This Quick Start Guide is designed to quickly verify that a new SigmaLogic product is functional and ready for full configuration and operation. The process should only take a matter of minutes to:

1) Supply power to the unit.
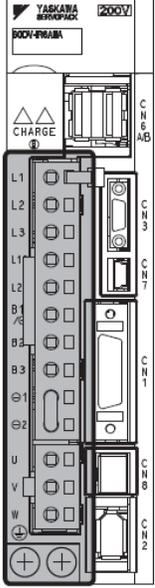2) Establish communications with LogicWorks.
3) Jog the motor using Test Mode.

Parts Needed

- ☐ SigmaLogic or Sigmalogic-7 SERVOPACK
- ☐ Servo motor
- ☐ Motor cable
- ☐ Encoder cable
- ☐ Ethernet cable to PC
- ☐ LogicWorks Configuration Utility zipped file
- ☐ Incoming Power Supply

Wiring and Connection

The wiring and connection may vary based on the servopack types (Sigma-5 or Sigma-7). Please consult the Servopack User Manual or the Controller Hardware Manual for full wiring instructions.

Table 1 shows the wiring connections for **Sigma-5 Servopacks** extracted from section 3.1 of the manual. For 100v and 200v models, both the Main Power and Logic Power inputs require AC voltage. For 400v models, the Main Power is AC and the Logic Power requires 24vdc.
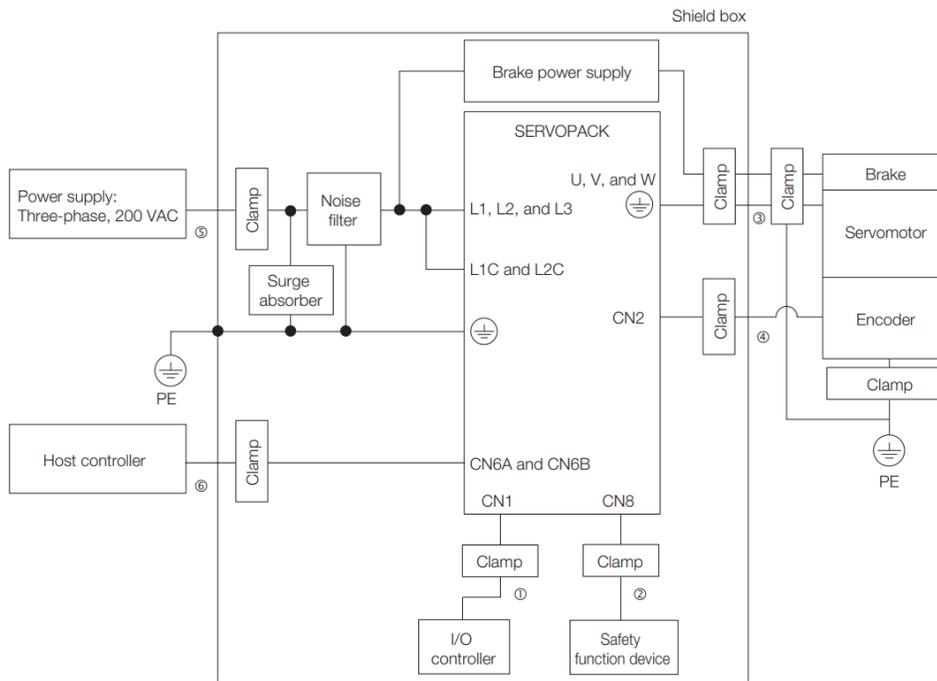

| Terminal Symbols	Name	Model SGDV-□□□□	Specification
L1, L2	Main circuit power input terminals	□□□F	Single-phase 100 to 115 V, +10% to -15% (50/60 Hz)
L1, L2, L3		□□□A	Three-phase 200 to 230 V, +10% to -15% (50/60 Hz)
		□□□D	Three-phase 380 to 480 V, +10% to -15% (50/60 Hz)
L1C, L2C	Control power input terminals	□□□F	Single-phase 100 to 115 V, +10% to -15% (50/60 Hz)
		□□□A	Single-phase 200 to 230 V, +10% to -15% (50/60 Hz)
24V, 0V		□□□D	24 VDC, ±15%
B1/⊕, B2*1	External regenerative resistor connection terminals	R70F, R90F, 2R1F, 2R8F, R70A, R90A, 1R6A, 2R8A	If the regenerative capacity is insufficient, connect an external regenerative resistor between B1/⊕ and B2. Note: The external regenerative resistor is not included.
		3R8A, 5R5A, 7R6A, 120A, 180A, 200A, 330A, 1R9D, 3R5D, 5R4D, 8R4D, 120D, 170D	If the internal regenerative resistor is insufficient, remove the lead or shorting bar between B2 and B3 and connect an external regenerative resistor between B1/⊕ and B2. Note: The external regenerative resistor is not included.
		470A, 550A, 590A, 780A, 210D, 260D, 280D, 370D	Connect a regenerative resistor unit between B1/⊕ and B2. Note: The regenerative resistor unit is not included.

Table 1: Main circuit wiring connections for Sigma-5 Servopack.

The following images show the wiring connections for **Sigma-7 Servopack** based controller like SigmaLogic-7 Compact and SigmaLogic-7 Modbus. This information was extracted from the controller s hardware manual section 8. For 100v and 200v models, both the Main Power and Logic Power inputs require AC voltage. For 400v models, the Main Power is AC and the Logic Power requires 24vdc.

Shield box

Brake power supply

SERVOPACK

Power supply: Three-phase, 200 VAC ⑤

Clamp

Noise filter

Surge absorber

L1, L2, and L3

L1C and L2C

U, V, and W

CN2

Clamp ③

Clamp

Brake

Servomotor

Encoder

Clamp

PE

PE

Host controller ⑥

Clamp

CN6A and CN6B

CN1

CN8

Clamp ①

Clamp ②

I/O controller

Safety function device

Symbol	Cable Name	Specification
①	I/O Signal Cable	Shielded cable
②	Safety Function Device Cable	Shielded cable
③	Servomotor Main Circuit Cable	Shielded cable
④	Encoder Cable	Shielded cable
⑤	Main Circuit Power Cable	Shielded cable
⑥	Ethernet Communications Cable	Shielded cable

Single-Phase, 200 VAC for SigmaLogic-7 Controllers.
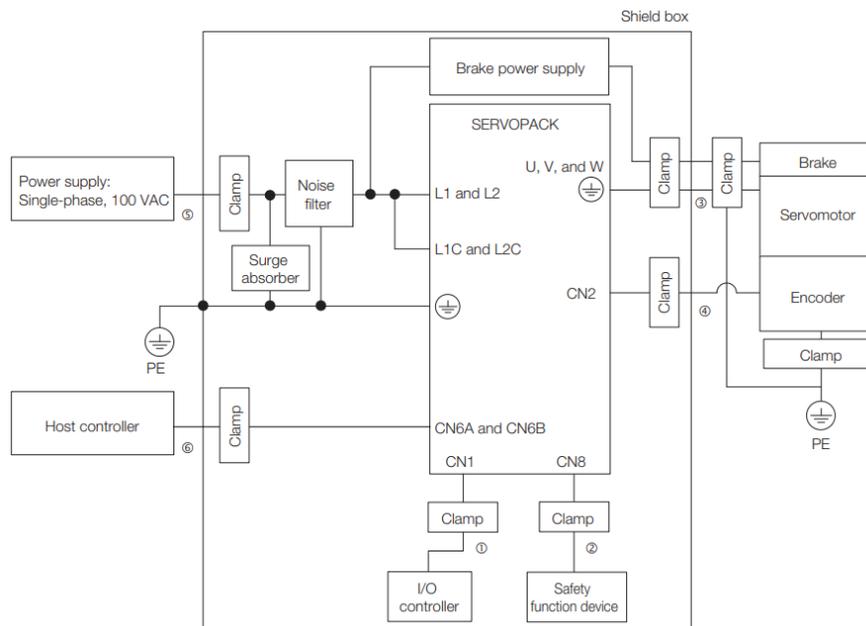
Symbol	Cable Name	Specification
①	I/O Signal Cable	Shielded cable
②	Safety Function Device Cable	Shielded cable
③	Servomotor Main Circuit Cable	Shielded cable
④	Encoder Cable	Shielded cable
⑤	Main Circuit Power Cable	Shielded cable
⑥	Ethernet Communications Cable	Shielded cable

Single-Phase, 100 VAC for SigmaLogic-7 Controllers.
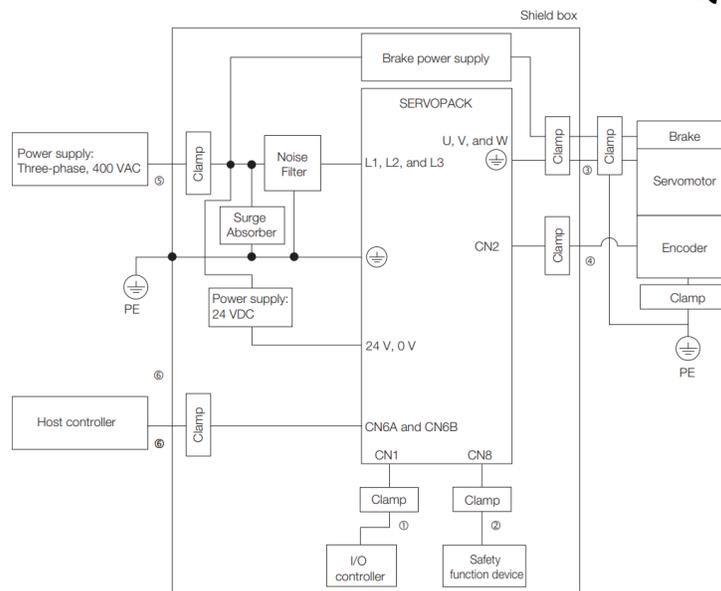
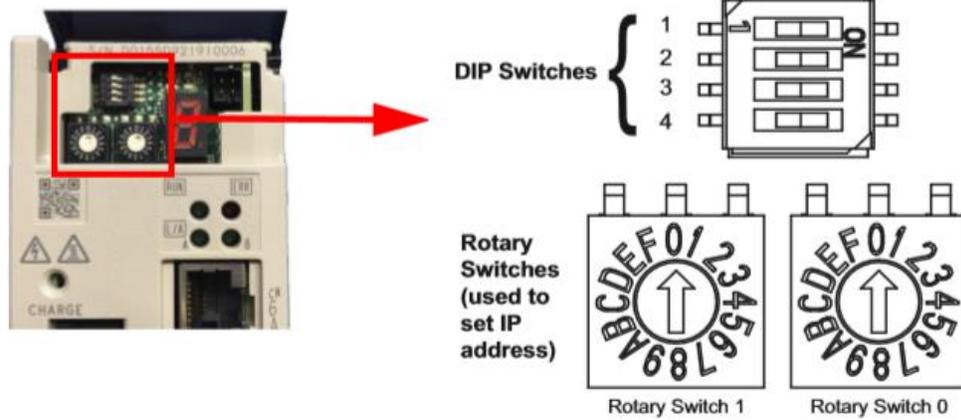| Symbol	Cable Name	Specification
①	I/O Signal Cable	Shielded cable
②	Safety Function Device Cable	Shielded cable
③	Servomotor Main Circuit Cable	Shielded cable
④	Encoder Cable	Shielded cable
⑤	Main Circuit Power Cable	Shielded cable
⑥	Ethernet Communications Cable	Shielded cable

Three-Phase, 400 VAC for SigmaLogic-7 Controllers.

1) With the source deactivated:
   - wire the Main AC Power at inputs L1, L2 (1-phase) or L1, L2, L3 (3-phase)
   - wire the AC Logic Power at inputs L1C and L2C
   - for 400 volt units, wire the DC Logic Power at inputs 24v and 0v
2) Connect the motor cable to the motor and to the SigmaLogic amplifier at U,V,W and Earth Ground. The phase order is important for proper operation so be sure to match each connection to the label on the cable leads.
3) Connect the encoder cable to the motor and to the SigmaLogic amplifier at CN2.
4) Ensure the factory jumper plug is inserted at CN8 or that the E-Stop circuit has been fully wired.
5) Connect the Ethernet cable to the SigmaLogic controller and to a PC.
6) For SigmaLogic controller either connection point may be used:
   a. CN11A default IP address is 192.168.1.1
   b. CN11B default IP address is 192.168.2.1
7) For SigmaLogic-7 Controllers both Ethernet ports (CN6A/CN6B) are configured to use the same IP address of 192.168.1.1

After initial connection is established, the IP addresses may be changed as desired.

8) Apply the Control Power source.
   a. The boot up process will take about 30 seconds.
   b. After successful boot, the RDY and RUN LEDs will light Green. The ALM LED may be either off or lit Red.
9) Apply the Main Power source
   a. The CHARGE LED will light Red.

10) Clear/Reset the SRAM:
    a. Turn off the Main Power and Logic Power on the SigmaLogic controller.
    b. Set the "INIT" switch (S11) to ON.
    c. Turn on the Logic Power and the Main Power on the SigmaLogic controller and wait for the "RDY" LED to illuminate.
    d. Turn off the Main Power and Logic Power.
    e. Set the "INIT" switch (S11) to OFF.
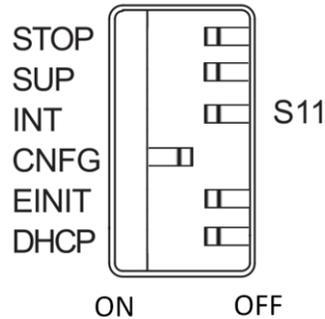   f. Turn on the Logic Power and the Main Power.

Controller Dip Switch Settings

Controllers, out of the box, come with a pre-configured IP address of 192.168.1.1. If the IP address of the controller is changed or unknown, it can be temporarily overridden back to 192.168.1.1 by rebooting the unit with E-INIT switch on. Wait about 30 seconds for the RDY indicator. The alarm indicator may be illuminated. Then turn the E-INIT switch back off. The IP address is now 192.168.1.1 unit the next reboot. In addition to the E-INIT switch there are several other DIP switches and its function are described in the table below.

| Switch	Name	Setting	Operating Mode	Setting for Normal Operation	Details
1	STOP	ON	User program execution inhibited	OFF	Inhibits user program execution
		OFF	Normal operation		
2	SUP	ON	Firmware programming mode	OFF	Enables servo controller firmware programming. This mode can also be performed via web UI without changing the DIP switch.
		OFF	Normal operation		
3	INIT	ON	Configuration bypass mode	OFF	Set to ON to bypass the stored configuration (e.g. in case of a configuration problem that prevents servo controller startup)
		OFF	Normal operation		
4	E-INIT	ON	Normal operation	OFF	Rotary switches used to set IP address
		OFF	Rotary switches ignored		IP address is set from configuration settings in servo controller

SigmaLogic-7 Normal DIP switch settings.

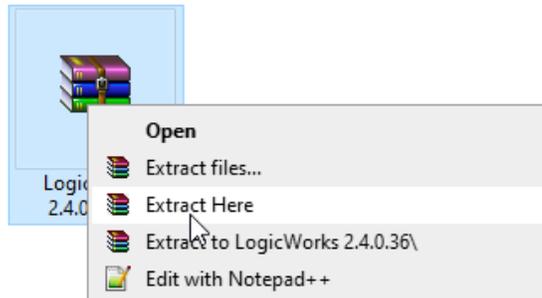| Switch	Name	Setting	Operating Mode	Setting for Normal Operation	Details
1	STOP	ON	User program execution inhibited	OFF	Inhibits user program execution
		OFF	Normal operation		
2	SUP	ON	Firmware programming mode	OFF	Enables controller firmware programming. (See Section 11)
		OFF	Normal operation		
3	INIT	ON	SRAM/clock initialization and configuration bypass mode	OFF	Set to ON to bypass the stored configuration (e.g. in case of a configuration problem that prevents controller startup) or to initialize the SRAM contents and clock settings after backup power has been lost (See Section 7.1).
		OFF	Normal operation		
4	CNFG	ON	Normal operation	ON	Always set to ON
		OFF	Do not set (reserved for future use)		
5	E-INIT	ON	Force Ethernet address setting for Port A to 192.168.1.1 and Port B to 192.168.2.1	OFF	Enables use of the default Ethernet addresses
		OFF	Normal Operation		
6	DHCP	ON	DHCP-configured IP settings	OFF	Enables use of DHCP for IP setting configuration
		OFF	Manually-configured IP settings		

SigmaLogic Normal DIP switch settings

Install LogicWorks Configuration Utility

1) The LogicWorks Installation .zip file can be retrieved from www.yaskawa.com/SigmaLogic product page. Download and save this file to a convenient location.

LogicWorks
2.4.0.36.zip
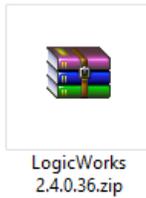
2) Right-click on the file icon to extract the contents to a convenient location.

Open
Extract files...
Extract Here
Extract to LogicWorks 2.4.0.36\
Edit with Notepad++

3) A new folder will be created at the specified location.
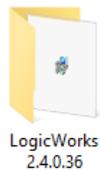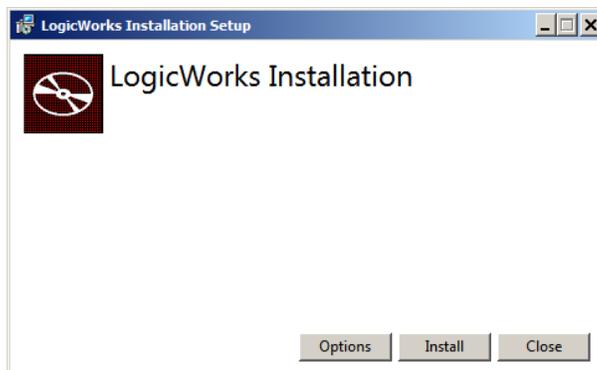

LogicWorks
2.4.0.36

4) Open the folder and double-click on 'Setup.exe' to begin installing LogicWorks to the PC.

LogicWorks 2.4.0.36

Name	Date modified	Type	Size
Setup.exe	7/7/2020 7:41 AM	Application	15,394 KB

5) When the LogicWorks installation dialog box appears, choose 'Install'.

LogicWorks Installation Setup

LogicWorks Installation

Options   Install   Close

6) When setup is complete, click on 'close.'
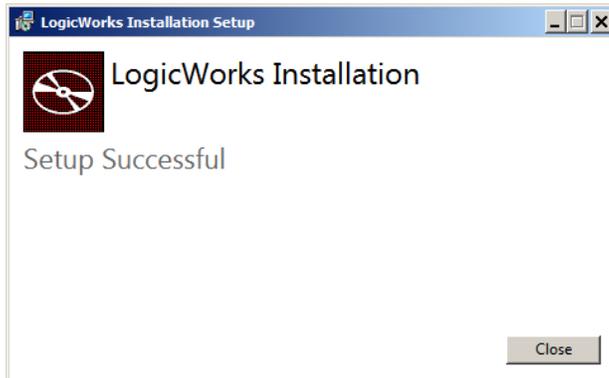
7) To launch LogicWorks, double-click on the program icon

**OR** navigate to Start, All Programs, Yaskawa, LogicWorks.
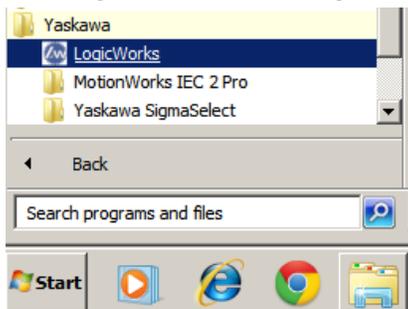
8) The program Start Page will appear.

YASKAWA

Establish Communications

1) Configure the PC with a static IP address on either subnet x.x.1.x or x.x.2.x depending on which port is chosen on the SigmaLogic controller. If you are using Sigmalogic-7 based controller both ports were configured to use the same subnet of x.x.1.x. Set the last digit of the PC address (x.x.x.#) to a value other than 1.

2) Launch LogicWorks, start a New Project and select the desired controller, motor and voltage type.
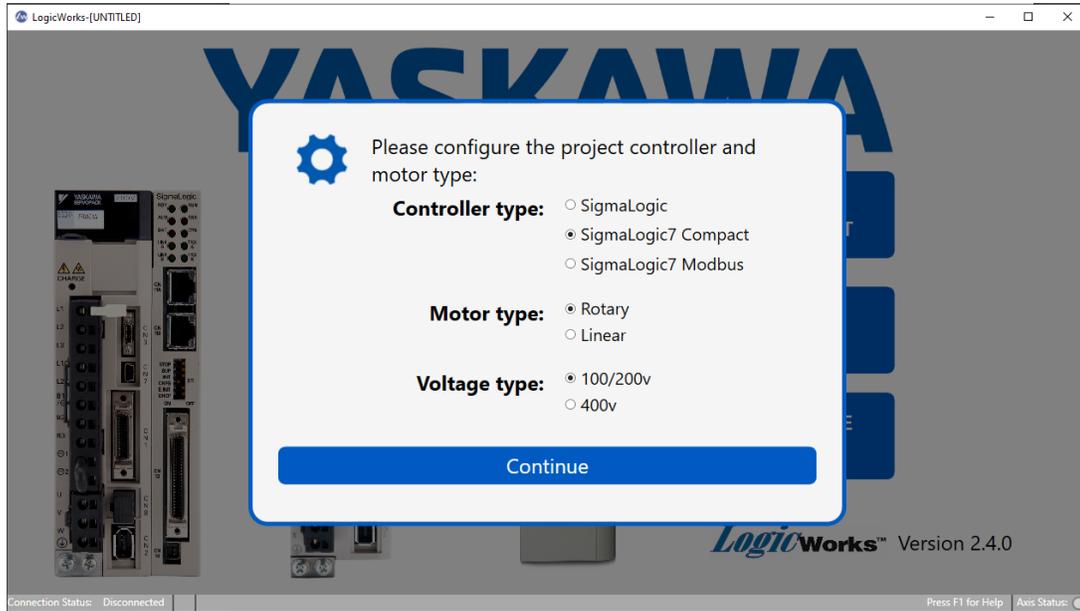
3) Press continue and the software will open connection page as shown.

4) The default IP address is 192.168.1.1 (Note: For SigmaLogic controller, if you are connected to port CN11B then the default IP address is 192.168.1.2).

5) Click on 'Ping Test' to verify that the controller is reachable on the network.
   a. A successful Ping Test returns a Green Light on the button indicator.

   b. If unsuccessful, please check the cable connections and the PC network settings. For further assistance please consult with IT personnel.

6) Click on 'Connect'.
   a. If successful, the Indicator will change from 'Disconnected' with Red background, to 'Connected' with Green background.
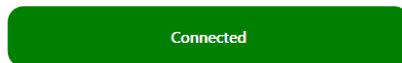
   b. If successful, the lower status bar will change status from 'Disconnected' to 'Connected' and the SigmaLogic IP address will appear.

7) CPU Status: Running
   a. If the controller is ready, the CPU Status on the bottom of the screen will display 'Running'.

Note: If the CPU Status displays "Stopped", check the **STOP** DIP switch on the controllers front panel. The switch should be turned OFF for normal operation.

Test Run

The Test Run page is designed to quickly check motion operation.

CAUTION: Be sure all personnel are clear of any moving mechanisms before entering Test Mode or serious injury may result.

1) Navigate to the Test Run – Motor Test page.
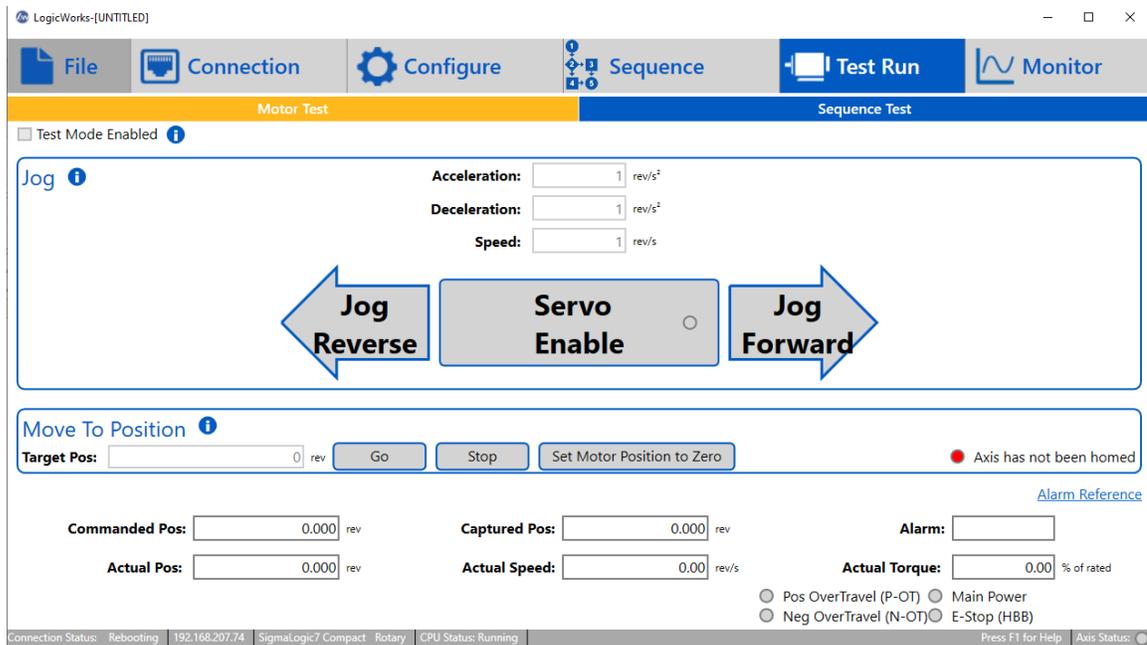
2) Click on the 'Test Mode Enabled' box to enable Test Mode. A warning pop-up message will appear to confirm that it is OK to enter Test Mode and take control away from any existing PLC.
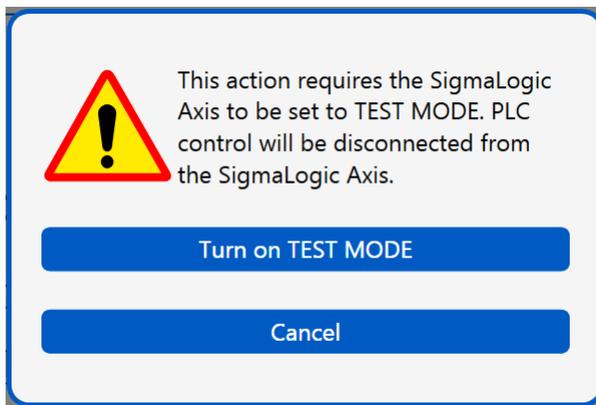
3) If successful, the 'Enable' button indicator will turn from grey to blue.

4) Check to be sure that all personnel are clear of any moving mechanism and click on 'Enable'.
    a. The motor should be energized and stationary.
    b. The 'Jog' and 'Move' buttons should change from grey to blue.
    c. The 'Enabled Status' indicator inside the 'Servo Enable' button and in the lower right of the status bar should turn green.
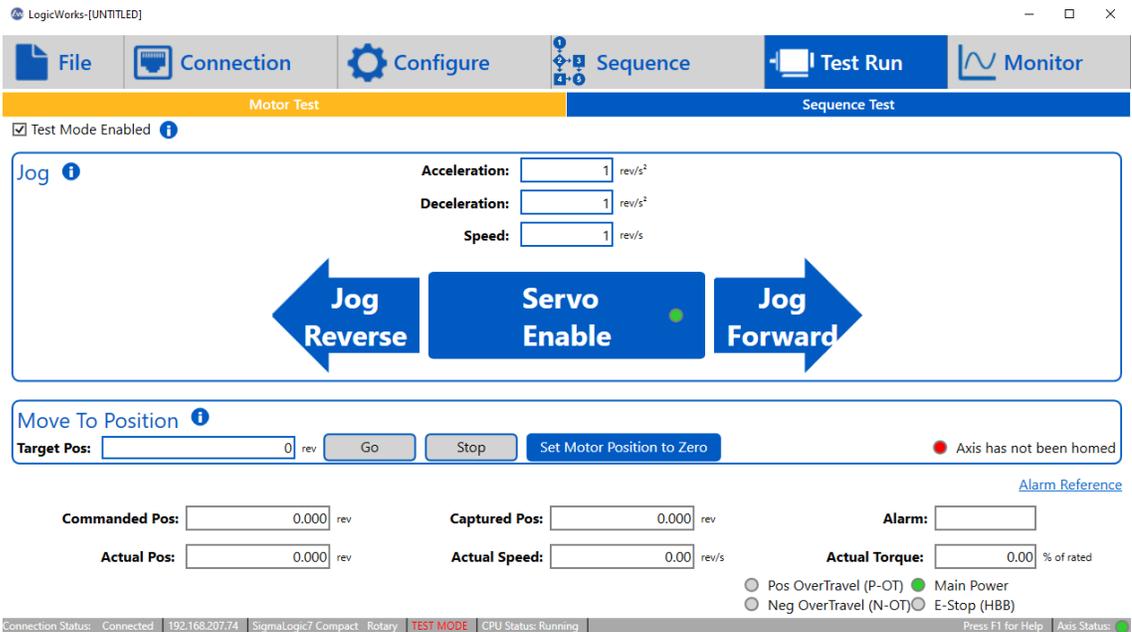

5) Enter appropriate values for Acceleration, Deceleration and Speed. The default units are in revolutions of the motor.

6) Click and hold the 'Jog Forward' button.
    a. The motor should move in the positive direction as shown in the Actual Position field.
    b. Release the button to stop the motor

7) Click and hold the 'Jog Reverse' button
    a. The motor should move in the negative direction as shown in the Actual Position field
    b. Release the button to stop the motor

8) In order to Move to an Absolute Position the axis must be homed by clicking 'Set Motor Position to Zero'. Once the axis is homed enter an appropriate target position and press 'Go' to move to that position.
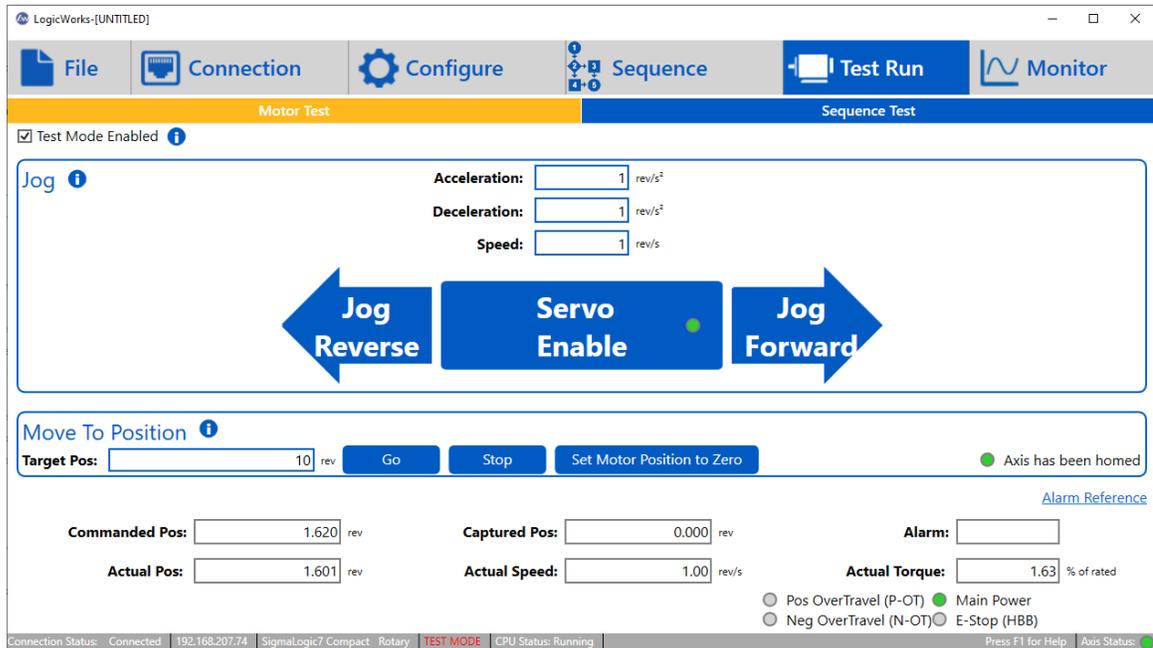
9) Click on the 'Test Mode Enabled' box again to disable Test Mode. After confirming it is ok to transfer control back to any existing PLC, all buttons should return to grey and the motor will be disabled.
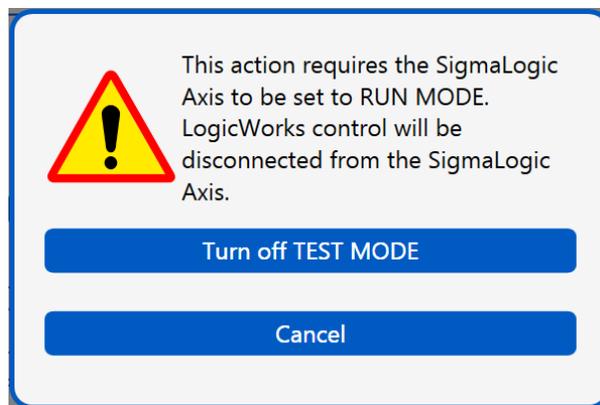
FINISHED! The initial 'Getting Started' tests are complete. For more assistance on fully configuring the SigmaLogic controller for actual applications and controlling motion from a PLC, please see the LogicWorks Help File and/or other instructional videos available from Yaskawa's eLearning Curriculum.