UniStream[™] Uni-I/O[™] Modules ^{Technical Specifications} UIS-04PTN, UIS-04PTKN

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This guide provides specifications for Unitronics' Uni-I/O[™] modules UIS-04PTN and UIS-04PTKN. Those modules comprise:

• 4 RTD inputs

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

RTD Inputs			
Number of inputs	4		
UIA-04PTN input range ⁽¹⁾	Input Type	Nominal Values	Over/Under-range Values *
	PT100 0.00385 0.00392 0.00391	-200°C ≤ T ≤ 850°C (-328°F ≤ T ≤ 1,562°F)	Under-range: $-220^{\circ}C \le T < -200^{\circ}C$ $(-364^{\circ}F \le T < -328^{\circ}F)$ Over-range: $850^{\circ}C < T \le 860^{\circ}C$ $(1,562^{\circ}F < T \le 1,580^{\circ}F)$
	NI100 0.00618	-100°C ≤ T ≤ 260°C (-148°F ≤ T ≤ 500°F)	Under-range: -150°C ≤ T < -100°C (-238°F ≤ T < -148°F) Over-range: 260°C < T ≤ 270°C (500°F < T ≤ 518°F)
	NI100 0.00617	-60°C ≤ T ≤ 180°C (-76°F ≤ T ≤ 356°F)	Under-range: -104°C ≤ T < -60°C -155.2°F ≤ T < -76°F)
			Over-range: 180°C < T ≤ 210°C (356°F < T ≤ 410°F)
	NI120 0.00672	-80°C ≤ T ≤ 260°C (-112°F ≤ T ≤ 500°F)	Under-range: $-130^{\circ}C \le T < -80^{\circ}C$ $(-202^{\circ}F \le T < -112^{\circ}F)$ Over-range: $260^{\circ}C < T \le 270^{\circ}C$ $(500^{\circ}F < T \le 518^{\circ}F)$
	Resistance	0Ω ≤ R ≤ 390Ω	$390\Omega < R \le 395.85\Omega$
	* Overrflow or Underflow ⁽¹¹⁾ is declared when an input value exceeds the Over-range or Under-range boundaries respectively.		
UIA-04PTKN input range ⁽¹⁾	Input Type	Nominal Values	Over/Under-range Values *
	PT1000 0.00385 0.00392	-200°C ≤ T ≤ 850°C (-328°F ≤ T ≤ 1,562°F)	Under-range: $-220^{\circ}C \le T < -200^{\circ}C$ $(-364^{\circ}F \le T < -328^{\circ}F)$ Over-range: $850^{\circ}C < T \le 860^{\circ}C$ $(1,562^{\circ}F < T \le 1,580^{\circ}F)$

	NI1000 0.00618	-100°C ≤ T ≤ 26 (-148°F ≤ T ≤ 50)0°F)	Under-range: $-150^{\circ}C \le T < -100^{\circ}C$ $(-238^{\circ}F \le T < -148^{\circ}F)$ Over-range: $260^{\circ}C < T \le 270^{\circ}C$ $(500^{\circ}F < T \le 518^{\circ}F)$
	NI1000 LG	-50°C ≤ T ≤ 190 (-58°F ≤ T ≤ 374	ŀ°F)	Under-range: $-60^{\circ}C \le T < -50^{\circ}C$ $(-76^{\circ}F \le T < -58^{\circ}F)$ Over-range: $190^{\circ}C < T \le 200^{\circ}C$ $(374^{\circ}F < T \le 392^{\circ}F)$
	Resistance	$0\Omega \le R \le 3,900\Omega$	2	390Ω < R ≤ 3,958.5Ω
	* Overrflow or Underflow ⁽¹⁾ is declared when an input value exceeds the Over-range or Under-range boundaries respectively.			
Sensor Type	4, 3 and 2 wire ⁽²⁾			
Absolute maximum rating	±50V at any pin relative to power-supply 0V			
Isolation	None			
Conversion method	Delta-sigma			
Resolution	RTD – $0.1^{\circ}C (0.1^{\circ}F)^{(3)}$ Resistance – 14 bits			
Accuracy 25°C / -20°C to 55°C (77°F / -4°F to 131°F)	UIA-04PTN : RTD - $\pm 0.5^{\circ}C / \pm 1.0^{\circ}C (\pm 0.9^{\circ}F / \pm 1.8^{\circ}F)$ Resistance - $\pm 0.05\% / \pm 0.1\%$ of full scale UIA-04PTKN : RTD - $\pm 1.0^{\circ}C / \pm 1.5^{\circ}C (\pm 1.8^{\circ}F / \pm 2.7^{\circ}F)$			
	Resistance – $\pm 0.1\%$ / $\pm 0.15\%$ of full scale			
Noise rejection	50Hz, 60Hz		1	
Step response (4)	Smoothing	(filter)	Noise Re	jection Frequency
(0 to 100% of final value)			60Hz	50Hz
Update time ⁽⁴⁾	None		465ms	535ms
	Weak		930ms	1,070ms
	Medium		1,860ms	2,140ms
	Strong		3,720ms	4,280ms
	Noise Rejection Frequency 60Hz		Update Time465ms	
	50Hz 535ms			
Cable	Shielded, see installation guide for details			
Diagnostics ^{(11) (5)}	Input Overflow or Underflow, sensor connection fault ^{(6) (7)}			

IO/COM Bus	
Bus current consumption	90mA maximum

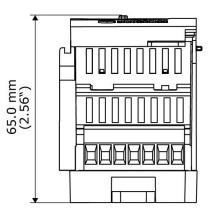


LED Indications				
Input LEDs	Red	On: Input value is in Overflo occurs	ow, Underflow, or a connection fault	
Status LED	A triple color LED. Indications are as follows:			
	Color	LED State	Status	
	Green	On	Operating normally	
		Slow blink	Boot	
		Rapid blink	OS initialization	
	Green/Red	Slow blink	Configuration mismatch	
	Red	Slow blink	No IO exchange	
		Rapid blink	Communication error	
	Orange	Rapid Blink	OS Upgrade	

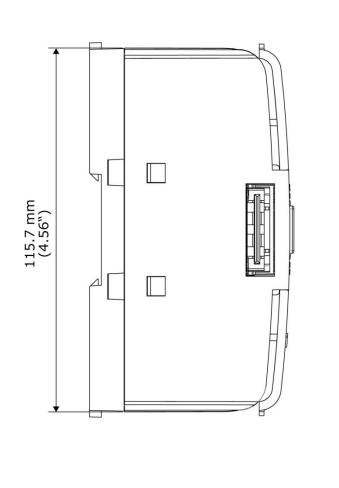
Environmental		
Protection	IP20, NEMA1	
Operating temperature	-20°C to 55°C (-4°F to 131°F)	
Storage temperature	-30°C to 70°C (-22°F to 158°F)	
Relative Humidity (RH)	5% to 95% (non-condensing)	
Operating altitude	2,000 m (6,562 ft)	
Shock	IEC 60068-2-27, 15G, 11ms duration	
Vibration	IEC 60068-2-6,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

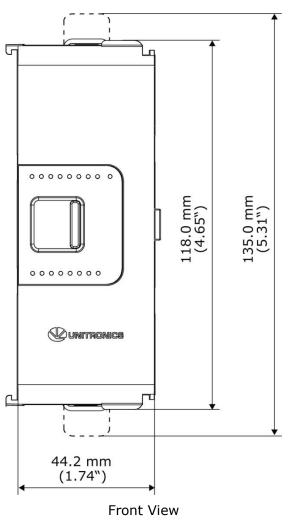


Dimensions	
Weight	100 g (0.220 lb)
Size	Refer to the images below



Bottom View





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Notes:

1. The UIS-04PTN and UIS-04PTKN measures values that are slightly higher or lower than the nominal input range (i.e. Input Over/Under-range respectively).

Note that when input Overflow, Underflow or a connection fault occurs, it is indicated in the corresponding I/O Status tag (refer to the UniLogic help for details) as well as by the respective input LED (see LED Indications), while the input value is registered as follows:

Fault Type	Registered Value in the Input Tag
Overflow	32,767
Underflow	-32,767
Connection fault	-32,768

2. The UIS-04PTN and UIS-04PTKN inherently supports 3-wire sensors.

4-wire sensors may be connected by utilizing 3 of the sensor wires; in-order to achieve the specified performance, all sensor wires shall be of identical type and length just as with a 3-wire sensor connection.

2-wire sensors may also be connected; performance in this case will degrade because of the wires` resistance.

Refer to the UIS-04PTN and UIS-04PTKN installation guide for detailed installation instructions.

- 3. For temperature measurement, the value is represented in 0.1° units. For example, a temperature of 12.3° is represented as 123 at the Value tag.
- 4. Step response and update time are independent of the number of inputs that are used.
- 5. See LED Indications Table above for description of the relevant indications. Note that the diagnostics results are also indicated in the I/O tags and can be observed through the UniApps[™] or the online state of the UniLogic[™].
- 6. Sensor connection fault check is active by default for both temperature and resistance measurements.
- Sensor connection fault check may interfere with some test equipment like resistance/RTD simulators and thus may induce reading errors or cause malfunction of the test equipment and/or the UIS-04PTN and UIS-04PTKN.

In order to interoperate correctly with such equipment, you may set the Disable Fault Detection I/O tag. This will disable connection fault check for all inputs.

Note that when this tag is set, the UIS-04PTN and UIS-04PTKN will not check, or report, connection faults; thus, the reading in such case is unpredictable.

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