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1. Application Overview

SigmaLogic is an EtherNet/IP Indexer that was designed to work seamlessly with the CompactLogix and ControlLogix PLCs from Allen Bradley. Yaskawa has created Add-On Instructions (AOI) for easy import into the Studio 5000 programming environment. The AOIs as well as other documentation and videos can be found at www.yaskawa.com/sigmalogic. This application note highlights some key elements of the "EC.SigmaLogic.02_Logix_Example.ACD" code that is included in the SigmaLogic AOI zip file. This example code was created in Studio 5000 Logix Designer to provide useful examples for Rockwell programmers. The code contains interlocking logic to help prevent alarms and faults from occurring when executing the AOIs.
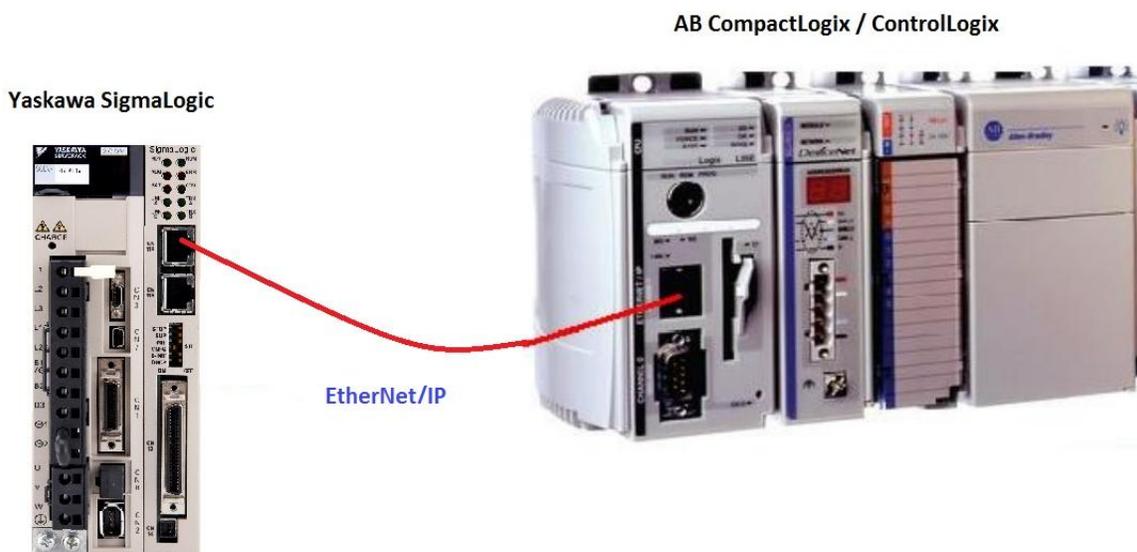
Figure 1: Required Components

Component	Product and Model Number
EIP Servo Indexer	SGDV-****E1A******B00 (SigmaLogic) or SGDV-****E*A******300 (MP2600)
Motor	Any Sigma-II, Sigma-III or Sigma-5 motor recognized by Sigma-5 amplifiers
PLC	CompactLogix, ControlLogix or SoftLogix with an EtherNet/IP Communications Adapter
Software	Logix Designer Version 31.01.00 was used to create this code; v17 or higher works with SigmaLogic

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2. Application Solution and Benefits

The example code uses each AOI provided by Yaskawa and shows a suggested way to use these AOIs in the context of a Studio 5000 ladder program. There are only a couple of basic rules when using the AOIs. The first rule is that each SigmaLogic used needs to have its own MCFG AOI. This defines the Axis structures and provides a huge amount of diagnostic information. The other rule is that most motion-related AOIs cannot be executed if another AOI is already in progress. The interlocking logic used in this example will prevent the user from violating this rule which would generate a FLT_RDY error in the AOI. This example code uses a Standard Sigmalogic controller nevertheless, the same example code and program practice can also used for Sigmalogic-7 Compact controller. The benefit to the PLC programmer is that this example code will help them avoid frustrating errors and alarms.

3. Initial Configuration

This application note assumes that the SigmaLogic has already been configured with LogicWorks and has been added to the Logix Designer project. Yaskawa has produced several QuickStart videos available on Yaskawa's website and on YouTube. These QuickStart videos walk the user through setting up the SigmaLogic amplifier via LogicWorks, adding SigmaLogic to RSLogix (Similar to Logix Designer) and importing and using some of the popular AOIs. When searching these videos on Yaskawa's website, type "eLV.SigmaLogic" into the site search window. This will produce three QuickStart videos and any other eLearning Videos that Yaskawa has produced for SigmaLogic. The following link should bring up the search results:

https://www.yaskawa.com/pycsearch?keywords=eLV.SigmaLogic*&selCollection=Entire%20Site

These same videos are also published to Yaskawa's YouTube channel. Typing "SigmaLogic" into a YouTube search will bring up several results including a playlist of training videos. The following link should bring up the SigmaLogic training section:

https://www.youtube.com/watch?v=pkm3wVTe2-U&list=PLNAENlyEDCkwyKty6WKoekdBmELwBniQ9

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From the Logix Designer point of view, SigmaLogic is added as a Generic Ethernet Module with the following settings:
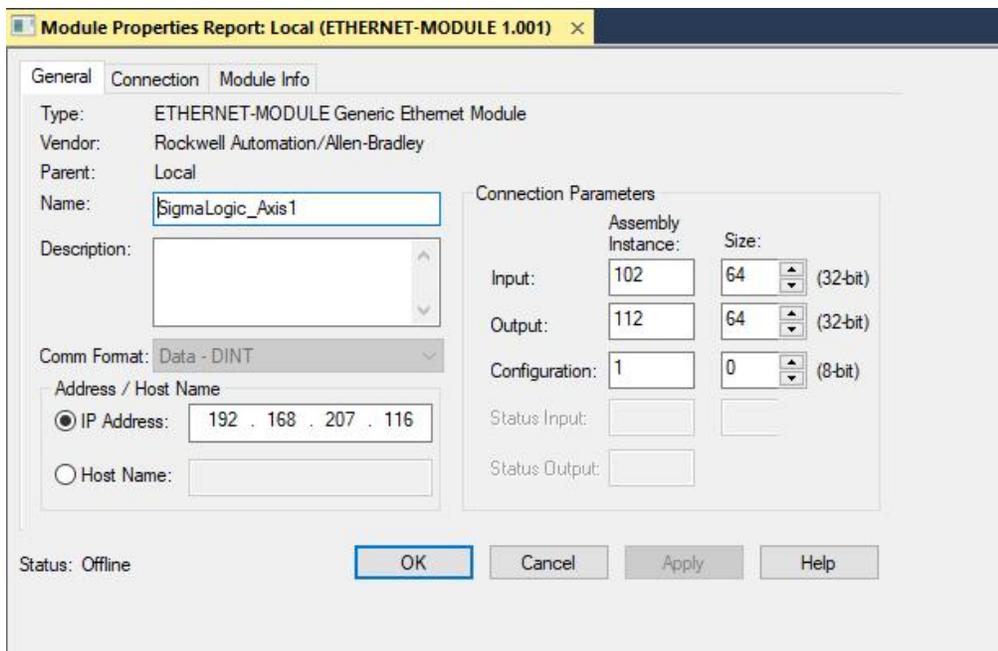
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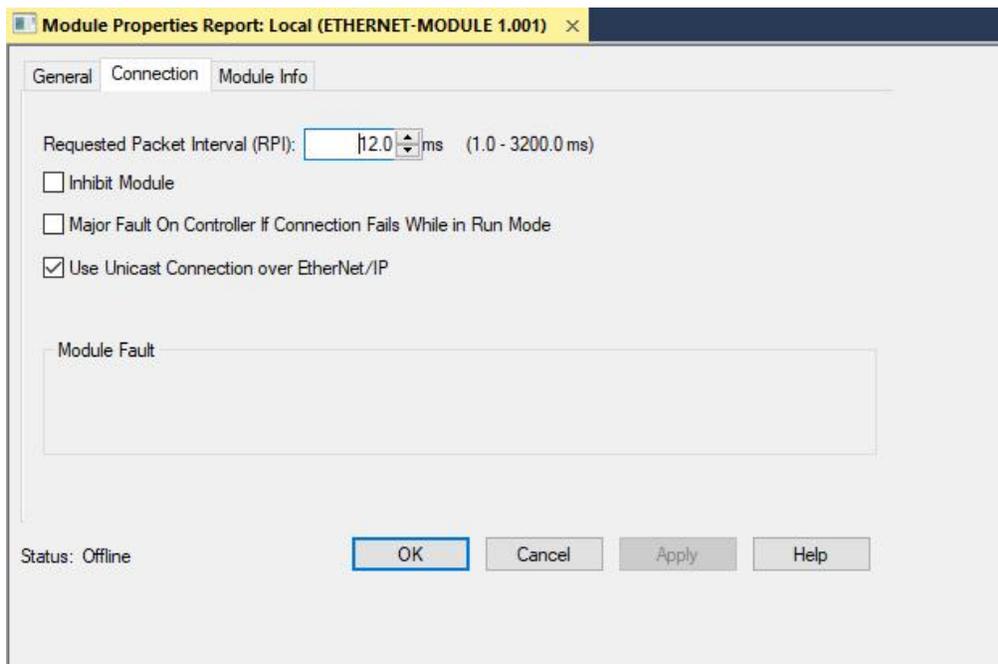
All Add-On Instructions for Studio 5000 can be downloaded from Yaskawa's website at:

www.yaskawa.com/sigmalogic

This will be a zip file containing all available AOIs and example code. QuickStart video #2 (Connection) guides the user through importing the AOIs into Studio 5000. Once imported, they will show up in the Add-On-Defined Folder in the Controller Organizer.

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▲ 🗀 Add-On Instructions
    📄 MAB_Yaskawa
    📄 MAFR_Yaskawa
    📄 MAG_Yaskawa
    📄 MAHSP_Yaskawa
    📄 MAH_Yaskawa
    📄 MAJ_Yaskawa
    📄 MAM_Yaskawa
    📄 MAS_Yaskawa
    📄 MCFG_Yaskawa
    📄 MCLK_Yaskawa
    📄 MHSI_Yaskawa
    📄 MPLS_Yaskawa
    📄 MRSE_Yaskawa
    📄 MSF_Yaskawa
    📄 MSO_Yaskawa
    📄 MSQE_Yaskawa
    📄 MSQR_Yaskawa
    📄 MSTL_Yaskawa
    📄 MTRQ_Yaskawa

The user must also make sure that the required dataypes for the AOI's to function are created in the user defined datatypes section. If not then please make sure to import the datatypes into the Logix Designer Program.

▲ 🗀 Data Types
  ▲ 🗀 User-Defined
    Yaskawa_AOI_Status_Bits
    Yaskawa_EIP_Servo
    Yaskawa_IN_from_Servo
    Yaskawa_OUT_to_Servo
    Yaskawa_PLS_Switch

4. **MCFG_Yaskawa (Configuration & Status)**

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MCFG_Yaskawa must be included in the Logix Designer program in order to use SigmaLogic and should always be enabled. The Axis_IN and Axis_OUT parameters link the AOI to the physical generic Ethernet module that was configured. The Axis parameter creates a User-Defined DataType called Yaskawa_EIP_Servo. The Axis structure is then used in all subsequent AOIs.

If StfwreMismatch output is ON then please update your Sigmalogic controller program to an appropriate version prescribed in the following link

https://www.yaskawa.com/products/motion/sigma-7-servo-products/software-tools/sigmalogic-software-package/-/content/_50483a92-6e31-4f8a-910c-fc20f8d19245_DownloadSigmaLogicSoftwarePackage

For more information regarding the information available in the Axis structure, please refer to Appendix A&B in this document. There is a wealth of useful information that exists in this structure and is updated automatically as long as the MCFG_Yaskawa AOI is enabled and heartbeat signal output(HB) fluctuates.

It is highly recommend that the sigmalogic AOI's must be run on a periodic task interval of 12ms or higher for reliable operation.

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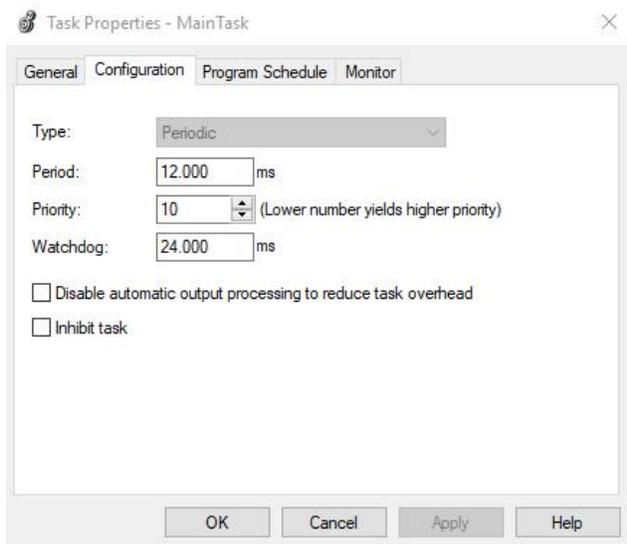
5. Interlocks
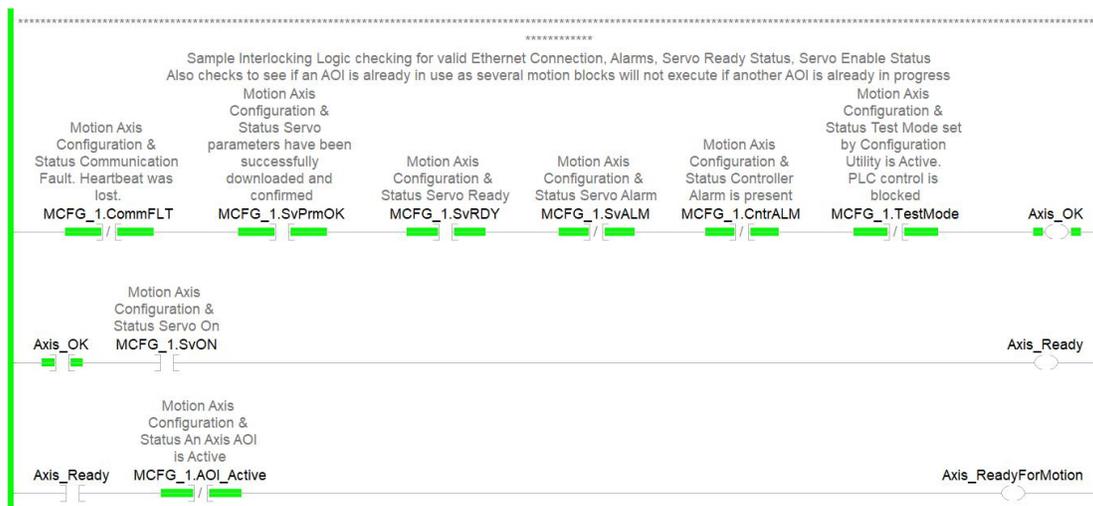
This section of logic was written to provide three Boolean variables for use further down in the code. Axis_OK will be TRUE if the SigmaLogic axis has good communication, the amplifier has power and no alarms. Axis_Ready further checks the servo enable status and

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will be TRUE when the servo motor is enabled. Axis_ReadyForMotion takes it one step further and makes sure that no AOI is already in progress. Most of the motion-related AOIs cannot be executed if another AOI is active so Axis_ReadyForMotion is used often to ensure that the conditions are acceptable to enable a new AOI.

6. SigmaLogic Input/Output Status

Yaskawa SigmaLogic Axis Structure Digital IO Status.
Bits 0-7, CN13 Inputs 0-7, Used as Flag 65-72.
Bits 8-15, CN13 Outputs 0-7, Used as Flag 73-80.
Bits 16-22, CN1 Inputs 0-6, Used as Flag 81-87.
Bits 23-25, CN1 Outputs 0-2, Used as Flag 88-90.
The only reason for using the IOStatusBits variable instead of the Axis.I.IOStatusBits location was to be able to customize the labels/descriptions.

This part of the code is completely optional but can provide a good way to customize the descriptions of any Inputs or Outputs used with SigmaLogic. The status of all of the Digital Input and Output points available on the SigmaLogic controller (CN13) and the amplifier (CN1) are stored in Axis.I.IOStatusBits. This rung simply copies this status into a DINT variable called IOStatusBits. The description for each bit of IOStatusBits can now be customized for display in ladder.

| ⊿ IOStatusBits	Local	917504		Decimal
IOStatusBits.0		0		Decimal
IOStatusBits.1		0		Decimal
IOStatusBits.2		0		Decimal
IOStatusBits.3		0		Decimal
IOStatusBits.4		0		Decimal

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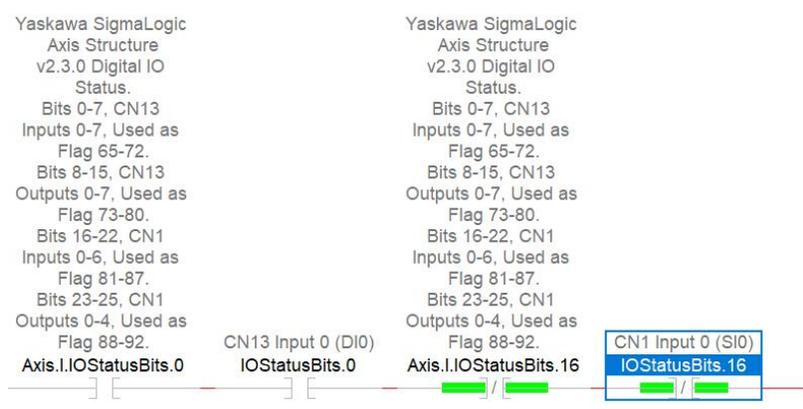
The picture above shows the differences in descriptions between Axis.I.IOStatus and IOStatus bits even though they display the same status.

7. MAFR_Yaskawa (Fault Reset), MSO_Yaskawa (Servo On), MSF_Yaskawa (Servo Off), MAS_Yaskawa (Stop)

The Fault Reset (MAFR_Yaskawa), Servo On (MSO_Yaskawa), Servo Off (MSF_Yaskawa) and Stop (MAS_Yaskawa) AOIs are pretty straightforward and do not require much in the way of interlocking. The Stop and Fault Reset can all be executed even if other AOIs are in progress.

8. MAHSP_Yaskawa (Set Position)

This AOI sets the current position of the servo motor or of the External Ecnoder (if applicable) to a specified value. This command is a simpler alternative to the MAH_Yaskwa command with HomeType = 0 (Set Position). When executing this function, the Axis can be in either enabled or disabled state.
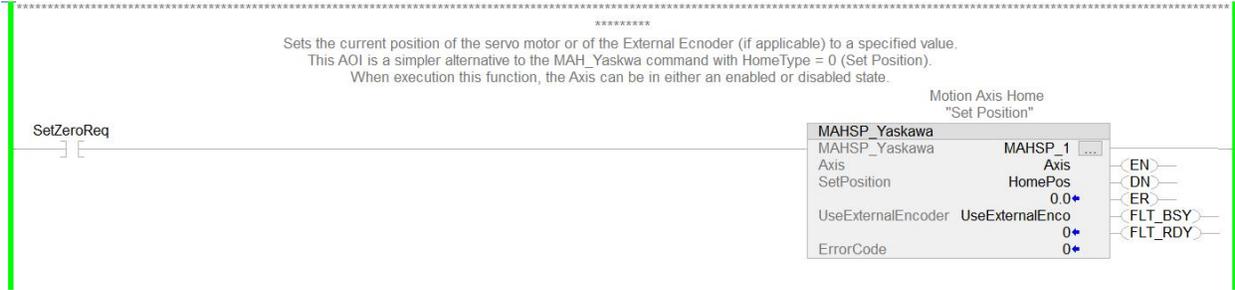
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9. MAH_Yaskawa (Homing)

To start the homing search, the code is looking for the rising edge of either the HomeSearchStart bit or Input SI2 from the amplifier I/O. As long as Axis_ReadyForMotion is also true, the HomeSearchReq bit will be latched in. It will hold the enable on to the MAH AOI. This will stay latched until the home search is complete (PC) or a stop has been issued. This type of latched enable signal is used for most of the motion AOIs.

The MAH_Yaskawa AOI has many different options and configurations which define the type of home search being performed. The following table explains the different AOI inputs and resulting home search routines:

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AOI Inputs			
HomeType	**Direction**	**Use_Cpulse**	**Description**
0	N/A	N/A	Set Position Directly
1	0	N/A	Home in Positive Direction to Hard Stop
1	1	N/A	Home in Negative Direction to Hard Stop
2	0	0	Home in Positive Direction to Limit Switch
2	1	0	Home in Negative Direction to Limit Switch
2	0	1	Home in Positive Direction to Limit Switch with C-Pulse
2	1	1	Home in Negative Direction to Limit Switch with C-Pulse
3	0	0	Home in Positive Direction to Flag
3	1	0	Home in Negative Direction to Flag
3	0	1	Home in Positive Direction to Flag with C-Pulse
3	1	1	Home in Negative Direction to Flag with C-Pulse
4	0	1	Home in Positive Direction to C-Pulse only
4	1	1	Home in Negative Direction to C-Pulse only

10. MAJ_Yaskawa (Jog, Jog w/ Registration)
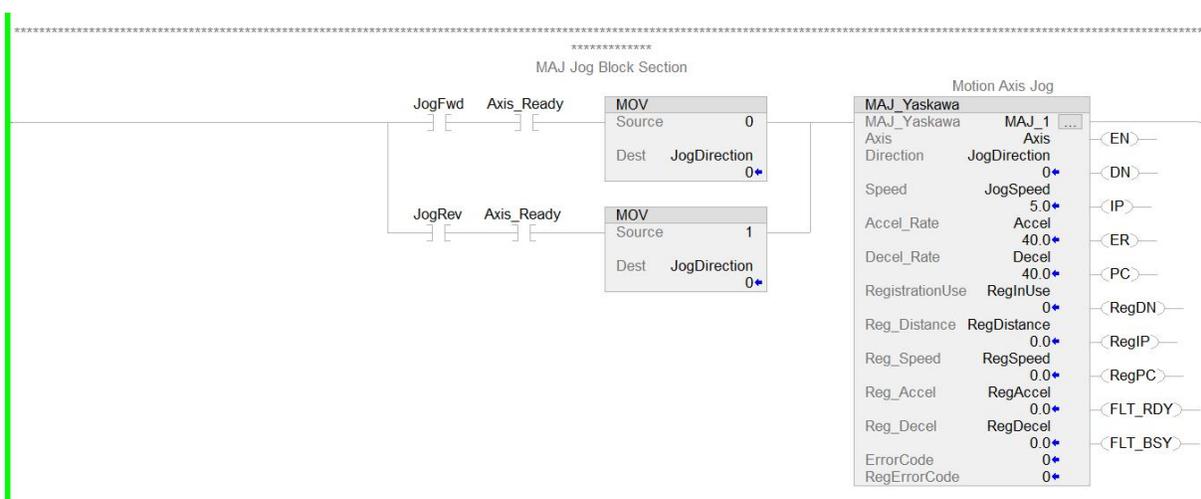
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The MAJ AOI jogs the motor forward or reverse depending on the Direction input. As long as the enable is active, the motor will be jogging. When the enable turns off, the motor decelerates at the Decel_Rate to a stop. If RegistrationUse is set to true, then the jog move will be interrupted and SigmaLogic performs a relative move when the registration latch input (Amplifier Input SI4) is activated. After a successful registration move has been completed, the enable must by cycled to start jogging once again. If the registration latch input is not activated, the motor will continue to jog.

11. MAM_Yaskawa (Move)
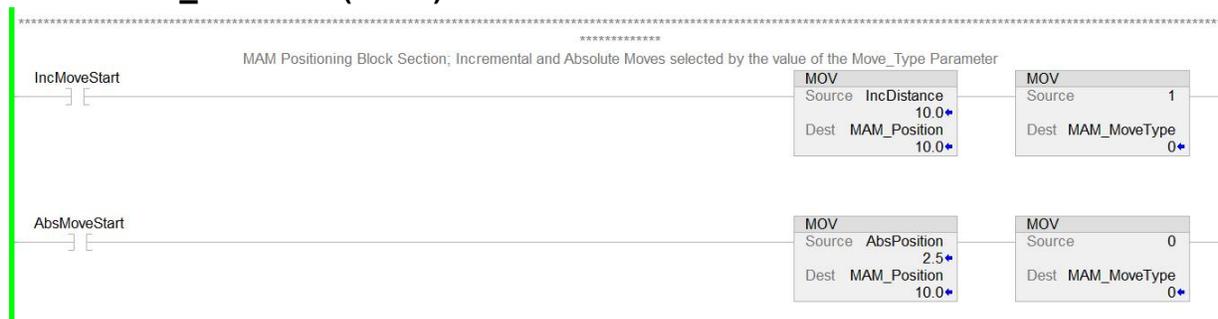
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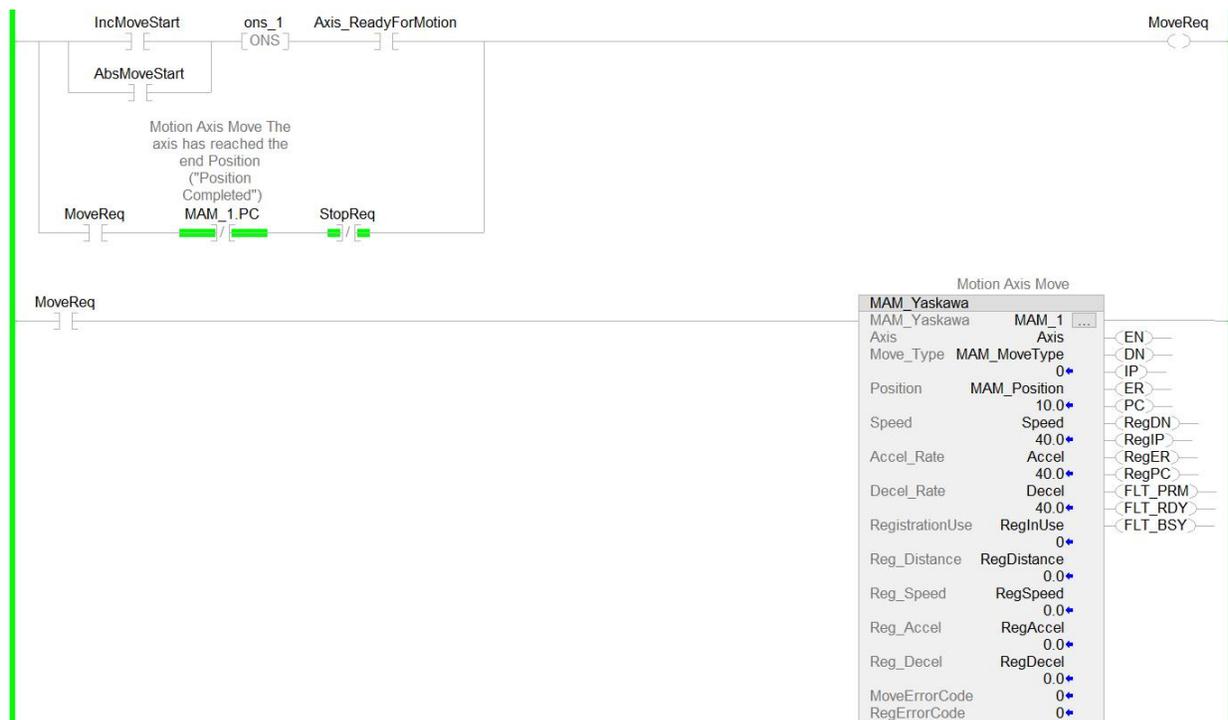
The MAM AOI performs either an incremental index move or a move to an absolute position. The Move_Type input dictates which type of move is commanded. From the code above, the Position and Move_Type inputs are loaded based on whether an incremental or absolute move is commanded. If Axis_ReadyForMotion is true, a rising edge of either IncMoveStart, AbsMoveStart, Input 3 or Input 4 will latch in the MoveReq bit. This bit hold on the enable for the MAM AOI until the move is complete (PC) or a stop has been issued.

If RegistrationUse is set to true, then the move will be interrupted and SigmaLogic performs a relative move when the registration latch input (Amplifier Input SI4) is activated. If a registration move is triggered, then the RegIP output will be true and the RegPC output will be true once the registration move has completed. To use the same latching logic for the MAM enable when registration is used, the RegPC signal should also be added to logic as shown below.

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If the registration latch input is not activated, the motor will complete the original incremental or absolute index move and the PC output will turn on.

MAM Type	Direction	Description
0	N/A	Linear Absolute
1	Positive / Negative (-)	Incremental Relative
2	Shortest Path	Rotary Absolute
3	Positive	Rotary Absolute
4	Negative	Rotary Absolute

12. MHSI_Yaskawa (High Speed Index)

The MHSI AOI is used primarily when the delays of the Ethernet/IP communication cycle could impact the desired performance. The MHSI function reacts to a physical input to start the move instead of a command over EIP which represents the fastest way to trigger motion. Additionally, if the profile is a repeating profile with a move and a dwell, the MSHI AOI would give the user the fastest response and save programming effort creating logic with MAM, TON and counters.

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The code above uses a signal (HSI_Enable or SI4) to enable the MHSI AOI. Using MHSI is a two-step process. It must be enabled for the trigger flag to start the index. There are many ways to adjust the move performed based on the inputs MoveMode, MoveType and CalcMethod.

The embedded help file for the MHSI_Yaskawa AOI describes these parameters in detail. The example shown on the previous page performs a relative move of 10 revs when the rising edge of the trigger flag (86 or CN1 SI5) is activated. The trigger flag can be assigned to any other physical Input signal from CN1 or CN13 by modifying the flag number.

If the MHSI parameter MoveType changes to a value of 2, then the trigger flag would start a repeating move for two cycles. A relative move of 10 revs followed by a dwell of 500ms would be repeated twice. For any repeating moves to run, the trigger flag must stay ON. If the trigger flag pulses, then the MHSI will perform one move and one dwell before finishing.

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There are also two additional rungs used with this MHSI AOI example. These show how a programmer might choose to use the AOI status that is updated automatically and stored in the Axis structure. Each AOI has similar status information in the Axis structure. The code below turns on Output 6 when the MHSI index is in progress and turns ON Output 7 when the MHSI index is complete.

13. MAB_Yaskawa (Motion Axis Blend)
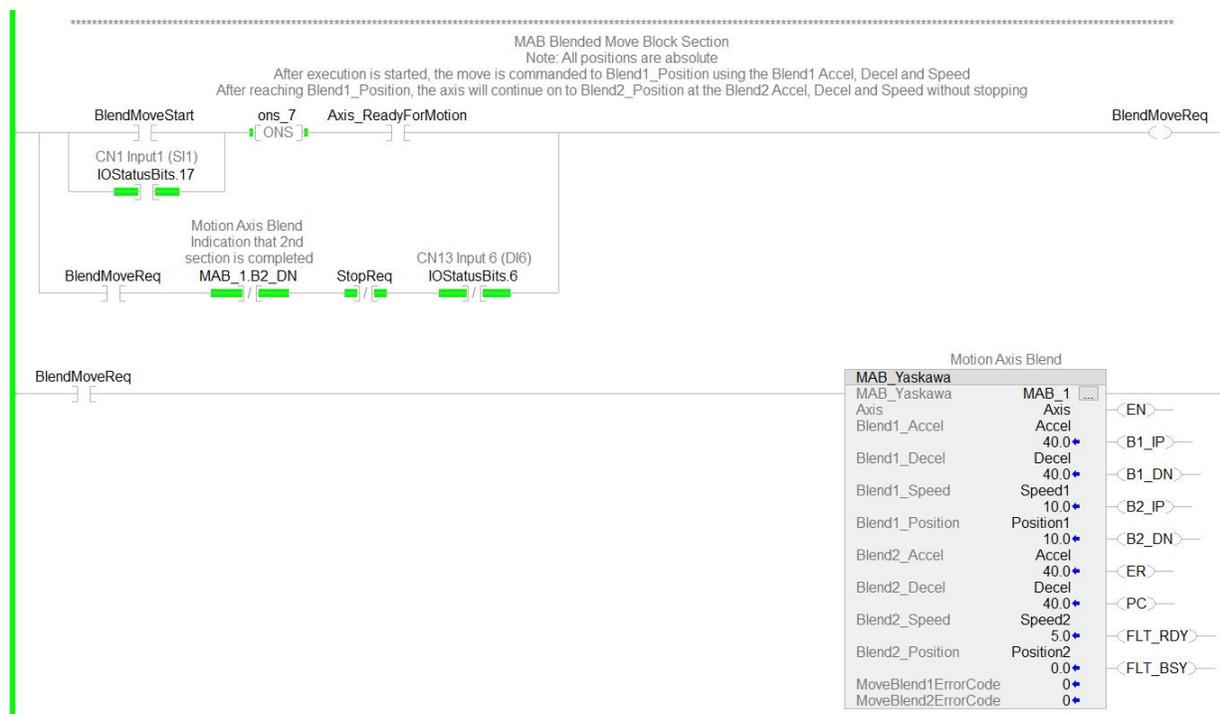
The MAB_Yaskawa AOI performs a two-stage absolute index. This is typically used when a move profile requires different speeds at the beginning and the end of the move. The position inputs to the AOI are absolute positions so the motor position when the MAB AOI is enabled will dictate motor direction.
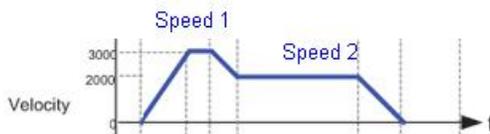
The picture above shows a sample move profile where the motor moves to Position1 at Speed1 and then decelerates down to Speed2 to finish moving to the final end position (Position2).

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14. MAG_Yaskawa (Electronic Gearing)

For the MAG_Yaskawa AOI to work properly, the external encoder must be set up first with LogicWorks. To avoid any errors in the MAG AOI, make sure that the "Enable External Encoder as a Gearing Master" is checked. Below is an example setup:

It is also recommended to check the feedback and scaling by going to the Monitor -> Status and I/O section.

In the bottom left corner, it is possible to see the current external encoder position

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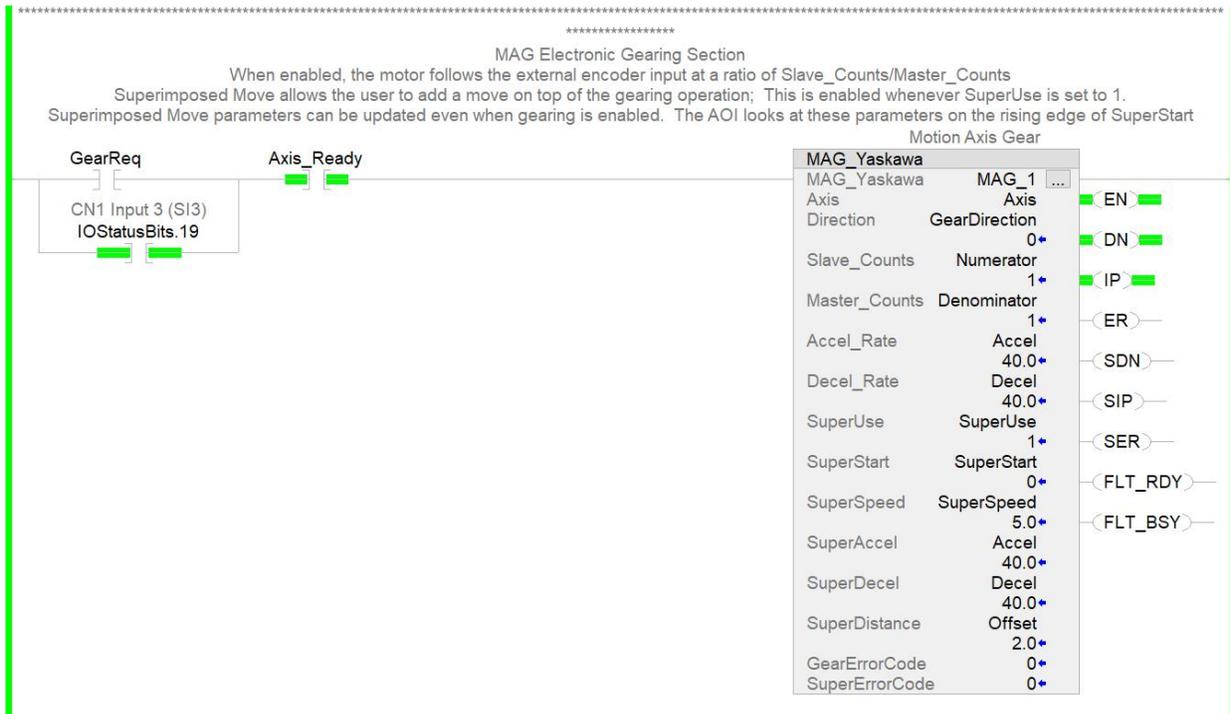
When the MAG_Yaskawa AOI is enabled, the SigmaLogic axis follows the external encoder wired into CN13. While the encoder resolution and scaling is part of the LogicWorks setup shown on the previous page, the gearing ratio is adjustable from Logix Designer via the Slave_Counts and Master_Counts inputs. MAG also allows for a superimposed move to be commanded on top of the gearing relationship. This is typically used for phase shifting, registration corrections or other offsets. When the enable to MAG is turned off, the motor will decelerate at the Decel_Rate to a stop.

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15. MSQR & MSQE (Sequence Run and Edit)

The MSQR_Yaskawa and MSQE_Yaskawa AOIs are used to execute and modify pre-programmed sequences in SigmaLogic. Those sequences must be created initially in LogicWorks. The picture below shows a simple two-step sequence:

SUMMARY | | | | | | | | | | | | | | | | | Flag Reference |

Step	Before The Move				The Move										After The Move							
	Wait		Set								Registration Data		Wait		Set		Time Delay	Branch		Wait		
	Flag	State	Flag	State	Move Type	Position	Accel.	Decel.	Speed	Direction	Reg. Distance	Reg. Speed	Flag	State	Flag	State	Milliseconds	Flag	State	True Jump	False Jump	
1			64	Off	Relative	10	20	20	2								1000			END	2	
2					Absolute	0	20	20	2						64	On				END	END	

When the sequence is started on Step 1, the motor will go 10 revs in the positive direction, wait 1000ms and then return to the zero position. In this example, Flag 64 acts as a sequence complete bit since there is no other bit that would indicate that the sequence has finished. There are 64 user-defined flags for this type of handshaking and Flag 64 was chosen aribitrarily.

The example code on the next page shows one way to execute the sequence starting at Step 1 using the MSQR AOI. Once the rising edge of SeqStart or DI5 is detected, the SeqReq bit is latched in. This will keep the enable to MSQR on until Flag 64 (Axis.I.FlagStatusBit2.31) turns on or the move is aborted via Stop. There is an additional contact that will not allow the sequence to run if a sequence edit is in progress.

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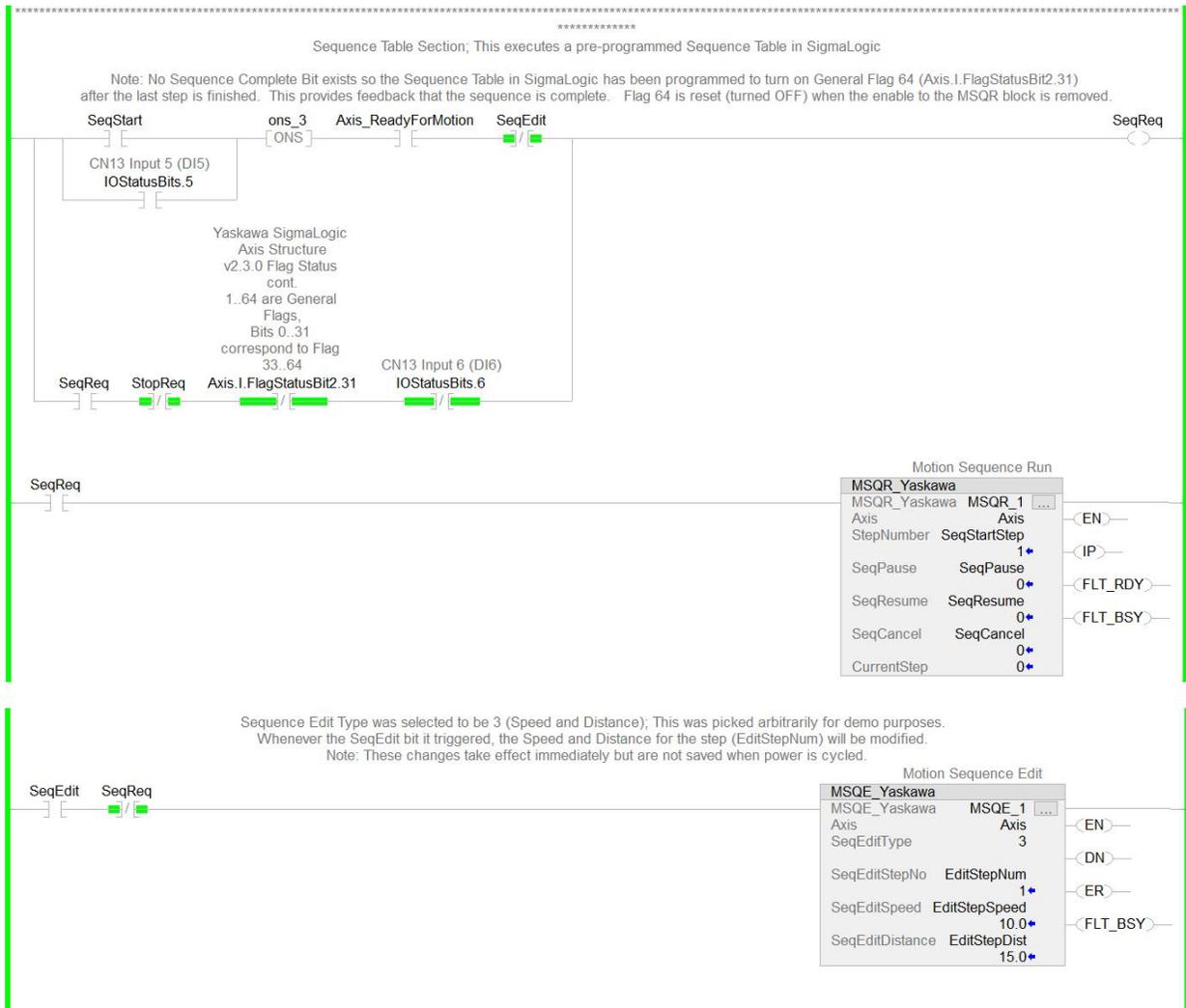
The MSQE_Yaskawa AOI provide a way to modify the Speed and Position of an individual step in the sequence table. The code above shows that the speed for Step 1 will be changed to 5 rev/s and the position for Step 1 will be changed to 5 revs if the SeqEdit bit turns on. There is an additional contact preventing the edit from occurring if a sequence is currently running. An important note is that these edits are not retained in SigmaLogic when power is cycled. When SigmaLogic boots up, the sequence table reverts back to the values that were last sent from LogicWorks.

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16. MSTL_Yaskawa (Set Torque Limit)

Helps to set the torque or force limit limit to the axis. This AOI will disable the servo axis upon execution. The SetForwardLimit and SetReverseLimit input should be either 1 or 0 depending on what is being set. The Torque/Force Limit setting range from 0-800% of rated motor torque/force.
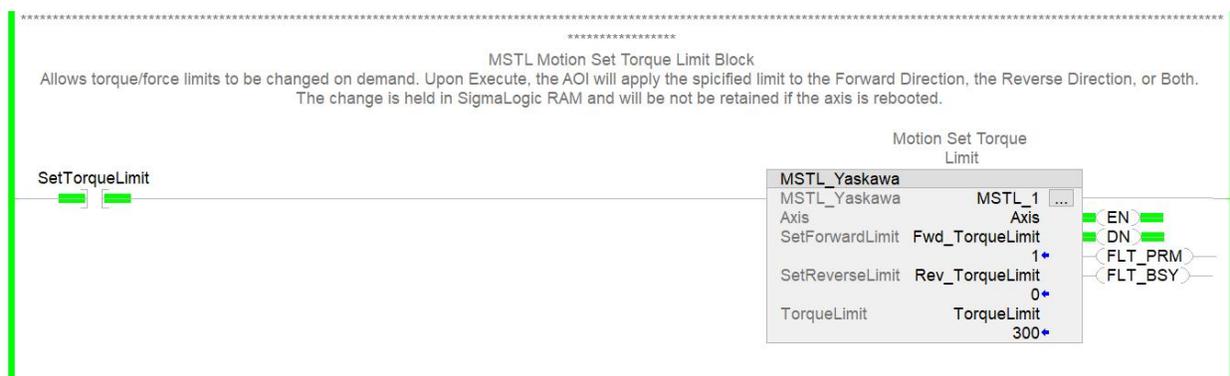
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17. MTRQ_Yaskawa (Torque Control)

The following code shows an example of using MTRQ for a demo capping application:
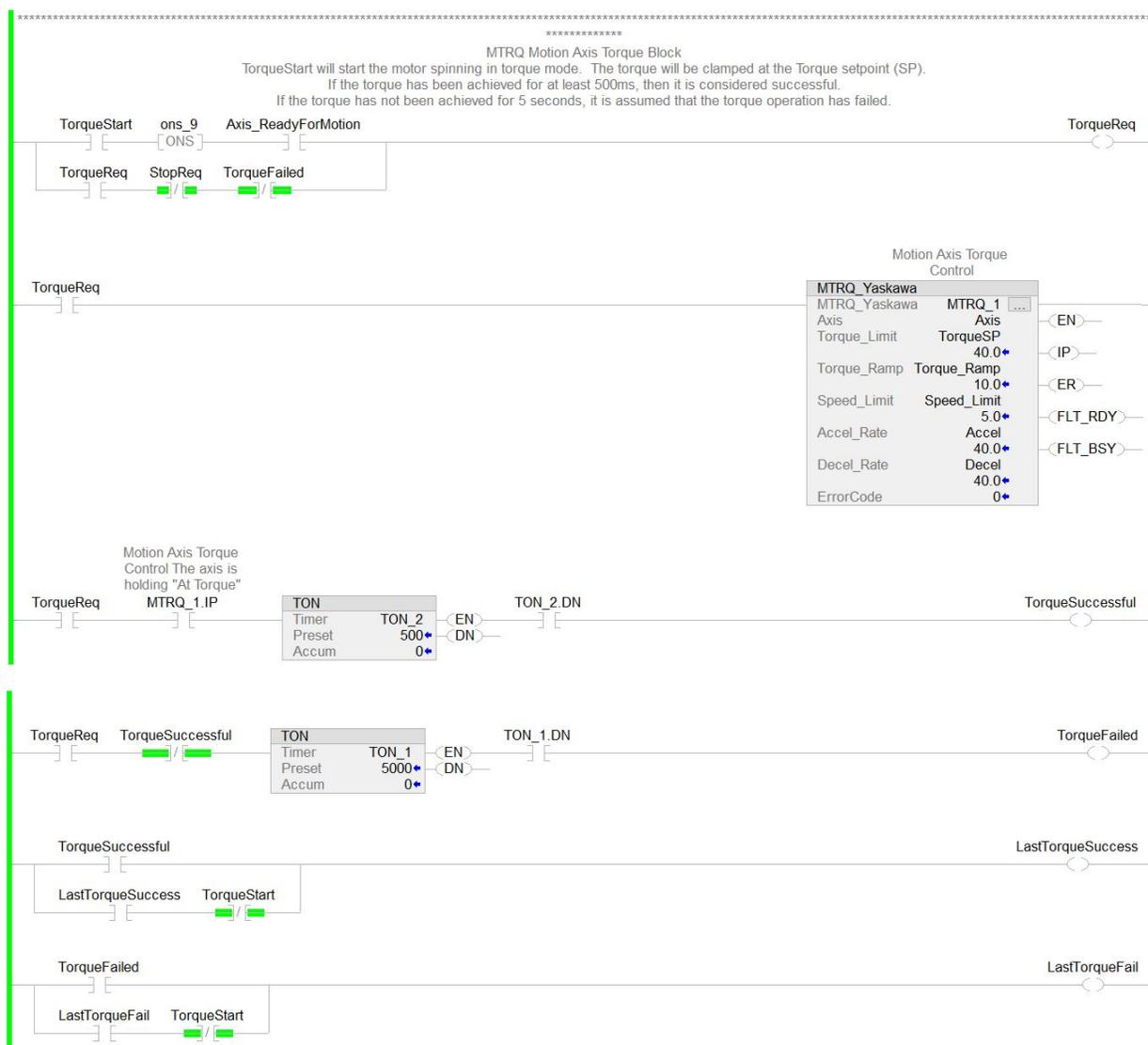
The MTRQ section of code has been written to show how the MTRQ AOI might be used in an application. The concept is that the motor starts spinning at a commanded torque

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setpoint. If the actual torque reaches the torque setpoint for at least 500ms, then the operation is considered successful (TorqueSuccessful). If five seconds passes without this condition being met, then the operation is considered a failure (TorqueFailed). Either signal (TorqueSuccessful, TorqueFailed) will unlatch the TorqueReq signal and the motor will decelerate to a stop.

There are many ways to use the MTRQ_Yaskawa AOI, however. The important features are that when enabled, the MTRQ AOI puts the servo in torque mode. The torque is limited by the Torque_Limit input. The speed of the motor during the torque operation will be limited by the Speed_Limit input. The actual speed and torque of the motor will vary depending on the resistance of the load but will not be allowed to exceed the torque or speed limits.

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18. MCLK_Yaskawa (Set Clock)
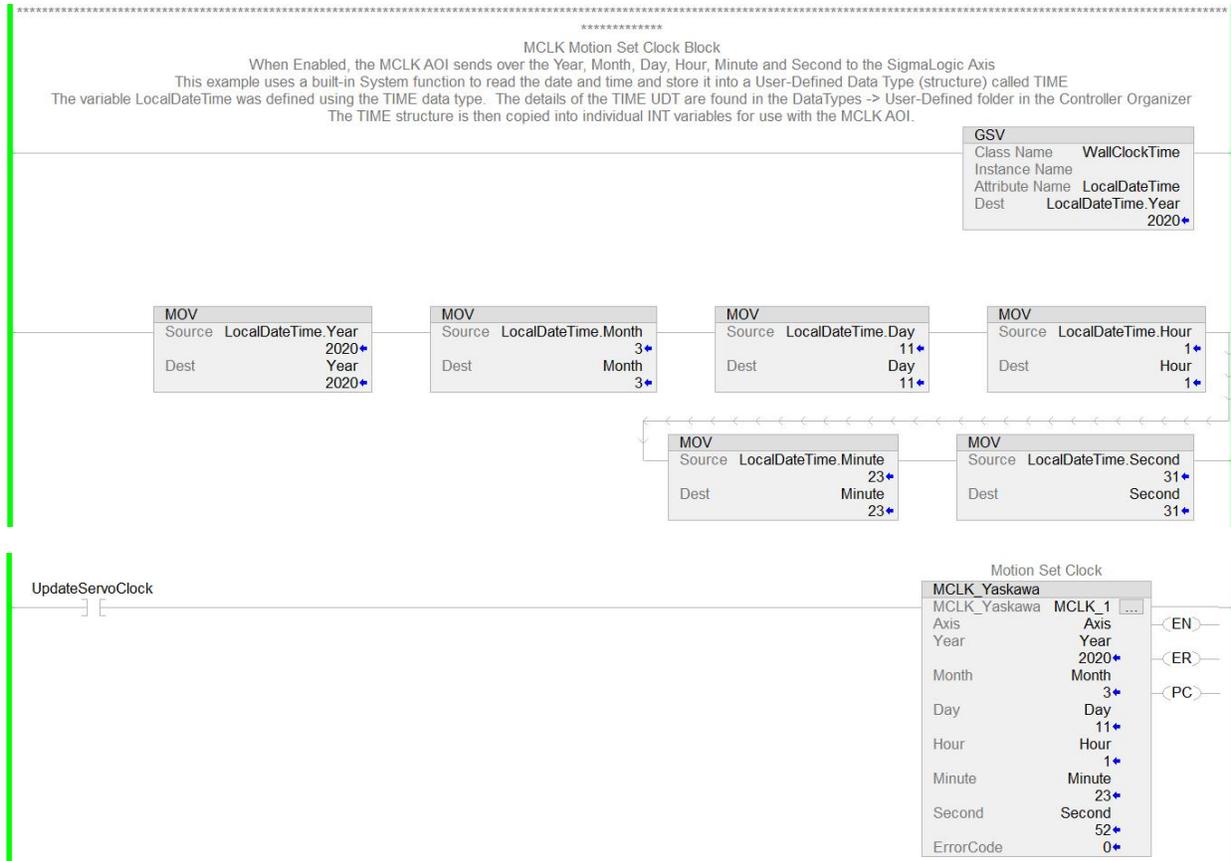
The MCLK_Yaskawa AOI was created to allow the SigmaLogic to be synchronized with the PLC clock. The benefit to using this AOI is so that the Alarm History in SigmaLogic matches any time stamping in the PLC. The PLC time and date is read from a System object called WallClockTime and stored into a structure called LocalDateTime. Then the individual elements from LocalDateTime are moved into the inputs of the MCLK AOI. When MCLK is enabled, the clock in SigmaLogic is updated. No power cycle is required on SigmaLogic.

The structure LocalDateTime uses a user-defined data type (UDT) called TIME that was created in the User-Defined folder in the Controller Organizer. Once created, the TIME structure contains the following elements:
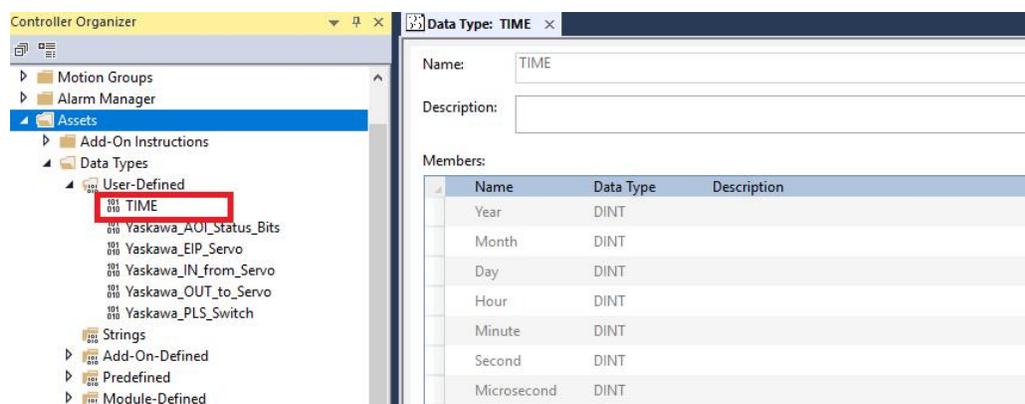
Here is the definition of the LocalDateTime structure:
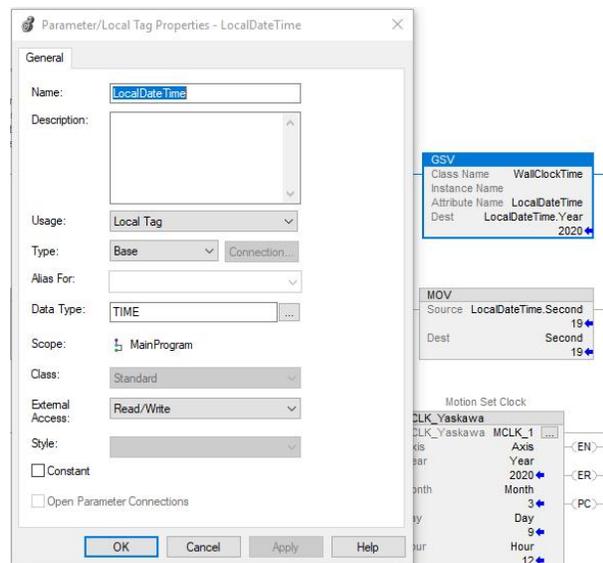
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19. MPLS_Yaskawa (Programmable Limit Switch Outputs)
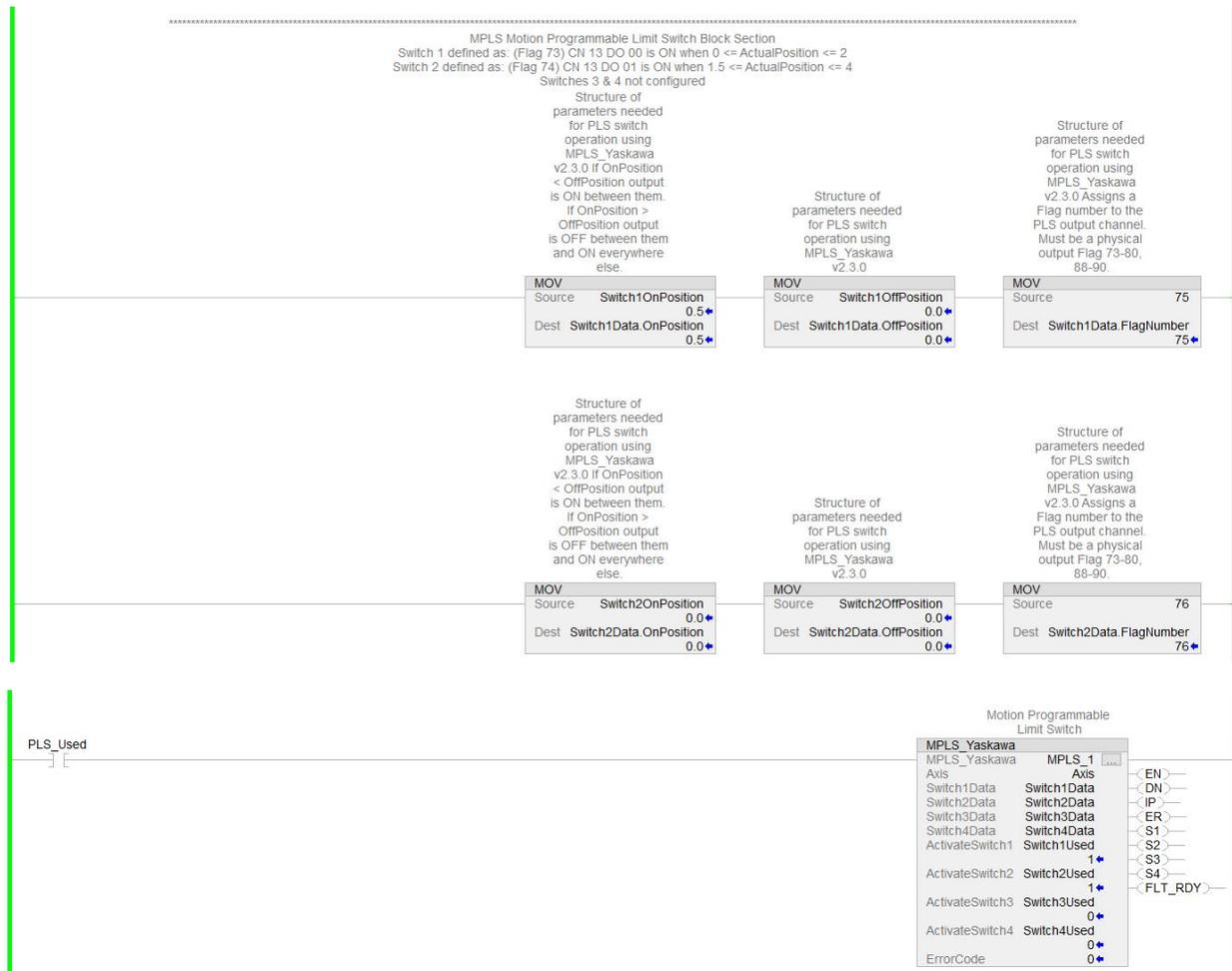
The MPLS_Yaskawa AOI is used when outputs need to be triggered based on motor position. SigmaLogic can fire these position-based outputs faster than the PLC because the EIP communication cycle delays are cut out of the equation. The example above uses two of the available four PLS outputs. Switch1 is mapped to DO 00 (Flag 73) and Switch 2 is mapped to DO 01 (Flag 74). When MPLS is enabled, SigmaLogic will use the On

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Position and Off Position parameters of the SwitchData structure to trigger the outputs mapped by the Flag number. The On and Off Positions can be modified even while MPLS is enabled and those changes take effect immediately.

20. Scaling

Position, Speed and Torque feedback values are included in the Axis structure but the elements of that structure are DINT. The ParameterResolution input of the MCFG AOI defines the number of decimal points of resolution included in those DINT values.

A clean way to take those DINT values and use them as REAL values in the program is to divide the DINT by the resolution and store into REAL variables like ActualPosition, ActualVelocity and ActualTorque.

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APPLICATION NOTE

YASKAWA

Title: SigmaLogic Example Code Example Manual	
Product(s): SigmaLogic, LogicWorks	**Doc. No.** AN.SigmaLogic.02

Appendix A – SigmaLogic Status Registers included in Yaskawa_IN_from_Servo

Name	⊞‖ ▲	Usage	Value	◆ Force Mask ◆	Style	Data Type	Class	Description	◆
▲ Axis.I			{...}	{...}		Yaskawa_IN_from_Servo	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
▶ Axis.I.AlarmText			"	{...}		STRING	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 ServoPack Alarm Code plus Text Descripti...	
Axis.I.b00_Heartbeat			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b01_Alarm			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 ServoPack Alarm	
Axis.I.b02_Warning			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 ServoPack Warning	
Axis.I.b03_Ready			1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 ServoPack Ready	
Axis.I.b04_Enabled			1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 ServoPack Enabled ("Servo On")	
Axis.I.b05_StopComplete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b06_HomeComplete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b07_HomeBusy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b08_HomeActive			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b09_HomeAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b10_HomeError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b11_MoveAbsComplete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b12_MoveAbsBusy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b13_MoveAbsActive			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b14_MoveAbsAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b15_MoveAbsError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b16_MoveRelComplete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b17_MoveRelBusy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b18_MoveRelActive			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b19_MoveRelAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b20_MoveRelError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b21_JogAtSpeed			1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b22_JogBusy			1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b23_JogActive			1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b24_JogAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b25_JogError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b26_GearInSync			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b27_GearBusy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b28_GearActive			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b29_GearAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b30_GearError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b32_MoveSuperComplete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b33_MoveSuperBusy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b34_MoveSuperActive			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b35_MoveSuperAborted			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b36_MoveSuperError			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b37_PowerCycleRequired			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b38_MoveBlend1Complete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b39_MoveBlend1Busy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b40_MoveBlend1Active			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b41_MoveBlend1Abort			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b42_MoveBlend1Error			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b43_MoveBlend2Complete			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b44_MoveBlend2Busy			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b45_MoveBlend2Active			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b46_MoveBlend2Abort			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	
Axis.I.b47_MoveBlend2Error			0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...	

APPLICATION NOTE

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Title: SigmaLogic Example Code Example Manual	
Product(s): SigmaLogic, LogicWorks	**Doc. No.** AN.SigmaLogic.02

Axis.I.b48_RegComplete	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b49_RegBusy	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b50_RegActive	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b51_RegAborted	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b52_RegError	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b53_ResetAbsEncoderActive	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b54_ResetAbsEncoderBusy	8#0	Octal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b55_ResetAbsEncoderDone	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b56_ResetAbsEncoderError	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b57_SeqRunning	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b58_RegSensorNotReached	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b59_SeqEditError	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b60_SeqEditDone	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b61_TorqueAtTorque	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b62_TorqueBusy	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b63_TorqueActive	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b64_TorqueAborted	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b65_TorqueError	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b66_ControllerAlarm	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b67_ApplicationError	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b68_AxisAtStandStill	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b69_TestModeActive	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b70_ServoParamsOK	1	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b71_SetFwdTorqueLimitDone	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.b72_SetRevTorqueLimitDone	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Position	2320108	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Speed	5027	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Torque	650	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.HomeErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.MoveAbsErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.MoveRelErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.JogErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.GearErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.MoveSuperErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...

▷ Axis.I.ServoAlarmID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.ServoWarningID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.ControllerAlarmID	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.AxisGenAlarmID	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.MoveBlend1ErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.MoveBlend2ErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.ResetAbsEncoderErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.FunctionBlockErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.TorqueErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.RegErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.SeqCurrentStep	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.FlagStatusBit1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Flag Status. 1..64 are General Flags, Bits 0....
▷ Axis.I.FlagStatusBit2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Flag Status cont. 1..64 are General Flags, B...
▷ Axis.I.IOStatusBits	786432	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Digital IO Status. Bits 0-7, CN13 Inputs 0-7...
Axis.I.HSI_Moving	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.HSI_Dwelling	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.HSI_Done	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.HSI_Busy	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.HSI_Error	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.HSI_ErrorCode	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...

Axis.I.PLS_Running	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_SwitchStatus1	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_SwitchStatus2	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_SwitchStatus3	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_SwitchStatus4	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_Busy	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.PLS_Error	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.PLS_ErrorCode	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.SetClock_Done	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.SetClock_Busy	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.SetClock_Error	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.SetClock_ErrorID	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.SoftwareVersion	20300012	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.FirmwareVersion	30700448	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.CommandedPos	2979004	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.CommandedPosNonCyc	2979004	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.CommandedSpeed	5000	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Year	2020	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Month	3	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Day	11	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Hour	13	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Minute	58	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.Clock_Second	14	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
Axis.I.AnalogInput	-0.0029	Float	REAL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 CN13, AI_01 [v]
Axis.I.BrakeBypassActive	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.ForwardTorqueLimit	300	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.I.ReverseTorqueLimit	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data coming from the Yaska...
▷ Axis.AOI_SB	{...}	{...}	Yaskawa_AOI_Status_Bits	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Internal bits used to interlock Yaskawa AO...

Title: SigmaLogic Example Code Example Manual	
Product(s): SigmaLogic, LogicWorks	**Doc. No.** AN.SigmaLogic.02

Appendix B – SigmaLogic Status Registers used in Yaskawa_OUT_to_Servo

Name	Usage	Value	Force Mask	Style	Data Type	Class	Description	C
◢ Axis.O		{...}	{...}		Yaskawa_OUT_to_Servo	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
Axis.O.b00_ServoOn		1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Servo On	
Axis.O.b01_Stop		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Stops All Current Motion in Progress	
Axis.O.b02_Home		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Start Homing Process	
Axis.O.b03_MoveStart1		1		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Start Current Motion	
Axis.O.b06_SuperImpose		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
Axis.O.b07_ServoAlarmReset		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Servo Alarm Reset	
Axis.O.b08_ControllerAlarmReset		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 SigmaLogic Alarm Reset	
Axis.O.b09_MoveStart2		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Start Second Motion (Blended Move)	
Axis.O.b10_MoveAbort		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Abort Current Move	
Axis.O.b11_MovePause		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Pause Current Move	
Axis.O.b12_SeqPause		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Indexing Sequence Pause	
Axis.O.b13_SeqResume		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Indexing Sequence Resume	
Axis.O.b14_SeqCancel		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Indexing Sequence Cancel	
Axis.O.b15_AbsEncoderReset		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Absolute Encoder Reset	
Axis.O.b16_SeqStart		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Start Indexing Sequence	
Axis.O.b17_SeqEditSpeed		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Enter Edit Speed	
Axis.O.b18_SeqEditDistance		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Enter Distance Edit	
Axis.O.b19_PLSEnable		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Enable PLS execution	
Axis.O.b20_PLSActivateOutput1		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Activate PLS output1 switch logic	
Axis.O.b21_PLSActivateOutput2		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Activate PLS output2 switch logic	
Axis.O.b22_PLSActivateOutput3		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Activate PLS output3 switch logic	
Axis.O.b23_PLSActivateOutput4		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Activate PLS output4 switch logic	
Axis.O.b24_SetClock		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Set the remote controller clock with data ...	
Axis.O.RebootController		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
Axis.O.UseExternalEncoder		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Use External Encoder when executing MA...	
Axis.O.b32_HeatbeatAnswer		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Heartbeat Answer	
Axis.O.BrakeBypassRequest		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
Axis.O.SetFwdTorqueLimit		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
Axis.O.SetRevTorqueLimit		0		Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.TorqueLimit		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.TorqueRamp		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeMethod		6		Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeSpeed		2000		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	

▷ Axis.O.HomeAccDec		20000		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Home Move Acceleration/Deceleration R...	
▷ Axis.O.HomeBackOffDistance		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeCreepSpeed		250		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeCreepDistanceLimit		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeCreepTimeLimit		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeOffsetDistance		420		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeOffsetSpeed		1000		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomePostion		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeTorque		100000		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeInputNo		84		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeApproachTimeLimit		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeApproachDistLimit		0		Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	
▷ Axis.O.HomeDirection		0		Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...	

APPLICATION NOTE

YASKAWA

Title: SigmaLogic Example Code Example Manual	
Product(s): SigmaLogic, LogicWorks	**Doc. No.** AN.SigmaLogic.02

▷ Axis.O.HomeSwitchMode	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveType	6	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveDirection	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveAccel1	40000	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveAccel2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveDecel1	40000	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveDecel2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveSpeed1	5000	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveSpeed2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveDistance1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MoveDistance2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MovePosition1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.MovePosition2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RegistrationDistance	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.GearNumerator	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.GearDenominator	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.SuperImposeDistance	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.Resolution	3	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RegistrationDirection	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.TuningLevel	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.SequenceStep	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Staring Sequence Step Number
▷ Axis.O.SequenceEditStep	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Sequence Step Number to Edit
▷ Axis.O.FlagCommandBits1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Flag Commands. 1..64 are General Flags, ...
▷ Axis.O.FlagCommandBits2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Flag Commands cont. 1..64 are General Fl...
▷ Axis.O.DigitalOutCommandBits	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Digital Output commands. Bits 0-7 corres...
▷ Axis.O.SequenceEditSpeed	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.SequenceEditDistance	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.FeedRateOverride	100	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
Axis.O.HSI_Enable	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
Axis.O.HSI_MoveMode	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 0=Relative; 1=Moves per Cycle
Axis.O.HSI_CalcMethod	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 0=Accel/Decel; 1=Time
Axis.O.HSI_MoveDirection	0	Decimal	BOOL	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 0 = Negative; 1 = Positive
▷ Axis.O.HSI_TriggerFlag	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_MovingFlag	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...

▷ Axis.O.HSI_DwellingFlag	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_DoneFlag	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_MoveType	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 0=Single; 1=Repeat; 2=Repeat "x" times
▷ Axis.O.HSI_RepeatNumber	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_Distance	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_Speed	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_Accel	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_MoveTime	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.HSI_DwellTime	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OutputFlag1	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OutputFlag2	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OutputFlag3	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OutputFlag4	0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnPosition1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffPosition1	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnPosition2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffPosition2	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnPosition3	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffPosition3	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnPosition4	0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...

▷ Axis.O.PLS_OffPosition4		0	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnCompensation1		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffCompensation1		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnCompensation2		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffCompensation2		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnCompensation3		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffCompensation3		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OnCompensation4		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.PLS_OffCompensation4		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Year		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Month		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Day		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Hour		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Min		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.RTC_Sec		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.StopDecel		50000	Decimal	DINT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 Structure of data sent out to the Yaskawa ...
▷ Axis.O.AnalogOutput		0	Decimal	INT	Standard	Yaskawa SigmaLogic Axis Structure v2.3.0 CN13, AO_01 [mV]