

PLC131 LAB 2.1: COMPACTLOGIX ANALOG MODULES

Student Name: _____

Student ID: _____

LAB OUTCOMES:

1. Explain what Tags are created for the analog I/O module
2. Demonstrate how to measure voltages on an analog I/O module
3. Explain how to interpret the properties and settings of an analog I/O module
4. Explain the correlation of the analog output tag value to the measured signal

LAB PROCESS:

In part 1 you will ensure that the CompactLogix trainer is NOT powered on. For this part of the lab you will require a DMM that is setup to perform a continuity check. In part 2 you will Download the project “Compact_Module_8_EX1_Analog.ACD” file, go online and put the CompactLogix into RUN mode.

Part 1

Ensure CompactLogix demo is NOT powered-up

Configure DMM for continuity check

Meter terminals V/I in 0- and V/I in 1-

Continuity Yes / No?

Meter terminals V/I in 0- and ANGL Com, left terminal column

Continuity Yes / No?

Meter terminals V/I in 0- and ANGL Com, right terminal column

Continuity Yes / No?

Meter terminals V/I in 1- and ANGL Com, left terminal column

Continuity Yes / No?

Meter terminals V/I in 1- and ANGL Com, right terminal column

Continuity Yes / No?

Explain connections between V/I in 0-, V/I in 1-, ANGL Com, left terminal column and ANGL Com, right terminal column:

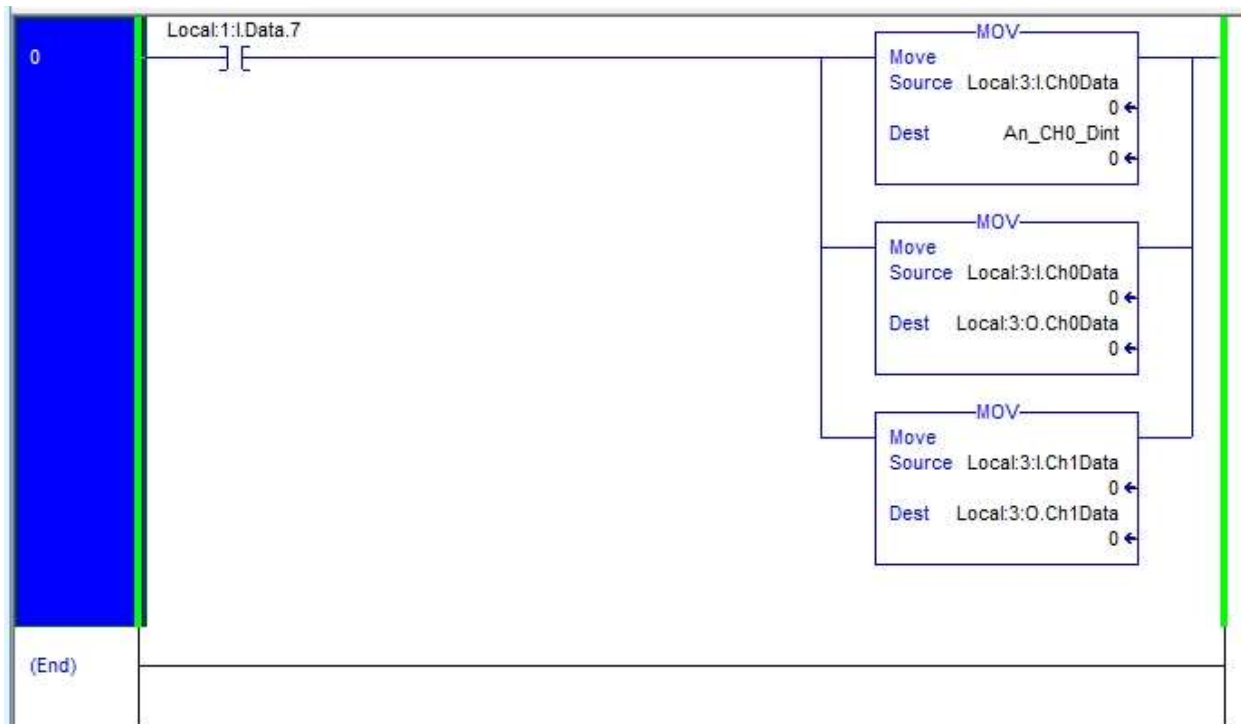
Part 2

What is the Part Number of the Analog module being used?

How many analog input channels are available on the module?

How many analog output channels are available on the module?

Ensure SS7 switch is OFF – turned to left



1. Monitor the MainRoutine

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the left. The top status bar on the display to the right of the upper potentiometer reads what value?

Monitor the Local:3:I.Ch0.Data tag.

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.

What is the DMM reading?

turn the upper potentiometer (to the right of the PL7 pilot light) completely to the right. The top status bar on the display to the right of the upper potentiometer reads what value?

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.

What is the DMM reading?

2. Turn SS7 ON – to the right

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the left. The top status bar on the display to the right of the upper potentiometer reads what value?

Monitor the Local:3:I:Ch0.Data tag.

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.

What is the DMM reading?

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the right. The top status bar on the display to the right of the upper potentiometer reads what Value?

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.

What is the DMM reading?

3. Ensure SS7 is ON – to the right

Turn the lower potentiometer (to the right of the SS7 switch) completely to the left. The top status bar on the display to the right of the lower potentiometer reads what value?

Monitor the Local:3:I:Ch1.Data tag.

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 1+ and V/I in 1 – terminals

What is the DMM reading?

Measure V in 1+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 1+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 1+ and ANGL Com – terminals, right column.

What is the DMM reading?

Turn the lower potentiometer (to the right of the SS7 switch) completely to the right. The top status bar on the display to the right of the lower potentiometer reads what value?

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

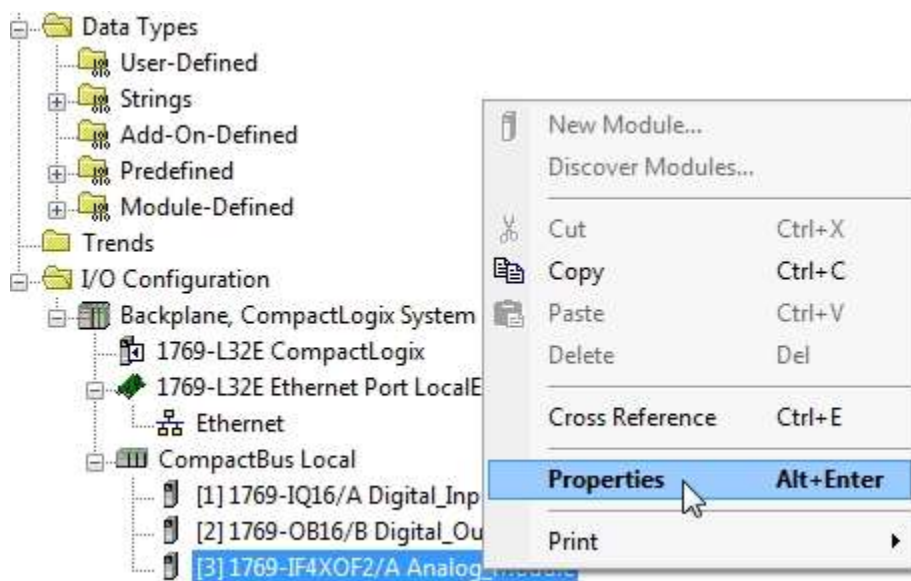
Measure V in 1+ and V/I in 0 – terminals.
What is the DMM reading?

Measure V in 1+ and ANGL Com – terminals, left column.
What is the DMM reading?

Measure V in 1+ and ANGL Com – terminals, right column
What is the DMM reading?

4. Enable module's analog channels

Hint: Click on the Properties selection for the 1769-IF4XOF2/A analog module.



On the analog module's Properties sheet Click the Input Configuration tab.

General Connection Module Info **Input Configuration** Output Configuration Fault/Program Action

Type: 1769-IF4XOF2 4 Channel Input/2 Channel Output Low Resolution Analog
 Vendor: Allen-Bradley
 Parent: Local
 Name: Analog_Module Slot: 3
 Description:

Module Definition
 Series: A Change ...
 Revision: 1.1
 Electronic Keying: Compatible Module
 Connection: Output
 Data Format: Integer

Status: Running OK Cancel Apply Help

Enable Channel 0 and Channel 1.

Click the Enable Check Boxes.

Channel	Enable
0	<input checked="" type="checkbox"/>
1	<input checked="" type="checkbox"/>
2	<input type="checkbox"/>
3	<input type="checkbox"/>

Status: Running OK Cancel Apply Help

Click the Apply button.

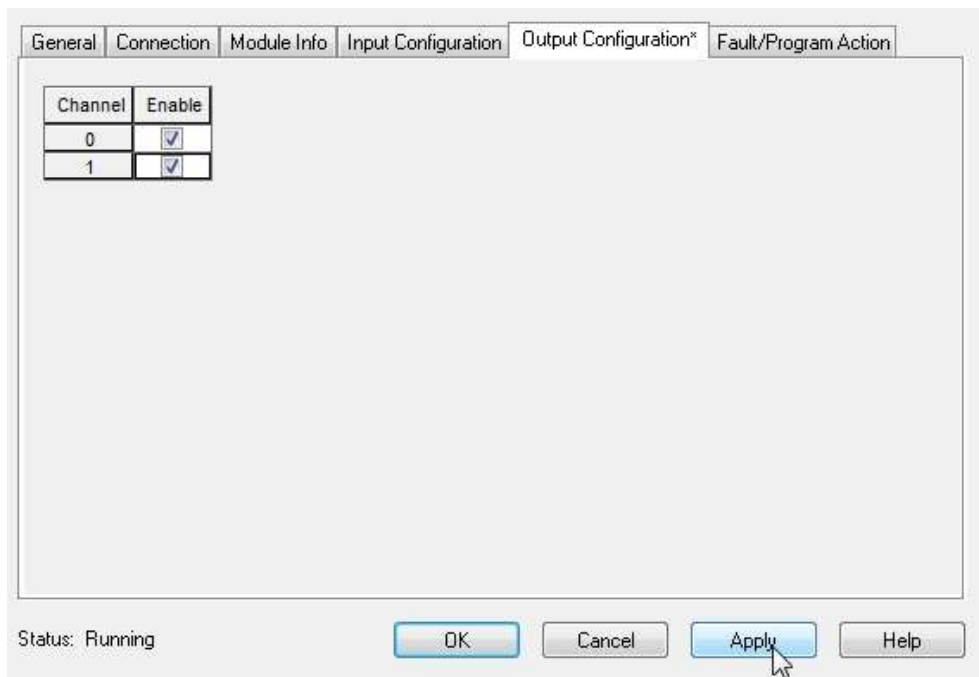


Click the Yes button.

On the analog module's Properties sheet Click the Output Configuration tab.

Enable Channel 0 and Channel 1.

Click the Enable Check Boxes.



Click the Apply button.



Click the Yes button.

5. Monitor the MainRoutine

Ensure SS7 is ON – to the right

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the left. The top status bar on the display to the right of the upper potentiometer reads what value?

The lower status bar on the display to the right of the upper potentiometer reads what value?

Monitor the Local:3:I:Ch0.Data tag.

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.

What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.
What is the DMM reading?

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the right. The top status bar on the display to the right of the upper potentiometer reads what value?

The lower status bar on the display to the right of the upper potentiometer reads what value?

What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.
Measure V in 0+ and V/I in 0 – terminals.
What is the DMM reading?

Measure V in 0+ and V/I in 1 – terminals.
What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, left column.
What is the DMM reading?

Measure V in 0+ and ANGL Com – terminals, right column.
What is the DMM reading?

6. Monitor the MainRoutine

Ensure SS7 is ON – to the right

Keep the upper potentiometer turned completely to the right.

The lower status bar on the display to the right of the upper potentiometer reads what value?

Monitor the Local:3:0:Ch0.Data tag.
What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.
Measure V out 0+ and ANGL Com – terminals, left column.

Measure V out 0+ and ANGL Com – terminals, right column.

Note: All ANGL Com terminals are internally connected in the 1769-IF4XOF2/A analog module.
What is the DMM reading?

Turn the upper potentiometer (to the right of the PL7 pilot light) completely to the left. The lower status bar on the display to the right of the upper potentiometer reads what value?

Monitor the Local:3:O:Ch0.Data tag.
What is the tag's scope?

What is the tag's value?

Using a DMM set to DC volts.
Measure V out 0+ and ANGL Com – terminals, left column.

Measure V out 0+ and ANGL Com – terminals, right column.

Note: All ANGL Com terminals are internally connected in the 1769-IF4XOF2/A analog module.
What is the DMM reading?

What causes the lower status bar on the display to follow the upper status bar of the display?
Explain.

What causes numbers to appear in the value column of the Channel 0's Input and Output tags?
Explain.

What is the range of values for Channel 0's Input Tags and Output tags?

What is the Data Type of the Local:3:I:Ch0.Data tag?

What is the Data Type of the Local:3:O:Ch0.Data tag?

7. Monitor the MainRoutine

Ensure SS7 is ON – to the right

Turn the lower potentiometer (to the right of the SS7 switch)? Which display is being changed with the lower potentiometer?

Which module tags are being changed by the lower potentiometer?

Turn SS7 OFF – to the left.

Turn the upper potentiometer

Turn the lower potentiometer

Which tag values are not changing? Explain.

8. Monitor the MainRoutine

Ensure SS7 is ON – to the right

Turn the upper potentiometer until the upper status bar on the upper display is at half scale.

Monitor the Local:3:I:Ch0.Data tag.

What is the tag's value?

Using a DMM set to DC volts.

Measure V in 0+ and V/I in 0 – terminals.

What is the DMM reading?

Explain the voltage reading of the DMM vs. the tag value of the Local:3:I:Ch0.Data tag.

9. Using the 1769-IF4XOF2 User Manual

How are the Analog Input Channels wired? Differential or Singled – Ended?

How are the Analog Output Channels wired? Differential or Singled – Ended?

Hint: See Chapter 3 - 1769-IF4XOF2 User Manual

How many bits make-up the Channel Data tags?

Which bits of the Data tags for Input and Output Channels are used to represent Channel values?

Hint: See Chapter 4 - 1769-IF4XOF2 User Manual

What is the range of the Voltage signals used by the 1769-IF4XOF2 module?

How can the module be configured to use mA signals?

What is the range of Current signals used by the 1769-IF4XOF2 module?

Hint: See Chapter 1 - 1769-IF4XOF2 User Manual

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

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