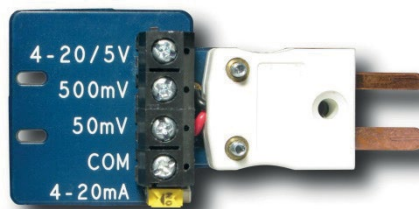


TC-08 Single-Channel Terminal Board

User's Guide



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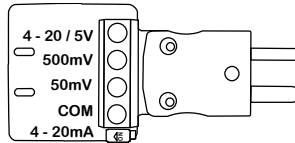


User's Guide

1. Introduction

The TC-08 Single-Channel Terminal Board is an accessory for the Pico Technology TC-08 8-Channel Thermocouple Data Logger. The screw terminals allow wires to be attached to the data logger without soldering and enable the TC-08 to measure voltages from -5 to $+5$ V or 4 – 20 mA loop currents.

The terminal board is designed for use with the TC-08 and is not guaranteed to work with other thermocouple data loggers.



2. Safety

To prevent possible electrical shock, fire, personal injury, or damage to the product, carefully read this safety information before attempting to install or use the product. In addition, follow all generally accepted safety practices and procedures for working with and near electricity.




The following safety descriptions are found throughout this guide:

A **WARNING** identifies conditions or practices that could result in injury or death.

A **CAUTION** identifies conditions or practices that could result in damage to the product or equipment to which it is connected.

Symbols

These safety and electrical symbols may appear on the product or in this guide:

Symbol	Description
	Possibility of electric shock
	Caution
	Do not dispose of this product as unsorted municipal waste.

Appearance on the product indicates a need to read these safety and operation instructions.

WARNING

To prevent injury or death use the product only as instructed. Protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

Maximum input ranges

The table below and markings on the product indicate the maximum input voltage between each measurement terminal of the Terminal Board and the COM input. The maximum input voltage is the maximum voltage that can be applied without risk of damage to the instrument.

WARNING

To prevent damage to the terminal board or connected equipment, and risk of electric shock, do not attempt to measure voltages or currents outside of the marked rating for each terminal.

⚠ WARNING

Signals exceeding the voltage limits in the table below are defined as "hazardous live" by EN 61010:

Signal voltage limits of EN 61010-1:2010+A1:2019		
±60 V DC	30 V AC RMS	±42.4 V pk max.

Do not use the Terminal Board to directly measure hazardous live voltages. Do not allow the Terminal Board, or attached wiring to come into contact with exposed hazardous live conductors.

To prevent electric shock, take all necessary safety precautions when working on equipment where hazardous live voltages may be present.

⚠ WARNING

To prevent injury or death, do not connect the Terminal Board directly to the mains (line power).

⚠ WARNING

To prevent injury or death, do not use the product if it appears to be damaged in any way, and stop use immediately if you are concerned by any abnormal behavior.

⚠ WARNING

To prevent injury or death, use the product only as instructed and use only accessories that have been supplied or recommended. Protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

⚠ CAUTION

Refer to the TC-08 User's Guide for information on safe use of the data logger.

The Terminal Board is for use with the TC-08 only. To prevent damage, do not attempt to connect it to other equipment.

Grounding**⚠ CAUTION**

To prevent measurement errors caused by poor grounding, always connect the data logger to the computer using the blue USB cable supplied with the data logger.

Environment**⚠ CAUTION**

This product is for indoor or outdoor use, in dry locations only.

⚠ WARNING

To prevent injury or death, do not use in wet or damp conditions, or near explosive gas or vapor.

⚠ CAUTION

To prevent damage, always use and store your Terminal Board in appropriate environments.

	Storage	Operating
Temperature	-20 °C to +60 °C	0 °C to +40 °C
Max. humidity (non-condensing)	5 to 95 %RH	5 to 80 %RH
Max. altitude	2000 m	
Pollution degree	2 (As defined in IEC 61010-031. Non-conductive pollution with occasional temporary conductivity due to condensation.)	

Connecting to the data logger

You can plug the terminal board directly into any of the thermocouple sockets on the TC-08.

**Disposal**

Your help and efforts are required to protect and keep our environment clean. Therefore either return this product at the end of life to the manufacturer or ensure WEEE-compliant collection and treatment yourself.

Care of the product

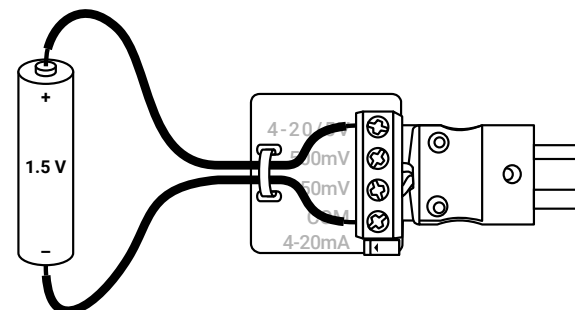
Inspect the Terminal Board and all probes, connectors, cables and accessories before use for signs of damage.

⚠ CAUTION

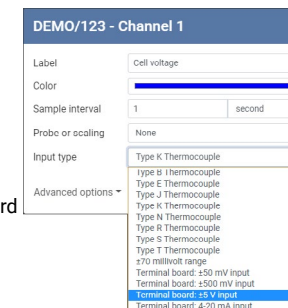
When cleaning the Terminal Board, use a soft cloth and a solution of mild soap or detergent in water. Do not submerge the Terminal Board in liquid as this will compromise the electronics and insulation.

3. Measuring voltages and currents

1. Connect the negative side of your circuit to the COM terminal.
2. Connect the positive side of your circuit to the **5 V**, **500 mV** or **50 mV** terminal depending on the voltage range of the signal. For a 4–20 mA loop signal, use the **5 V** input.
3. For a 4–20 mA loop signal, set the switch to **ON**. For a voltage signal, set the switch to **OFF**.



4. Plug the terminal board into the TC-08.
5. Connect the TC-08 to the computer using the cable supplied with the logger.
6. Run PicoLog 6 on the computer.
7. On the **Devices** page, click the TC-08 channel that you are using.
8. Set **Input type** to one of the **Terminal Board...** options:
9. PicoLog will display the voltage or current applied to the terminal board in the monitor window.



4. Reference

4.1 Inputs and switch

Name	Function
4–20/5 V	Input for the measurement side of a 4–20 mA loop or -5 to +5 V signal
500 mV	Input for the measurement side of a -500 mV to +500 mV signal
50 mV	Input for the measurement side of a -50 mV to + 50 mV signal
COM	Input for the COMmon/reference side of any voltage or current signal. To prevent incorrect readings, please DO NOT allow this terminal to exceed the ± 7.5 V common-mode range of the data logger.
4–20 mA	Set switch to "ON" for a 4–20 mA loop signal. Set switch to "OFF" for all voltage signals.

4.2 Input ranges

The approximate voltages sensed by the data logger correspond to the input voltages as follows:

Input range	Input impedance	PicoLog voltage (approximate)	Scaling (more precise)
-5 to +5 V	101 k Ω	-50 to +50 mV	x101.5
-500 to +500 mV	10.1 k Ω	-50 to +50 mV	x10.105
-50 to +50 mV	1 k Ω	-50 to +50 mV	x1
4 to 20 mA		+9.6 to +48 mV	x(24/10.105)

To obtain more precise voltages, use the scaling factors shown above. These are calculated from the nominal values of the resistors on the terminal board.

4.3 Specifications

Dimensions	57 x 27 x 14 mm (approx. 2.3 x 1.1 x 0.6 in.)
Weight	12 g nominal (approx. 0.5 oz)
Terminal wire size	1.5 mm ² solid, 1.0 mm ² stranded, 16 to 26 AWG

4.4 Warranty

Pico Technology Ltd. ("Pico") warrants this accessory for normal use and operation within specifications for a period of five years from date of shipment and will repair or replace any defective product which was not damaged by negligence, misuse, improper installation, accident or unauthorized repair or modification by the buyer. This warranty is applicable only to defects due to material or workmanship. Pico disclaims any other implied warranties of merchantability or fitness for a particular purpose. Pico will not be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of use or data, interruption of business and the like), even if Pico has been advised of the possibility of such damages arising from any defect or error in this manual or product.




4.5 Compliance

This terminal board has been designed and tested in accordance with UK Conformity Assessed (UKCA) Statutory Requirements SI 2013/3113 (WEEE) and SI 2012/3032 (RoHS).

This terminal board has been designed and tested in accordance with European Union directives 2012/19/EU (WEEE) and 2011/65/EC (RoHS), Incorporating Commission Delegated Directive 2015/863/EU. The EU Declaration of Conformity is available for download from www.picotech.com/library/documentation.

United Kingdom global headquarters:


Pico Technology
James House
Colmworth Business Park
St. Neots
Cambridgeshire
PE19 8YP
United Kingdom

 +44 (0) 1480 396 395

 sales@picotech.com

North America regional office:


Pico Technology
320 N Glenwood Blvd
Tyler
TX 75702
United States


 +1 800 591 2796

 sales@picotech.com

Asia-Pacific regional office:


Pico Technology
Room 2252, 22/F, Centro
568 Hengfeng Road
Zhabei District
Shanghai 200070
PR China

 +86 (0) 21 2226-5152

 pico.asia-pacific@picotech.com

Germany regional office and EU authorized representative:

Pico Technology GmbH
Im Rehwinkel 6
30827 Garbsen
Germany

 +49 (0) 5131 907 62 90

 info.de@picotech.com

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