Application Note

YASKAWA

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

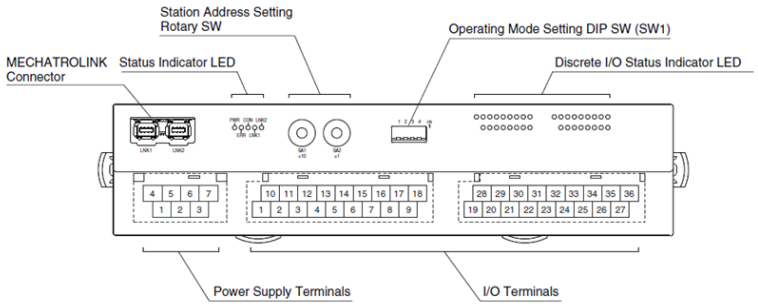
Application Overview

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



OPERATING MODE SETTING

(*) Factory setting

• **Read Rate (SW1-1, 1-2, 1-3)**

SW1-1	SW-1-2	SW1-3	Read rate
OFF	OFF	OFF	≤ 10 msec. (*)
ON	OFF	OFF	≤ 1 msec.
OFF	ON	OFF	≤ 5 msec.
ON	ON	OFF	≤ 20 msec.
OFF	OFF	ON	≤ 50 msec.
ON	OFF	ON	≤ 70 msec.
OFF	ON	ON	≤ 100 msec.
ON	ON	ON	≤ 200 msec.

• **Output at the Loss of Communication (SW1-4)**

SW1-4	Output at the loss of communication
OFF	Reset the output (turned off)
ON	Hold the output (*) (maintains the last data received normally)

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:

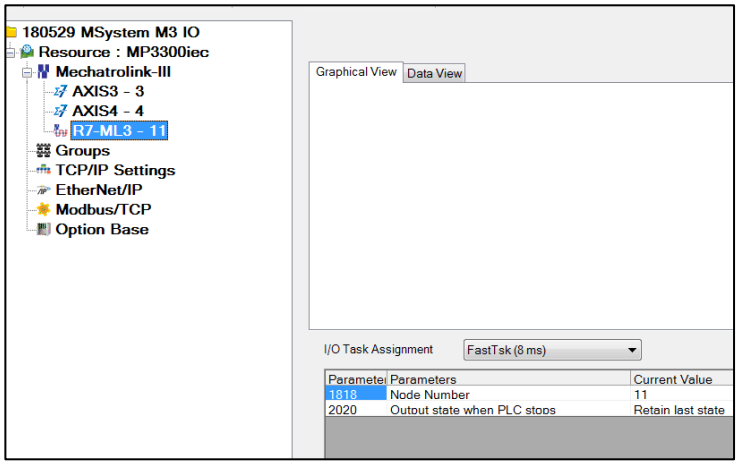


FIGURE 1

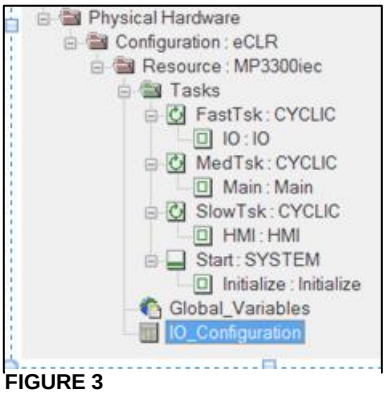


FIGURE 3

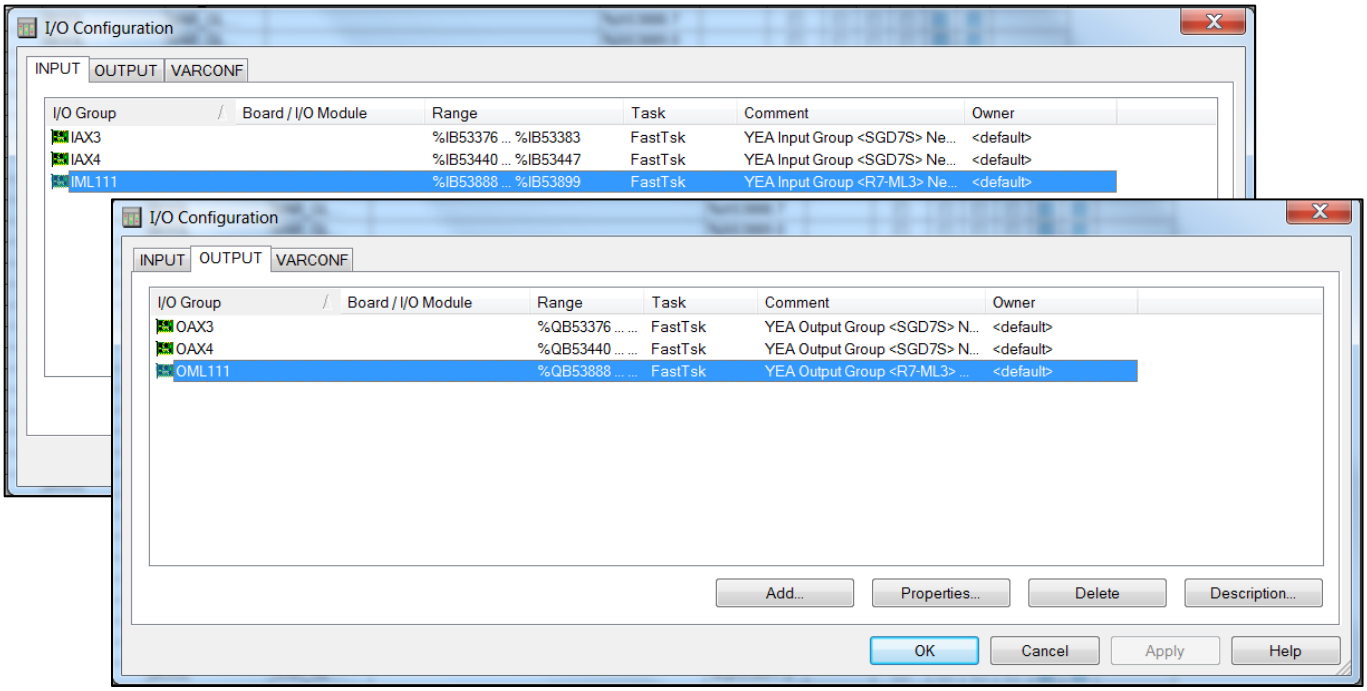
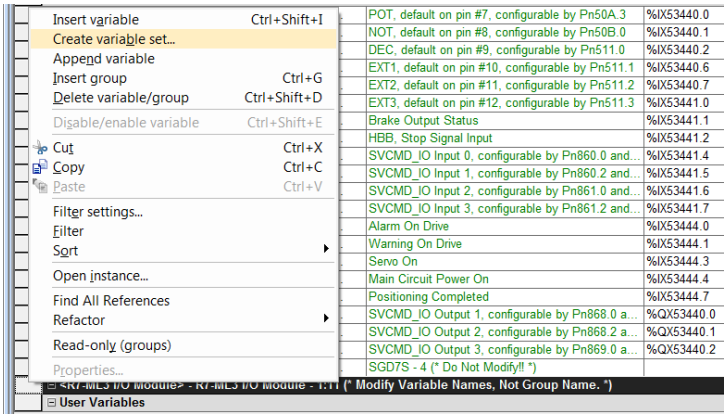
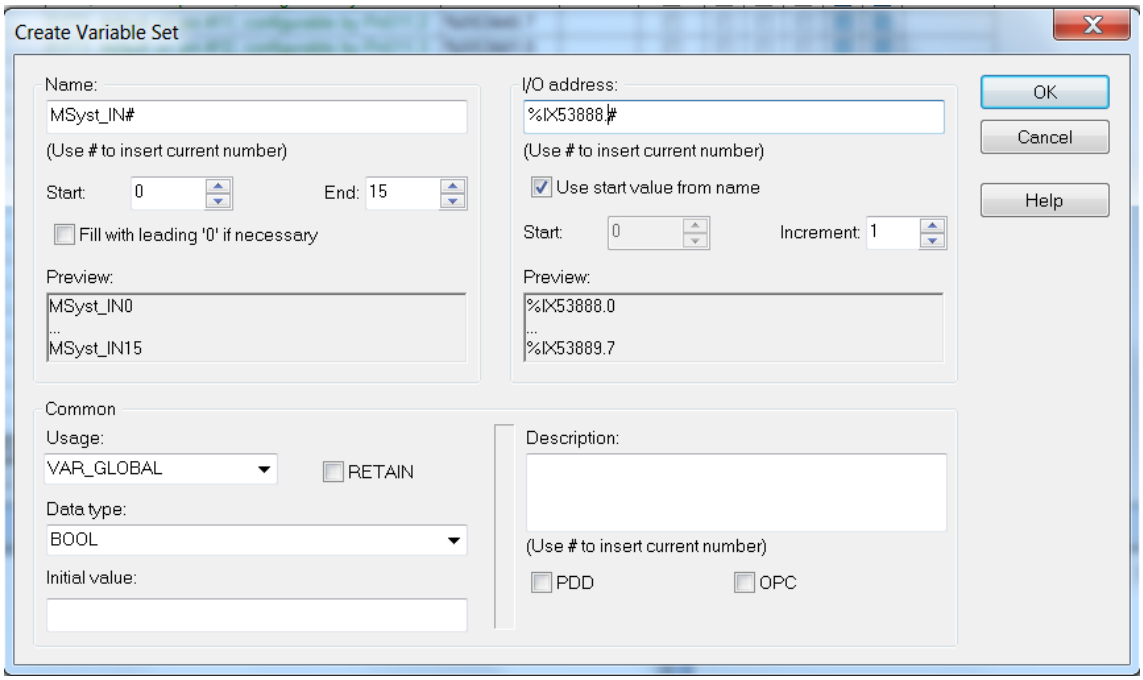


FIGURE 2

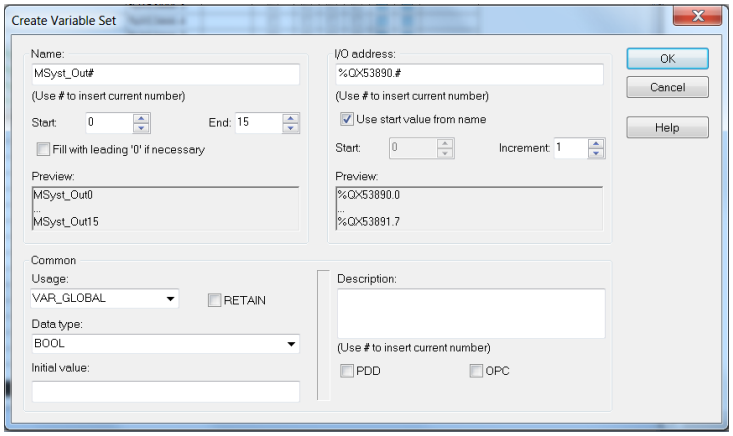
13. Open the global variable menu and go to the variable group **<R7-ML3 I/O Module>** .
14. Right click in the column on the left of the group and click on Create variable set:



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:



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

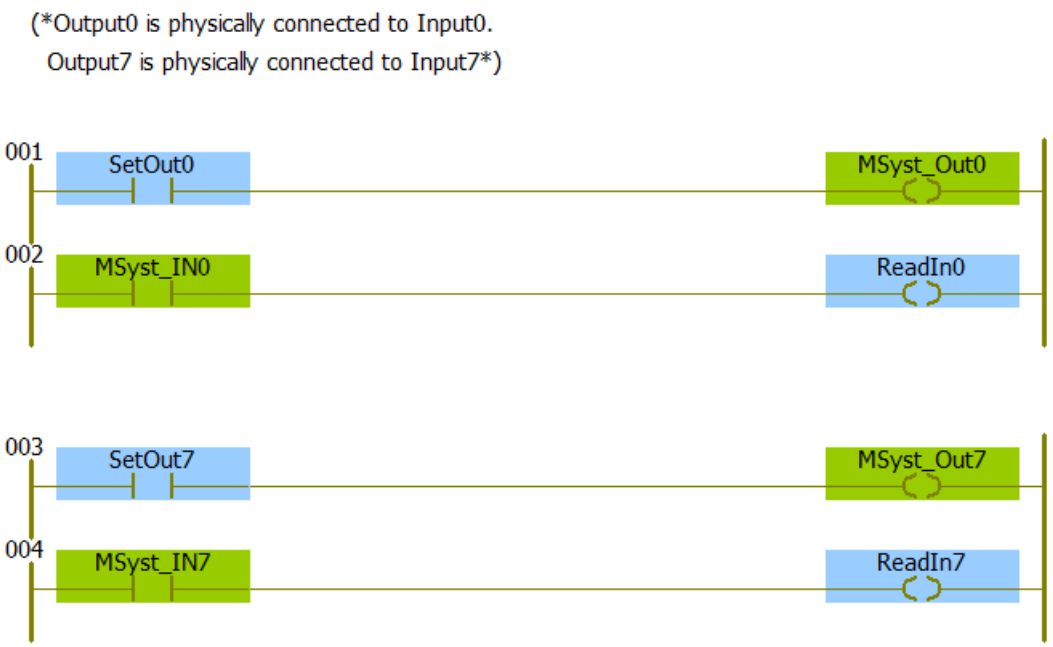


for the information to fill:

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/O Module> - R7-ML3 I/O Module - 1:11 (* Modify Variable Names, Not Group Name. *)				
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:



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