UniStream™ Uni-I/O™ Modules

Technical Specifications UIS-04PTN, UIS-04PTKN

This guide provides specifications for Unitronics' Uni-I/O $^{\text{TM}}$ modules UIS-04PTN and UIS-04PTKN. Those modules comprise:

• 4 RTD inputs

Uni-I/O modules are compatible with UniStreamTM family of Programmable Logic Controllers. They may be either snapped onto the back of a UniStreamTM 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.unitronicsplc.com

RTD Inputs			
Number of inputs	4		
UIS-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°C ≤ T < -200°C (-364°F ≤ T < -328°F) Over-range: 850°C < T ≤ 860°C
			(1,562°F < T ≤ 1,580°F)
	NI100 0.00618	$-100^{\circ}C \le T \le 260^{\circ}C$ $(-148^{\circ}F \le T \le 500^{\circ}F)$	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°C ≤ T < -80°C (-202°F ≤ T < -112°F)
			Over-range: 260°C < T ≤ 270°C (500°F < T ≤ 518°F)
	Resistance	$0\Omega \le R \le 390\Omega$	390Ω < R ≤ 395.85Ω
	* Overrflow or Underflow (11) is declared when an input value exceeds the Over-range or Under-range boundaries respectively.		
UIS-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°C < T ≤ 860°C (1,562°F < T ≤ 1,580°F)

3/16 UniStream™

NI1000 $-100^{\circ}\text{C} \le T \le 260^{\circ}\text{C}$ Under-range: $-150^{\circ}\text{C} \le T < 500^{\circ}\text{F}$ $-150^{\circ}\text{C} \le T < (-238^{\circ}\text{F} \le T < 0)$ Over-range:			
$260^{\circ}\text{C} < T \le 2$ $(500^{\circ}\text{F} < T \le 1)$	-148°F) 270°C		
NI1000 LG $-50^{\circ}\text{C} \le T \le 190^{\circ}\text{C}$ Under-range: $-60^{\circ}\text{C} \le T < -50^{\circ}\text{C} \le T \le -50^{\circ}\text{C} \le T < -50^{\circ}$			
Over-range: $190^{\circ}C < T \le 2$ $(374^{\circ}F < T \le 3)$			
Resistance $0\Omega \le R \le 3,900\Omega$ $3900\Omega < R \le 3$	3,958.5Ω		
* Overrflow or Underflow (1) is declared when an input the Over-range or Under-range boundaries respectively.	value exceeds		
Sensor Type 4, 3 and 2 wire (2)			
Absolute maximum rating ±50V at any pin relative to power-supply 0V	±50V at any pin relative to power-supply 0V		
Isolation None	None		
Conversion method Delta-sigma	Delta-sigma		
Resolution RTD - 0.1°C (0.1°F) (3)			
Resistance – 14 bits			
Accuracy UIS-04PTN:			
Accuracy UIS-04PTN: 25°C / -20°C to 55°C RTD - ±0.5°C / ±1.0°C (±0.9°F / ±1.8°F)			
Accuracy UIS-04PTN: 25°C / -20°C to 55°C RTD - ±0.5°C / ±1.0°C (±0.9°F / ±1.8°F)			
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Accuracy 25°C / -20°C to 55°C (77°F / -4°F to 131°F) UIS-04PTN: RTD - ± 0.5 °C / ± 1.0 °C (± 0.9 °F / ± 1.8 °F) Resistance - ± 0.05 % / ± 0.1 % of full scale			
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Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C (77°F / -4°F to 131°F) $ \begin{aligned} &\text{RTD} - \pm 0.5^{\circ}\text{C} / \pm 1.0^{\circ}\text{C} \ (\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}) \\ &\text{Resistance} - \pm 0.05\% / \pm 0.1\% \ \text{of full scale} \end{aligned} $ UIS-04PTKN: $ &\text{RTD} - \pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C} \ (\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}) $			
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C ($77^{\circ}\text{F} / -4^{\circ}\text{F}$ to 131°F) Resistance $-\pm 0.05^{\circ}\text{C} / \pm 1.0^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}$) Resistance $-\pm 0.05^{\circ}\text{M} / \pm 0.1^{\circ}\text{M}$ of full scale UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}$) Resistance $-\pm 0.1^{\circ}\text{M} / \pm 0.15^{\circ}\text{M}$ of full scale Noise rejection Step response (4) Smoothing (filter) Noise Rejection Frequence (5)	ency		
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C (77°F / -4°F to 131°F) $ \begin{aligned} &\text{RTD} - \pm 0.5^{\circ}\text{C} / \pm 1.0^{\circ}\text{C} \ (\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}) \\ &\text{Resistance} - \pm 0.05\% / \pm 0.1\% \ \text{of full scale} \end{aligned} $ UIS-04PTKN: $ \begin{aligned} &\text{RTD} - \pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C} \ (\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}) \\ &\text{Resistance} - \pm 0.1\% / \pm 0.15\% \ \text{of full scale} \end{aligned} $ Noise rejection $ \begin{aligned} &\text{Noise rejection} \end{aligned} $ 50Hz, 60Hz	ency		
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C ($77^{\circ}\text{F} / -4^{\circ}\text{F}$ to 131°F) Resistance $-\pm 0.05^{\circ}\text{C} / \pm 1.0^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}$) Resistance $-\pm 0.05^{\circ}\text{M} / \pm 0.1^{\circ}\text{M}$ of full scale UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}$) Resistance $-\pm 0.1^{\circ}\text{M} / \pm 0.15^{\circ}\text{M}$ of full scale Noise rejection Step response (4) Smoothing (filter) Noise Rejection Frequency ($\pm 0.9^{\circ}\text{F} / \pm 0.10^{\circ}\text{M}$)	ency		
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C ($77^{\circ}\text{F} / -4^{\circ}\text{F}$ to 131°F) Resistance $-\pm 0.05^{\circ}\text{C} / \pm 1.0^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}$) Resistance $-\pm 0.05^{\circ}\text{M} / \pm 0.1^{\circ}\text{M}$ of full scale UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}$) Resistance $-\pm 0.1^{\circ}\text{M} / \pm 0.15^{\circ}\text{M}$ of full scale Noise rejection Step response (4) (0 to 100% of final value) Smoothing (filter) Noise Rejection Frequence (60Hz) 50Hz	ency		
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C (77°F / -4°F to 131°F) $ \begin{array}{c} \text{RTD} - \pm 0.5^{\circ}\text{C} / \pm 1.0^{\circ}\text{C} \ (\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}) \\ \text{Resistance} - \pm 0.05\% / \pm 0.1\% \ \text{of full scale} \\ \\ \text{UIS-04PTKN}: \\ \text{RTD} - \pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C} \ (\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}) \\ \text{Resistance} - \pm 0.1\% / \pm 0.15\% \ \text{of full scale} \\ \\ \text{Noise rejection} \\ \\ \text{Step response} \\ \text{Step response} \\ \text{(4)} \\ \text{(0 to 100\% of final value)} \\ \\ \hline \\ \text{Smoothing (filter)} \\ \hline \\ \text{Noise Rejection Frequency of the final value} \\ \\ \text{None} \\ \hline \\ \text{None} \\ \hline \\ \text{Sobstance} \\ \text{Sobstance} \\ \hline \\ \text{Sobstance} \\ Sobstan$	ency		
Accuracy 25°C / -20°C to 55°C (77°F / -4°F to 131°F) RTD $-\pm 0.5^{\circ}\text{C}$ / $\pm 1.0^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F}$ / $\pm 1.8^{\circ}\text{F}$) Resistance $-\pm 0.05\%$ / $\pm 0.1\%$ of full scale UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C}$ / $\pm 1.5^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F}$ / $\pm 2.7^{\circ}\text{F}$) Resistance $-\pm 0.1\%$ / $\pm 0.15\%$ of full scale Noise rejection Step response (4) (0 to 100% of final value) Smoothing (filter) Noise Rejection Frequence (60Hz) SoHz None 465ms 535ms Weak 930ms 1,070ms Medium 1,860ms 2,140ms Strong 3,720ms 4,280ms	ency		
Accuracy $25^{\circ}\text{C} / -20^{\circ}\text{C}$ to 55°C ($77^{\circ}\text{F} / -4^{\circ}\text{F}$ to 131°F) $ \begin{array}{c} \text{RTD} - \pm 0.5^{\circ}\text{C} / \pm 1.0^{\circ}\text{C} (\pm 0.9^{\circ}\text{F} / \pm 1.8^{\circ}\text{F}) \\ \text{Resistance} - \pm 0.05\% / \pm 0.1\% \text{ of full scale} \end{array} $ $ \begin{array}{c} \text{UIS-04PTKN} : \\ \text{RTD} - \pm 1.0^{\circ}\text{C} / \pm 1.5^{\circ}\text{C} (\pm 1.8^{\circ}\text{F} / \pm 2.7^{\circ}\text{F}) \\ \text{Resistance} - \pm 0.1\% / \pm 0.15\% \text{ of full scale} \end{array} $ $ \begin{array}{c} \text{Noise rejection} \\ \text{Step response} & \text{SoHz}, 60\text{Hz} \\ \text{O to 100\% of final value} \end{array} $ $ \begin{array}{c} \text{Smoothing (filter)} & \text{Noise Rejection Frequence} \\ \hline 60\text{Hz} & \text{50\text{Hz}} \\ \hline None & 465\text{ms} & 535\text{ms} \\ \hline Weak & 930\text{ms} & 1,070\text{ms} \\ \hline Medium & 1,860\text{ms} & 2,140\text{ms} \end{array} $			
Accuracy 25°C / -20°C to 55°C (77°F / -4°F to 131°F) RTD $-\pm 0.5^{\circ}\text{C}$ / $\pm 1.0^{\circ}\text{C}$ ($\pm 0.9^{\circ}\text{F}$ / $\pm 1.8^{\circ}\text{F}$) Resistance $-\pm 0.05\%$ / $\pm 0.1\%$ of full scale UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C}$ / $\pm 1.5^{\circ}\text{C}$ ($\pm 1.8^{\circ}\text{F}$ / $\pm 2.7^{\circ}\text{F}$) Resistance $-\pm 0.1\%$ / $\pm 0.15\%$ of full scale Noise rejection Step response (4) (0 to 100% of final value) Smoothing (filter) Noise Rejection Frequence (60Hz) None 465ms 535ms Weak 930ms 1,070ms Medium 1,860ms 2,140ms Strong 3,720ms 4,280ms			
Accuracy $25^{\circ}\text{C} \ / \ -20^{\circ}\text{C} \ \text{to } 55^{\circ}\text{C} \ (77^{\circ}\text{F} \ / \ -4^{\circ}\text{F to } 131^{\circ}\text{F})$ RTD $-\pm 0.5^{\circ}\text{C} \ / \pm 1.0^{\circ}\text{C} \ (\pm 0.9^{\circ}\text{F} \ / \pm 1.8^{\circ}\text{F}) \ \text{Resistance} - \pm 0.05\% \ / \pm 0.1\% \ \text{of full scale}$ UIS-04PTKN: RTD $-\pm 1.0^{\circ}\text{C} \ / \pm 1.5^{\circ}\text{C} \ (\pm 1.8^{\circ}\text{F} \ / \pm 2.7^{\circ}\text{F}) \ \text{Resistance} - \pm 0.1\% \ / \pm 0.15\% \ \text{of full scale}$ Noise rejection Step response (4) (0 to 100% of final value) Smoothing (filter) Noise Rejection Frequency None 465ms 535ms Weak 930ms 1,070ms Medium 1,860ms 2,140ms Strong 3,720ms 4,280ms Update time (4) Noise Rejection Frequency Update Time (5)			
Accuracy $25^{\circ}\text{C} \ / \ -20^{\circ}\text{C} \ \text{to} \ 55^{\circ}\text{C} \ (77^{\circ}\text{F} \ / \ -4^{\circ}\text{F} \ \text{to} \ 131^{\circ}\text{F})$ $ \begin{array}{c} \text{RTD} \ - \ \pm 0.5^{\circ}\text{C} \ / \ \pm 1.0^{\circ}\text{C} \ (\pm 0.9^{\circ}\text{F} \ / \ \pm 1.8^{\circ}\text{F}) \\ \text{Resistance} \ - \ \pm 0.05\% \ / \ \pm 0.1\% \ \text{of full scale} \end{array} $ $ \begin{array}{c} \text{UIS-04PTKN} : \\ \text{RTD} \ - \ \pm 1.0^{\circ}\text{C} \ / \ \pm 1.5^{\circ}\text{C} \ (\pm 1.8^{\circ}\text{F} \ / \ \pm 2.7^{\circ}\text{F}) \\ \text{Resistance} \ - \ \pm 0.1\% \ / \ \pm 0.15\% \ \text{of full scale} \end{array} $ $ \begin{array}{c} \text{Noise rejection} \\ \text{Step response}^{(4)} \ (0 \ \text{to} \ 100\% \ \text{of final value}) \end{array} $ $ \begin{array}{c} \text{Smoothing (filter)} \ \hline \text{Noise Rejection Frequency} \ \hline \text{Weak} \ 930\text{ms} \ 1,070\text{ms} \\ \text{Medium} \ 1,860\text{ms} \ 2,140\text{ms} \\ \text{Strong} \ 3,720\text{ms} \ 4,280\text{ms} \end{array} $ $ \begin{array}{c} \text{Update time}^{(4)} \ \hline \text{Noise Rejection Frequency} \ 60\text{Hz} \ \hline \end{array} $ $ \begin{array}{c} \text{Noise Rejection Frequency} \ 60\text{Hz} \ \hline \end{array} $	ne		

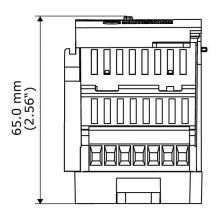
IO/COM Bus	
Bus current consumption	90mA maximum

LED Indications			
Input LEDs	Red	On: Input value is in Overflooccurs	ow, Underflow, or a connection fault
Status LED	A triple color LED. Indications are as follows:		s:
Gree	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

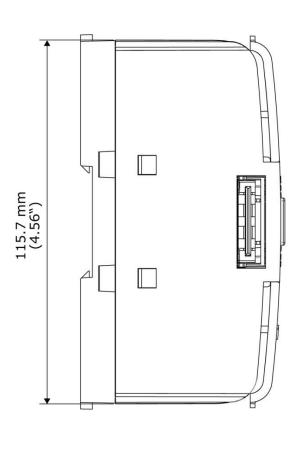
Environmental	
Protection	IP20, NEMA1
Operating temperature	-20°C to 55°C (-4°F to 131°F)
Storage temperature	-30°C to 70°C (-22°F to 158°F)
Relative Humidity (RH)	5% to 95% (non-condensing)
Operating altitude	2,000 m (6,562 ft)
Shock	IEC 60068-2-27, 15G, 11ms duration
Vibration	IEC 60068-2-6, 5Hz to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

3/16 UniStream™

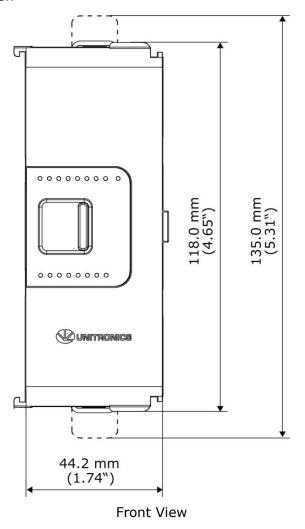
Dimensions	
Weight	100 g (0.220 lb)
Size	Refer to the images below



Bottom View



Side View



Unitronics 4

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.
- 7. 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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03/16