JVL AOI IOLink Manual

Rockwell PLC AOI for the control of JVL Motors by IO-Link

V1.0 01/2025

Contents

1 Note 3
2 Configuration 3
2.1 Requirements 3
2.2 MacTalk Configuration ModeFM and Mode66 3
2.3 Import AOIs and Data Types 4
2.4 Setup IO-Link Master 5
3 Addon Instructions Mode66 6
3.1 JVL_COM for Rockwell IO-Link-Master 6
3.2 JVL_COM for IFM IO-Link-Master 7
3.3 JVL_MSO 8
3.4 JVL_MSF 8
3.5 JVL_MAS 9
3.6 JVL_MAH_IOLink 10
3.7 JVL_MAJ 11
3.8 JVL_MAM 12
3.9 JVL_MAFR 13
4 Addon Instructions ModeFM 13
4.1 JVL_FM_Mode 13

1 Note

Please note that this AOIs have been tested with MacTalk V1.91.01.46.

The JVL AOI's will simplify the integration into the Rockwell Logix5000 environment.

For the Rockwell motion programmer the JVL AOI's will help the integration of the JVL motors into a Rockwell application.

This document along with the example project should give a good understanding on how to setup and control a JVL motor.

2 Configuration

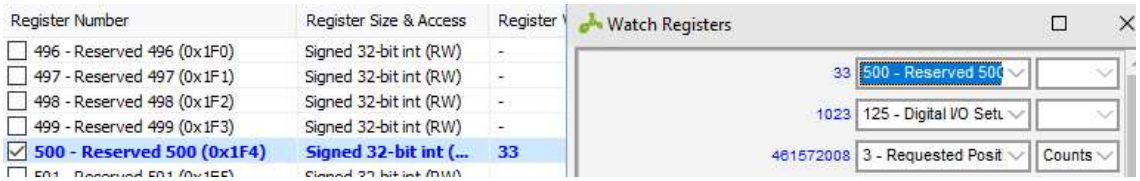
2.1 Requirements

Studio5000 V33 or higher.

2.2 MacTalk Configuration ModeFM and Mode66

In the MacTalk project for your JVL device you can set register 500 in Watch Registers:

1. Register 500 = 33 to choose ModeFM (2 bytes read/write exchange).
2. Register 500 = 1 to choose Mode66 (24 bytes read/write exchange).

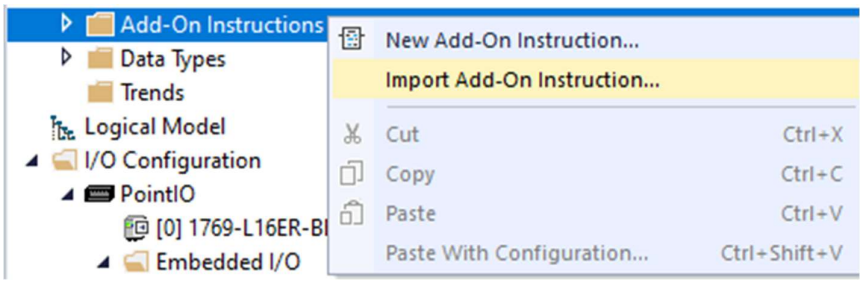


See also description in IOLink_Usermanual_v0_3.

> Once configured, please remember to click the "Save in Motor" button in order to save configuration in the drive.

2.3 Import AOIs and Data Types

To import the Add-On Instruction and select Import Add-On Instruction and choose/open JVL_IOLink_AOI.L5X.

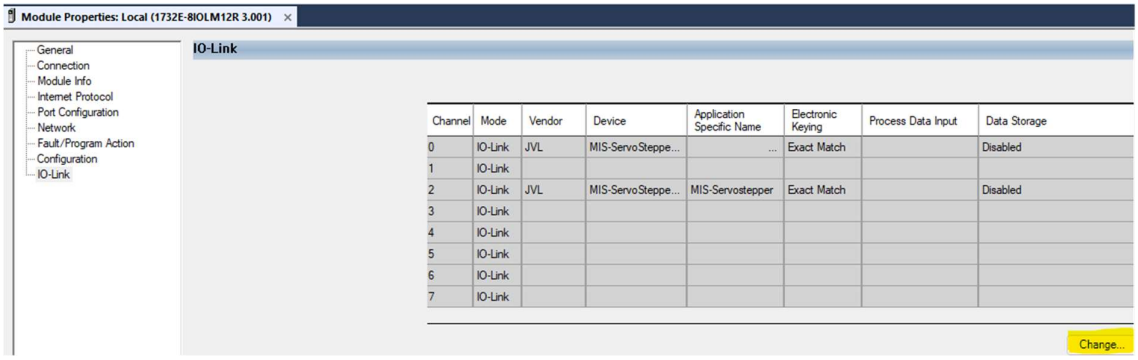


With these AOIs the Datatypes should be installed, too.

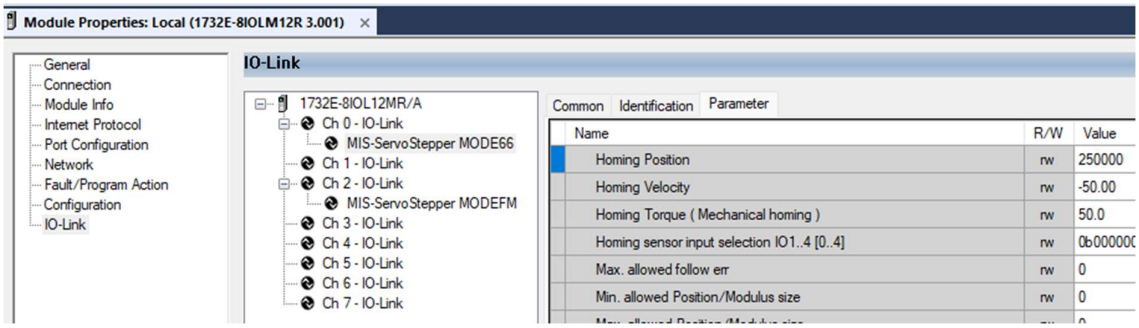
2.4 Setup IO-Link Master

In this case we used a Rockwell IO-Link-Master. In the module properties you can setup the IO-Link master.

In the IO-Link view install the IODD-file for Mode66 and ModeFM and choose the port/channel for these Modes.



When you are online you can setup the ISDU-parameter for Mode66 and ModeFM



For other IO-Link-master (like Balluff, IFM, …) the setup could be different. Some IO-Link master need extra parameter tool to setup these ISDU-parameter.

3 Addon Instructions Mode66

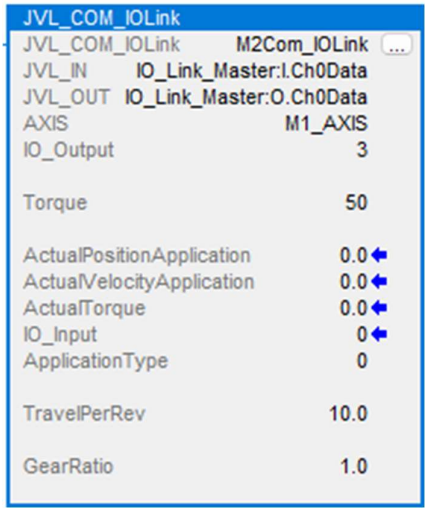
3.1 JVL_COM for Rockwell IO-Link-Master

3.1.1 Description

JVL_COM_IOLink performs cyclic communication over IO-Link. The cyclic data setup is transferred between PLC input/output area and the axis data.

This AOI also calculates the position and velocity depending on the application type

This AOI is required for all other motion control AOIs to operate.



3.1.2 Parameter

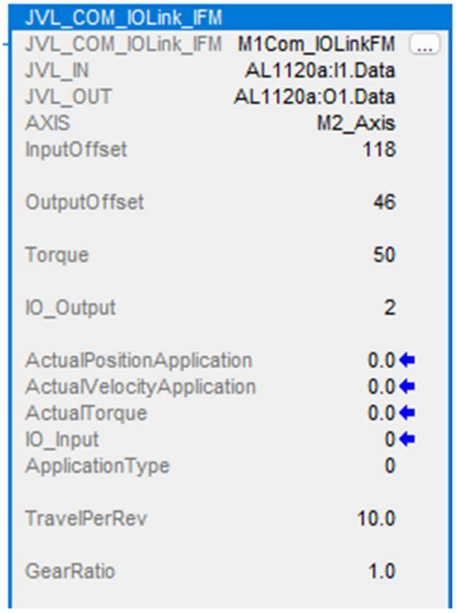
Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
JVL_IN	InOut	SINT[24]	Processdata IN, SINT[24]
JVL_OUT	InOut	SINT[24]	Processdata OUT, SINT[24]
AXIS	InOut	JVL_AXIS	Drive Data
IO_Output	Input	DINT	Set Output, Output1 bit0, Output2 bit1,...
Torque	Input	DINT	Set Torque in %
ActualPositionAp...	Output	REAL	scaled actual Position
ActualVelocityAp...	Output	REAL	scaled actual Velocity
ActualTorque	Output	REAL	Actual Torque in %
IO_Input	Output	SINT	active Input, Input1 bit0, Input2 bit1,....
ApplicationType	Input	DINT	0=linear, 1= in counts, 2=in degree
TravelPerRev	Input	REAL	Travel per Revolution. Actuator with 10mm/rev, then value=10
GearRatio	Input	REAL	Gear ratio if a gearbox is mounted. select 1 for none

3.2 JVL_COM for IFM IO-Link-Master

3.2.1 Description

This JVL_COM_IOLink_IFM is another example for a communication AOI. In this case the Processdata of this IO-Link master do not match to the SIN[24] array. Therefore, you need an offset for the Input data and Output data

This AOI is required for all other motion control AOIs to operate.



3.2.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
▷ JVL_IN	InOut	SINT[246]	Processdata In,
▷ JVL_OUT	InOut	SINT[174]	Processdata Out
▷ AXIS	InOut	JVL_AXIS	Drive Data
▷ InputOffset	Input	DINT	Offset of Processdata
▷ OutputOffset	Input	DINT	Offset of Processdata
▷ Torque	Input	DINT	Set Torque in %
▷ IO_Output	Input	SINT	Set Output, Output1 bit0, Output2 bit1,...
ActualPositionAp...	Output	REAL	scaled actual Position
ActualVelocityAp...	Output	REAL	scaled actual Velocity
ActualTorque	Output	REAL	Actual Torque in %
▷ IO_Input	Output	SINT	active Input, Input1 bit1, Input2 bit2,....
▷ ApplicationType	Input	DINT	0=linear, 1= in counts, 2=in degree
TravelPerRev	Input	REAL	Travel per Revolution. Actuator with 10mm/rev, then value=10

3.3 JVL_MSO

3.3.1 Description

There is no JVL_MSO because the controller of a JVL Motor is always enabled.

3.4 JVL_MSF

3.4.1 Description

Place the drive in passive mode, removing all torque from the motor.

If the motor is running then it stops with the configured deceleration of the command that is in progress.

> Caution, this can result in a long stopping distance if the configured deceleration is low. It is recommended that JVL_MIS_Stop is used with suitable deceleration before then executing JVL_MIS_Disable.



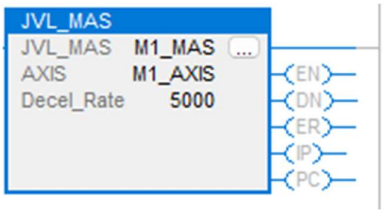
3.4.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
AXIS	InOut	JVL_AXIS	Drive Data
EN	Output	BOOL	
CommandAborted	Output	BOOL	
DN	Output	BOOL	
ER	Output	BOOL	

3.5 JVL_MAS

3.5.1 Description

Stopss the motor to a standstill with defined deceleration.



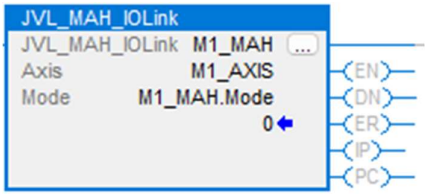
3.5.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
▶ AXIS	InOut	JVL_AXIS	Drive Data
Decel_Rate	Input	REAL	in rpm
CommandAborted	Output	BOOL	
EN	Output	BOOL	
DN	Output	BOOL	
ER	Output	BOOL	
IP	Output	BOOL	
PC	Output	BOOL	

3.6 JVL_MAH_IOLink

3.6.1 Description

JVL_MAH_IOLink homes or references the motor position. Homing parameters like speed, torque,... are in the ISDU-parameter. See chapter 2.4.



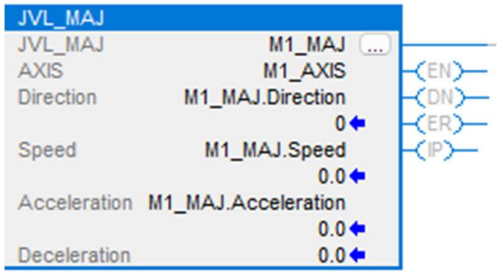
3.6.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
▷ Axis	InOut	JVL_AXIS	Drive Data
CommandAborted	Output	BOOL	
EN	Output	BOOL	Enable Bit - The EN bit stays Set until the Process is Complete
DN	Output	BOOL	Done Bit - The Done bit is Set if the Instruction Executed with
ER	Output	BOOL	Error Bit - An Error Happened
IP	Output	BOOL	In Progress Bit - The In Progress bit is Set While the Axis is M
PC	Output	BOOL	Process Complete, Motion has stopped
▷ Mode	Input	INT	0=Set Encoder, 1=Homing on sensor, 2=Homing on block

3.7 JVL_MAJ

3.7.1 Description

Run the motor at the specified speed. The axis is stopped when the EnableIn is reset.



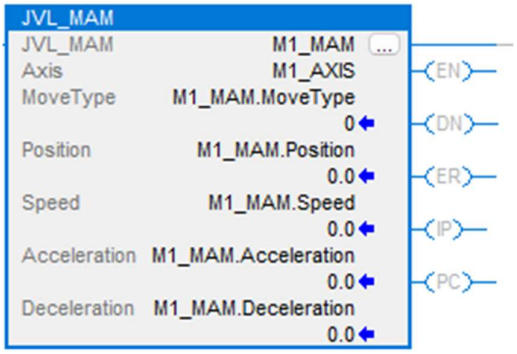
3.7.2 Parameter

Name	Description
EnableIn	Enable Input - System Defined Parameter
EnableOut	Enable Output - System Defined Parameter
▷ AXIS	Drive Data
▷ Direction	0 = CW rotation, 1 = CCW rotation
Speed	scaled velocity
Acceleration	in rpm/s
Deceleration	in rpm/s, only for MIS, =0 then Deceleration = Acceleration
EN	Enable Bit - The EN bit stays Set until the Process is Complete and the rung goes False
DN	Done Bit - The Done bit is Set if the Instruction Executed without Errors
ER	Error Bit - An Error Happened
IP	In Progress Bit - The In Progress bit is Set While the Axis is Moving

3.8 JVL_MAM

3.8.1 Description

Move the axis to the specified position, or by the specified distance.



3.8.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
▷ Axis	InOut	JVL_AXIS	Drive Data
▷ MoveType	Input	DINT	0=absolute, 1= relative
Position	Input	REAL	scaled Position
Speed	Input	REAL	scaled velocity
Acceleration	Input	REAL	in rpm/s
Deceleration	Input	REAL	in rpm/s, only for MIS, = 0 then Deceleration = Acceleration
CommandAborted	Output	BOOL	
EN	Output	BOOL	
DN	Output	BOOL	
ER	Output	BOOL	
IP	Output	BOOL	
PC	Output	BOOL	

3.9 JVL_MAFR

3.9.1 Description

JVL_MAFR resets any errors or faults in the drive.

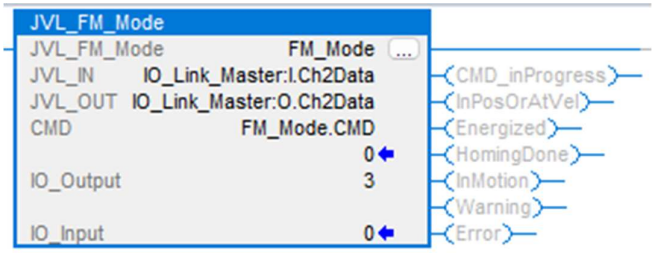


4 Addon Instructions ModeFM

4.1 JVL_FM_Mode

4.1.1 Description

With this AOI you can control in ModeFM.



4.1.2 Parameter

Name	Usage	Data Type	Description
EnableIn	Input	BOOL	Enable Input - System Defined Parameter
EnableOut	Output	BOOL	Enable Output - System Defined Parameter
JVL_IN	InOut	SINT[2]	Processdata IN, SINT[2]
JVL_OUT	InOut	SINT[2]	Processdata OUT, SINT[2]
CMD	Input	INT	
IO_Output	Input	DINT	Set Output, Output1 bit0, Output2 bit1,...
CMD_inProgress	Output	BOOL	
InPosOrAtVel	Output	BOOL	
Energized	Output	BOOL	
HomingDone	Output	BOOL	
InMotion	Output	BOOL	
Warning	Output	BOOL	
Error	Output	BOOL	
IO_Input	Output	SINT	active Input, Input1 bit0, Input2 bit1,....

4.1.3 Command List

CMD	Description
0	reactivate Motion commands
129	passive Mode
236	error reset
229	stop
129	passive Mode after velocity mode236
168	activate V1, Acc1, Velocity mode
169	activate V2, Acc2, Velocity mode
170	activate V3, Acc3, Velocity mode
171	activate V4, Acc4, Velocity mode
223	Positionmode is activated (Motor gets energized)
236	pos vector1
237	pos vector2
238	pos vector3
239	pos vector4
240	homing