

PRECISION 2/3 WIRE RTD SENSOR TO USB ADAPTER

RTD300



DESCRIPTION

The RTD300 is an interface for temperature measurements using most of 2- or 3-wire 100 ohms RTDs, such as the popular PT100 probes. Built around a 24-bit data converter combining cutting-edge technologies, the RTD300 brings unmatched precision and resolution to your temperature values, with an improved sample speed. Furthermore, the RTD300 compensates the measured value of errors introduced by the length of a 3-wire probe cable, up to 100 feet, and drastically reduces electronic noise, thanks to its sophisticated built-in digital filters. Sensors connect using a convenient and industry standard mini RTD 3-pin connector. Its compact USB-key form factor simplifies integration even in space-constrained applications.

APPLICATIONS

- Research & development
- Aerospace
- Biomedical
- Robotics
- Environmental chamber
- Pre-certification
- Server rooms
- Building automation
- Green house
- Manufacturing
- Engineering

INSTALLATION TIME

Less than 10 minutes

UNIQUE SERIAL NUMBER

Each unit is assigned a unique serial number allowing for traceability and certification

FREE DAQ SOFTWARE

Real-time data visualization and logging

DATA INTEGRATION

Command-line tools for direct data access and integration

OPTIONS

- Virtual COM Port (VCP) communication protocol
- 3-point user calibration mechanism

ALSO AVAILABLE

Traceability certificates

SPECIFICATIONS

Parameter	Condition	Value	Units
Temperature			
Measurement range	Probe dependant	- 200 to 800	°C
ADC resolution	—	24	bits
Temperature resolution	Typ.	0.0001	°C
Factory calibrated	Individually ^[2]	Yes	—
Accuracy ^{[4], [5]}	Typ., at 25°C	±0.005	°C
Accuracy ^{[4], [5]}	0°C to 50°C	±0.018	°C
Noise level	Typ., at 25°C	0.0015	°C
Samples rate	10 SPS	100	ms
Response time	t63%	Probe dependant	
Sensing element type	RTD	100	Ohms
Standards	ITS-90/IEC751	0.00385	Ω /Ω/°C
Temperature stabilisation time	At 25°C, minimum, following power-up	15	min
Pre-wired PT100 probe available (optional)	Yes	See image below	—
Long-term drift ^[6]	Typ., at 25°C, reading 0°C	±0.008	°C/yr

^[1] Not all pre-wired probes are wired the same and may require wiring rearrangement in its connector. See the drawing on the following page.

^[2] Each sensor is individually calibrated by Dracal technologies and their correction coefficients are stored in each unit.

^[3] If water condensation is possible, it is recommended to install the probe pointing down to reduce the risk of water build-up in the sensor. If water splashing is possible, protect the sensor and cable converter using extra precautions. Extra housing may be required depending on the application.

^[4] Subsequent to a warm-up time of 15 minutes.

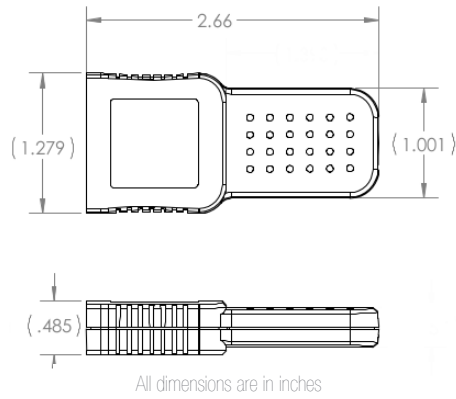
^[5] Excluding probe accuracy.

^[6] Based on two years of data, using a stable very low drift resistor with precision equivalent to 0.00°C as the RTD element.

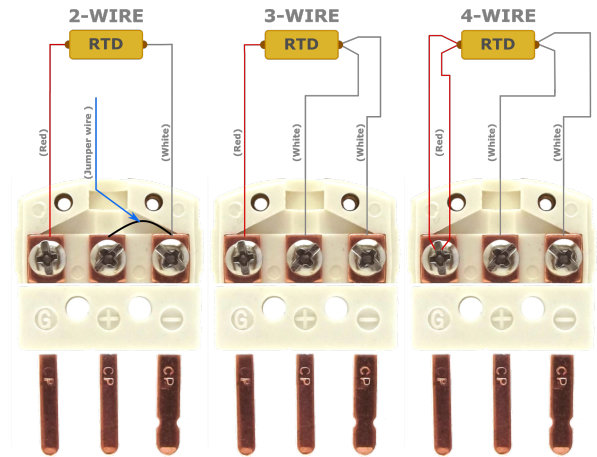
SPECIFICATIONS (continued)

Parameter	Condition	Value	Units
Power supply			
Voltage	Powered through a USB port	5	V
Current Consumption	At 5V	≈19	mA
Mechanical			
Dimensions	See schema below	—	—
Colour	Cyan	—	—
Weight	Without USB cable	25	g
Housing and USB cable			
Operating temperature	—	-20 to 60	°C
Operating relative humidity	Non-condensing	10 to 90	%RH
Material	ABS plastic		
IP rating	—	51 ^[3]	—
System galvanic isolation	—	None	—
Miscellaneous			
Connection	Polarized 3-pin standard ^[1] miniature receptacle		
Built-in noise filter	—	Yes	—
Low drift	—	Yes	—
Long-term stability	—	Yes	—
Temperature compensated	—	Yes	—
Certification(s)			
RoHS	RoHS3	Yes	—

PRODUCT DIMENSIONS



PROBE WIRING OPTIONS



Wiring for RTD300

Notes: Disregard the 'G', '+', and '-' markings on the connector.
Wire colors may vary according to the probe type and manufacturer.



AVAILABLE CHANNEL(S)

As displayed in our logging software

CHANNEL ID*	DESCRIPTION	TYPE	NATURE
00	PT100 Temperature sensor	Temperature	Real

* Channel Id as it appears in DracalView. Virtual channel Id differ in DracalView and dracal-usb-get.

RTD300 WITH OUR OPTIONAL PROBE (RTD-PT100_SIL_B)



CAUTION: Please keep in mind that electromagnetic interference (EMI) may decrease the accuracy of the sensor. Avoid using this device near EMI sources such as motors, high voltage transformers and fluorescent tubes.

NOTE: Note that this product is not waterproof and requires protection if contact with water is possible.

TIP: Avoid installing the sensor in a location where strong vibration is likely to occur. Strong vibrations may cause slight inaccuracies in the reading.

TIP: As for any precision measurement equipment, it is advised to power on the unit at least 15 minutes before using it.

ORDERING

PRODUCT(S)

PART NUMBER	OPTION	DESCRIPTION
601048	USB-RTD300	2/3 Wire RTD sensor to USB adapter
603048	VCP-RTD300	2/3 Wire RTD sensor to USB adapter - with VCP mode
608048	USB-RTD300-CAL	2/3 Wire RTD sensor to USB adapter - calibratable
601109	RTD-PT100_SIL_B	RTD probe for the RTD300 (sold separately)

TRACEABILITY CERTIFICATE(S)

NT1WT	1-point temperature certificate for one (1) unit
NT2WT	2-point temperature certificate for one (1) unit
NT3WT	3-point temperature certificate for one (1) unit
NT4WT	4-point temperature certificate for one (1) unit

Warning: This product should not be used in applications where its failure may cause personal injury.

Note: While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions.

Note: Data may change without notification, and you are strongly advised to obtain copies of the most recently issued datasheet.