# Dracal TECHNOLOGIES

## PRECISION 2/3 WIRE RTD SENSOR TO USB ADAPTER — RTD300



### DESCRIPTION

The RTD300 is an interface for temperature measurements using most 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 for the measured value of errors introduced by the length of a 3-wire probe cable up to 100 feet. It drastically reduces electronic noise, thanks to its sophistication's 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

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.

RTD300 User manual (PDF)

| 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 | – |
| Operating temperature | – | -20 to 60 | °C |
| Operating relative humidity | Non-condensing | 10 to 90 | %RH |
| Accuracy[4], [5] (Adapter only) | At 25°C | Typ. ±0.005 / Max ±0.008 | °C |
| Accuracy[4], [5] (Adapter only) | 0°C to 50°C | Typ. ±0.018 / Max ±0.030 | °C |
| Accuracy[4], [5] (Adapter only) | -20°C to 60°C | Typ. ±0.025 / Max ±0.035 | °C |
| Noise level | Typ., at 25°C | 0.0015 | °C |
| Sample 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 |
| Long-term drift[6] | Typ., at 25°C, reading 0°C | ±0.008 | °C/yr |
| Pt100 probe available | | Yes | See image below |

| 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** | | | |
| Material | ABS plastic | | |
| IP rating | – | 51[3] | – |
| System galvanic isolation | – | None | – |
| **Miscellaneous** | | | |
| Connection | Polarized 3-pin standard[1] miniature receptacle | | |
| Buit-in noise filter | – | Yes | – |
| Low drift | – | Yes | – |
| Long-term stability | – | Yes | – |
| Temperature compensated | – | Yes | – |
| **Certification(s)** | | | |
| RoHS | RoHS3 | Yes | – |

[1] Not all pre-wired probes are wired the same; some may require wiring rearrangement in their connector. See the drawing on the following page.
[2] Dracal Technologies individually calibrates each sensor, 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, take extra precautions to protect the sensor and cable converter. Depending on the application, extra housing may be required.
[4] After 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 RTD element.

REV. November 19, 2024    www.dracal.com    Designed and assembled in Canada

## RTD300 WITH OUR OPTIONAL PROBE (RTD-PT100_SIL_B)



### AVAILABLE CHANNEL(S)
**As displayed in our logging software**

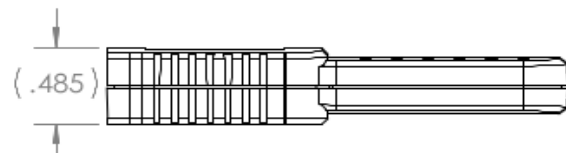| CHANNEL ID* | DESCRIPTION | TYPE | NATURE |
|---|---|---|---|
| 00 | PT100 Temperature sensor | Temperature | Real |

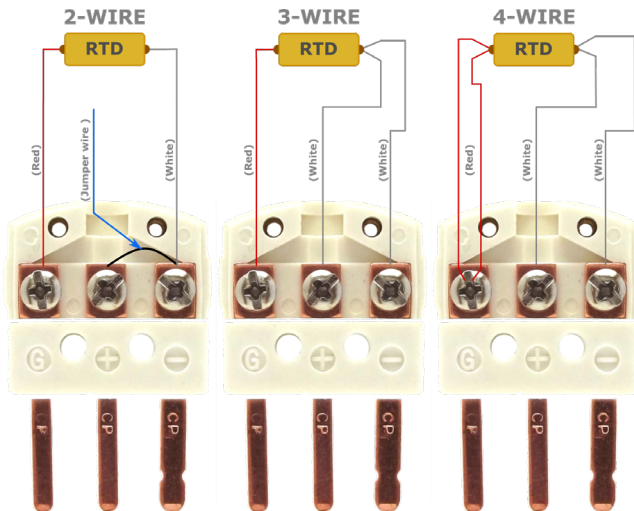\* Channel ID as it appears in DracalView. Virtual channel IDs differ in DracalView and dracal-usb-get.

### PRODUCT DIMENSIONS
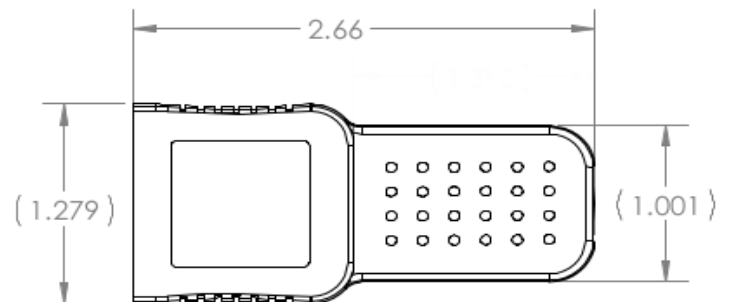


All dimensions are in inches

### PROBE WIRING OPTIONS FOR RTD300 ONLY



**2-WIRE**     **3-WIRE**     **4-WIRE**

**Wiring for RTD300**

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

### 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 | |

**CAUTION:** Please remember 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:** Before using any precision measurement equipment, it is advised to power the unit for at least 15 minutes.