block is currently limiting the rate of change of the Reactive Power Set Point signal.
19	Optional/ G	Active Current Limit	This bit is set if the active current reference signal is currently being limited by the Current Limiter block.
20	Optional/ G	Reactive Current Limit	This bit is set if the reactive current reference signal is currently being limited by the Current Limiter block.
21	Optional/ G	Motoring Power Limit	This bit is set if the current reference signals are currently being limited by the Current Limiter block due to the Motoring Power Limit.
22	Optional/ G	Regenerative Power Limit	This bit is set if the current reference signals are currently being limited by the Current Limiter block due to the Converter Regenerative Power Limit.
23	Optional/ G	Converter Thermal Limit	This bit is set if the current reference signals are currently being limited by the Current Limiter block due to the Converter Thermal Current Limit.
24-31	-	Reserved	-

The naming convention for individual bits within the CIP Axis Status 2 attributes is to append a 'Status' suffix to the CIP Axis Status 2 condition. This table lists the resulting CIP Axis Status 2 tags associated with the above status conditions

Axis Status 2 tags associated with the above status conditions:

Bit	Tag
0	MotoringStatus
1	RegeneratingStatus
2	RideThruStatus
3	ACLineSyncStatus
4	BusVoltageLockStatus
5	ReactivePowerOnlyModeStatus
6	VoltageControlModeStatus
7	PowerLossStatus
8	ACLineVoltageSagStatus
9	ACLinePhaseLossStatus
10	ACLineFrequencyChangeStatus
11	ACLineSyncLossStatus
12	SinglePhaseStatus
13	BusVoltageLimit
14	BusVoltageRateLimit
15	ActiveCurrentRageLimit
16	ReactiveCurrentRateLimit
17	ReactivePowerLimit
18	ReactivePowerRateLimit
19	ActiveCurrentLimit
20	ReactiveCurrentLimit
21	MotoringPowerLimit
22	RegenerativePowerLimit
23	ConverterThermalLimit

CIP Axis Status 2 - Mfg

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Required - G Optional - NED All	Get/GSV	T	DWORD	-	-	-	Bitmap: 0-31: Vendor Specific (Published in Product Manual)

The CIP Axis Status 2 - Mfg attribute is a collection of vendor specific bits indicating the internal status of the axis.

CIP Axis Status - RA

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Required - All	Get/GSV	T	DWORD	-	-	-	Enumeration 0 = Torque Notch Filter Frequency Detected 1 = Torque Notch Filter Tuning Unsuccessful 2 = Torque Notch Filter Multiple Frequencies 3 = Torque Notch Filter Frequency Below Limit 4 = Torque Notch Filter Frequency Above Limit 5 = Adaptive Tune Gain Stabilization Active 6 - 31 = Reserved

The CIP Axis Status attribute is a 32-bit collection of Rockwell Automation specific bits indicating various internal status conditions of the device axis. Any status bits that are not applicable are set to 0.

CIP Axis Status- RA Status Bit Descriptions

Bit	Usage	Status Condition	Description
0	Optional/ C	Torque Notch Filter Frequency Detected	This bit is set when the Adaptive Tuning function has detected a resonance frequency between the Torque Notch Filter Low Frequency Limit and the Torque Notch Filter High Frequency Limit with magnitude above the Toque Notch Filter Tuning Threshold. Otherwise, the bit is clear. This bit is cleared by the Adaptive Tuning function when the Axis state transitions to the Running state.

1	Optional/ C	Torque Notch Filter Tuning Unsuccessful	When the Adaptive Tuning Configuration is set to Enabled, this bit is set when an update to the Torque Notch Filter Estimate, applied to the Torque Notch Filter, does not eliminate all resonances between the Torque Notch Filter Low Frequency Limit and the Torque Notch Filter High Frequency Limit with magnitude above the Toque Notch Filter Tuning Threshold. Otherwise, the bit is clear. This bit is cleared by the Adaptive Tuning function when the Axis state transitions to the Running state or, when in the Running state, the Adaptive Tuning Configuration transitions from Disabled to one of the Torque Notch Filter Tuning enumerations.
2	Optional/ C	Torque Notch Filter Multiple Frequencies	This bit is set when, the Adaptive Tuning function, identifies multiple resonant frequencies that are between the Torque Notch Filter Low Frequency Limit and the Torque Notch Filter High Frequency Limit whose magnitudes are above the Toque Notch Filter Tuning Threshold. Otherwise, the bit is clear. This bit is cleared by the Adaptive Tuning function when the Axis state transitions to the Running state.
3	Optional/ C	Torque Notch Filter Frequency Below Limit	This bit is set when the Adaptive Tuning function identifies a frequency that is below the Torque Notch Filter Low Frequency Limit but whose magnitude is higher than the configured Toque Notch Filter Tuning Threshold. Otherwise, the bit is clear. This bit is cleared by the Adaptive Tuning function when the Axis state transitions to the Running state.
4	Optional/ C	Torque Notch Filter Frequency Above Limit	This bit is set when the Adaptive Tuning function identifies a frequency that is above the Torque Notch Filter High Frequency Limit but whose magnitude is higher than the configured Toque Notch Filter Tuning Threshold. Otherwise, the bit is clear. This bit is cleared by the Adaptive Tuning function when the Axis state transitions from disabled to enabled operation.
5	Optional/ C	Adaptive Tune Gain Stabilization Active	This bit is set when the Adaptive Tune Gain Scaling Factor is not equal to one. This indicates that the Adaptive Tuning function is actively adjusting servo loop gain values and the Torque Low Pass Filter Bandwidth value to improve system stability. This bit is cleared by the Adaptive Tuning function when the Axis state transitions to the Running state.
6-31	-	Reserved	-

The naming convention for individual bits within the CIP Axis Status RA attributes is to append a 'Status' suffix to the CIP Axis Status RA condition. This table lists the resulting CIP Axis Status RA tags associated with the above status conditions.

Bit	Tag
0	TorqueNotchFilterFreqDetectedStatus

1	TorqueNotchFilterTuneUnsuccessfulStatus
2	TorqueNotchFilterMultipleFreqStatus
3	TorqueNotchFilterFreqBelowLimitStatus
4	TorqueNotchFilterFreqAboveLimitStatus
5	AdaptiveTuneGainStabilizationStatus

CIP Axis Status 2 - RA

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values
Required - G Optional - NED All	Get/GSV	T	DWORD	-	-	-	-

The CIP Axis Status 2 attribute is a collection of Rockwell Automation specific bits indicating various internal status conditions of the axis. This attributes provides a 32-bit extension to the CIP Axis RA attribute. Any status bits that are not applicable are set to 0.

CIP Axis Status 2 - RA Status Bit Descriptions

Bit	Usage	Status Condition	Description
0-31		Reserved	-

The naming convention for individual bits within the CIP Axis Status 2 RA attributes is to append a 'Status' suffix to the CIP Axis Status 2 RA condition. This table lists the resulting CIP Axis Status 2 RA tags associated with the above status conditions.

Bit	Tag
0	-

CIP Axis I/O Status

Usage	Access	T	Data Type	Default	Min	Max	Semantics of Values

Required - All	Get/GSV	T	DWORD	-	-	-	Enumeration: 0 =Enable Input 1 =Home Input 2 = Registration 1 Input 3 = Registration 2 Input 4 = Positive Overtravel OK Input 5 = Negative Overtravel OK Input 6 = Feedback 1 Thermostat OK Input 7 = Resistive Brake Release Output 8 = Mechanical Brake Release Output 9 = Motor Thermostat OK Input 10 - 31 = Reserved.

The CIP Axis I/O Status attribute is a 32-bit collection of bits indicating the state of standard digital inputs and outputs associated with the operation of this axis. A value of zero for a given input bit indicates a logical 0 (false) value, while a value of 1 indicates a logical 1 (true) value. For example a value of 1 for the Positive Overtravel OK Input indicates that Positive Overtravel OK is true and there is no positive overtravel condition present. Conversely a value of 0 would indicate the Positive Overtravel OK Input is false and there is a positive overtravel condition present. Similarly, a value of 1 (true) for the Mechanical Brake Release Output indicates that the mechanical brake is released. Any status bits that are not applicable will be set to 0.

CIP Axis I/O Status Bit Descriptions

Bit	Usage	Status Condition	Description
0	Required/ BD	Enable Input	This bit represents the logical state of the Enable Input.
1	Required/ ED	Home Input	This bit represents the logical state of the Home Input.
2	Required/ ED	Registration 1 Input	This bit represents the logical state of the Registration 1 Input.
3	Optional/ ED	Registration 2 Input	This bit represents the logical state of the Registration 2 Input.
4	Required/ P	Positive Overtravel OK Input	This bit represents the logical state of the Positive Overtravel OK Input.

5	Required/ P	Negative Overtravel OK Input	This bit represents the logical state of the Negative Overtravel OK Input.
6	Optional/ ED	Feedback 1 Thermostat OK Input	This bit represents the logical state of the Thermostat OK input associated with the motor mounted Feedback 1device.
7	Optional/ D	Resistive Brake Release Output	This bit represents the logical state of the Resistive Brake Release Output.
8	Optional/ D	Mechanical Brake Release Output	This bit represents the logical state of the Mechanical Brake Release Output.
9	Optional/ D	Motor Thermostat OK Input	This bit represents the logical state of the Motor Thermostat OK Input.
10-31	-	Reserved	-

The naming convention for individual bits within the CIP Axis I/O Status attributes is to append a 'Status' suffix to the CIP Axis Status condition. This table lists the resulting CIP Axis I/O Status tags associated with the above status conditions.

Bit	**Tag**
0	EnableInputStatus
1	HomeInputStatus
2	Registration1InputStatus
3	Registration2InputStatus
4	PositiveOvertravelInputStatus
5	NegativeOvertravelInputStatus
6	Feedback1ThermostatInputStatus
7	ResistiveBrakeOutputStatus
8	MechanicalBrakeOutputStatus
9	MotorThermostatInputStatus

CIP Axis I/O Status - RA

Usage	**Access**	**T**	**Data Type**	**Default**	**Min**	**Max**	**Semantics of Values**

Required - All	Get/GSV	T	DWORD	-	-	-	Enumeration: 0 = Regenerative Power OK Input 1 = Bus Capacitor Module OK Input 2 = Shunt Thermal Switch OK Input 3 = Contactor Enable Output 4 = Pre-Charge OK Input 5 = AC Line Contactor OK Input 6 = Regenerative Power OK Output 7 = Bus Conditioner Module OK Input 8 = Converter OK Input 9 = Converter OK Output 10 - 31 = Reserved

Collection of bits indicating the state of Rockwell Automation specific digital inputs associated with the operation of this axis. A value of zero for a given input bit indicates a logical 0 value, while a value of 1 indicates a logical 1 value.

CIP Axis I/O Status - RA Bit Descriptions

Bit	Usage	Name	Description
0	Optional/ D	Regenerative Power OK Input	This bit represents the logical state of the Regenerative Power Input. This input status bit indicates the associated external regenerative converter is in the Running state and capable of transferring regenerative power.
1	Optional/ BD	Bus Capacitor Module OK Input	This bit represents the logical state of the Bus Capacitor Module Input.
2	Optional/ BD	Shunt Thermal Switch OK Input	This bit represents the logical state of the Shunt Thermal Switch Input.
3	Optional/ BD	Contactor Enable Output	This bit represents the logical state of the Contactor Enable Output.
4	Optional/ BD	Pre-Charge OK Input	This bit represents the logical state of the Pre-Charge Input.
5	Optional/ BD	AC Line Contactor	This bit represents the logical state of the AC Line Contactor OK Input

	BD	OK Input	
6	Optional/ G	Regenerative Power OK Output	This bit represents the logical state of the Regenerative Power Output. This output status bit indicates this regenerative converter is in the Running state and capable of transferring regenerative power.
7	Optional/ BD	Bus Conditioner Module OK Input	This bit represents the logical state of the Bus Conditioner Module Input.
8	Optional/ D	Converter OK Input	This bit represents the logical state of the Converter OK Input. This input status bit indicates the associated external converter has determined that the DC bus has reached operational voltage level and that the converter is not faulted.
9	Optional/ B	Converter OK Output	This bit represents the logical state of the Converter OK Output. This output bit indicates that this converter has determined that the DC bus has reached operational voltage level and is not currently faulted.
10-31	-	Reserved	-

The naming convention for individual bits within the CIP Axis I/O Status - RA attributes is to append a 'Status' suffix to the CIP Axis Status - RA condition. This table lists the resulting CIP Axis I/O Status -RA tags associated with the above status conditions.

Bit	Tag
0	RegenerativePowerInputStatus
1	BusCapacitorModuleInputStatus
2	ShuntThermalSwitchInputStatus
3	ContactorEnableOutputStatus
4	PreChargeInputStatus
5	ACLineContactorInputStatus
6	RegenerativePowerOutputStatus
7	BusConditioneerModuleInputStatus
8	ConverterInputStatus
9	ConverterOutputStatus

See also

CIP Axis Attributes

Motion Control Axis Behavior Model

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How are we doing?