



HIGH-PRECISION AND HIGH-RESOLUTION USB ADAPTER FOR TYPE-K THERMOCOUPLES

TMC200x



All types of converters are supplied with their respective connectors.

DESCRIPTION

The TMC200x acquires temperature using a 24-bit analog to digital engine with a built-in noise filter. It performs non-linearity compensation using standard coefficients from the NIST ITS-90 thermocouple database as well as cold-junction temperature compensation, resulting in excellent stability, resolution and accuracy. As a new functionality, the TMC200x provides the user with error status of the thermocouple connection to avoid false readings. Status displays such as “Probe Disconnected” allows the user to intervene when readings are interrupted, and ensures that only relevant readings are recorded. In comparison to the TMC100x, the TMC200x comes with improved precision and resolution.

APPLICATIONS

- Industrial processes
- Pharmaceutical processes
- Food processes
- Environmental chamber
- Engineering and R&D
- Pre-certification
- Scientific research
- Oven
- Temperature detection racks

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 |
|---|--------------------------|--------------|-------|
| TMC200k | | | |
| Thermocouple type | 2- or 3-pin | K | – |
| Thermocouple operating range ^[1] | – | -200 to 1372 | °C |
| Typical accuracy ^[2] | Junction at 25°C | ±0.5 | °C |
| Maximum accuracy | Junction from 25 to 50°C | ±1.5 | °C |
| TMC200j | | | |
| Thermocouple type | 2- or 3-pin | J | – |
| Thermocouple operating range ^[1] | – | -200 to 1200 | °C |
| Typical accuracy ^[2] | Junction at 25°C | ±1 | °C |
| Maximum accuracy | Junction from 25 to 50°C | ±1.5 | °C |
| TMC200t | | | |
| Thermocouple type | 2- or 3-pin | T | – |
| Thermocouple operating range ^[1] | – | -200 to 400 | °C |
| Typical accuracy ^[2] | Junction at 25°C | ±0.5 | °C |
| Maximum accuracy | Junction from 25 to 50°C | ±1 | °C |
| TMC200n | | | |
| Thermocouple type | 2- or 3-pin | N | – |
| Thermocouple operating range ^[1] | – | -200 to 1300 | °C |
| Typical accuracy ^[2] | Junction at 25°C | ±0.5 | °C |
| Maximum accuracy | Junction from 25 to 50°C | ±1 | °C |
| TMC200e | | | |
| Thermocouple type | 2- or 3-pin | E | – |
| Thermocouple operating range ^[1] | – | -200 to 1000 | °C |
| Typical accuracy ^[2] | Junction at 25°C | ±0.5 | °C |
| Maximum accuracy | Junction from 25 to 50°C | ±1 | °C |

SPECIFICATIONS

| Parameter | Condition | Value | Units |
|---|----------------------------|----------|-------|
| ADC resolution | Hot- and Cold-junction | 24 | bit |
| Temperature resolution | – | 0.01 | °C |
| Sampling rate | Up to 5 SPS | 200 | ms |
| Cold junction compensation | – | Yes | – |
| Built-in correction | NIST ITS-90 | Yes | – |
| Built-in noise filter | – | Yes | – |
| Long-term stability | – | Yes | – |
| Connector compatibility | Mini 2- and mini 3-pin | – | – |
| Power supply | | | |
| Voltage | Powered through a USB port | 5 | V |
| Current Consumption | At 5V | 15 | mA |
| Mechanical | | | |
| Dimensions | See drawing below | – | – |
| Colour | – | Cyan | – |
| Weight | – | 28 | g |
| Housing | | | |
| Temperature operating range | – | 0 to 50 | °C |
| Humidity operating range ^[3] | Non-condensing | 10 to 90 | %RH |
| Material | – | ABS | – |
| IP rating ^[3] | – | 51 | – |
| System galvanic isolation | – | None | – |
| Miscellaneous | | | |
| Communication | – | USB 2.0 | – |
| RoHS | – | Yes | – |

^[1] The temperature range may be restricted to the operating range of the probe.
^[2] Minimum precision over the complete thermocouple operating range.
^[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.

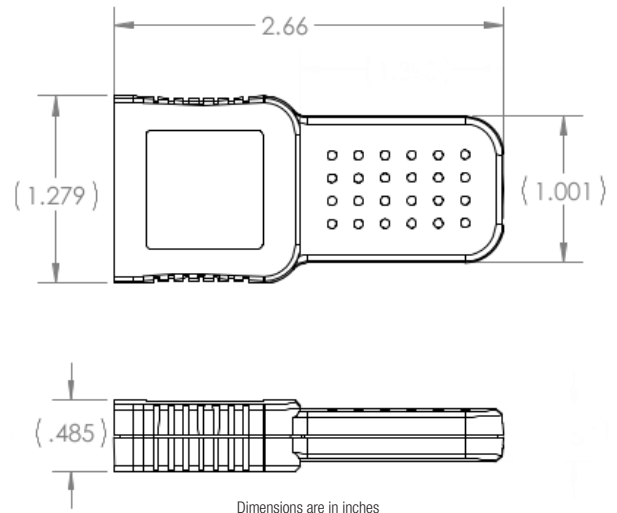
AVAILABLE CHANNEL(S)

As displayed in our logging software

| CHANNEL ID* | DESCRIPTION | TYPE | NATURE |
|-------------|--|-------------|--------|
| 00 | Type-x Thermocouple | Temperature | Real |
| 01 | Thermocouple cold junction temperature | Temperature | Real |

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

PRODUCT DIMENSIONS



DETECTABLED ERROR STATUS

| DESCRIPTION | NATURE |
|--------------------|--|
| Probe Disconnected | The probe is not connected or loose/broken wire |
| Sensor Error | Cold junction temperature out of range |
| Out Of Range | Measured temperature is outside the sensor operating range |
| Invalid Data | Communication error |

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.

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.

ORDERING

PRODUCT(S)

| PART NUMBER | OPTION | DESCRIPTION |
|-------------|-----------------|--|
| 601072 | USB-TMC200k | USB Type-K thermocouple converter |
| 608072 | USB-TMC200k-CAL | USB Type-K thermocouple converter - calibratable |
| 603072 | VCP-TMC200k | USB Type-K thermocouple converter - with VCP mode |
| 605072 | VCP-TMC200k-CAL | USB Type-K thermocouple converter - calibratable with VCP mode |
| 601073 | USB-TMC200j | USB Type-J thermocouple converter |
| 608073 | USB-TMC200j-CAL | USB Type-J thermocouple converter - calibratable |
| 603073 | VCP-TMC200j | USB Type-J thermocouple converter - with VCP mode |
| 605073 | VCP-TMC200j-CAL | USB Type-J thermocouple converter - calibratable with VCP mode |
| 601074 | USB-TMC200t | USB Type-T thermocouple converter |
| 608074 | USB-TMC200t-CAL | USB Type-T thermocouple converter - calibratable |
| 603074 | VCP-TMC200t | USB Type-T thermocouple converter - with VCP mode |
| 605074 | VCP-TMC200t-CAL | USB Type-T thermocouple converter - calibratable with VCP mode |
| 601075 | USB-TMC200n | USB Type-N thermocouple converter |
| 608075 | USB-TMC200n-CAL | USB Type-N thermocouple converter - calibratable |
| 603075 | VCP-TMC200n | USB Type-N thermocouple converter - with VCP mode |
| 605075 | VCP-TMC200n-CAL | USB Type-N thermocouple converter - calibratable with VCP mode |
| 601076 | USB-TMC200e | USB Type-E thermocouple converter |
| 608076 | USB-TMC200e-CAL | USB Type-E thermocouple converter - calibratable |
| 603076 | VCP-TMC200e | USB Type-E thermocouple converter - with VCP mode |
| 605076 | VCP-TMC200e-CAL | USB Type-E thermocouple converter - calibratable with VCP mode |

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 |

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