Instruction Leaflet **IL042002EN** Effective March 2015

PROFIBUS module for use with C440, S611, S811+ and as stand-alone I/O

Installation

The PROFIBUS® module is designed to be used in industrial applications and installed in accordance with this document.

Mount the module

This PROFIBUS module is the stand-alone version. It can be used to interface a C440 motor protection OL relay, S611 or S811+ soft starters to PROFIBUS or can be used as a stand-alone I/O module on PROFIBUS.

The stand-alone design provides two optional mounting methods for the customer.

- 35 mm DIN rail mounting
- Panel mounting features 79x18 mm with two #10 screws

Connect the PROFIBUS adapter to PROFIBUS

Connect the PROFIBUS cable to the PROFIBUS DB9 connector located on the side of the module. The connector has screws for positive retention to eliminate accidental unplugging.

Connect 24 Vdc control power to the 5-position header.

- The connector has screws for positive retention to eliminate accidental unplugging
- Use one wire per terminal

Set the PROFIBUS address

The PROFIBUS address is set using the DIP switches located on the face of the module. The PROFIBUS address is binary with the major units numbered to the left of the switch on the side label. Adding up the major units set to ON determines the address of the module. Switches 1–7 are used for the address (shown below).

Table 1. Switch address

DIP switch	Value
7	64
6	32
5	16
4	8
3	4
2	2
1	1

DIP switch 8 is used for special functions. Refer to the C441 PROFIBUS User Manual.

Example: To set the address to 25, start from the switch mark 32 and set the switches to OFF (32), ON (16), ON (8), OFF (4), OFF (2), ON (1) (16+8+1=25).

Note: DIP switches are read only at power up.

The PROFIBUS baud rate is set automatically using an auto baud technology; there is no need to set the baud rate.

The GSD file is located on the Eaton website at www.eaton.com.

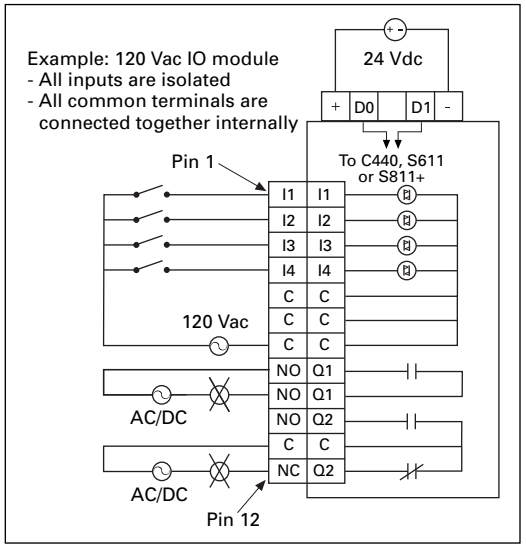

Figure 1. C441SS—120 Vac input specification

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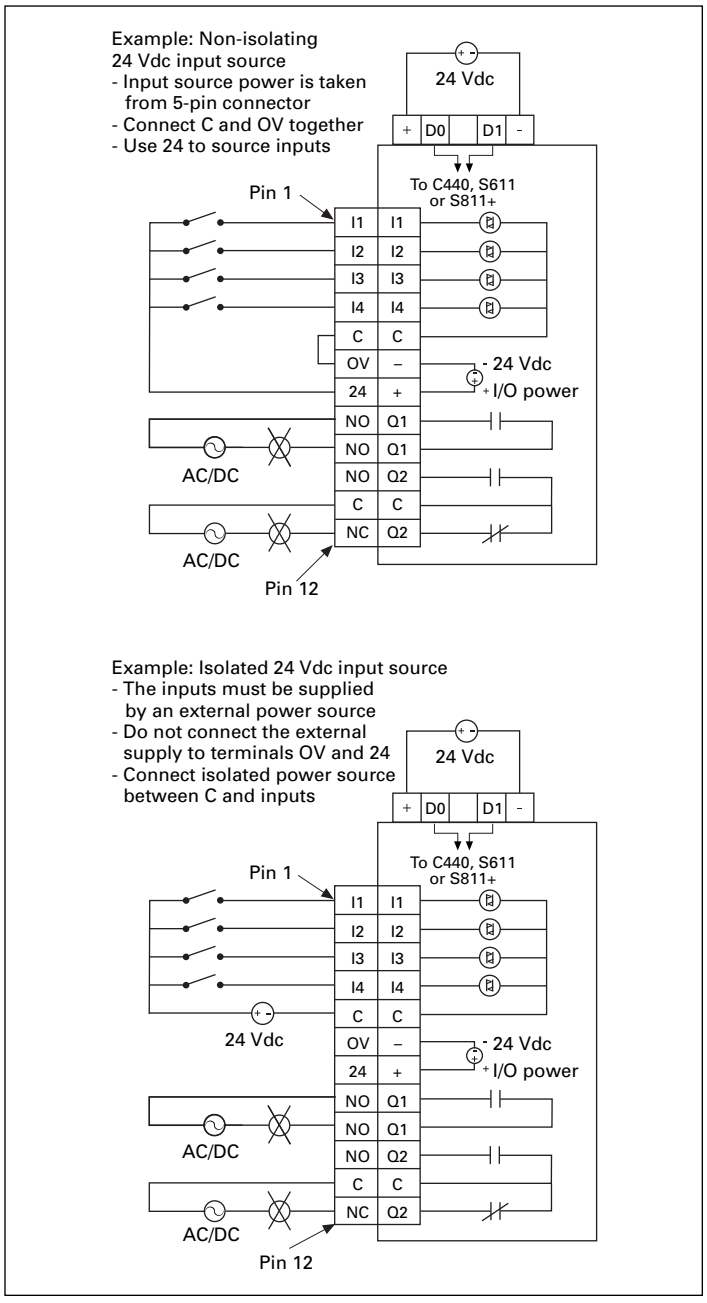

Figure 2. C441QS—24 Vdc input specification

Inputs

Table 2. 120 Vac input specifications

Specification	Value
Number of inputs	4
Voltage category	120 Vac
Operating range	80–140 Vac
Operating frequency	50/60 Hz
Signal delay max.	30 ms
Off state voltage	0–30 Vac
On state voltage	79–140 Vac
On state current max.	15 mA
Supply	External supply

Table 3. 24 Vdc input specifications

Specification	Value
Number of inputs	4
Supply voltage	24 Vdc
Type	Current sinking
On state voltage	15 V – 30 Vdc
Steady state current max.	15 mA
Off state voltage	0–5 Vdc
24 Vdc source current limit	50 mA
Isolation voltage	250 Vac

Relay outputs

Two relay outputs are provided, one Form A (NO) and one Form C (NO, NC).

Table 4. Relay specifications

Specification	Value
Number of contacts	Two independent relays (one Form A, one Form C)
Thermal contact	5 A
Rated insulation voltage	300 Vac
Operating voltage	240 Vac
Operating AC current (rated)	3 A at 120 Vac; 1.5 A at 240 Vac
Operating DC current (rated)	24 A at 110 Vdc, 0.1 A at 220 Vdc
Minimum operating current	10 mA at 5 Vdc
Resistive load rating	5 A at 240 Vac, 5 A at 30 Vdc
Inductive loading	2 A at 240 Vac, 2 A at 30 Vdc

Table 5. Pilot duty relay requirements

Specification	Value
Pilot duty rating	B300
Thermal continuous test current	5 A
Maximum current (120 Vac)—make/break	30 A / 3 A
Maximum current (240 Vac)—make/break	15 A / 1.5 A
Maximum VA (volt-amperes)—make/break	3600 VA / 360 VA

PROFIBUS diagnostics

The C441 PROFIBUS adapter provides the user with status information along with fault and warning data relevant to the operation of the attached base module. Fault and warning information is presented to the user through extended diagnostics. All fault information is sent to the Master as high priority diagnostic messages (ext. diag. bit set in diagnostic message). All warning information is sent as low priority diagnostic messages (ext diag. bit clear). Low priority diagnostic messages are issued as the fault condition clears.

See the user manual for the attached base module's diagnostic message bit definitions.

Table 6. Environmental ratings

Description		Rating
Transportation and storage	Temperature	–50 °C to +80 °C (–58 °F to +176 °F)
	Humidity	5–95% noncondensing
Operating	Temperature	–40 °C to +55 °C (–40 °F to +131 °F)
	Humidity	5–95% noncondensing
	Altitude	Above 2000 meters (6600 feet) consult factory
	Shock IEC 68-2-27	15 G any direction for 11 milliseconds
	Vibration IEC 68-2-6	10–150 Hz, 3 G, 0.3 mm maximum peak-to-peak
	Pollution degree	Pollution III
	Power draw	<30 mA steady state from 24 Vdc
	Dielectric withstand	Equipment rating volts more than 50 V, potential volts AC 1000+2*V (max. marked voltage)

Table 7. Certifications

Description	Rating
Agency certifications	cULus by UL® to UL 508, CSA® C22.2 No. 14 CE (Low Voltage Directive, EMC Directive), C-TICK
Radiated and conducted emissions	EN 55011 Class A
Electrical/EMC	
ESD immunity (IEC 61000-4-2)	±8 kV air, ±4 kV contact
Radiated immunity (IEC 61000-4-3)	10 V/m 80–1000 MHz, 80% amplitude modulation at 1 kHz
Fast transient (IEC 61000-4-4)	±2 kV supply and IO ±1 kV communications
Surge (IEC 61000-4-5)	±2 kV line to PE and ±1 kV line-to-line
RF conducted (IEC 61000-4-6)	10 V, 0.15–100 MHz
Magnetic field (IEC 61000-4-8)	DNA
Voltage dips (IEC 61000-4-11)	DNA
Protection degree (IEC 60947-1)	IP20
Certification of Compliance to the EU Directive 2011/65/EU (RoHS 2.0)	Yes
Reach	Yes
PCB laminate	Manufactured by a UL Recognized (ZPMV2) printed wiring board manufacturer, which meets the requirements in UL 508, paras. 15.1, 15.3, 36.12, and 39.4(b). CB to be marked with Vendor UL-ID code, Vendor Date Code, material, flammability rating. Polarized components shall be marked so that polarity can be verified after assembly.

Table 8. Module electrical requirements

Description	Rating
Voltage range	18–30 Vdc
Current draw	Approximately 50 mA

Notes: For use with Eaton UL Listed Power Supply Catalog Nos. PSG240E or PSG240F24RM. Any UL Listed isolated power supply with a maximum of 30 Vdc output may be used, provided that a UL Listed or Recognized fuse rated no more than 3 A maximum be installed.

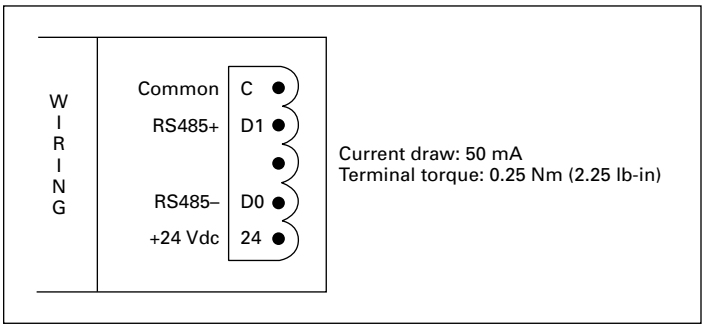

Figure 3. 5-pin 24 Vdc power, RS-485 connector

Module LEDs

Table 9. Input LEDs (I1–I4)

Description	Status
LED color	Green
Input ON	LED ON
Input OFF	LED OFF

Table 10. Output LEDs (Q1 and Q2)

Description	Status
LED color	Yellow
Relay (normally open) closed	LED ON
Relay (normally open) open	LED OFF

Table 11. PROFIBUS status LEDs

Description			Status
PBUS	BF	SF	Fault condition
ON	OFF	OFF	Everything OK
ON	ON	OFF	No communication
ON	Blinking	OFF	Communication, but not in data exchange
ON	ON	ON	Configuration not OK

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Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

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