

MPiec Web User Interface

Class No. TRM010-Mpiec-WebUI

Rev. A.01

Date: October 31, 2016



Instructor Introduction

Matt Pelletier

Product Training Engineer

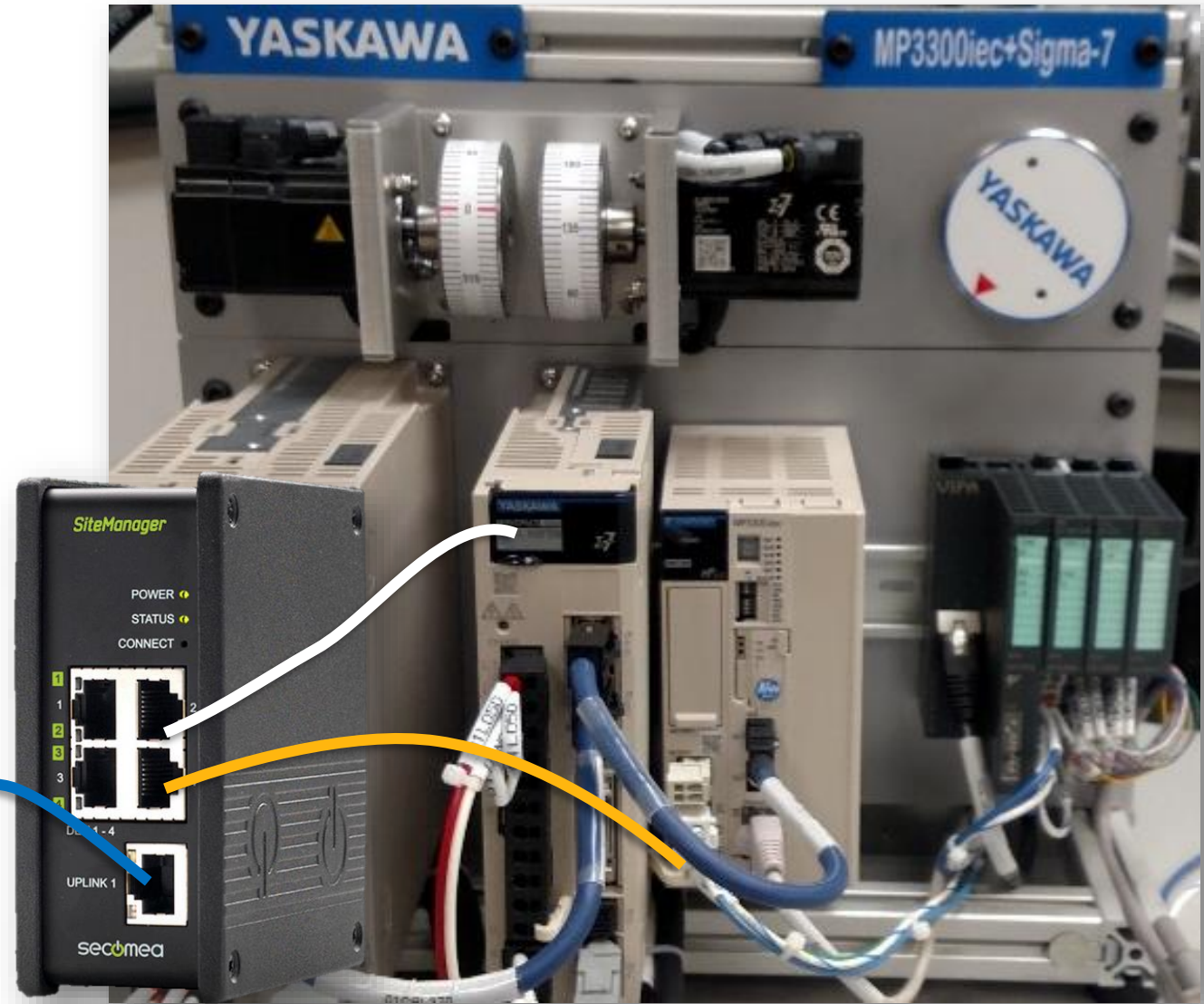
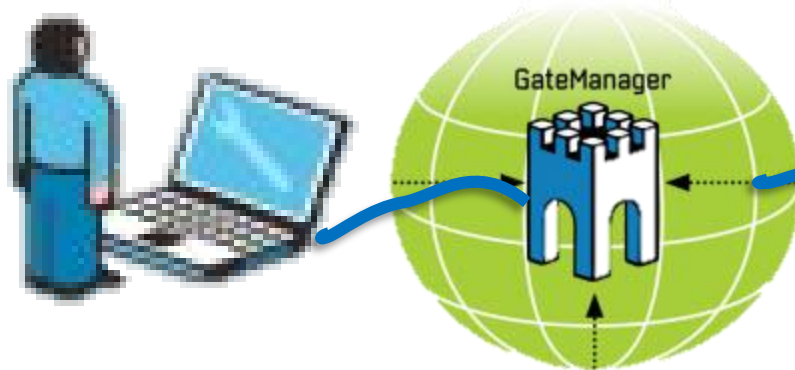
training@yaskawa.com

1-800-YASKAWA



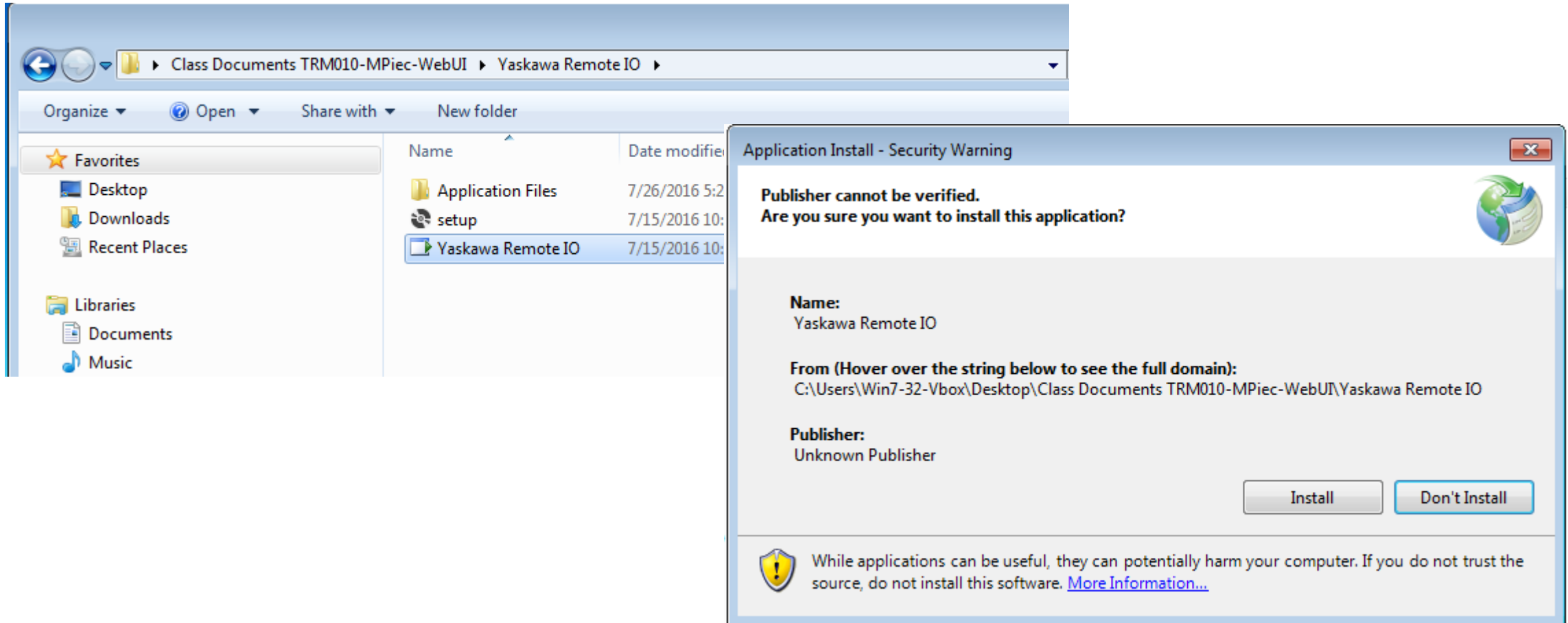
Remote Demo System

- Request access by Email
 - Training@yaskawa.com
- Remote Connection Process
 - `eLV.MPIec.01.PLCOpen_RmtCnct`



Install Yaskawa Remote IO

- *Launch “Yaskawa Remote IO”*



Yaskawa Remote IO

Remote I/O Interface

YASKAWA TTS
2016-07-13 Rev A.01

X_Axis Y_Axis Z_Axis

Servo ON Servo ON Servo ON

Alarm Reset Alarm Reset Alarm Reset

No Alarm No Alarm No Alarm

Set Speed 10 11 7889

Jog+ Jog+ Jog+

Jog- Jog- Jog-

Set Distance 80 51 52

Move Rel Move Rel Move Rel

Set Position 20 22

Move Abs Move Abs

Actual Position 0 23

Actual Speed 0

Write Pn Write Pn Write Pn

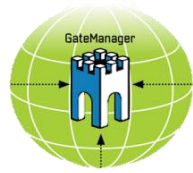
AbsEnc-Rst AbsEnc-Rst AbsEnc-Rst

Set Zero Set Zero Set Zero

Soft Reboot Controller and Servos (wait 30 sec)

Z_Axis Hardware Connection Options

Abs. Encoder Battery Disconnected	Control Power Disconnected	P-OT Conn.
		N-OT Conn.



Modbus/TCP

Modbus/TCP



Control Power

O.T. Inputs

Encoder Battery





MPiec Web User Interface Project Archive

Hands-on Training Tutorial

- *Backup*
- *Restore Controller*
- *Restore Servo Amplifiers*
- *Restore Servomotors*

Quick Reference Guide

- *Web UI Procedures*
- *MotionWorks IEC Procedures*

MPiec Series QRG Rev 3.4

1.8 Receive Project Archive (Back up controller and servo parameters)

KEY INFORMATION

The project archive contains the critical data for the controller and servopacks. Save this archive at time of machine commissioning and after any change is made.

Step	Description	Detail
1	Login to WebUI	See Procedure. Login: Admin. Password: MP2300S, MP2600, MP3200, MP3300
2	Verify Drive Parameters	Drive Parameters -> User Parameters, "verify" each axis. <i>Verify compares parameters in the archive with the current parameters in the servo.</i> IF Verify is successful, proceed to next step. IF Verify is not successful, then the archive drive parameters do not match the current parameters in the servos. Use MotionWorks IEC hardware configuration to import parameters to project archive.
3	Save archive from controller	Setup -> Archive -> "Receive", rename as required. *.zip file is saved to browser's default download directory.

1.9 Send Project Archive

KEY INFORMATION


This procedure only sends the controller program and configuration.



Step	Description	Detail
1	Login to WebUI	See Procedure. Login: Admin. Password: MP2300S, MP2600, MP3200, MP3300
2	Obtain the project archive file	*.zip is the file extension. The project archive must have been previously saved from an existing controller. It can also be created by MotionWorks IEC.
3	Send archive to controller	Project Archive -> "Browse" and select the project archive file. Select "Clean Install" to delete any previous archive files. Then "Send to Controller", "OK". Wait 1-2 minutes. <i>When complete the button changes from "Wait" back to "Send to Controller".</i>
4	Reboot	Under "Maintenance" -> reboot, then "Reboot Controller" and "OK" to confirm. Wait 45 seconds for reboot.

YASKAWA

Quick Reference Guide

MPiec Series Controllers



Contents

Web UI Procedures

- Set up the MP2300Siec and MP2310iec controller (Firmware 2.x)
- Set up the MP2600Siec controller (Firmware 2.x)
- Set the Front Panel Switches
- Set IP Address of PC (Windows 7)
- Establish Ethernet Communication between Controller and PC
- Download project to controller
- Login to Webserver
- Set IP Address of Controller
- Update firmware
- Save Project Archive (Backup controller and servo parameters)
- Load Project Archive
- Startup from Project Archive
- Clear Alarm A.810 (Initialize Absolute Encoders)
- Clear Alarm A.CC0
- Replace the controller
- Replace a Servopack (Mechatrolink)
- Replace ServoMotor
- Replace Battery
- Machine Operations and JAVA version

MotionWorks IEC Procedures

- Start MotionWorks IEC
- Open a saved project
- Open a zipped project
- Start a new project
- Save and Backup Project
- Set Project IP Address (Connect project to controller)
- Reset the MPiec controller back to factory settings
- Reset connected Servos to factory settings
- Clear Alarm A.810 (Initialize Absolute Encoders)
- Extract/Open the project stored in the controller

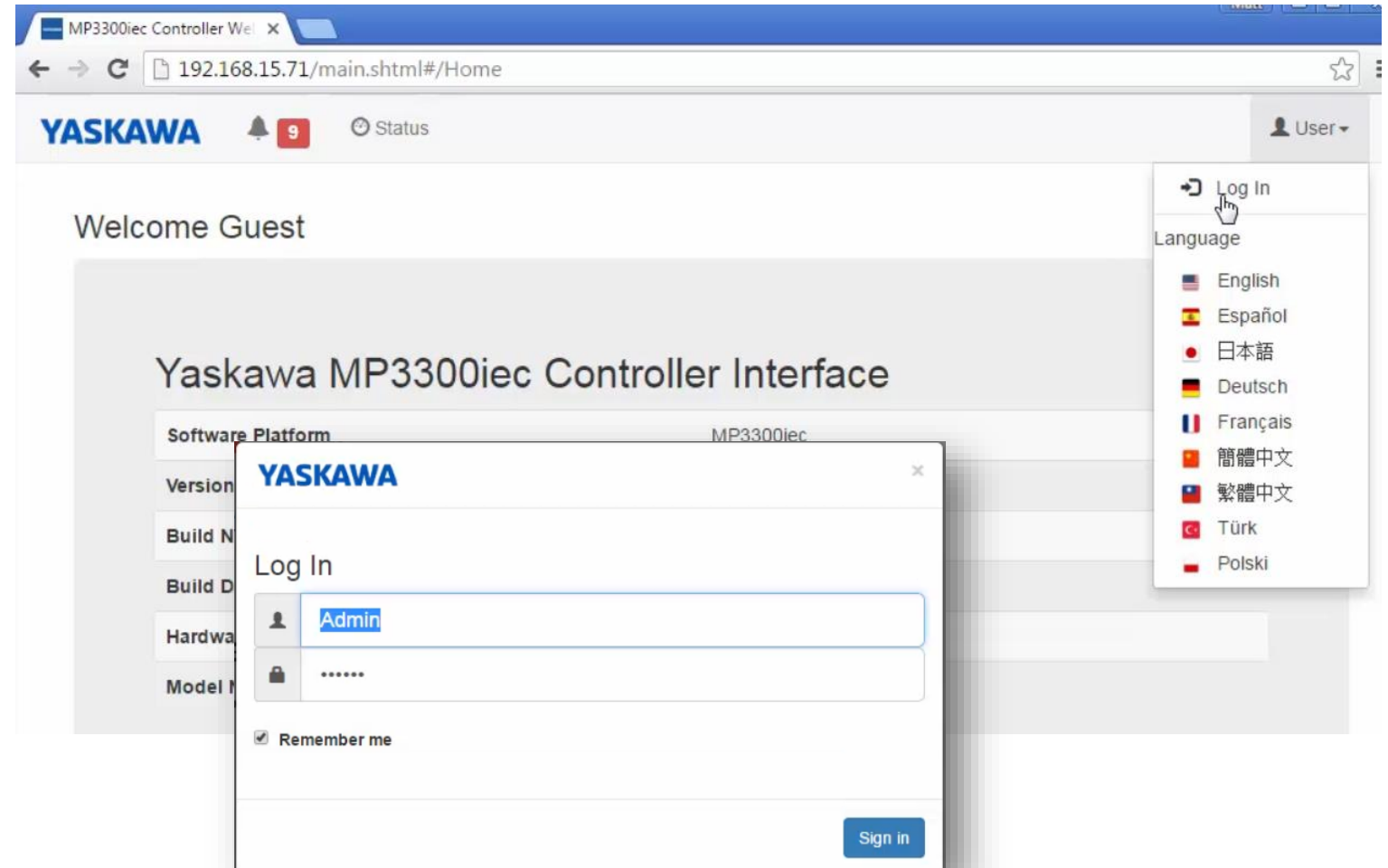
Modbus/TCP and Ethernet/IP

User Libraries
OPC Server
Logic Analyzer

QRG.MP2000iecSeries.01

Log in to WebUI

- *Enter IP Address*
- *User – Log In*
 - *Admin*
 - *MP3300*



MPiec Data

■ Archive (Flash)

- Program
- Configuration
- Cam Tables
- Servopack Parameters

■ SRAM

- IP Address
- Date, Time, Alarm History
- Absolute encoder offsets
- Data of Variables

The screenshot shows the Yaskawa MP3300iec Controller Web interface. The browser address bar shows the URL `192.168.15.71/main.shtml#/Archive`. The page title is "YASKAWA" and it includes navigation links for "Status" and "Operations".

The "Display" section shows checkboxes for "Unmodified", "Modified", "New", and "Deleted", all of which are checked. Below this is a "File" dropdown menu.

The file list is as follows:

- `/flash/procon/any/image`
- `/flash/user/config/current.xml`
- `/flash/user/config/startup/axis.xml`
- `/flash/user/config/startup/group.xml`
- `/flash/user/config/startup/hardware.xml`
- `/flash/user/config/startup/io.xml`
- `/flash/user/config/startup/servonet.xml`
- `/flash/user/config/startup/taskdata.xml`
- `/flash/user/config/startup/userdata.xml`
- `/flash/user/data/PDD.csv`
- `/flash/user/driveParam/XDrivePn.xml`
- `/flash/user/driveParam/YDrivePn.xml`
- `/flash/user/driveParam/ZDrivePn.xml`

Annotations on the left side of the screenshot map these files to categories:

- Boot Project** (yellow box) points to `/flash/procon/any/image`.
- Configuration** (light blue box) points to the group of files under `/flash/user/config/startup/`.
- PLC Variables** (dark blue box) points to `/flash/user/config/current.xml`.
- Servo Parameters** (green box) points to the group of files under `/flash/user/driveParam/`.
- Project.MWT** (orange box with folder icon) and **Source** (orange box) point to the text "Source code may not exist" at the bottom of the file list.

At the bottom of the page, the copyright notice reads: ©2014-2016 Yaskawa America, Inc. All Rights Reserved. yaska

Receive Project Archive

- Refer to Quick Reference Guide



System Restore

1. Send Archive

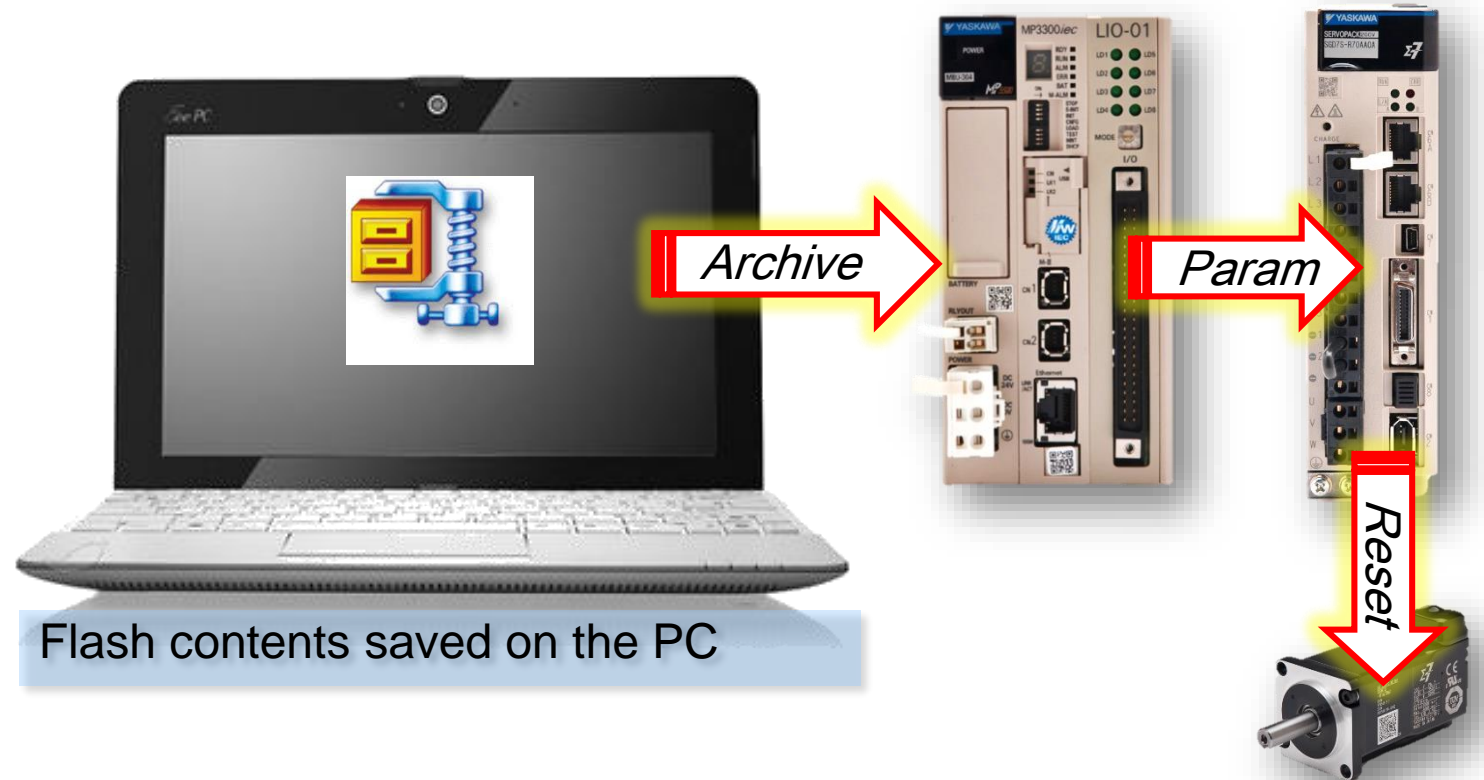
- *Reboot*

2. Write Parameters

- *Reboot*

3. Encoder Reset

- *Reboot*



Send Archive

- *Step 1: Controller*
 - *Send Archive "Archive_WebUI.zip"*
 - *Install*
 - *Reboot*



1.A Startup from Project Archive

KEY INFORMATION

Project Archive contains all required data including servo parameters.
Archive is not active until reboot.

Step	Description	Detail
1	Set up the controller	See procedure 1.0, for new controllers.
2	Stop all motion	Operate the machine according to existing program.
3	Login to WebUI	See Procedure. Login: Admin. Password: MP2300S, MP2600, MP3200, MP3300
4	Obtain the project archive file	*.zip is the file extension. The project archive must have been previously saved from an existing controller. It can also be created by MotionWorks IEC.
5	Send archive to controller	Setup - Archive - Send - Add Archive. Navigate to select the project archive file. "Clean Install" to delete all previous archive files. Click "Send", wait for transfer "Install". "Installing Archive" message appears at the top. When complete, the message disappears and the archive files are displayed.
7	Reboot #1	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot. <i>Controller is now running the loaded archive but may have alarms.</i>
6	Send Drive Parameters	Setup - Drive Parameters. Under "User Parameters", click "verify" for each axis. <i>Verify compares parameters in the archive with the current parameters in the servo drive. Click "Write" and confirm "Write" to send parameters from archive to servo. Takes 1-2 seconds to write. "Verified" confirms success.</i>
7	Reboot #2	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot. <i>Servos are now using the drive parameters sent from the archive.</i>
		Operations - Motion Control Panel. Click "Download and run externally" and run "WebControllerApplet". Java opens. "Run". new window titled Yaskawa Engineering

Write Parameters

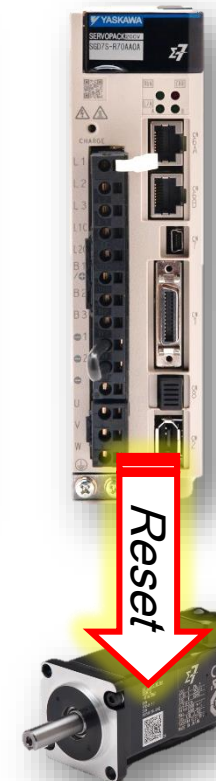
- *Step 2: Servo Amplifier*
 - *Drive Parameters*
 - *Write All User Pns*
 - *Reboot*



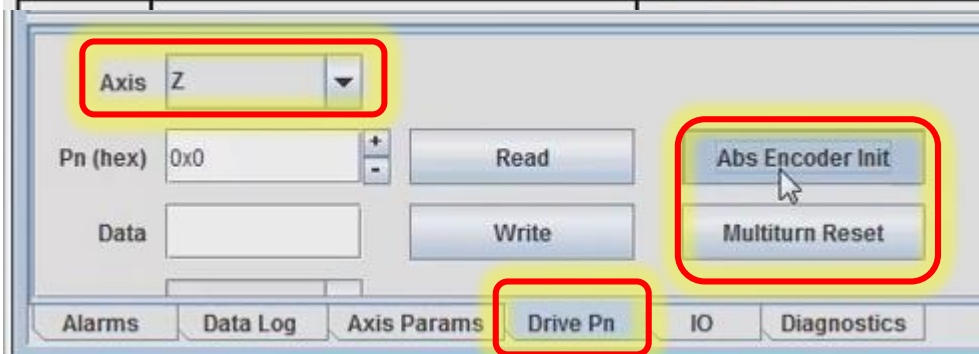
6	Reboot #1	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot. <i>Controller is now running the loaded archive but may have alarms.</i>
7	Send Drive Parameters	Setup - Drive Parameters. Under "User Parameters", click "verify" for each axis. <i>Verify compares parameters in the archive with the current parameters in the servo drive. Click "Write" and confirm "Write" to send parameters from archive to servo. Takes 1-2 seconds to write. "Verified" confirms success.</i>
8	Reboot #2	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot. <i>Servos are now using the drive parameters sent from the archive.</i>
9	Initialize Absolute Encoders to clear A.810, A.820, A.CC0	Operations - Motion Control Panel. Click "Download and run externally" and run "WebControllerApplet". Java opens, "Run", new window titled Yaskawa Engineering Tool opens. Navigate to "Drive Pn" tab -> select the axis with the encoder alarm. Click " abs encoder init " then " Multiturn Reset ". <i>Alarms A.810, A.820 and A.CC0 will clear after reboot.</i>
10	Reboot #3	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot. <i>Encoder alarms are now clear, and Pn205 multiturn limit has been stored in the encoder.</i>

Encoder Reset

- *Step 3: Encoder of Servomotor*
 - *Motion Control Panel*
 - *Java*
 - *Drive Pn*
 - *Abs Encoder Init*
 - *Multiturn Reset*
 - *Repeat for each axis*
 - *Reboot*



9	Initialize Absolute Encoders to clear A.810, A.820, A.CC0	Operations - Motion Control Panel. Click "Download and run externally" and run "WebControllerApplet". Java opens, "Run", new window titled Yaskawa Engineering Tool opens. Navigate to "Drive Pn" tab -> select the axis with the encoder alarm. Click " abs encoder init " then " Multiturn Reset ". Alarms A.810, A.820 and A.CC0 will clear after reboot.
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Motion Control Panel
Java Applet

Playtime

- *Repeat this procedure on your own*
 - *Disconnect abs encoder battery and control power*
 - *Delete archive*



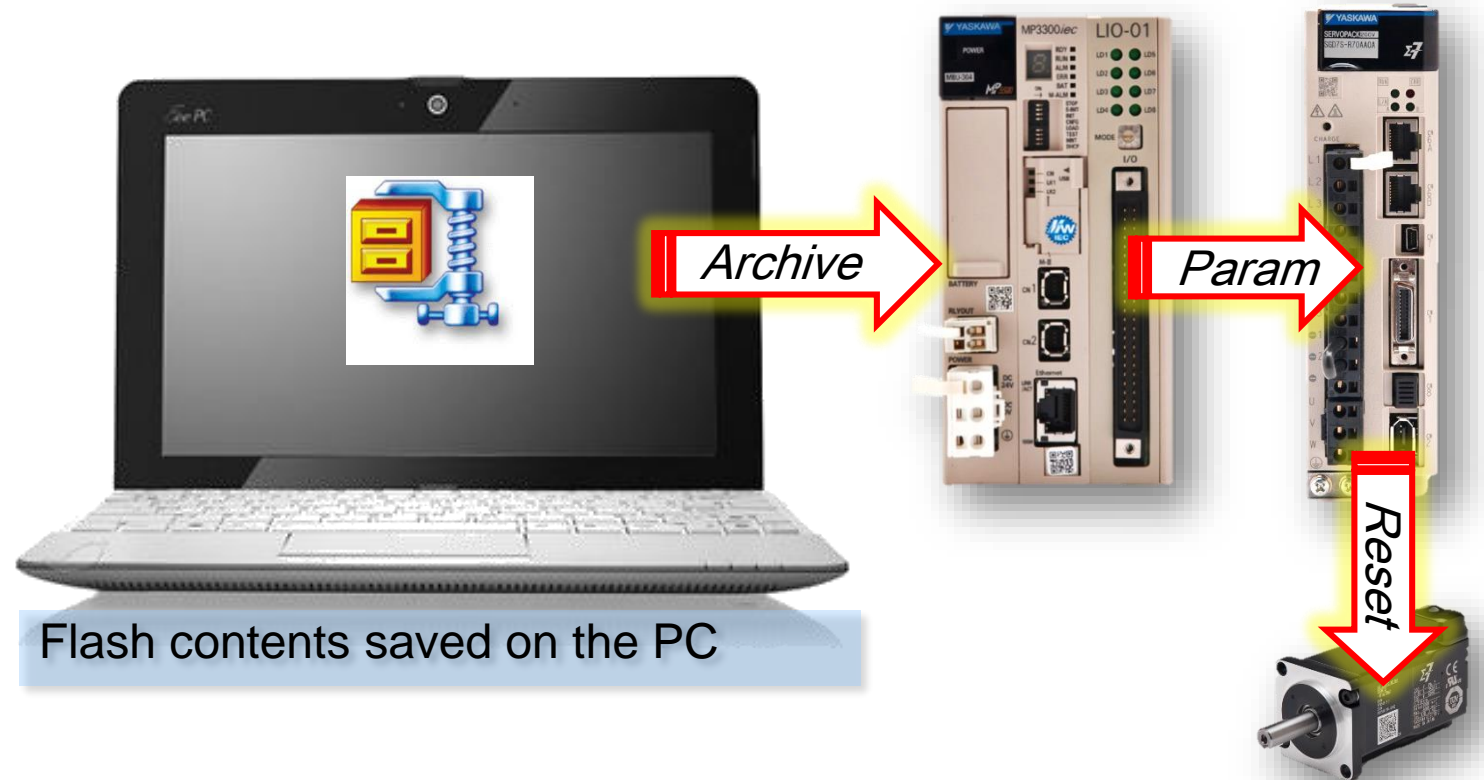
MPiC Web User Interface Training Demo Operation

Hands-on Training Tutorial

- *Jog Each Axis*
- *Set Zero Position*
- *Relative and Absolute Moves*
- *Controller Replacement*
- *Amplifier Replacement with HMI*
- *Motor Replacement with HMI*

Demo Current Status

1. *Send Archive*
 - *Reboot*
2. *Write Parameters*
 - *Reboot*
3. *Encoder Reset*
 - *Reboot*



Jog Each Axis

The screenshot shows a web browser window displaying the Yaskawa Remote IO interface. The interface is divided into two main sections: a video feed on the left and a control panel on the right. The video feed shows a Yaskawa MP3300iec+Sigma-7 motor with a white encoder and a blue Yaskawa logo. The control panel, titled 'Yaskawa Remote IO', features a 'Remote I/O Interface' section with three columns for X_Axis, Y_Axis, and Z_Axis. Each column contains buttons for 'Servo ON', 'Alarm Reset', 'Jog+', 'Jog-', 'Move Rel', 'Move Abs', and 'Set Zero'. The 'Jog-' button for the X_Axis is highlighted in green. Below the buttons, there are digital displays for 'Set Speed', 'Set Distance', 'Actual Position', and 'Actual Speed'. The Z_Axis 'Actual Position' display shows '356'. At the bottom of the control panel, there are 'Z_Axis Hardware Connection Options' including 'Abs. Encoder Battery Connected', 'Control Power Connected', 'P-OT Conn.', and 'N-OT Conn.'.

- *Servo ON*
- *Enter Speed*
- *Jog+*
- *Jog-*

Set Zero Position

The image shows a remote I/O interface for a Yaskawa TTS 2016-07-13 Rev A.01. The interface is divided into three columns for X, Y, and Z axes. Each column contains buttons for Servo ON, Alarm Reset, Jog+, Jog-, Move Rel, Move Abs, Write Pn, and AbsEnc-Rst. Below these are 'Set Zero' buttons for each axis. A 'Soft Reboot Controller and Servos (wait 30 sec)' button is at the bottom. The Z-axis section includes 'Z Axis Hardware Connection Options' with buttons for 'Abs. Encoder Battery Connected', 'Control Power Connected', 'P-OT Conn.', and 'N-OT Conn.'. The video feed shows a Yaskawa MP3300iec+Sigma-7 motor with a Yaskawa logo and a red triangle pointing down. The motor is connected to a Yaskawa servo drive and a Yaskawa I/O module. The I/O module has several green LEDs and a red LED. The video feed also shows a Yaskawa servo drive with a red LED and a Yaskawa I/O module with several green LEDs and a red LED.

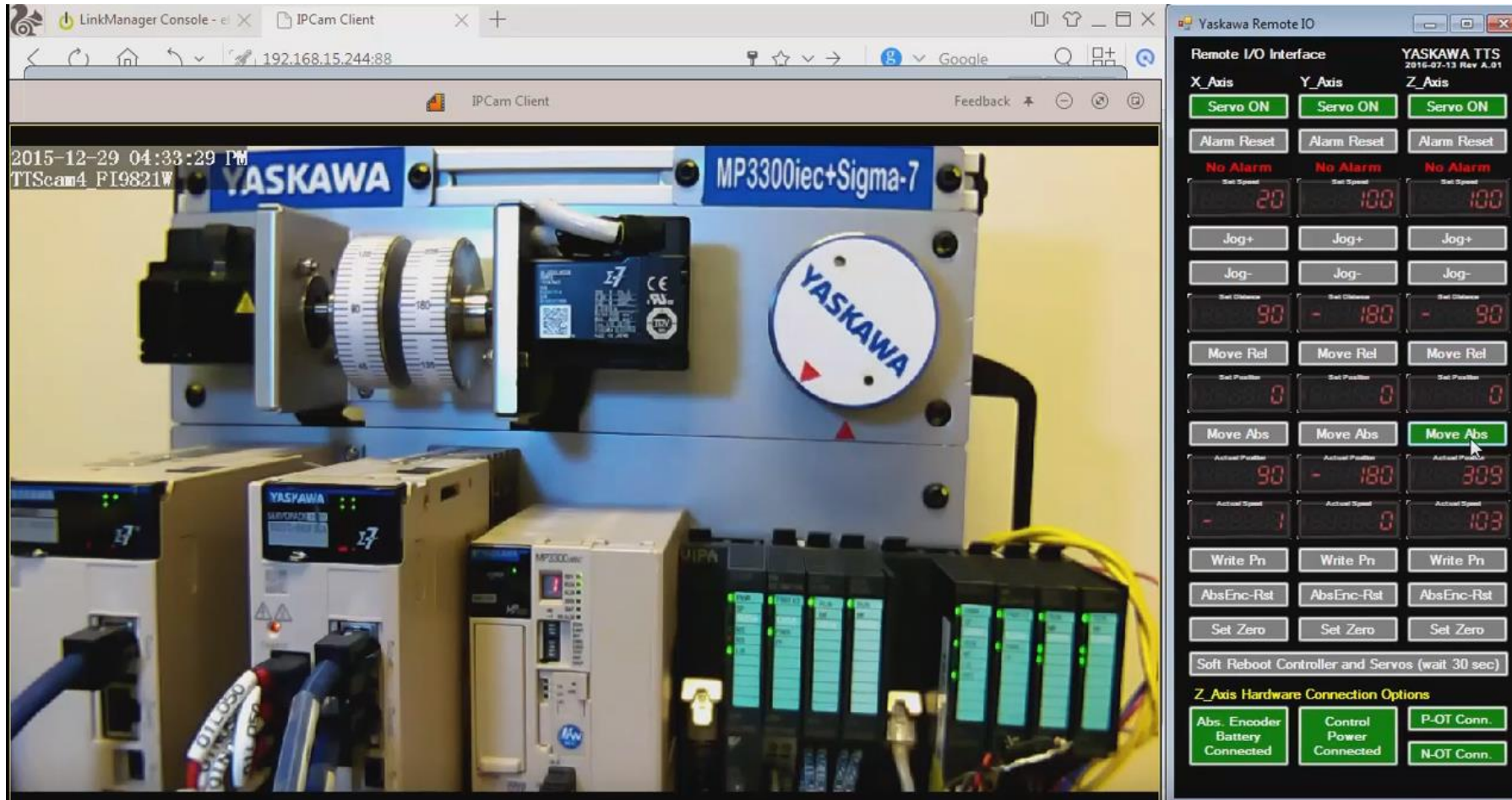
- Jog each axis to desired zero position
- Verify position feedback
- Set Zero

Relative Move

The image displays a Yaskawa robotic system and its remote control interface. On the left, a photograph shows the physical hardware, including a Yaskawa MP3300iec+Sigma-7 motor and a Yaskawa TTS controller. The right side of the image shows the Yaskawa Remote IO software interface. The interface is titled 'Remote I/O Interface' and 'YASKAWA TTS 2016-07-13 Rev A.01'. It features three columns for X, Y, and Z axes. The Z-axis is currently selected, and the 'Move Rel' button is highlighted in green. The Z-axis display shows a set distance of 180, a set speed of 100, and an actual position of 180. The X and Y axes show set distances of 90 and 180, respectively, and actual positions of 90 and 180. The interface also includes buttons for 'Servo ON', 'Alarm Reset', 'Jog+', 'Jog-', 'Move Abs', 'Write Pn', 'AbsEnc-Rel', 'Set Zero', and 'Soft Reboot Controller and Servos (wait 30 sec)'. The 'Z-Axis Hardware Connection Options' section shows 'Abs. Encoder Battery Connected', 'Control Power Connected', 'P-OT Conn.', and 'N-OT Conn.'.

- *Set Distance*
- *Positive or negative*
- *Move Rel*
- *Repeat the relative move*

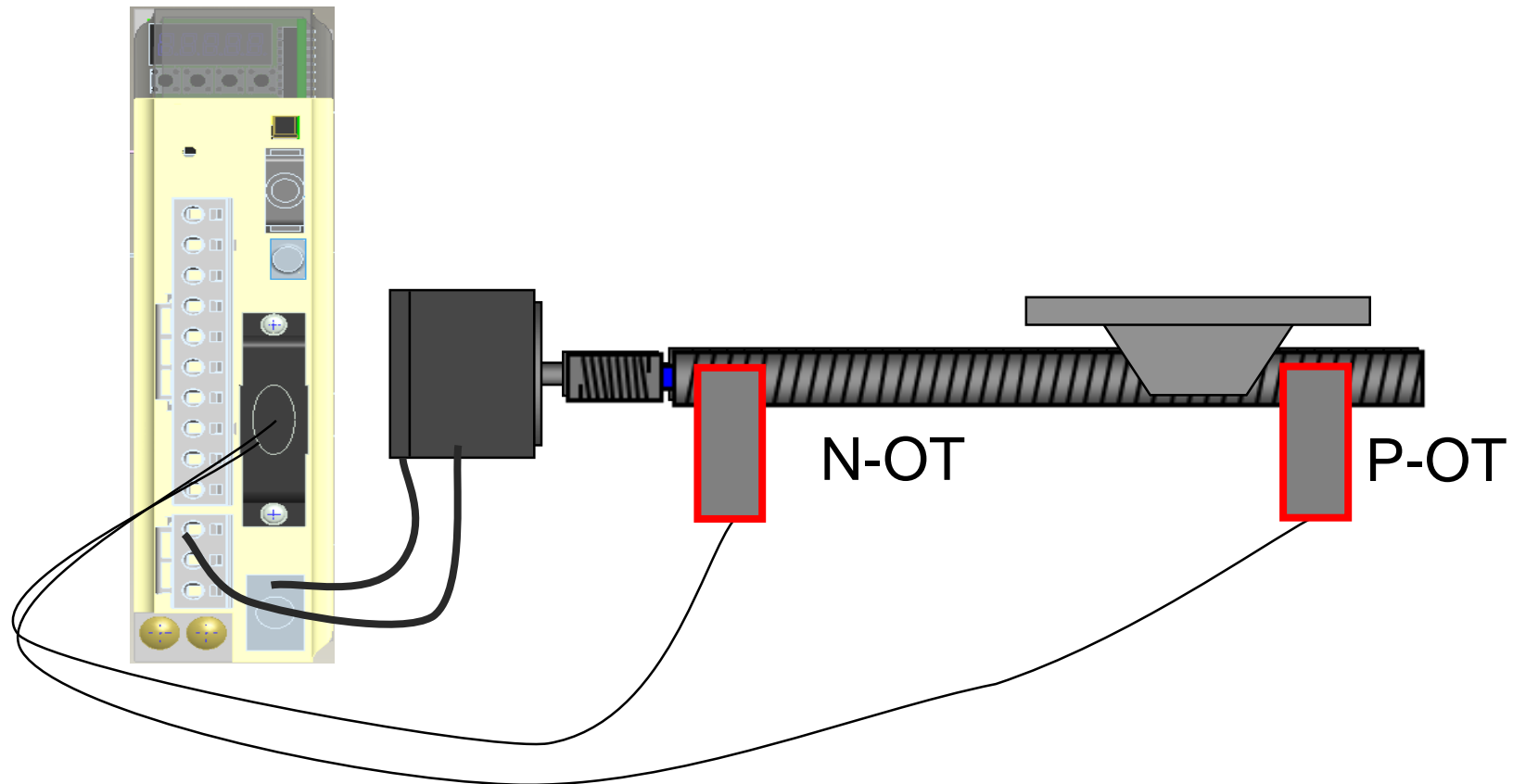
Absolute Move



- *Set Position*
- *Move Abs*
- *Move back to position zero*

Over-Travel

- *Normally Closed Circuit*



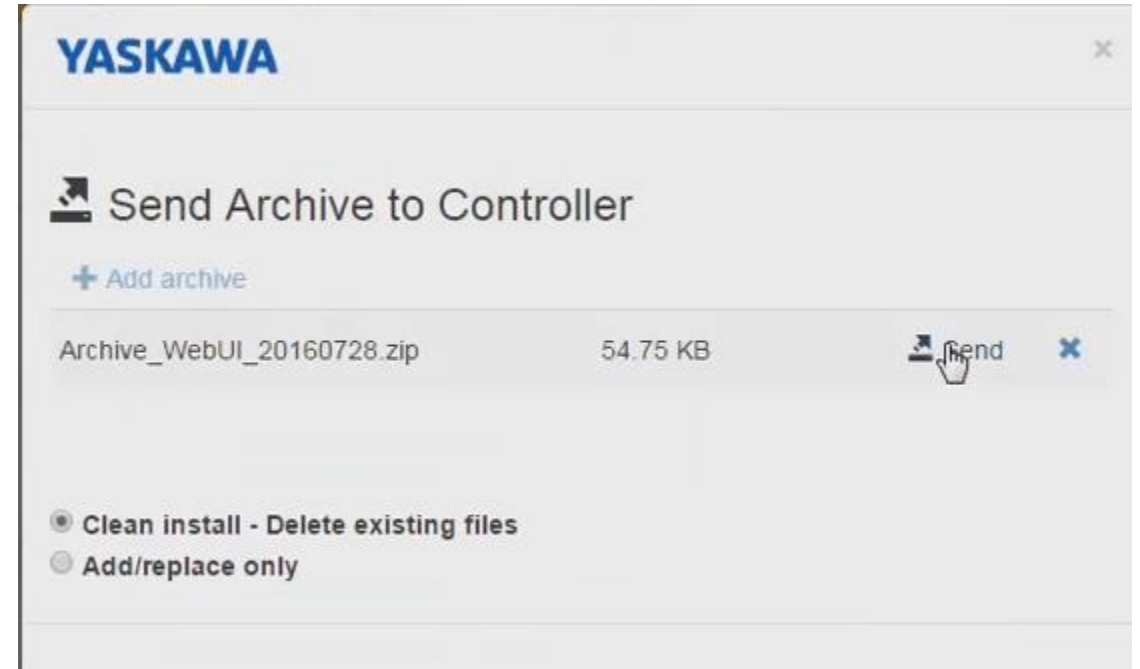
Playtime

Could not	Could not	Could not
Could not	Could not	Could not
Could not connect to 192.168.1.80	Could not connect to 192.168.1.51	Could not connect to 192.168.1.52
80	51	52
Could not	Could not	Could not
Could not connect to 192.168.1.20	Could not connect to 192.168.1.21	Could not connect to 192.168.1.22
20	21	22
Could not	Could not	Could not
Could not connect to 192.168.1.0	Could not connect to 192.168.1.0	Could not connect to 192.168.1.236
0	0	236
Could not	Could not	Could not
Could not	Could not	Could not
Could not	Could not	Set Zero
Soft Reboot Controller and Servos (wait 30 sec)		
Z_Axis Hardware Connection Options		
Abs. Encoder Battery Disconnected	Control Power Disconnected	P-OT Conn.
		N-OT Conn.



Simulate a Controller Replacement

- *Delete archive*
- *Initialize SRAM*
 1. *Send Archive*
 2. *Reboot in Web UI*
 3. *Set zero positions*
 - *Offsets for zero position are stored in SRAM*



Simulate a Drive Replacement

- Set default Pn on X_axis (with WebUI)
- Cycle power to demo
 1. Write Pn (with HMI)
 2. Soft Reboot (with HMI)
 3. Servo ON, Jog



1.E Replace a Servopack (Mechatrolink)

KEY INFORMATION:

The Servopack parameters can also be written

- * From the controller, automatically, according to the controller program
- * From MotionWorks IEC project file
- * From a previously saved SigmaWin+ parameter file

Step	Description	Detail
1	Install the replacement servopack	Power supply, motor, encoder, Mechatrolink, IO, holding brake, regen resistors, etc
2	Set the Mechatrolink Address	Note the rotary address switch setting of existing servopack and set the same address to the replacement servopack.
3	Login to WebUI	See Procedure. Login: Admin. Password: MP2300S, MP3200, MP3300 Expect controller alarm 3301 000b "Pn002 not correctly initialized"
4	Send Drive Parameters	Setup -> Drive Parameters -> "verify" each axis. Verify compares parameters in the archive with the current parameters in the servo. "Write" and "OK" to send parameters from archive to servo. Takes just a couple seconds to write.
5	Reboot	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot.

Simulate a Motor Replacement

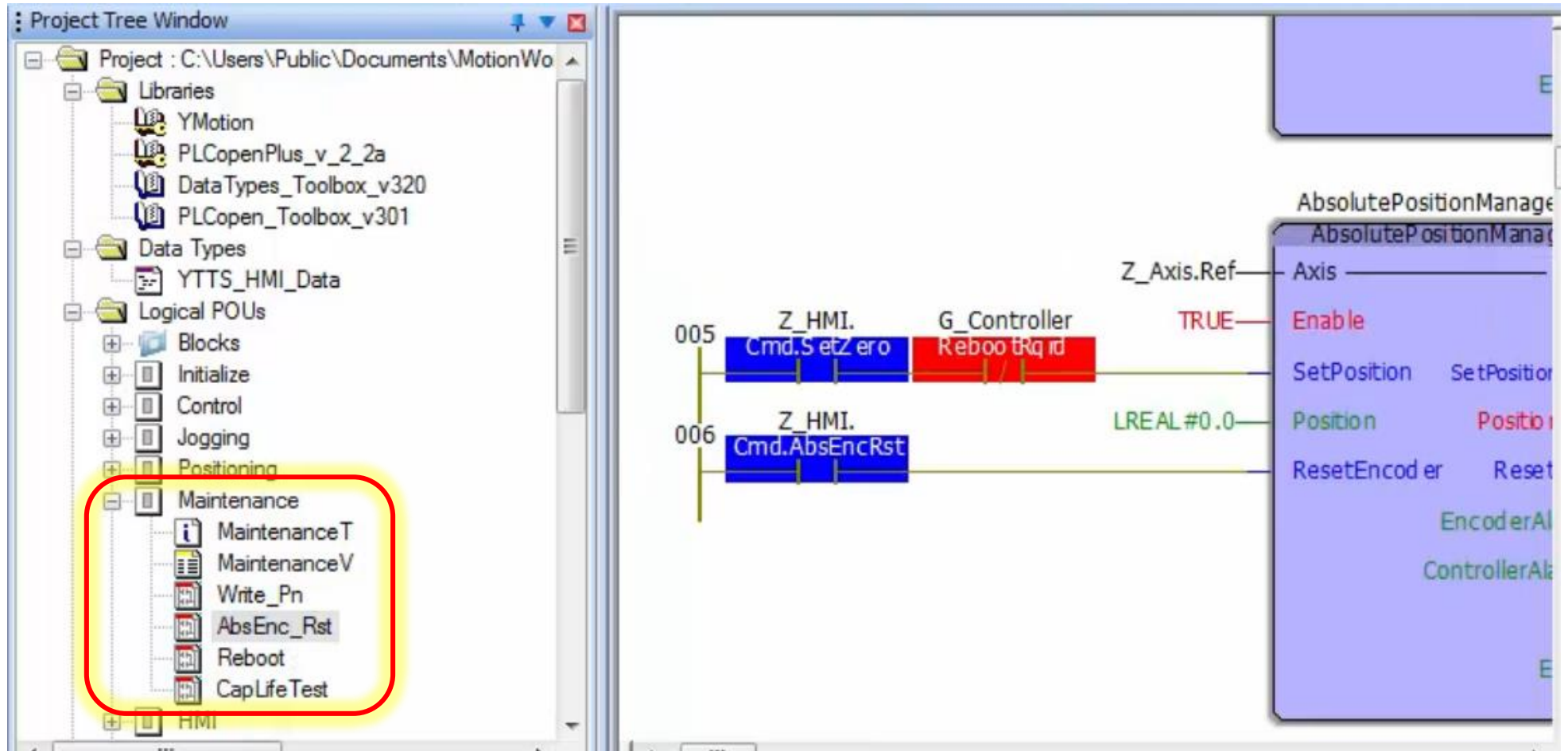
- *Turn off power*
 - *Disconnect absolute encoder cable*
 - *Turn on power*
1. *AbsEnc-Rst (with HMI)*
 2. *Soft Reboot (with HMI)*
 3. *Set zero positions*

1.F	Replace ServoMotor	
	KEY INFORMATION:	Absolute encoder alarms require special consideration (A.810 and A.CC0)
	Power OFF	
	Install replacement motor	
	Clear Alarm A.810	See procedure 1.B. Only applies to absolute encoder.
	Clear Alarm A.CC0	See procedure 1.C. Only to Absolute Encoder when multi-turn limit Pn205 is set
	Reboot Controller and Sigma5 Servopack	Status -> Reboot and confirm with "Reboot". Wait 45 seconds for reboot.
	Zero-Set / Home and machine calibration	Follow steps according to application programming of machine. <i>Home offsets for absolute encoder are stored in SRAM of controller.</i>



Behind the Scenes

- Code Preview





MPiec Web User Interface Test Move

Hands-on Training Tutorial

- *Purpose of Test Move*
- *Quick Reference Guide*
- *Motion Control Panel*
- *Move the Motors*
- *Run Controller Program*

Purpose of Test Move

- *Can the controller make the motors move?*
 - *Yes*
 - » *Check Controller Program*
 - » *Check I/O*
 - » *Check Upstream Devices; PLC, HMI*
 - *No*
 - » *Check Mechatrolink Cables and node address*
 - » *Check over-travel sensors*
 - » *Send parameters*
 - » *Jog motor directly from amplifier (SigmaWin+)*



Quick Reference Guide

1.i Test Move

KEY INFORMATION:

The test move confirms that the MPiec controller can run each servo axis.
 If successful, then application problems are related to the program or connected devices.
 If not successful, problems are likely related to servo wiring or parameter configuration.

Step	Description	Detail
1	Restore system from project archive	See section 1.A. The servo parameters must be set and the absolute encoders must be reset.
2	Clear servo alarms	Many alarms can be cleared in the alarm menu. See section 1.B and 1.D for encoder alarms, which also require a reboot to clear.
3	Stop the controller program	Either 1) turn on the STOP switch on the controller front panel, 2) use the STOP button within the MotionWorks IEC environment, or 3) temporarily delete the archive and reboot (save the archive before deleting).
4	Open "Motion Control Panel"	Operations - Motion Control Panel. Click "Download and run externally" and run "WebControllerApplet". Java opens, "Run", new window "Yaskawa Engineering Tool" opens.
5	Move the motors	<i>The axes are listed by name (or number) in columns. The feedback position and target position are given in configured user units. Target Vel is set to 1 rev/sec in user units. Accel Limit and Decel Limit are set to 1 rev/sec² in user units. Check the box "Enable". Set "Target Pos" to the desired absolute position. Click the "Move" button. To stop, click the "Abort" button or uncheck the box "Enable". The servo will move to the absolute position and stop when Feedback Pos = Target Pos.</i>
6	Run the controller program	Turn off the stop switch on the controller front panel, install the saved archive if it was deleted, and reboot the controller.

Before Attempting

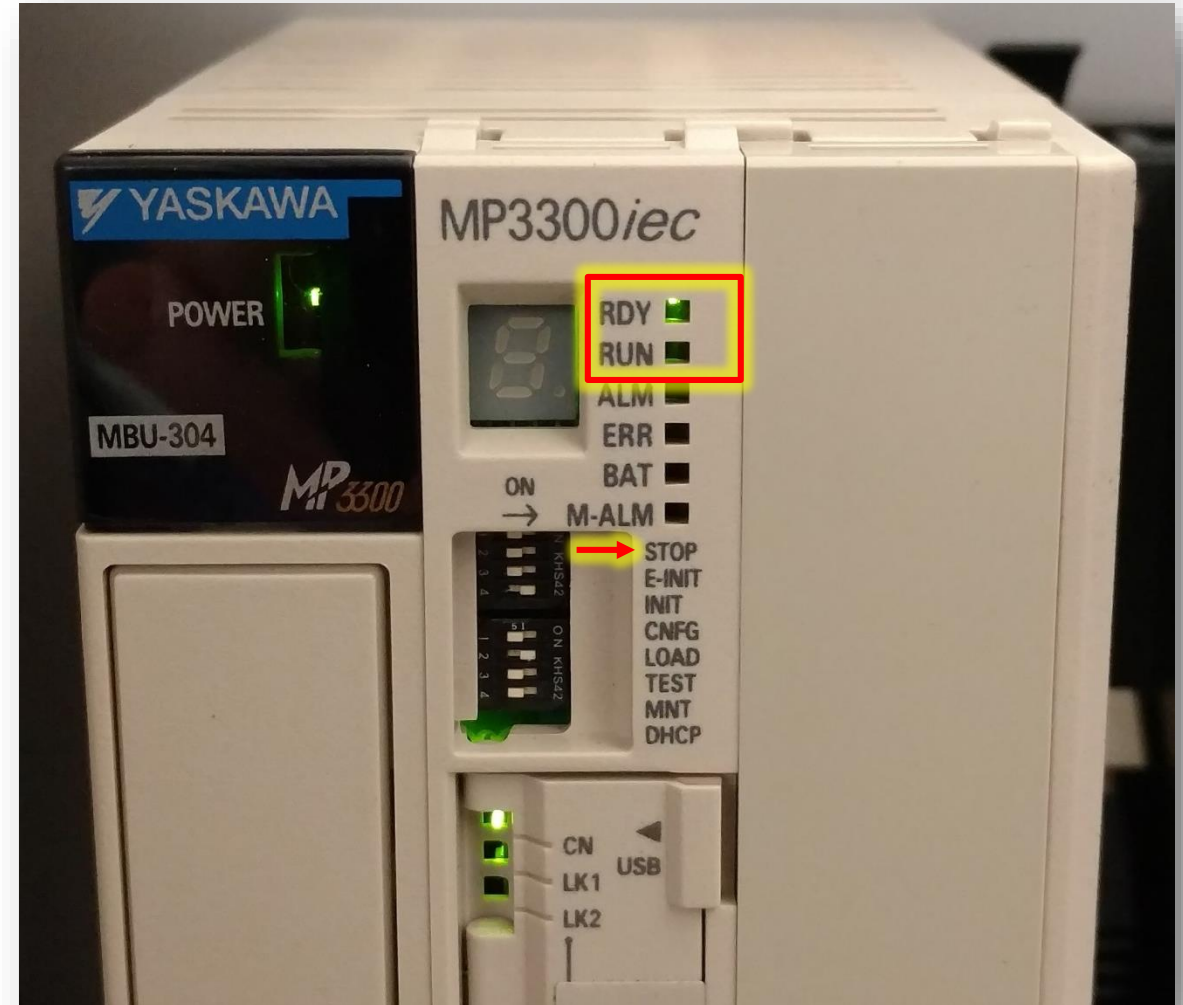
- *Demo System is Restored*
 - *Controller – Archive*
 - *Servo Amplifier – Drive Pn*
 - *Servomotor – Abs Encoder Init*
- *No alarms*
 - *Clear any alarms*
 - *Encoder alarms require special procedure and reboot*

The screenshot displays the YASKAWA control interface. At the top, there is a navigation bar with the YASKAWA logo, a bell icon for notifications, and menu items for Status, Operations, Setup, and Reboot. Below this, there are three tabs: Alarms (selected), Alarms History, and Alarms Reference. The main area shows a table with the following columns: Error Class, (Axis) Error Id, Source, and Description. To the right of the table, there are two buttons: 'Clear' (with an 'X' icon) and 'Save' (with a floppy disk icon).

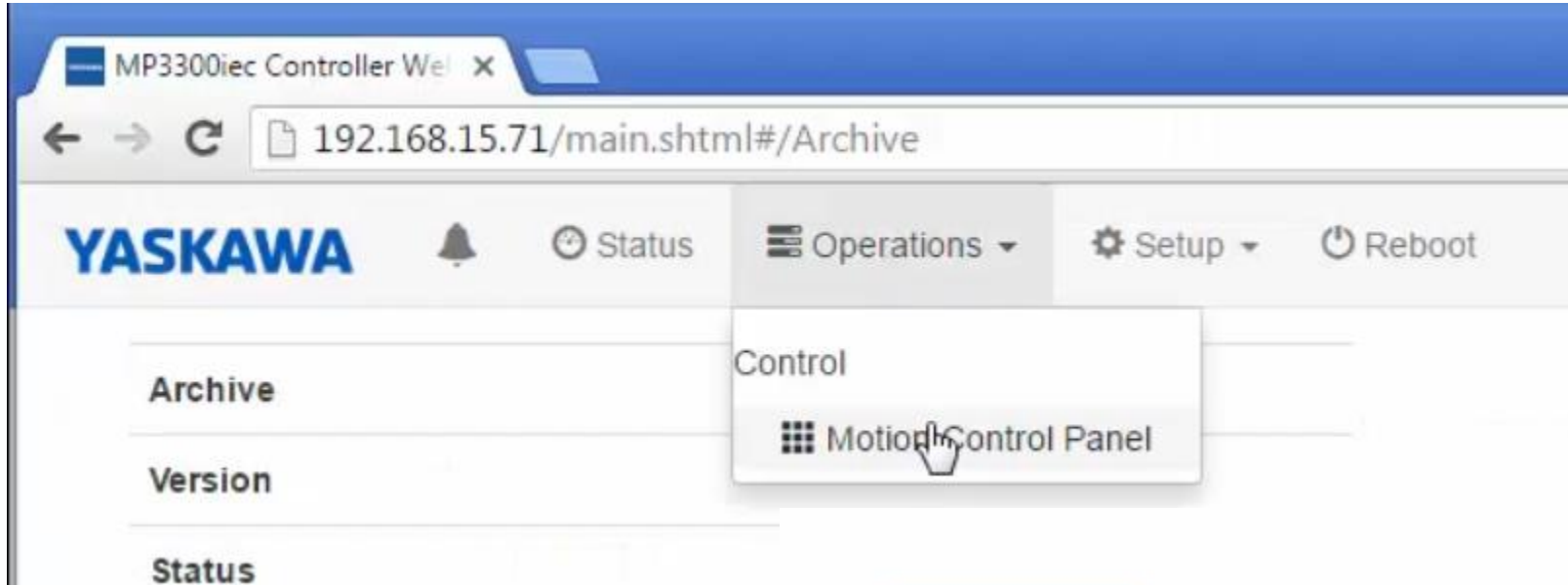
Error Class	(Axis) Error Id	Source	Description	Clear	Save
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Stop the Controller Program

- *Option 1: Turn on STOP switch*
- *Option 2: Stop in MotionWorks IEC*
- *Option 3: Temporarily delete archive and reboot*
 - *Save the archive first*
 - *Units of motion revert to Revolutions*



Motion Control Panel

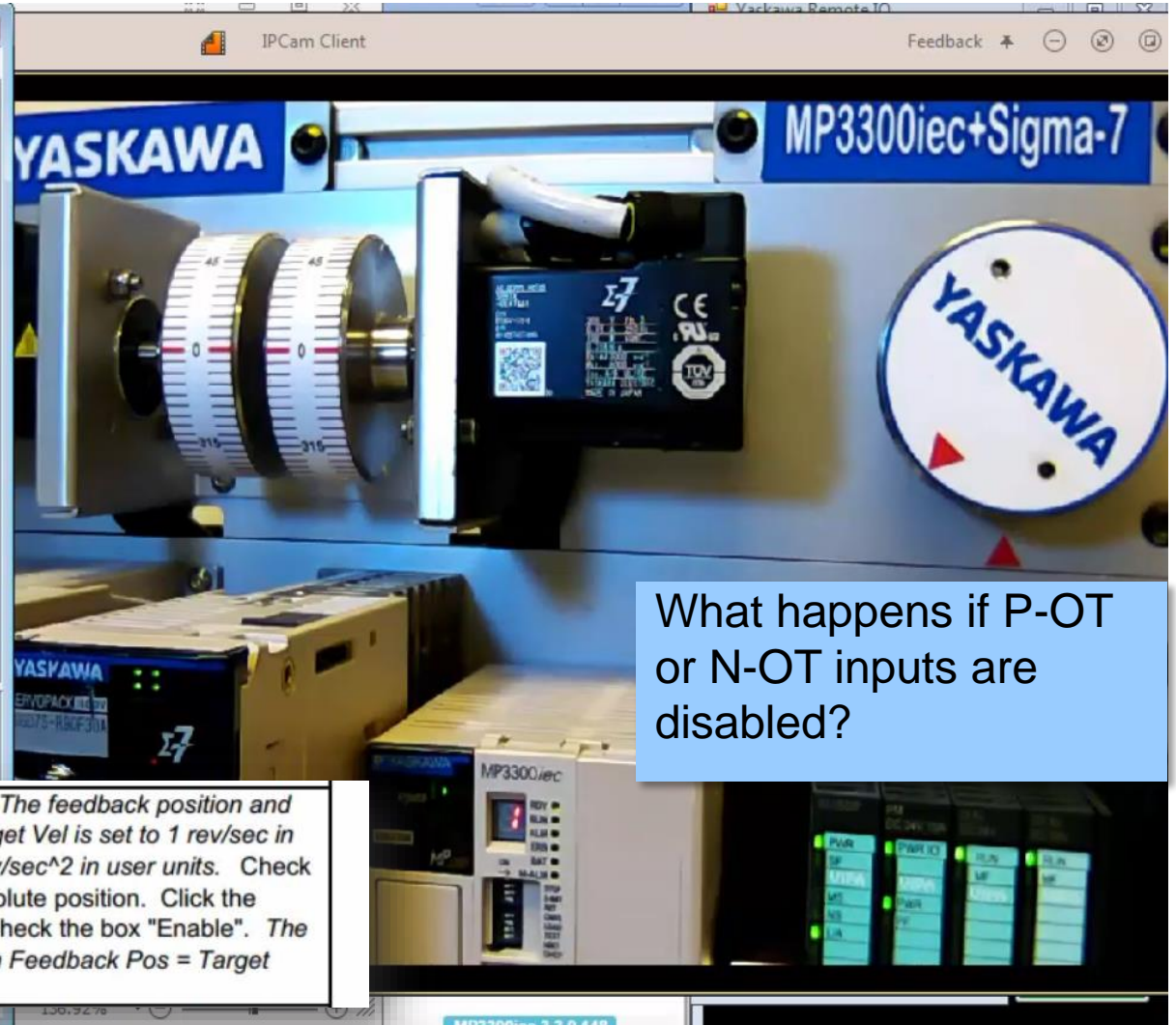


Move the Motors

Yaskawa Engineering Tool

All Axes	AXIS3	AXIS4	AXIS5
Alarm			
	Clear Alarm	Clear Alarm	Clear Alarm
Feedback Pos	0.000005	0.000001	-3493.153698
Feedback Vel	0.002563	-0.000030	-0.000268
Feedback Torque	-1%	0%	-0%
Group			
	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable	<input checked="" type="checkbox"/> Enable
Control Mode	Position	Position	Position
Target Pos	0.000000	0.000000	-3493.153696
Target Vel	1.000000	1.000000	1.000000
Accel Limit	1.000000	1.000000	1.000000
Decel Limit	1.000000	1.000000	1.000000
Target Torque	0.00 %	0.00 %	0.00 %
	Move	Move	Move
	Abort	Abort	Abort

Alarm	Source	Description



What happens if P-OT or N-OT inputs are disabled?

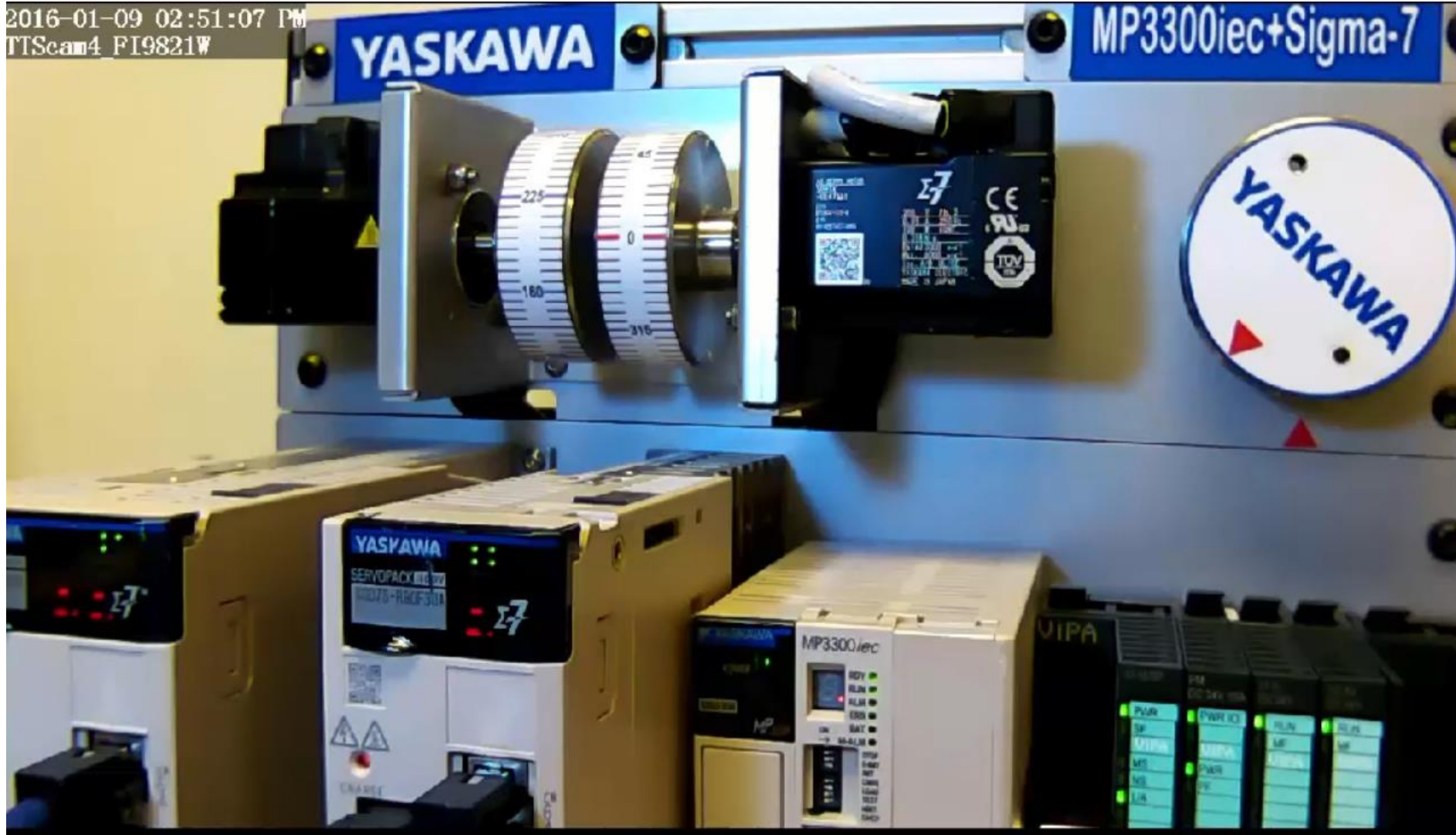
5	Move the motors	<p>The axes are listed by name (or number) in columns. The feedback position and target position are given in configured user units. Target Vel is set to 1 rev/sec in user units. Accel Limit and Decel Limit are set to 1 rev/sec² in user units. Check the box "Enable". Set "Target Pos" to the desired absolute position. Click the "Move" button. To stop, click the "Abort" button or uncheck the box "Enable". The servo will move to the absolute position and stop when Feedback Pos = Target Pos.</p>
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Run the Controller Program

- *Turn off STOP*
- *Install archive (if deleted)*
- *Reboot*



Playtime



**EASY TO WORK
WITH**

**ENGINEERING
EXPERTISE**

YASKAWA



**QUALITY
PRODUCT**

**TECHNOLOGICAL
INNOVATION**