

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 | $0 \leq V_{in} \leq 10VDC$ | $10 < V_{in} \leq 10.15VDC$ | $V_{in} > 10.15VDC$ | |
| | 0 ÷ 20mA | $0 \leq I_{in} \leq 20mA$ | $20 < I_{in} \leq 20.3mA$ | $I_{in} > 20.3mA$ | |
| 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 impedance | 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 ≤ V _{out} ≤ 10VDC | 10 < V _{out} ≤ 10.15VDC | V _{out} > 10.15VDC |
| | -10 ÷ 10VDC | -10 ≤ V _{out} ≤ 10VDC | -10.15 ≤ V _{out} < -10VDC 10 < V _{out} ≤ 10.15VDC | V _{out} < -10.15VDC V _{out} > 10.15VDC |
| | 0 ÷ 20mA | 0 ≤ I _{out} ≤ 20mA | 20 ≤ I _{out} ≤ 20.3mA | I _{out} > 20.3mA |
| | 4 ÷ 20mA | 4 ≤ I _{out} ≤ 20mA | 20 ≤ I _{out} ≤ 20.3mA | I _{out} > 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 | | | |

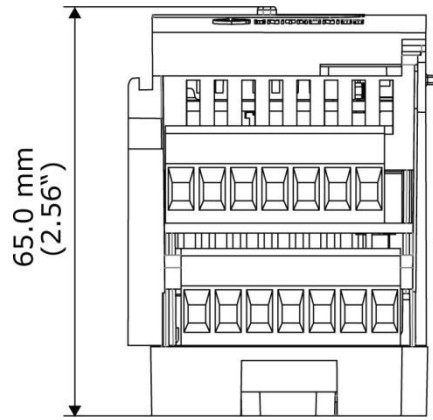
| Power Supply | |
|-----------------------------|--|
| Nominal operating voltage | 24VDC |
| Operating voltage | 20.4 ÷ 28.8VDC |
| Maximum current consumption | 150mA @ 24VDC |
| Diagnostics ⁽⁴⁾ | Supply level: Normal / Low or missing. |

| IO/COM Bus | |
|-------------------------|---------------|
| Bus current consumption | 120mA maximum |

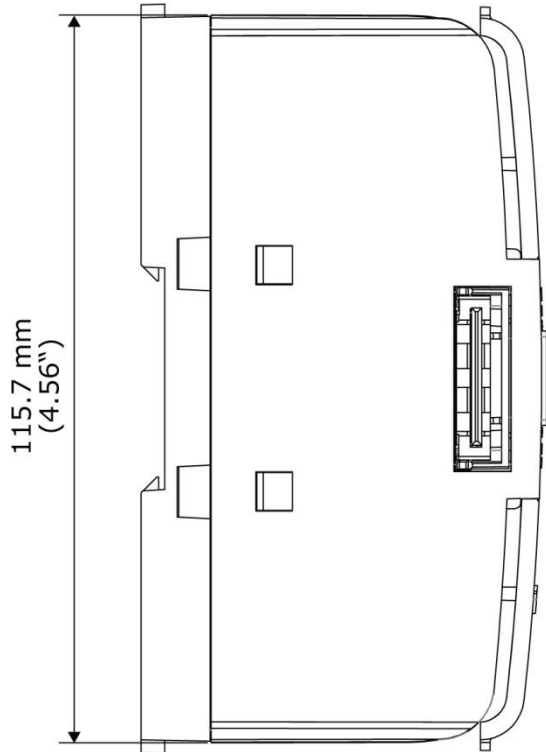
| LED Indications | | | |
|-----------------|---|---|----------------------------------|
| Input LEDs | Red | On: Input value is in Overflow | |
| Output LEDs | Red | On: Short Circuit (when set to Voltage mode) Open Circuit (when set to Current mode) | |
| Status LED | A triple color LED. Indications 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 |

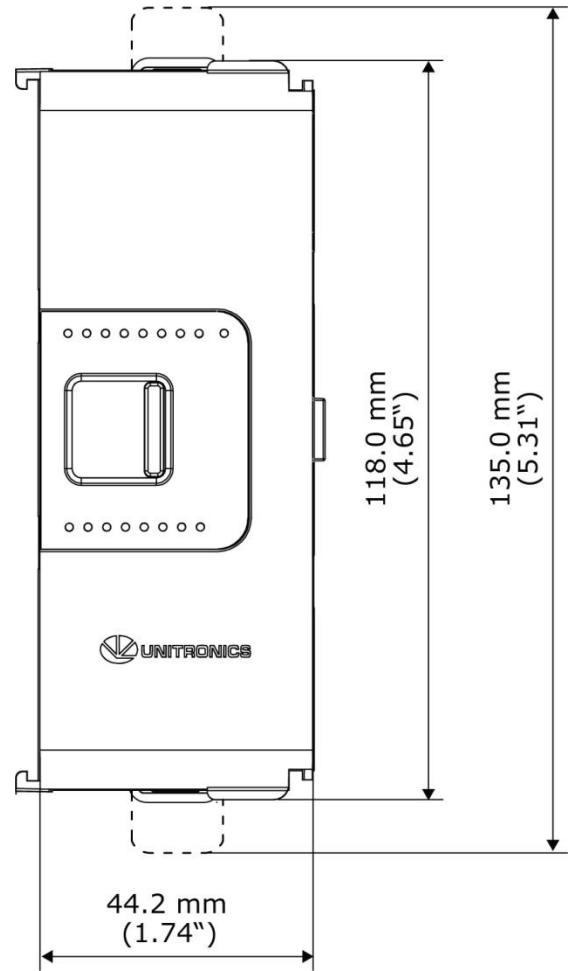
| Dimensions | |
|------------|---------------------------|
| Weight | 0.15 Kg (0.331 lb) |
| Size | Refer to the images below |



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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