![Dracal Technologies logo]

HIGH-PRECISION AND HIGH-RESOLUTION USB ADAPTER FOR TYPE-K THERMOCOUPLES — TMC200x

DESCRIPTION

The TMC200*x* 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 TMC200*x* 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 TMC100*x*, the TMC200*x* comes with improved precision and resolution.

All types of converters are supplied with their respective connectors.

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	–
Buit-in correction	NIST ITS-90	Yes	–
Buit-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

Dimensions are in inches
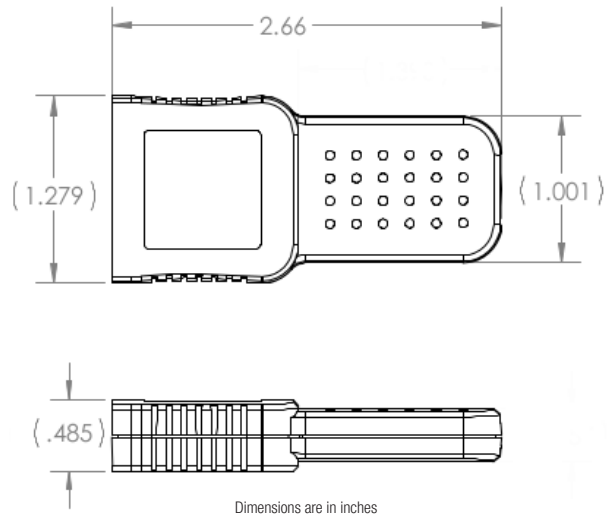
DETECTABLED ERROR STATUS

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.

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