2D Debus & Diebold Meßsysteme GmbH Alte Karlsruher Straße 8 · D-76227 Karlsruhe
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BC-TX2iso-000 Thermocouple interface to CAN

Function

- Amplifies the thermocouple voltage of up to two connected thermocouple sensors and outputs the temperature value onto the CAN bus
- Thermocouple channels are galvanically isolated
- Versions available for most common thermocouple types: K-, J-, N-, T-, S-, R- and E-Type
- Detects thermocouple shorts to GND or Vcc
- Detects open thermocouple
- 5V automotive CAN bus
- Integrated cold-junction compensation
- 14 bit, 0.25°C resolution converter

Please order the thermocouple interface suitable for your thermocouple type!

Example: You need a thermocouple type N, the order code would be BC-TN2iso-000.

Technical specifications

Electrical characteristics		
Power supply	V	8-18
Current consumption	mA	60
Channels (temperature type X)		2
Galvanic isolation of the channels		Yes
Vibration resistance		
Shock	G	40
	ms	10
Vibration tested at	G	12
	Hz	1000

Mechanical characteristics		
Dimensions	mm³	44x34x11
Weight (including cables)	g	~100
Cable CAN		
Length	mm	800
Cable Type-X		
Length	mm	750
Environmental data		
Ambient operating range	°C	0 to +70
Humidity	%	5 to 95
Sealing class	IP	67

Cables and connectors can be modified on customer request.

The color of the thermocouple connector depends on the ordered type.
2D uses the IEC coded color.

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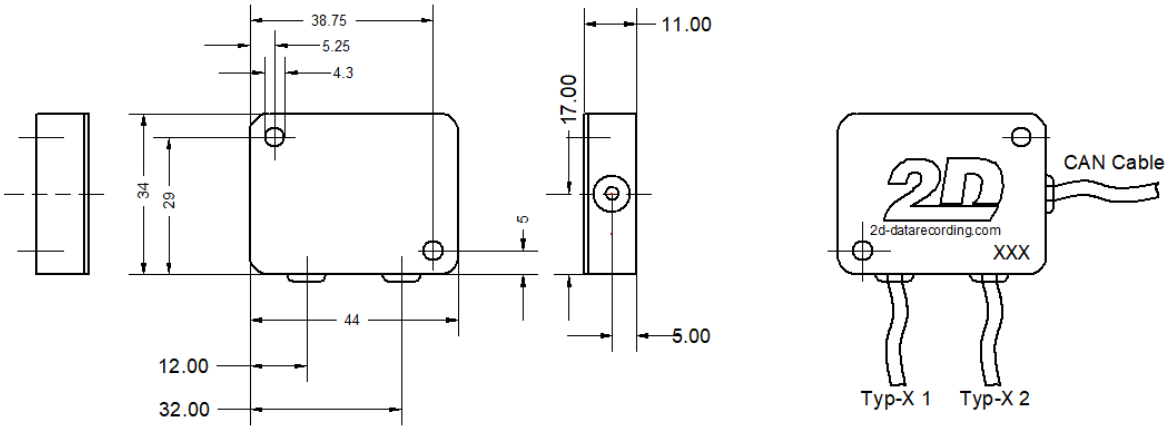
Dimensions



Error codes

Open wire: 32769 digits ADC ⇒ digits contain algebraic sign ⇒ -32767 digits * analysis formula = -2047.9375°C

GND short: 32770 digits ADC ⇒ digits contain algebraic sign ⇒ -32766 digits * analysis formula = -2047.875°C

VCC short: 32772 digits ADC ⇒ digits contain algebraic sign ⇒ -32764 digits * analysis formula = -2047.75°C

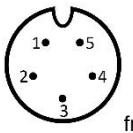
Example: -32767 digits * 0.0625 + 0 = -2047.9375°C

Connector layout

Connector type

CAN line, Binder 712 5PM

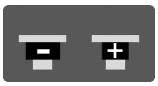
Pin	Name	Description	Color
1	CAN hi	CAN Bus high	white
2	CAN lo	CAN Bus low	green
3	GND	Ground	black
4	n.c.	Not connected	
5	Vext	Power supply	red



front view

Temperature type X

Pin	Name	Description
-	TC -	Temperature cable -
+	TC +	Temperature cable +


front view

Thermocouple wire connections and nominal sensitivities

Type	T- wire	T+ wire	Temp range [°C]	Sensitivity [µV/°C]	Cold-junction sensitivity [µV/°C] (0°C to +70°C)
K	Alumel	Chromel	-270 to +1372	41.276 (0°C to +1000°C)	40.73
J	Constantan	Iron	-210 to +1200	57.953 (0°C to +750°C)	52.136
N	Nisil	Nicrosil	-270 to +1300	36.256 (0°C to +1000°C)	27.171
S	Platinum	Platinum/Rhodium	-50 to +1768	9.587 (0°C to +1000°C)	6.181
T	Constantan	Copper	-270 to +400	52.18 (0°C to +400°C)	41.56
E	Constantan	Chromel	-270 to +1000	76.373 (0°C to +1000°C)	44.123
R	Platinum	Platinum/Rhodium	-50 to +1768	10.506 (0°C to +1000°C)	6.158

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