Driving value

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Driving value

Modular Machine Commissioning with MPiec Controllers

Nishant Unnikrishnan Motion Application Engineer



PP.MPiec.03 | Rev 1.00 | Date: 7/30/2012 | ©2012 Yaskawa America, Inc. All rights reserved.



Topics

- How to design a project for use with a variable number of axes
- What to expect when a controller is operated with part of the configured machine missing
- Recommended procedure for ensuring all drive parameters are retained in the IEC Application's ZIP Project
- New simplified procedure for replacing a drive in the field without any special vendor software

Project Design



Machine builder configures controller with all axes



Codes the project to use all possible axes Includes a version number for each machine type Eg) 0111 is a 3 axis machine version of a 4 axis machine (1111)

1	1	Axis1.AxisNum	:=	UINT#1;	
2	2	Axis2.AxisNum	:=	UINT#2;	
3	3	Axis3.AxisNum	:=	UINT#3;	
4	4	Axis4.AxisNum	:=	UINT#4;	
5					
6	16#0007	Version	:=	WORD#2#111;	
				•	



Code completed Axes tuned Go online using Hardware Configuration with startup Save Project completed Machine ships

Two situations for modular machines at customer:
1) Controller does not find configured axis on power up
2) Add axes after power up

Configured axis not found on startup **VASKAWA**

On Power up expect a controller alarm:

Active Alarms											
Alarm Code	Source	Description									
<u>2301 0008</u>	MLink Driver	Communication with a node failed during servo network startup. [hide details] An error occurred sending command to a node during initialization. The node may not support the configured communications rate. Communication with this node has been prohibited, but communication with other nodes may be possible.									
Clear Alarms		Save									

This can be seen using Y_ReadAlarm



TRUE-

Controller Prm 1330 also gives status of node if it is online



Alarm can be cleared using Y_ClearAlarm





Make sure MECHATROLINK axes are disabled Re-add axis Clear Alarms Reset MECHATROLINK

Make sure re-added node is online



-MLINKResetDn

OEM builds machine with 4 axes capability. Code for 4 axes Customer buys 3 axis version Customer can run :

- 1. All 3 axes together: (1,2,3)
- 2. Two axes at a time: (1,2), (1,3), (2,3)
- 3. One axis at a time: (1), (2), (3)

Customer's 3 axis machine



All 3 axes together: (1,2,3)



Power on with 3 axes connected (1,2,3). Clear alarm about missing axis 4



(*In the First Scan, if the controller alarm is 2301 0008 and if the machine version does not use all 4 axes, perform a one time Y_ClearAlarm to clear the alarm for missing axes.*)



All 3 axes together: (1,2,3)



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Two Axes Mode (1,3)





Two Axes Mode (1,3)





	Variable	Value	Defa	Туре	🛛 Va	riable	Value	D	Туре		V	ariable	Value	Defa	Туре
	🖃 🗝 Reqd			ModularAxesArray		AxesOnline			ModularAxesArray			AxesReady			ModularAxesArray
1	[0]	FALSE		BOOL	T	[0]	FALSE		BOOL	1		[0]	FALSE		BOOL
	[1]	TRUE		BOOL		[1]	TRUE		BOOL			[1]	FALSE		BOOL
	[2]	TRUE		BOOL		[2]	FALSE		BOOL			[2]	FALSE		BOOL
	[3]	TRUE		BOOL		[3]	TRUE		BOOL			[3]	FALSE		BOOL
	[4]	FALSE		BOOL		[4]	FALSE		BOOL			[4]	FALSE		BOOL







3	Variable	Value	Defa	Туре	Variable	Value	D	Туре		Variable	Value	Defa	Туре
1	⊟Regd			ModularAxesArray	⊡ Axes0nline			ModularAxesArra		⊒ AxesReady			ModularAxesArray
		FALSE		BOOL	[0]	FALSE		BOOL	1	[0]	FALSE		BOOL
ľ	[1]	TRUE		BOOL	[1]	TRUE		BOOL		[1]	TRUE		BOOL
ľ	[2]	FALSE		BOOL		FALSE		BOOL		[2]	FALSE		BOOL
ľ	[3]	TRUE		BOOL	[3]	TRUE		BOOL		[3]	TRUE		BOOL
	[4]	FALSE		BOOL	[4]	FALSE		BOOL		[4]	FALSE		BOOL

One Axis Mode (1)





One Axis Mode (1)





Var	iable	Value	Defa	Туре	Vari	iable	Value	D	Туре	Var	able	Value	Defa	Туре
-	Reqd			ModularAxesArray		AxesOnline			ModularAxesArray		AxesReady			ModularAxesArray
	[0]	FALSE		BOOL		[0]	FALSE		BOOL		[0]	FALSE		BOOL
	[1]	TRUE		BOOL		[1]	TRUE		BOOL		[1]	FALSE		BOOL
	[2]	FALSE		BOOL			FALSE		BOOL		[2]	FALSE		BOOL
	[3]	TRUE		BOOL		[3]	FALSE		BOOL		[3]	FALSE		BOOL
	[4]	FALSE		BOOL		[4]	FALSE		BOOL		[4]	FALSE		BOOL







Varia	able	Value	Defa	Туре	Variable	Value	D	Туре	Variable	Value	Defa	Туре
	Reqd			ModularAxesArray	⊟ AxesOnline			ModularAxesArray	AxesReady			ModularAxesArray
	[0]	FALSE		BOOL	[0]	FALSE		BOOL	[0]	FALSE		BOOL
	[1]	TRUE		BOOL	[1]	TRUE		BOOL	[1]	TRUE		BOOL
	[2]	FALSE		BOOL	[2]	FALSE		BOOL	[2]	FALSE		BOOL
	[3]	FALSE		BOOL	[3]	FALSE		BOOL	[3]	FALSE		BOOL
	[4]	FALSE		BOOL	[4]	FALSE		BOOL	[4]	FALSE		BOOL

Three Axes Mode (1, 2, 3)



Back to all three axes (1, 2, 3)



Variable	Value	Defa	Туре	Vari	able	Value	D	Туре	Vari	able	Value	Defa	Туре
⊟Regd			ModularAxesArray		AxesOnline			ModularAxesArray		AxesReady			ModularAxesArray
[0]	FALSE		BOOL		[0]	FALSE		BOOL		[0]	FALSE		BOOL
[1]	TRUE		BOOL		[1]	TRUE		BOOL		[1]	FALSE		BOOL
[2]	FALSE		BOOL		[2]	TRUE		BOOL		[2]	FALSE		BOOL
[3]	FALSE		BOOL		[3]	TRUE		BOOL		[3]	FALSE		BOOL
[4]	FALSE		BOOL		[4]	FALSE		BOOL		[4]	FALSE		BOOL







Variable	Value	Defa	Туре	Variable	Value	D	Туре	Vari	able	Value	Defa	Туре
🖃 🗝 Reqd			ModularAxesArray	⊡ Axes0nline			ModularAxesArray		AxesReady			ModularAxesArray
[0]	FALSE		BOOL		FALSE		BOOL		[0]	FALSE		BOOL
[1]	TRUE		BOOL	[1]	TRUE		BOOL		[1]	TRUE		BOOL
[2]	TRUE		BOOL	[2]	TRUE		BOOL		[2]	TRUE		BOOL
[3]	TRUE		BOOL	[3]	TRUE		BOOL		[3]	TRUE		BOOL
[4]	FALSE		BOOL	[4]	FALSE		BOOL		[4]	FALSE		BOOL



_							
1.0-]	
0.6	ResetMECHATROLINKRequest						
0.2							
0.0							
1.2							
0.8 0.6 0.4 0.2	Valid						
0.2-							
1.0-							
0.5	Active						
0.0-3							
-1-							
1.0- 0.8- 0.6- 0.4- 0.2- 0.0-	RequiredAxesReady						
0.2-							
1.0-1 0.8-1 0.6-1 0.4-1 0.2-1 0.0-1	ResetMECHATROLINKRequired						
0.2							
1.0- 0.8-							
0.6	Resetting						
0.4							
0.2-							
		· · · · · · · · · · · · · · · · · · ·	1 - 1 - 1 - 1 1500 Sam	''''''''''	2000	2500	

Drive Parameter Control from MotionWorks IEC



Save latest drive parameters using the Hardware configuration

STEP 2:

Verify on the project archive page (on web page)



<u> 1aintenance</u>	
Project Archive Update Firmware Initialize SRAM Reboot	
ogged in as: Admin	procon/any/Memory.MLI
ccess Level: OEM	procon/any/PcFiles.pcf
Log Out	procon/any/Pdc.MLI
	procon/any/Pdc.PRI
	procon/any/PLCopenP.xml
	procon/any/sr.zsv
	procon/boot/BootFile.pro
	user/config/current.xml
	user/config/startup/axis.xml
	user/config/startup/hardware.xml
	user/config/startup/io.xml
	user/config/startup/servonet.xml
	user/config/startup/taskdata.xml
	user/config/startup/userdata.xml
	user/driveParam/AXIS1DrivePn.xml
	user/driveParam/AXIS2DrivePn.xml
	user/driveParam/AXIS3DrivePn.xml
	user/driveParam/AXIS4DrivePn.xml





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STEP 4: Y_WriteParameters Write drive parameters stored on controller to the drive Used when drives are replaced in the field

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Browse.

Send to Controller

New feature on web server Project Archive page for Controller Firmware 2.2

Project Archive

Install Archive

Olean Install: ALL existing files will be deleted

O Add/Replace Only: existing files not present in the archive will be retained

Note: Installing an archive does not update drive parameters. Go to the Drive Parameters page to send the configuration data from the archive to the drives, or perform an online save in the MotionWorks IEC Hardware Configuration to send parameters according to the project settings.

Write Controller side drive parameters to the drive

Verify Controller side drive parameters with parameters on drive

Drive Parameters

[Axis	Factory Default Parameters			User Parameters ¹	V	¥
	AXIS1	Not Verified	Verify	Write	Not Verified	Verify	Write
	AXIS2	Not Verified	Verify	Write	Not Verified	Verify	Write
	AXIS3	Not Verified	Verify	Write	Not Verified	Verify	Write
	AXIS4	Not Connected	Verify	Write	Not Connected	Verify	Write
	AXIS21	Not Connected	Verify	Write	Not Connected	Verify	Write
			Write All [Default Pns		Write All	User Pns

¹ User parameters refers to drive configuration data stored in XML files on the controller. These files are created when saving the MotionWorks IEC Hardware Configuration, and are visible in the Project Archive.



Thank you

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