

# Title: How to configure a MSystem Mechatrolink III I/O module

Product(s): MP3300iec, M System R7K4FML3-6 I/O, MotionWorks IEC Version 3 Pro

Doc. No. AN.MTN.10

# **Application Overview**

This document explains how to configure and connect an MSystem Mechatrolink-III I/O module on MP3300iec. The document is specific for the R7K4FML3-6-DAC32B it but could is as a reference example for the other MSystems I/O modules.

### **Products Used & Application Requirements**

Component	Product and Model Number
Controller	MP3300iec with Firmware 3.2.0.197 or higher
SERVOPACK	Sigma-5 and Sigma-7 Series (optional)
Motor	Sigma-5 and Sigma-7 Series (optional)
I/O Module	MSystem R7K4FML3-6-DAC32B
Software	MotionWorks IEC 3.2.0.197 or higher

# External view & DIP switch information



# YASKAWA

# **Implementation**

- 1. Set Mechatrolink address with the rotary switch on the module.
- 2. Set Mechatrolink-III communication speed with the dip switch (should be the same that is configured for the network).
- 3. Supply 24vdc to the module (+24v & 0V terminal).
- 4. On the MP3300iec, turn Cnfg DIP Switch = ON.
- 5. Power up controller and clear archive with WebUI or MotionWorks IEC.
- 6. Reboot controller.
- 7. Start a new Motionworks IEC project with MP3300iec template.
- 8. Open Hardware Configuration and connect to controller. Use auto discovery configuration.
- 9. Verify R7-ML3 module in Mechatrolink-III nodes list (Figure 1).
- 10. Save hardware configuration and reboot controller.
- 11. In MotionWorks IEC project tree, choose I/O configuration in resource (see Figure 2).
- 12. Take note what are the first input & output address. In Figure 3 it is %IB53888 for the inputs and %QB53888 for the output:

Group	/ Board / I/O Module	Range %IB53376	%IB53383	Task FastTsk	Comment	Owner	
IAX4		%IB53440	%IB53447	FastTsk	YEA Input Group <sgd7s> Ne</sgd7s>	<default></default>	
IML111		%IB53888.	. %IB53899	FastTsk	YEA Input Group <r7-ml3> Ne</r7-ml3>	<default></default>	
I/0	O Configuration	_		2		5-5-6	
INP	UT OUTPUT VARCONE						
					_	_	
/	/O Group / Board / I	/O Module	Range	Task	Comment	Owner	
	OAX3		%QB53376	Fastīsk	YEA Output Group <sgd7s>N</sgd7s>	N <default></default>	
			%QB53440	EastTak	YEA Output Group <sgd7s>F</sgd7s>	N <detault></detault>	
	OMETTI		%QD55000	TASUSK	TEA Output Gloup (A7-ME32).	Suelauliz	
					Add Propertie	s Delete	Description

**FIGURE 1** 



180529 MSystem M3 IO Besource : MP3300iec		
Mechatrolink-III	Graphical View Data View	
27 AXIS3 - 3	Bala How	
7 AXIS4 - 4		
器 Groups		
TCP/IP Settings		
EtherNet/IP		
Option Base		
	I/O Task Assignment FastTsk (8 ms)	<b>•</b>
	Parameter Parameters	Current Value
	2020 Output state when PLC stops	Retain last state





13. Open the global variable menu and go to the variable group <R7-ML3 I/O Module> .
14. Right click in the column on the left of the group and click on Create variable set:

	CLL CLIP T	POT default on pin #7 configurable by Pn50A 3	%IX53440.0
Insert variable	Ctri+Snitt+1	NOT, default on pin #8, configurable by Ph50B.0	%IX53440.1
Create variable set	-	DEC default on pin #9 configurable by Pn511.0	%IX53440.2
<ul> <li>Append variable</li> </ul>	f	EXT1. default on pin #10. configurable by Pn511.1	%IX53440.6
Insert group	Ctrl+G	EXT2, default on pin #11, configurable by Pn511.2	%IX53440.7
Delete variable/group	Ctrl+Shift+D	EXT3, default on pin #12, configurable by Pn511.3	%IX53441.0
Disable/enable variable	Ctrl+Shift+E	Brake Output Status	%IX53441.1
	Chilly	HBB, Stop Signal Input	%IX53441.2
a cui	Cur+x	SVCMD_IO Input 0, configurable by Pn860.0 and	%IX53441.4
<u>C</u> opy	Ctrl+C	SVCMD_IO Input 1, configurable by Pn860.2 and	%IX53441.5
<u>Paste</u>	Ctrl+V	SVCMD_IO Input 2, configurable by Pn861.0 and	%IX53441.6
Filter settings		SVCMD_IO Input 3, configurable by Pn861.2 and	%IX53441.7
Filter		Alarm On Drive	%IX53444.0
Sort	• • •	Warning On Drive	%IX53444.1
		Servo On	%IX53444.3
Open instance		Main Circuit Power On	%IX53444.4
Find All References		Positioning Completed	%IX53444.7
Refactor	•	SVCMD_IO Output 1, configurable by Pn868.0 a	%QX53440.0
		SVCMD_IO Output 2, configurable by Pn868.2 a	%QX53440.1
Read-only (groups)		SVCMD_IO Output 3, configurable by Pn869.0 a	%QX53440.2
Properties		SGD7S - 4 (* Do Not Modify!! *)	
KI-ML3 I/O MOQUIE> - KI-M	IL3 I/O MOdule - 1:11 (	* Modify Variable Names, Not Group Name. *)	
User Variables			

15. Enter the input information. The starting address should be the same that was taken at step 12. See screen shot below for the information to fill:

Name:	I/O address:	ОК
MSyst_IN#	%I×53888.#	
(Use # to insert current number)	(Use # to insert current number)	Cancel
Start: 0 🚔 End: 15 🚔	✓ Use start value from name	Help
Fill with leading '0' if necessary	Start: 0 increment 1	
Preview:	Preview:	
MSyst_IN0	%IX53888.0	
 MSyst_IN15	 %IX53889.7	
Common		
Usage:	Description:	
VAR_GLOBAL    RETAIN		
Data type:		
BOOL 👻	(Use # to insert current number)	
Initial value:	PDD OPC	



16. Enter the output information. The starting address should be offset by 2 bytes from the address that was taken at step 12 (2 first bytes are reserved). See screen shot below

reate Variable Set	State State	×
Name:	I/O address:	OK
MSyst_Out#	%Q×53890.#	
(Use # to insert current number)	(Use # to insert current number)	Cancel
Start: 0 🐥 End: 15 🐥	Use start value from name	Help
Fill with leading '0' if necessary	Start: 0 📩 Increment 1	
Preview:	Preview:	
MSyst_Out0	%QX53890.0	
 MSyst_Out15	 %QX53891.7	
Common		
Usage:	Description:	
VAR_GLOBAL   RETAIN		
Data type:		
BOOL	(Use # to insert current number)	
Initial value:	PDD OPC	

for the information to fill:

17. Input variables MSyst\_IN0 to MSyst\_IN15 and Output variables MSyst\_Out0 to MSyst\_Out15 are now created (16 inputs and 16 outputs) :

□ <r7-ml3 i="" module<="" o="" th=""><th>- R7-ML3 I/O Mo</th><th>dule - 1:11 (* Modify Variable Names, Not Group Nar</th><th>ne. *)</th></r7-ml3>	- R7-ML3 I/O Mo	dule - 1:11 (* Modify Variable Names, Not Group Nar	ne. *)
MSyst_IN0	BOOL	VAR_GLOBAL	%IX53888.0
MSyst_IN1	BOOL	VAR_GLOBAL	%IX53888.1
MSyst_IN2	BOOL	VAR_GLOBAL	%IX53888.2
MSyst_IN3	BOOL	VAR_GLOBAL	%IX53888.3
MSyst_IN4	BOOL	VAR_GLOBAL	%IX53888.4
MSyst_IN5	BOOL	VAR_GLOBAL	%IX53888.5
MSyst_IN6	BOOL	VAR_GLOBAL	%IX53888.6
MSyst_IN7	BOOL	VAR_GLOBAL	%IX53888.7
MSyst_IN8	BOOL	VAR_GLOBAL	%IX53889.0
MSyst_IN9	BOOL	VAR_GLOBAL	%IX53889.1
MSyst_IN10	BOOL	VAR_GLOBAL	%IX53889.2
MSyst_IN11	BOOL	VAR_GLOBAL	%IX53889.3
MSyst_IN12	BOOL	VAR_GLOBAL	%IX53889.4
MSyst_IN13	BOOL	VAR_GLOBAL	%IX53889.5
MSyst_IN14	BOOL	VAR_GLOBAL	%IX53889.6
MSyst_IN15	BOOL	VAR_GLOBAL	%IX53889.7
MSyst_Out1	BOOL	VAR_GLOBAL	%QX53890.1
MSyst_Out2	BOOL	VAR_GLOBAL	%QX53890.2
MSyst_Out3	BOOL	VAR_GLOBAL	%QX53890.3
MSyst_Out4	BOOL	VAR_GLOBAL	%QX53890.4
MSyst_Out5	BOOL	VAR_GLOBAL	%QX53890.5
MSyst_Out6	BOOL	VAR_GLOBAL	%QX53890.6
MSyst_Out7	BOOL	VAR_GLOBAL	%QX53890.7
MSyst_Out8	BOOL	VAR_GLOBAL	%QX53891.0
MSyst_Out9	BOOL	VAR_GLOBAL	%QX53891.1
MSyst_Out10	BOOL	VAR_GLOBAL	%QX53891.2
MSyst_Out11	BOOL	VAR_GLOBAL	%QX53891.3
MSyst_Out12	BOOL	VAR_GLOBAL	%QX53891.4
MSyst_Out13	BOOL	VAR_GLOBAL	%QX53891.5
MSyst_Out14	BOOL	VAR_GLOBAL	%QX53891.6
MSyst_Out15	BOOL	VAR_GLOBAL	%QX53891.7
MSyst_Out0	BOOL	VAR_GLOBAL	%QX53890.0



# 18. The MSystem module input & output variables are now accessible in the POUs:

 001
 SetOut0
 MSyst\_Out0

 002
 MSyst\_IN0
 ReadIn0

 003
 SetOut7
 MSyst\_Out7

 004
 MSyst\_IN7
 ReadIn7

(\*Output0 is physically connected to Input0. Output7 is physically connected to Input7\*)

#### Other available modules:

- R7K4FML3-6-DA32: NPN/PNP discrete input, 32 points
- R7K4FML3-6-DA32-1: NPN/PNP discrete input, 32 points
- R7K4FML3-6-DC32A: NPN transistor output, 32 points
- R7K4FML3-6-DC32A1: NPN transistor output, 32 points
- R7K4FML3-6-DC32B: PNP transistor output, 32 points
- R7K4FML3-6-DAC32A: NPN/PNP discrete input & NPN transistor output, 16 points each
- R7K4FML3-6-DAC32B: NPN/PNP discrete input & PNP transistor output, 16 points each
- R7G4HML3-SV4: DC voltage/current input (10 V/20 mA), 4 points
- R7G4HML3-SVF4: DC voltage /current input (10 V/20 mA),
- R7G4HML3-TS4: Thermocouple input, 4 points
- R7G4HML3-LC2: Strain gauge input, 2 points
- R7G4HML3-LC2A: Tension sensor input, 2 points
- R7G4HML3-PA1J: Encoder input (speed / position) 1 point
- R7G4HML3-PA1A1: Encoder input (speed / position) 1 point
- R7G4HML3-PA1A4: Encoder input (speed / position) 1 point