UniStream™ Uni-I/O™ Modules

Technical Specifications
UIA-0402N

This guide provides specifications for Unitronics' Uni-I/O™ module UIA-0402N. This module comprises:

- 4 analog inputs, 13 bit
- 2 analog outputs, 13/14 bit

Uni-I/O modules are compatible with UniStream™ family of Programmable Logic Controllers. They may be either snapped onto the back of a UniStream™ HMI Panel next to a CPU-for-Panel to create an all-in-one HMI + PLC controller, or installed on a standard DIN Rail using a Local Expansion Adapter.

Installation Guides are available in the Unitronics Technical Library at www.unitronics.com

Analog Inputs					
Number of inputs	4				
Input range (1) (2)	**Input Type**	**Nominal Values**	**Over-range Values**	**Overflow Values**	
	0 ÷ 10VDC	0 ≤ Vin ≤ 10VDC	10 < Vin ≤ 10.15VDC	Vin > 10.15VDC	
	0 ÷ 20mA	0 ≤ Iin ≤ 20mA	20 < Iin ≤ 20.3mA	Iin > 20.3mA	
Absolute maximum rating	±30V (Voltage), ±30mA (Current)				
Isolation	None				
Conversion method	Successive approximation				
Resolution	13 bits				
Accuracy (25°C / -20°C to 55°C)	±0.3% / ±0.5% of full scale (Voltage) ±0.3% / ±0.4% of full scale (Current)				
Input impedence	552kΩ (Voltage), 118Ω (Current)				
Noise rejection	10Hz, 50Hz, 60Hz, 400Hz				
Step response (3) (0 to 100% of final value)	**Smoothing**	**Noise Rejection Frequency**			
		400Hz	60Hz	50Hz	10Hz
	None	2.7ms	16.86ms	20.2ms	100.2ms
	Weak	10.2ms	66.86ms	80.2ms	400.2ms
	Medium	20.2ms	133.53ms	160.2ms	800.2ms
	Strong	40.2ms	266.86ms	320.2ms	1600.2ms
Update time (3)	**Noise Rejection Frequency**			**Update Time**	
	400Hz			1.25ms	
	60Hz			8.33ms	
	50Hz			10ms	
	10Hz			50ms	
Operational signal range (signal + common mode)	Voltage mode – IxV: -1V ÷ 12.5V ; CMx: -1V ÷ 2.5V Current mode – IxI: -1V ÷ 2.8V ; CMx: -1V ÷ 0.4V (x=0,1,2 or 3)				
Common mode rejection	30dB @ 10Hz, 50Hz, 60Hz or 400Hz noise rejection mode				
Normal mode rejection	60dB @ 10Hz, 50Hz or 60Hz noise rejection mode 45dB @ 400Hz noise rejection mode				

Cable	Shielded twisted pair
Diagnostics (4)	Analog input overflow

Analog Outputs				
Number of outputs	2			
Output range (2)	**Output Type**	**Nominal Values**	**Over-range Values**	**Overflow Values**
	0÷10VDC	0≤Vout≤10VDC	10<Vout≤10.15VDC	Vout>10.15VDC
	-10÷10VDC	-10≤Vout≤10VDC	-10.15≤Vout<-10VDC 10<Vout≤10.15VDC	Vout<-10.15VDC Vout>10.15VDC
	0÷20mA	0≤Iout≤20mA	20≤Iout≤20.3mA	Iout>20.3mA
	4÷20mA	4≤Iout≤20mA	20≤Iout≤20.3mA	Iout>20.3mA
Isolation	None			
Resolution	0 ÷ 10VDC – 14bit -10 ÷ 10VDC – 13 bit + sign 0 ÷ 20mA – 13 bit 4 ÷ 20mA – 13 bit			
Accuracy (25°C / -20°C to 55°C)	±0.3% / ±0.5% of full scale (Voltage) ±0.5% / ±0.7% of full scale (Current)			
Load impedance	Voltage – 2kΩ minimum Current – 600Ω maximum			
Settling time (95% of new value)	0 ÷ 10VDC – 1.8ms (2kΩ resistive load), 3.7ms (2kΩ + 1uF load) -10 ÷ 10VDC – 3ms (2kΩ resistive load), 5.5ms (2kΩ + 1uF load) 0 ÷ 20mA and 4 ÷ 20mA – 1.7ms (600Ω load), 1.7ms (600Ω + 10mH load)			
Cable	Shielded twisted pair			
Diagnostics (4)	Voltage – Short circuit Current – Open circuit			

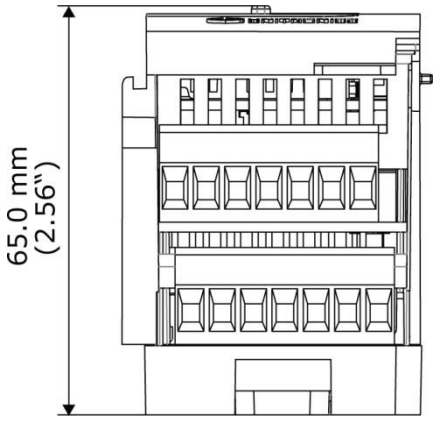
Power Supply	
Nominal operating voltage	24VDC
Operating voltage	20.4 ÷ 28.8VDC
Maximum current consumption	150mA @ 24VDC
Diagnostics (4)	Supply level: Normal / Low or missing.

IO/COM Bus	
Bus current consumption	120mA maximum

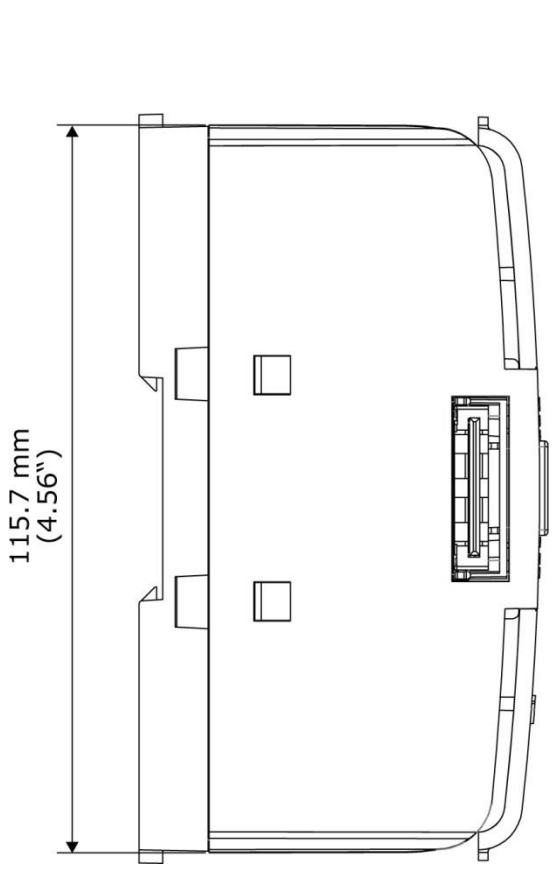
LED Indications			
Input LEDs	Red	On: Input value is in Overflow	
Output LEDs	Red	On: Short Circuit (when set to Voltage mode) Open Circuit (when set to Current mode)	
Status LED	A triple color LED. Indications are as follows:		
	Color	LED State	Status
	Green	On	Operating normally
		Slow blink	Boot
		Rapid blink	OS initialization
	Green/Red	Slow blink	Configuration mismatch
	Red	On	Supply voltage is low or missing
		Slow blink	No IO exchange
		Rapid blink	Communication error
	Orange	Rapid Blink	OS Upgrade

Environmental	
Protection	IP20, NEMA1
Operating temperature	-20°C to 55°C (-4°F to 131°F)
Storage temperature	-30°C to 70°C (-22°F to 158°F)
Relative Humidity (RH)	5% to 95% (non-condensing)
Operating altitude	2,000 m (6,562 ft)
Shock	IEC 60068-2-27, 15G, 11ms duration
Vibration	IEC 60068-2-6, 5Hz to 8.4Hz, 3.5mm constant amplitude, 8.4Hz to 150Hz, 1G acceleration

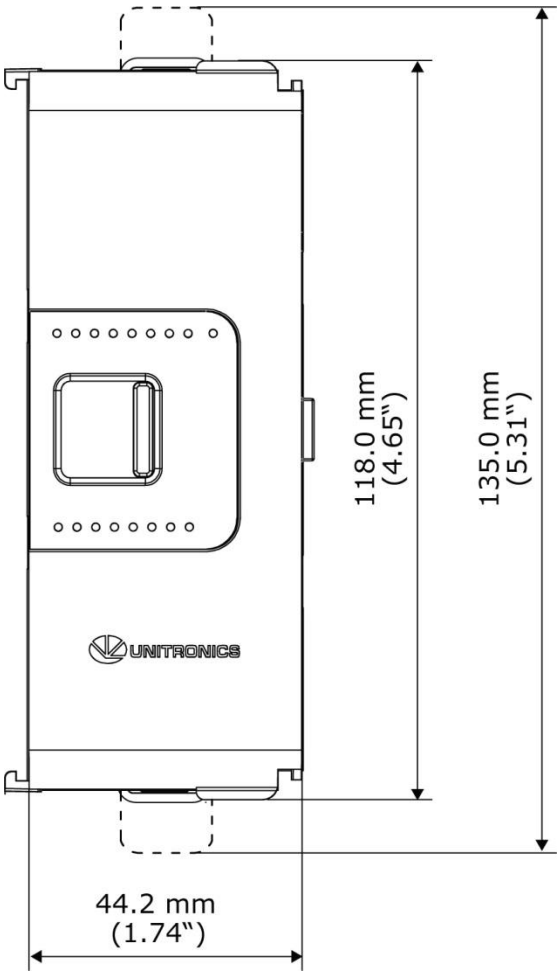
Dimensions	
Weight	0.15 Kg (0.331 lb)
Size	Refer to the images below



Top View



Side View



Front View

Notes:

1. The 4-20mA input option is implemented using 0-20mA input range.
2. The UIA-0402N measures values that are up to 1.5% higher than the nominal input range (i.e. Input Over-range). Similarly, it will be able to output values that are up to 1.5% higher than the nominal output range (Output Over-range).
   Note that when the input overflow occurs, it is indicated in the corresponding system tag while the input value is registered as the maximum permissible value. For example, if the specified input range is 0–10V, the Over-range values can reach up to 10.15V, and any input voltage higher than that will still register as 10.15V while the Overflow system tag is turned on.
3. Step response and update time are independent of the number of channels that are used.
4. See LED Indications Table above for description of the relevant indications. Note that the diagnostics results are also indicated in the system tags and can be observed through the UniApps™ or the online state of the UniLogic™.

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