

Application Note

Using a Yaskawa VFD and Mechatrolink-II option card with the MPiec Series Controller



Subject: Application Note	Product: MPiec Controllers	Doc#: AN.MPIEC.09
Title: Using a Yaskawa VFD and Mechatrolink-II option card with the MPiec Series Controller		

Contents

Application Overview	3
MPiec Series Controllers that support Mechatrolink –II VFD	3
Minimum MPiec Firmware required	3
VFDs supported.....	3
VFD Configuration	3
MotionWorks IEC Hardware Configuration	4
User Units.....	5
VFD I/O access	5
Supported PLCopen function blocks as of MPiec release 2.5.0	6
Features not supported by MPiec.....	6



Application Overview

This application note describes basic requirements and how to configure a Yaskawa A1000 or V1000 to work with MP2300Siec or MP2310iec controllers using a Mechatrolink communications card. Limited support via Mechatrolink is provided.

MPiec Series Controllers that support Mechatrolink –II VFD

MP2300Siec

MP2310iec

Minimum MPiec Firmware required

Version 2.0.0.255

VFDs supported

A1000: firmware VSA901014 and up

V1000: firmware VSV901016 and up

VFD Configuration

Refer to the manual YASKAWA AC Drive-V1000 Option MECHATROLINK-II Installation Manual Type SI-T3/V [TOBP C730600 49] on www.yaskawa.com.

Select rows from Section 6, MECHATROLINK Option Drive Parameters are reprinted below and describe the V1000 parameters that must be configured when using the Mechatrolink interface.

Prm	Name	Description	Default	Required Value for Mechatrolink Operation
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	1	3



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		3: Option PCB 4: Pulse Input (Terminal RP)		
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
F6-20	MECHATROLINK Station Address	20 to 3FH	21	Must not be zero, must be unique with all other devices on Mechatrolink network
F6-21	MECHATROLINK Frame Size	0: 32 byte 1: 17 byte	0	0
F6-22	MECHATROLINK Link Speed	0: 10 Mbps 1: 4 Mbps	0	0

MotionWorks IEC Hardware Configuration

Add a VFD as you would add any other axis to the system. The Hardware Configuration does not support editing VFD parameters.

PrmF6-20 should be set to the Node Number (in hex) plus 20hex. The formula is given below, as well as, two examples:

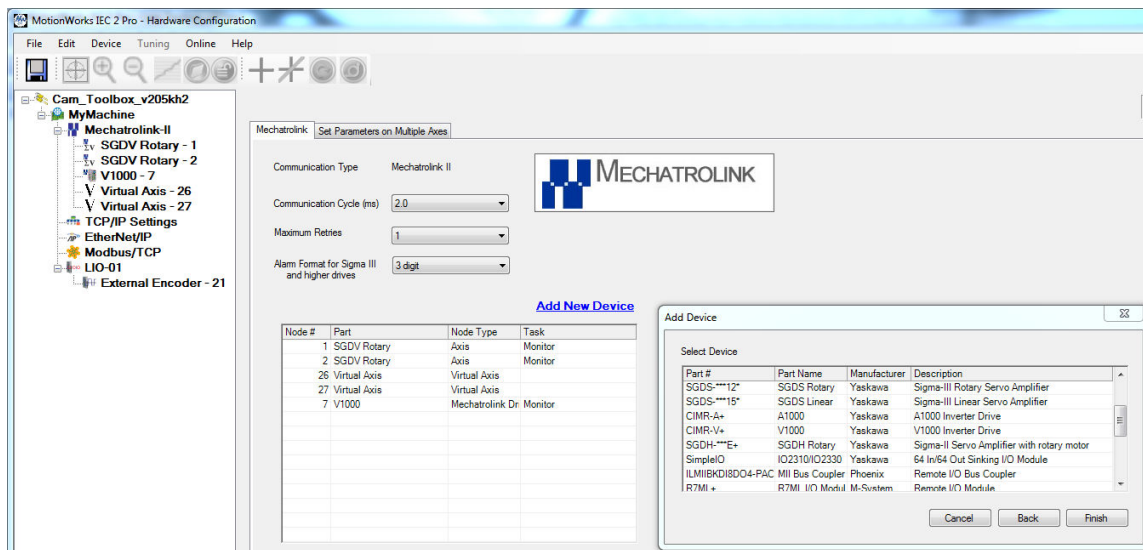
Formula:

Node Number (in hex) + 20hex = Prm F6-20

Examples:

- a. 7hex + 20hex = 27hex. Prm F6-20 = 27hex
- b. Fhex + 20hex = 2Fhex. Prm F6-20 = 2Fhex





User Units

User units can be configured by setting several VFD parameters. The default parameters will configure the VFD to use Hz as user units.

VFD I/O access

The following Global variables will be created for Status and I/O on the VFD when saving the Hardware Configuration.

Name	Type	Usage	Description	Address
System				
A1000 - A1000 Inverter Drive - 1:1 (* Modify Variable Names, Not Group Name. *)				
AX1_ALM	BOOL	VAR_GLOBAL	Alarm On Drive	%IX53248.0
AX1_WARNG	BOOL	VAR_GLOBAL	Warning On Drive	%IX53248.1
AX1_BBOFF	BOOL	VAR_GLOBAL	Baseblock Off	%IX53248.3
AX1_PON	BOOL	VAR_GLOBAL	Main Circuit Power On	%IX53248.4
AX1_RUNX	BOOL	VAR_GLOBAL	Drive Running	%IX53248.5
AX1_S1	BOOL	VAR_GLOBAL	Multi-function input 1	%IX53250.0
AX1_S2	BOOL	VAR_GLOBAL	Multi-function input 2	%IX53250.1
AX1_S3	BOOL	VAR_GLOBAL	Multi-function input 3	%IX53250.2
AX1_S4	BOOL	VAR_GLOBAL	Multi-function input 4	%IX53250.3
AX1_S5	BOOL	VAR_GLOBAL	Multi-function input 5	%IX53250.4
AX1_S6	BOOL	VAR_GLOBAL	Multi-function input 6	%IX53250.5
AX1_S7	BOOL	VAR_GLOBAL	Multi-function input 7	%IX53250.6
AX1_S8	BOOL	VAR_GLOBAL	Multi-function input 8	%IX53250.7
AX1_M1	BOOL	VAR_GLOBAL	Multi-function digital output 1	%QX53248.0
AX1_M3	BOOL	VAR_GLOBAL	Multi-function digital output 2	%QX53248.1
AX1_M5	BOOL	VAR_GLOBAL	Multi-function digital output 3	%QX53248.2

Supported PLCopen function blocks as of MPiec release 2.5.0

MC_Power
 MC_Reset
 MC_ReadAxisError
 (AxisControl from PLCopen Toolbox is compatible)
 MC_MoveVelocity
 Y_DirectControl (Velocity mode only)
 MC_Stop
 (Jog from PLCopen Toolbox is compatible)

Features not supported by MPiec

- Parameter read / write (Y_WriteDriveParameter, Y_ReadDriveParameter)
- Parameter backup file in controller (Y_WriteDriveParameters)
- User Units (Default is Hz)
- Encoder feedback
- Torque Mode
- Position Mode