FAQ YASKAWA

Title: What steps are necessary to connect a Yaskawa V1000/ A1000/GA500/GA800 to an MPiec series controller over EtherNet /IP?

Product(s): MP2300Siec, MP2600iec, MP3200iec MP3300iec, Sigma-7Siec, MotionWorks IEC, V1000, A1000, GA500, GA800, SI-EN3

DOC. NO. CNT-INV-T82IYJ

When first configuring the V1000/A1000/GA500/GA800, there are a few parameters that need to be changed. The key parameters that require a change from default are listed below. Make sure the IP address being set is reachable from the MPiec controller.

Prm	Name	Description	Default	Required Value
b1-01	Frequency Reference Selection	Selects the frequency reference input source. 0: Operator – Digital Preset speed d1-01 to d1-17 1: Terminals – Analog input terminal A1 or A2 2: MEMOBUS Communications 3: Option PCB 4: Pulse Input (Terminal RP)	1	3
b1-02	Run Command Selection	Selects the run command input source. 0: Operator – RUN and STOP keys on the digital operator 1: Digital input terminals 2: MEMOBUS communications 3: Option PCB	1	3
F7-01 – F7-04	IP Address 1-4	Sets the static/fixed IP address. Parameter F7-01 sets the first octet. Parameter F7-02 sets the second octet. Parameter F7-03 sets the third octet. Parameter F7-04 sets the last octet.	192.168.1.1	X.X.X.X
F7-05 – F7-08	Subnet Mask 1-4	Sets the static/fixed Subnet Mask. Parameter F7-05 sets the first octet. Parameter F7-06 sets the second octet. Parameter F7-07 sets the third octet. Parameter F7-08 sets the last octet.	255.255.255.0	X.X.X.X
F7-09 – F7-12	Gateway Address 1-4	Sets the static/fixed Gateway address. Parameter F7-09 sets the first octet. Parameter F7-10 sets the second octet. Parameter F7-11 sets the third octet. Parameter F7-12 sets the last octet.	192.168.1.1	X.X.X.X
F7-13	Address Mode at Startup	Selects how the option address is set. 0: Static 1: BOOTP 2: DHCP	2	0

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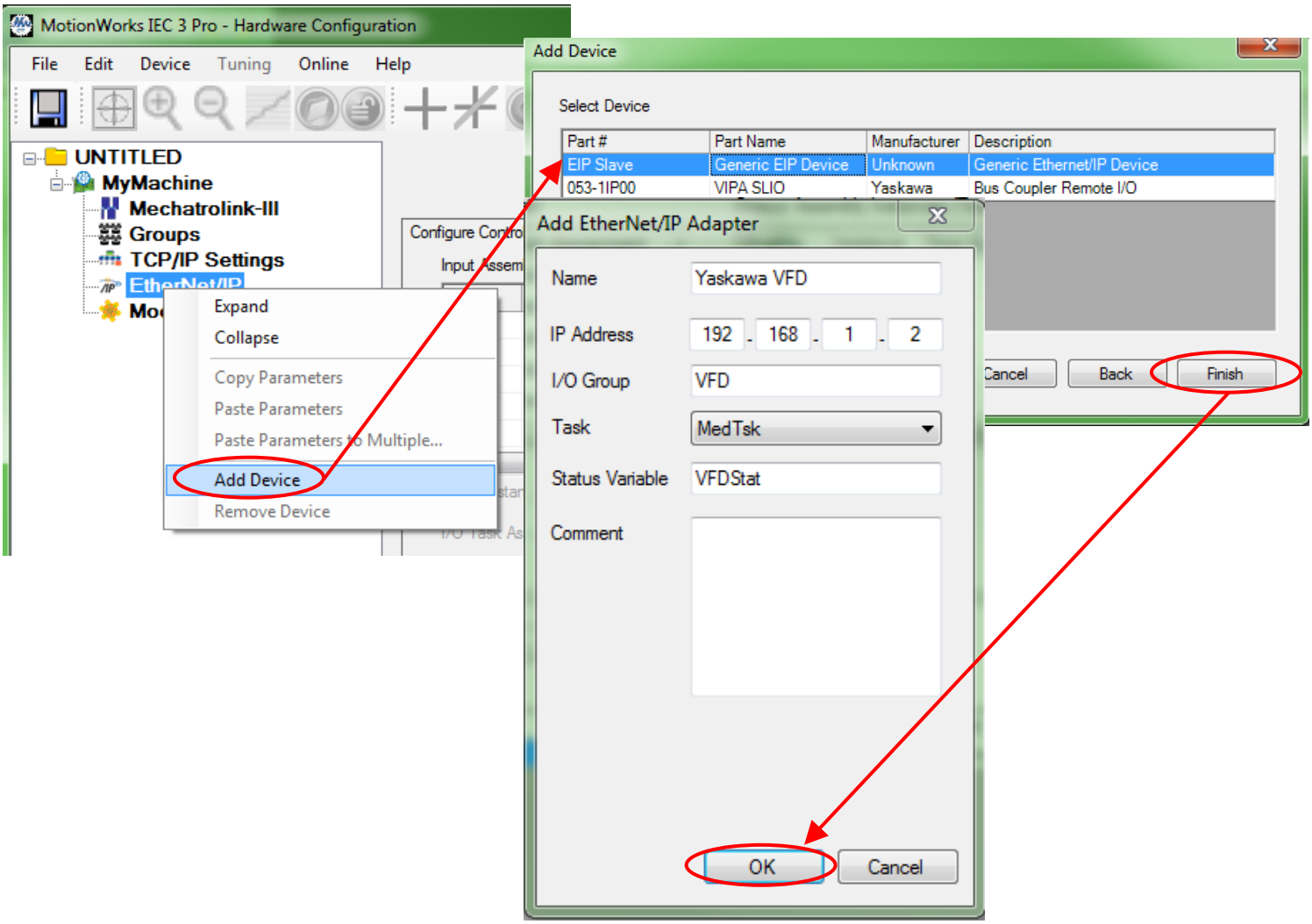
F7-15	Communication Speed Selection	Sets the communication speed. 0: 10 Mbps (Only available with drive software version PRG 1012 to 1015) 1: 10 Mbps 2: 100 Mbps	1	2

For more parameter options, see page 22 of the V1000 EtherNet /IP Option Module Manual here: SIEPC73060060. For an A1000/GA500/GA800 use SIEPC73060092.

Once the V1000 is configured, the device must be added to the MotionWorks project via the Hardware Configuration tool.



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Once the VFD is added to the Hardware Configuration at the correct address, make sure to add the input and output instances. Below is the configuration for the Yaskawa V1000. The Yaskawa A1000/GA500/GA800 will use the same configuration.

I/O Assembly Instances

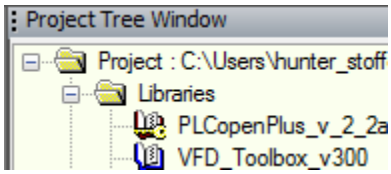
Type	Instance #	Size (bytes)	Update Interval (ms)	Ownership	Priority	Connection	Use Run Idle
Input	166	44	40	Exclusive	Scheduled	Multicast	False
Output	116	44	40	Exclusive	Scheduled	Point to Point	True

Add Input/Output Assembly Instance

Configuration Assembly Instance

Type	Instance #	Size (bytes)	Optional Data (hexadecimal)
Config	1	0	

Once the configuration is saved, send it to the controller and reboot. Once the controller has re-booted, re-compile and download the update project. Go into debug mode and verify that the VFD status variable = 16#1000 (connection established). Now that communication is established with the VFD it is time to command motion. The easiest way to achieve motion is to add the Yaskawa VFD toolbox (download here) and insert it into your project.



Once the library is added, create the necessary input and output structures with the appropriate I/O addressing to the VFD EtherNet /IP instance (example below). Note: Structures should always be placed starting at the first byte of the EtherNet /IP data area.

	⊟ <V1000> 'ig1' Address Range: %IB32768 - %IB32811 (* Do Not Modify Group Name or Status Variable. *)				
	From_V1000	YaskawaVFD_From_Instance166	VAR_GLO...		%IB32768
	VFDStat	WORD	VAR_GLO...	(* Do Not Modify...	%IW32812
	⊟ <V1000> 'og1' Address Range: %QB32768 - %QB32811 (* Do Not Modify Group Name or Status Variable. *)				
	To_V1000	YaskawaVFD_To_Instance116	VAR_GLO...		%QB32768
	V_1000_Data	V1000_Struct	VAR_GLO...		

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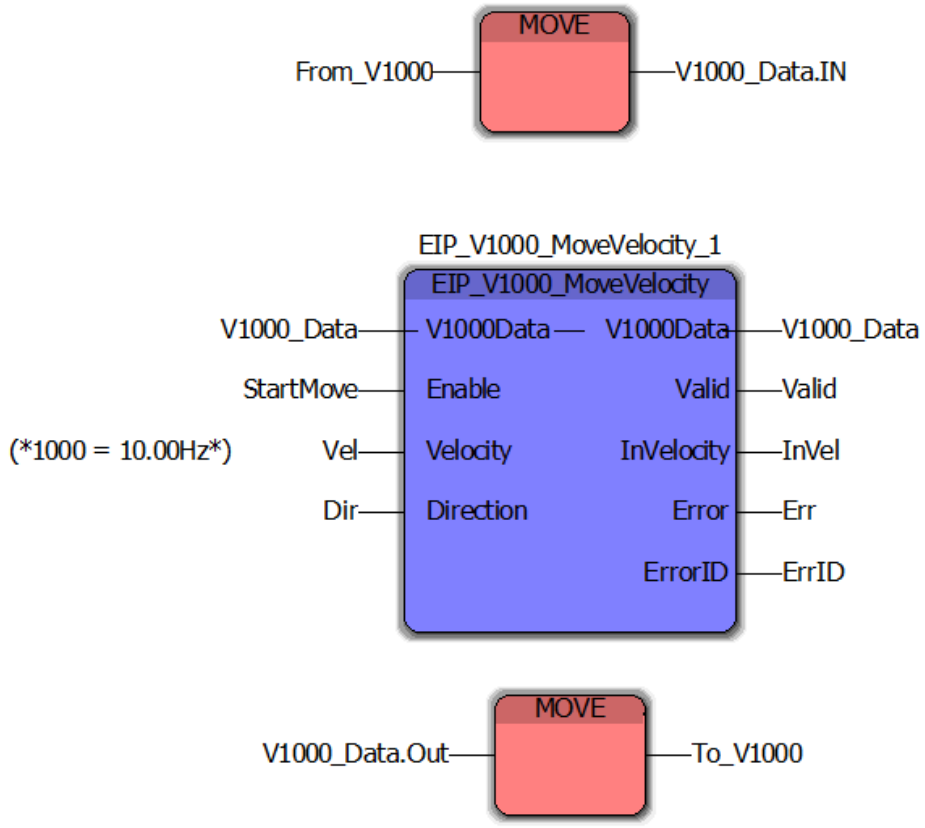
Once these structures are created, add the code below to the project and use the Enable input to the EIP_V1000_MoveVelocity function block as the RUN command bit and the Velocity as the Frequency input (Note: there is an implied decimal point for the Velocity input so a Velocity input of 100 = 1.00 Hz on the VFD). The same function blocks are used for the A1000/GA500/GA800 as well.

Depending on the controller type, the data used by the VFD_Toolbox function blocks needs to be formatted due to endianness differences.

Controller	Endianness
MP2300Siec / MP2310iec	Little endian
MP2600iec / Sigma-7Siec	Little endian
MP3200iec / MP3300iec	Big endian

<u>Little Endian Controller</u>



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For controllers that use Big Endian format, there is a function that converts data to and from Little Endian so that the same VFD_Toolbox function blocks can be used. The function is called “TO_LITTLE_ENDIAN” and its use is shown below.

Big Endian Controller