IO-D16A3-RO16

XL I/O Expansion Module
Technical Specifications

The Unitronics® IO-D16A3-RO16 is an XL I/O expansion module for use in conjunction with specific Unitronics controllers. XL modules comprise enhanced I/O configurations and detachable I/O connectors. A local or remote I/O adapter module is required to interface between the expansion module and the PLC controller and provide power to the expansion modules in the system.
The I/O expansion module provides:

- 16 digital inputs, includes 2 HSC
- 3 analog inputs
- 16 relay outputs

For additional information and wiring diagrams, visit the Technical Library at www.unitronics.com.

Technical Specifications

General

Maximum current consumption	70mA (provided by the adapter 5VDC supply for I/O modules)
Status indicator	
RUN: Green LED	▪ Lights when a communication link is established between the module and the PLC or remote I/O adapter ▪ Blinks when the communication link fails

Digital Inputs

Number of inputs	16 (in a single group)
Input mode	pnp (positive logic) or npn (negative logic) – configurable by hard-wiring
Galvanic isolation	None
Status indicators	
IN: Green LEDs	▪ One green LED for each input: Lights when the input is active, see note 1
Nominal input voltage	24VDC
Input voltage	
pnp (positive logic)	0–5VDC for logic state 0 17–28.8VDC for logic state 1
npn (negative logic)	17–28.8VDC for logic state 0 0–5VDC for logic state 1
Input current	3.7mA @ 24VDC
Input impedance	6.5kΩ
Response time	10ms typical
High-speed inputs	The specifications in this section apply when inputs are configured as high-speed counters or frequency measurers. If they are configured as general purpose digital inputs, the specification is as above. See notes 2, 3, and 4.
Resolution	16-bit or 32-bit, depending on the PLC or remote I/O adapter
Frequency	30kHz maximum (at 24VDC ±10%)
Minimum pulse width	14µs

Notes:

1. If the input is active but there is no communication with the PLC or the remote I/O adapter (RUN blinks), the status LED does not light.
2. Inputs 4 and 6 can function either as high-speed counters, frequency measurers, or general purpose digital inputs.
3. Inputs 5 and 7 can function either as counter reset inputs or general purpose digital inputs. In both cases, the specifications of these inputs are those of a general purpose digital input.
4. If input 4 or 6 is set as a high-speed counter and no reset input is configured, input 5 or 7 functions as a general purpose digital input.

Analog Inputs

Number of inputs	3
Input type	0–20mA or 4–20mA
Input impedance	191Ω
Maximum input rating	28mA, 5.3VDC
Galvanic isolation	None
Cable type	Shielded twisted-pair
Conversion method	Successive approximation
Resolution (0-20mA)	10-bit (1024 units)
Resolution (4-20mA)	204 to 1023 (820 units)
Conversion time	Each configured input is sampled once per 1.67ms. For example, if 3 inputs are configured, it takes 3*1.67 = 5ms to sample all the analog inputs. See note 5.
Accuracy	±0.9% of full scale
Status indication	In software: If a specific input value is 1024, a single analog input deviates above the permissible range. If all the input values are 1024, either all the inputs deviate above the permissible range or the RG signal is not connected.

Notes:

5. The conversion time does not include communication time with the PLC and PLC scan time.

Digital Outputs

Number of outputs	16 relays, see note 6
Output type	SPST-NO (Form A)
Isolation	By relay
Status Indicators	
OUT: Red LEDs	▪ One red LED for each output: Lights when the corresponding output is active
Type of relay	Tyco PCN-124D3MHz or compatible
Maximum output current	3A per output (resistive load) 8A total for common (resistive load), see note 6
Rated voltage	250VAC / 30VDC
Minimum load	1mA, 5VDC
Life expectancy	100k operations at maximum load
Response time	10ms (typical)
Contact protection	External precautions required (see *Increasing Contact Life Span* in the Installation Guide)
Output power supply	
Nominal operating voltage	24VDC
Operating voltage	20.4 to 28.8VDC
Maximum current consumption	80mA @ 24VDC

Notes:

6. Outputs 0–7 share the common signal C0 and outputs 8-15 share the common signal C1.

Dimensions

Size (W x H x D)	80 x 135 x 60mm (3.15 x 5.31 x 2.36"). For exact dimensions, refer to the product installation guide.
Weight (approximate)	394g (13.9oz)

Environmental

Operating temperature	0° to 50°C (32° to 122°F)
Storage temperature	–20° to 60°C (–4° to 140°F)
Relative Humidity (RH)	10% to 95% (non-condensing)
Mounting	Snap-mounted on 35mm DIN-rail (IP20/NEMA1)