

# ECAT1616 User Guide

For Revision 180823

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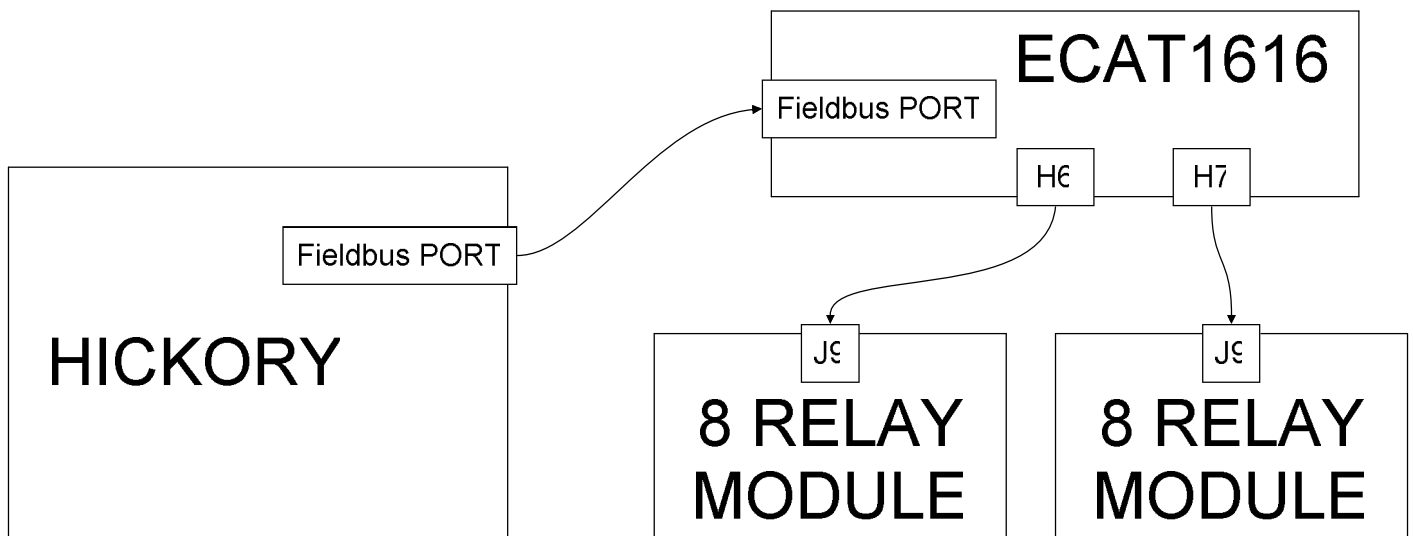
## Overview

The ECAT1616 is a digital I/O board used to add digital inputs and outputs to HICKORY controls. ECAT1616 has 16 digital outputs designed to connect to relay boards and 16 optically isolated inputs.

### ETH1616 Features

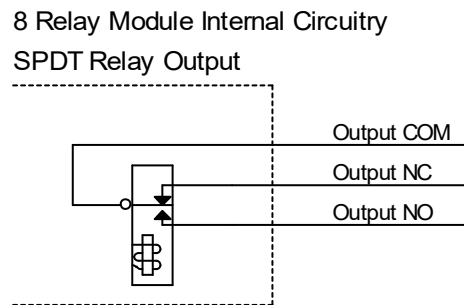
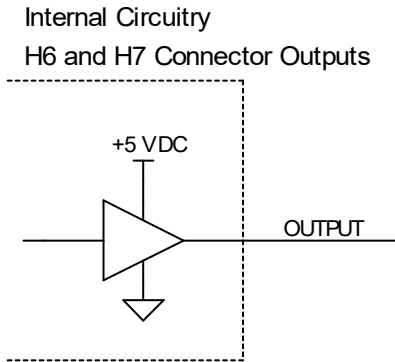
Application:	PLC Expansion Board
Digital Inputs:	16
Digital Outputs:	16
Control Interface:	MPU13 fieldbus
Update Rate:	4kHz
Dimensions (W*D*H):	9.8 * 3 * 0.75 inches

### ECAT1616 Connection Overview



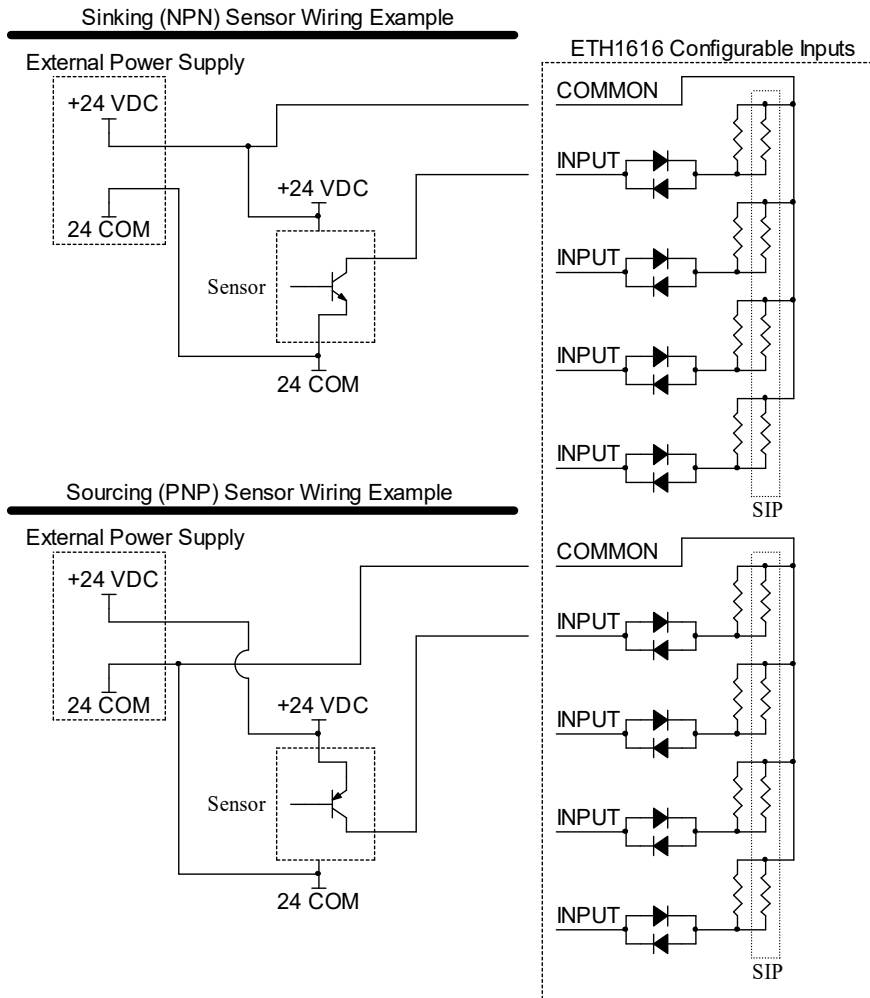
## ECAT1616 Outputs

Sixteen 5 volt logic outputs are available on the ECAT1616. The outputs are intended to be used with external 8 relay modules. The default (off) logic state is high. A low level will activate a relay on the external board.

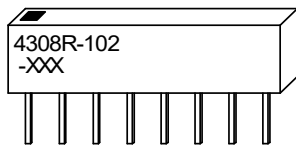


## ECAT1616 Inputs

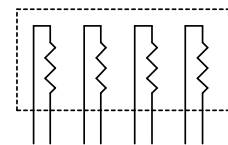
The ECAT1616 has 16 optically isolated inputs. Inputs are divided into banks of four. Each bank is configurable for various voltages and sinking or sourcing polarity. Voltage may be selected by installing the appropriate value resistor pack or SIP into a socket for each bank. Without a SIP installed, input voltage is set to 24V. Optional SIPs may be installed to use 12V or 5V input voltage. 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
221	220	5
102	1.0k	12
None	None	24

## ECAT1616 Power

ECAT1616 requires 24V power to be wired to H11. 5V will be generated internally to supply the external 8 relay modules. An additional 24V, 12V, or 5V supply is recommended to power the inputs. Using an isolated supply for the inputs can improve noise immunity.

## PLC Communication

Wire H9 "Fieldbus In" connector to the device nearest to HICKORY in the communication chain. Wire H10 "Fieldbus Out" connector to remaining accessories. Switching the connections may result in I/O not being mapped as expected in the software.

See the HICKORY or applicable control board documentation to determine the where I/O from the ECAT1616 will be located. ECAT1616 requires one slot of input and output space. I/O update rate is 4000 times per second or once every 250us.

## ECAT1616 Specifications

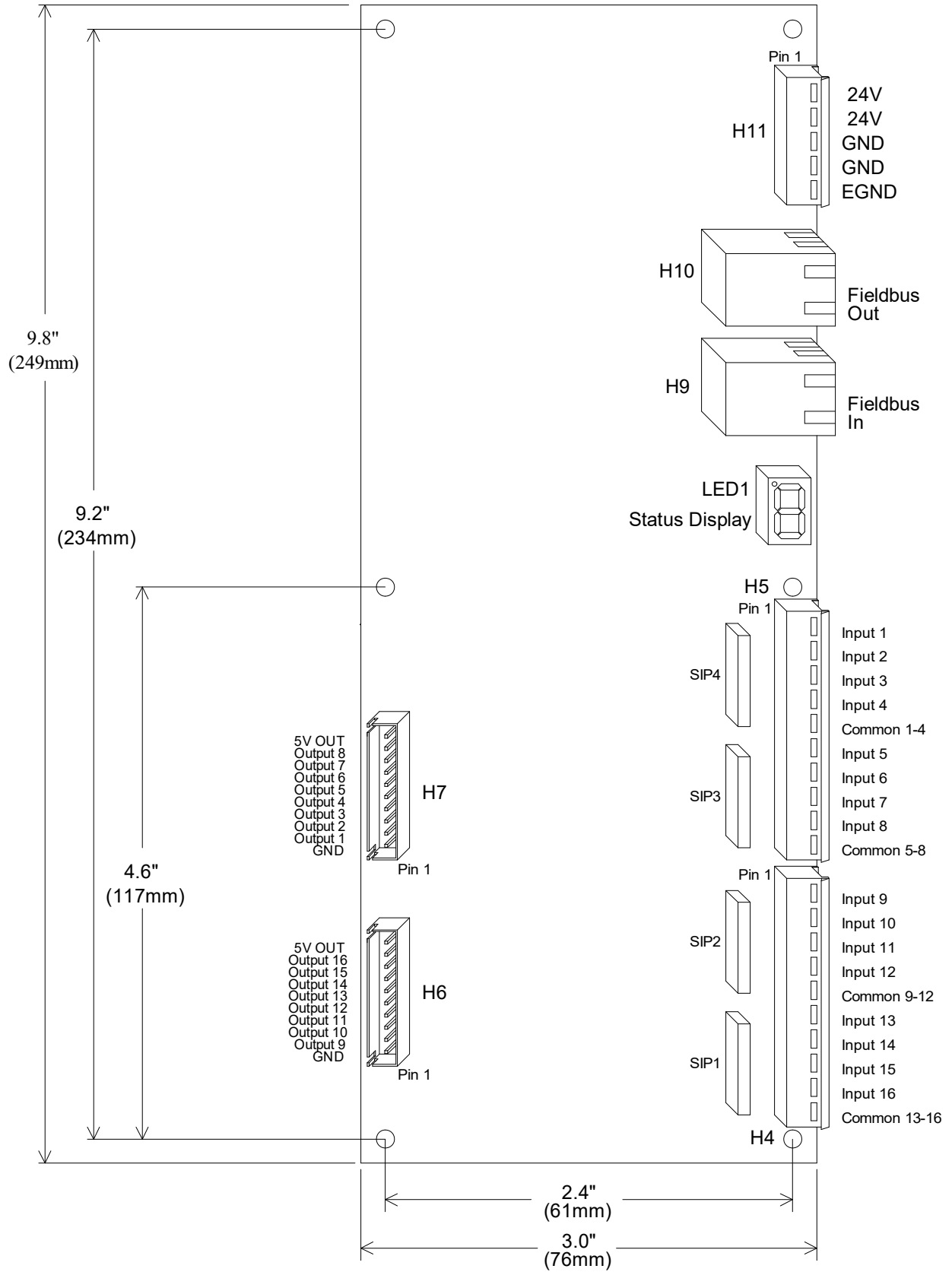
Characteristic	Min.	Typ.	Max.	Unit
5 Volt Input Off	-	-	1.8	V
5 Volt Input On	4.1	-	-	V
12 Volt Input Off	-	-	3.5	V
12 Volt Input On	10.3	-	-	V
24 Volt Input Off	-	-	5.9	V
24 Volt Input On	19.1	-	-	V
Supply Voltage (Vsup)	22	24	26	V
Supply Current	0.4	-	-	A
Input Pullup Voltage (Vinp)	4.5	24	26	V
Input Operating current	9	14	20	mA
Output Current	0	5	25	mA
Output Voltage High	Vsup - 0.75	-	Vsup	V
Output Voltage Low	0	-	0.44	V
Size: 9.8 * 3 * 0.75 (W*D*H)				Inches

\* Inputs may be wired either polarity. Input "on" and "off" ratings in the chart refer to the absolute difference between the input terminal and common terminal. Input devices must meet these specifications for long term reliability.

## ECAT1616 Troubleshooting

Symptom	Possible Cause	Corrective Action
LED1 out	Power loss	Check wiring to H11
	Power supply overloaded	Check external loads connected to supply, H6, H7, or H11
LED1 segments not scrolling	Offline	Start CNC12 software. Check communication cables.
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.

# ECAT1616 Connections and Mounting Dimensions



## 8 Relay Module Connections and Mounting Dimensions

