

PLCADD1616 User Guide

3/29/10

Overview

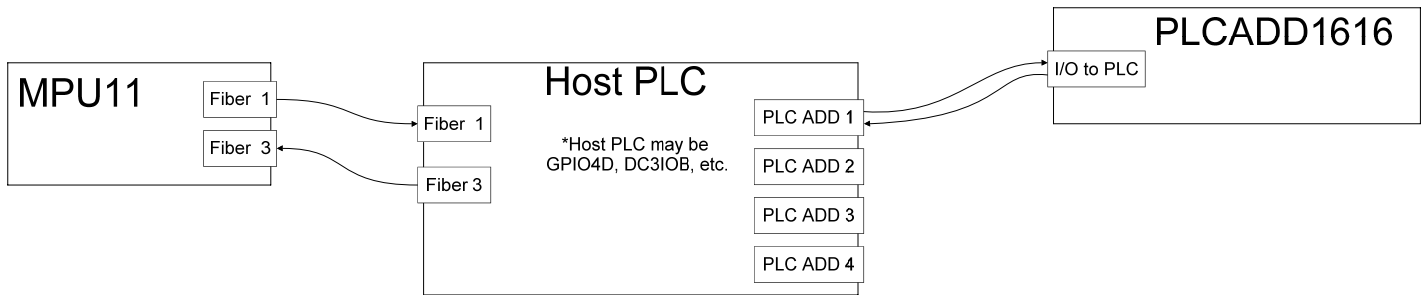
The PLCADD1616 is a PLC expansion board used to add digital inputs and outputs to a compatible host PLC. The PLCADD1616 has 16 relay outputs and 16 optically isolated inputs.

PLCADD1616 Features

Application:	PLC Expansion Board
Digital Inputs:	16
Digital Outputs:	16
Control Interface:	Shielded, twisted pair cable to host PLC
Update Rate:	4000 Hz
Dimensions (W*D*H):	9.8 * 3 * 0.75 inches

PLCADD1616 Connection Overview

The PLCADD1616 communicates with a host PLC through a cable connection to an expansion port. The host PLC may have up to 16 PLC expansion ports, labeled “PLC ADD 1” through “PLC ADD 16”. The PLCADD1616 may connect to any available expansion port.

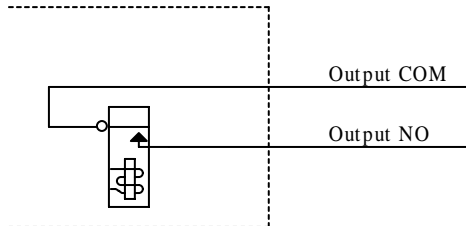


PLCADD1616 Outputs

Sixteen relay outputs are available on the PLCADD1616. Two of the outputs have both normally open and normally closed connections. All relay coils will release if the PLCADD1616 detects a communication error.

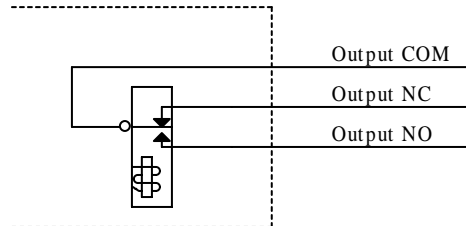
PLCADD1616 Internal Circuitry

SPST Relay Output



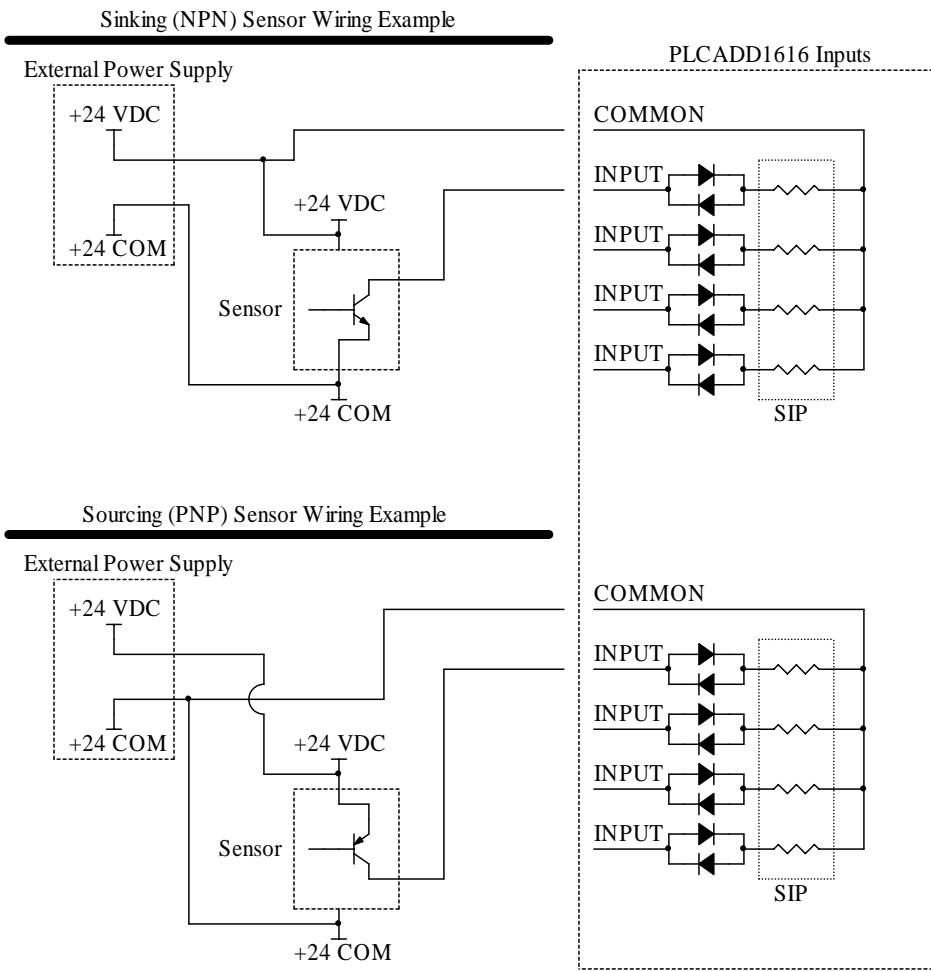
PLCADD1616 Internal Circuitry

SPDT Relay Output

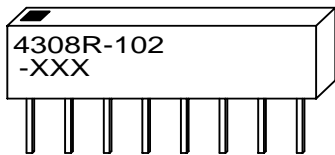


PLCADD1616 Inputs

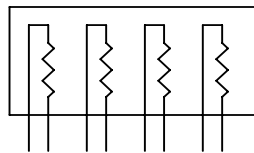
The PLCADD1616 has 16 optically isolated inputs. Inputs are divided into banks of four. Each bank is configurable for various voltages and sinking or sourcing polarity. Voltage may be selected by installing the appropriate value resistor pack or SIP into a socket for each bank. Polarity is determined by wiring the common terminal for the bank to the supply positive or supply common.



SIP Identification - XXX Indicates Value



SIP Internal Wiring / Pinout



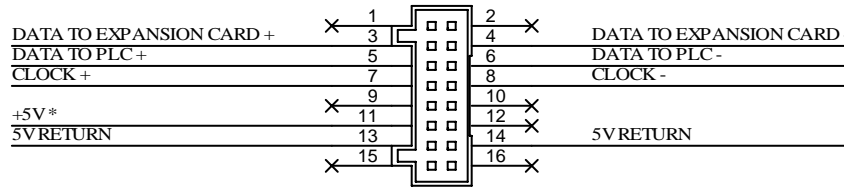
SIP Input Voltage Selection

SIP Value Marking	Resistor Value (Ohms)	Input Voltage
471	470	5
102	1.0k	12
222	2.2k	24

PLC Communication

Communication with the host PLC is performed through H3 “I/O TO PLC” connector. See the host PLC’s documentation to determine the where I/O from the PLCADD1616 will be located. PLCADD1616 requires one slot of input and output space in the individual I/O section (slots 0-14). I/O update rate is 4000 times per second or once every 250us, which will have to be considered when setting up the input debounce time.

I/O TO PLC Connector Pinout

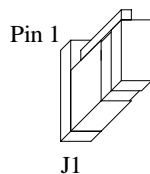


PLCADD1616 Power

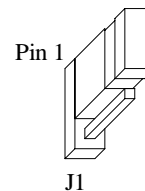
The PLCADD1616 may operate from the host PLC’s +5 VDC through the “I/O TO PLC” connector H3. However, care must be taken not to overload the power supply when adding expansion boards to a PLC. The PLCADD1616 can draw significant current when its output relays are active. Refer to the specifications for each device and the power supply to make sure the supply can handle the addition of the PLCADD1616.

If the host PLC’s supply can not support powering the PLCADD1616, jumper J1 may be changed to use power from header H6. This setting allows another power supply to be used to provide +5 VDC to the PLCADD1616.

J1 Setting to Use Host PLC +5V from H3



J1 Setting to Use External +5V from H6



PLCADD1616 Specifications

Characteristic	Min.	Typ.	Max.	Unit
5 Volt Supply Current	1.3	-	-	A
5 Volt Supply Voltage	4.5	5	5.5	V
Input Pullup Voltage (V _{inp})	4.5	5	25	V
Input On Voltage	V _{inp} -1.25	-	-	V
Input Off Voltage	-	-	1.25	V
Input Operating current	9	11	15	mA
Relay Output Current	0.1	-	10	A @ 125VAC
Relay Output Current	0.1	-	5	A @ 30VDC
Size: 9.8 * 3 * 0.75 (W*D*H)				Inches

PLCADD1616 I/O Map

Input Map

Input Specification			Input Location	
Number	Function	Type	Connector	Pin
1	General Purpose	Configurable	H5	1
2	General Purpose	Configurable	H5	2
3	General Purpose	Configurable	H5	3
4	General Purpose	Configurable	H5	4
5	General Purpose	Configurable	H5	6
6	General Purpose	Configurable	H5	7
7	General Purpose	Configurable	H5	8
8	General Purpose	Configurable	H5	9
9	General Purpose	Configurable	H4	1
10	General Purpose	Configurable	H4	2
11	General Purpose	Configurable	H4	3
12	General Purpose	Configurable	H4	4
13	General Purpose	Configurable	H4	6
14	General Purpose	Configurable	H4	7
15	General Purpose	Configurable	H4	8
16	General Purpose	Configurable	H4	9

Output Map

Output Specification			Output Location	
Number	Function	Type	Connector	Pin
1	General Purpose	Relay SPST	H1	1,2
2	General Purpose	Relay SPST	H1	3,4
3	General Purpose	Relay SPST	H1	5,6
4	General Purpose	Relay SPST	H1	7,8
5	General Purpose	Relay SPST	H1	9,10
6	General Purpose	Relay SPST	H1	11,12
7	General Purpose	Relay SPST	H1	13,14
8	General Purpose	Relay SPDT	H1	15,16,17
9	General Purpose	Relay SPDT	H1	18,19,20
10	General Purpose	Relay SPST	H2	1,2
11	General Purpose	Relay SPST	H2	3,4
12	General Purpose	Relay SPST	H2	5,6
13	General Purpose	Relay SPST	H2	7,8
14	General Purpose	Relay SPST	H2	9,10
15	General Purpose	Relay SPST	H2	11,12
16	General Purpose	Relay SPST	H2	13,14

PLCADD1616 Troubleshooting

Symptom	Possible Cause	Corrective Action
+5V LED out	Power source set incorrectly	Set J1 to get power from H3 or H6 as appropriate
	Power supply overloaded	If several expansion boards are powered from one supply, the current demands could be too much. Add or change power supplies to provide at least as much current as the expansion board ratings call out.
PLC OK LED out, +5V LED lit	Host PLC Offline	Troubleshoot host PLC
	Faulty cable to main PLC	Check or replace cable connected to H3 "I/O to PLC" header
Input doesn't work with sensor	Incorrect wiring	Correct wiring for sensor type (sinking or sourcing), check that SIP values are appropriate for the input voltage
	Voltage drop across sensor is too high	Use 3-wire sensors with lower voltage drop spec.

PLCADD1616 Connections and Mounting Dimensions

