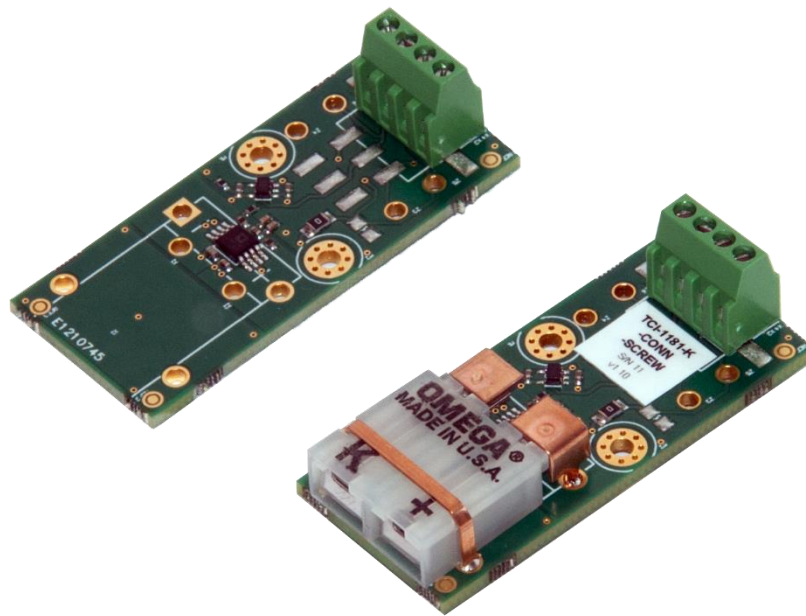


# Setup Guide

## TCI-1181



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# 1 Introduction

This step-by-step guide will help you setting up a Meerstetter Engineering TCI-1181 for the first time. The goal is to avoid difficulties and save time at first use.

We assume that the software is installed and that the Peltier element and power supply are already connected to the TEC controller. If not, we recommend consulting the [TEC Setup Guide](#) before.

The following topics will be treated in this guide:

1. Hardware setup
2. Default configuration
3. Temperature measurement

The following symbols are used to categorize the steps of the guide:

- ✕ Actions to be performed by the user
- 🔍 Reactions from the soft- or hardware, as indication that an action was successful
- 📘 Additional background information to the step to be performed

## 2 Material & Prerequisites

The following components were used for this example:

- TEC-1089-SV-VIN1
- TCI-1181-?t?-?c?-?d?
- CAB-6154 for TEC-1089
- Soldering station

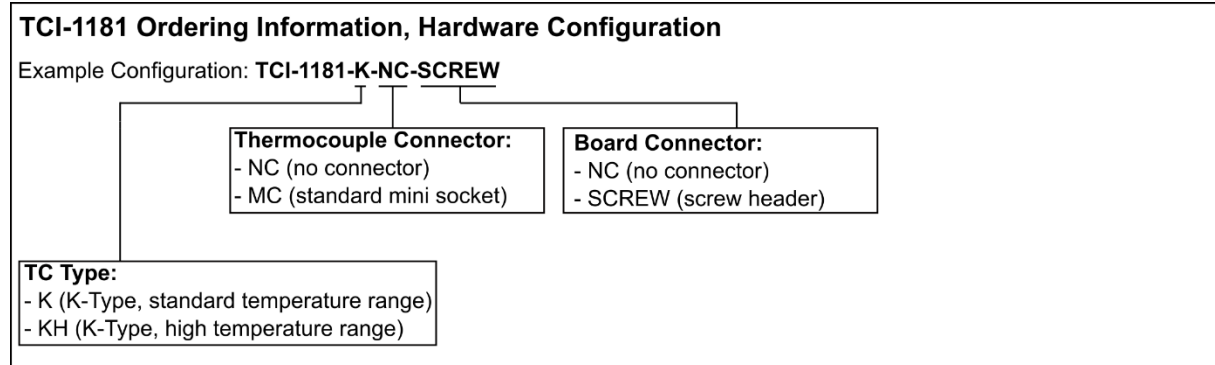
This is a general setup guide, so you can follow the steps even if you don't use the same materials and controller for your setup.

Please adapt the instructions to your TEC controller and TCI-1181.

### 3 Hardware Setup

In this tutorial we use a TEC-1089, the given specifications are not valid for all TEC controllers, Please check the specifications with the information in the corresponding data sheet.

- ✗ Read the hardware configuration of your TCI-1181. It can be found on the white sticker on the board. Note the Configurations for “Thermocouple Connector” and “Board Connector”. The hardware configuration is built up as follows:

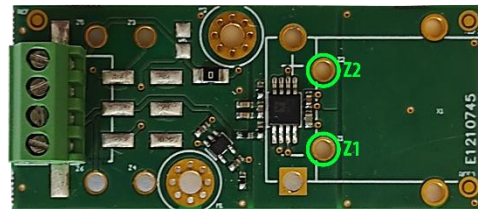
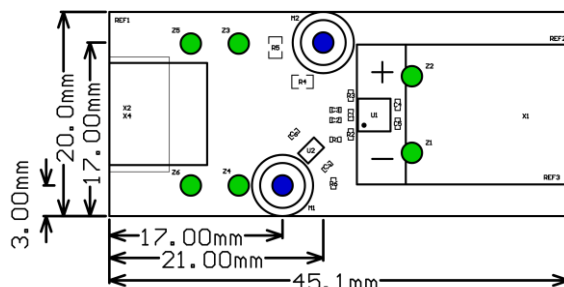


#### 3.1 Connect the thermocouple to the TCI-1181

- ✗ Refer to the datasheet of your Thermocouple for the pinout.
- ✗ Follow the instructions corresponding to the “Thermocouple Connector” you have on the TCI-1181.

A: NC (no connector) - TCI-1181-?t?-NC-?d?:

- ✗ Solder the negative connector of the Thermocouple to hole Z1
- ✗ Solder the positive terminal to hole Z2



B: MC (Standard mini socket) - TCI-1181-?t?-MC-?d?:

- ① The connectors of the thermocouple are usually polarity protected.
- ✗ Connect the negative terminal to K pin
- ✗ Connect the positive terminal to + pin



### 3.2 Connect TCI-1181 to TEC Controller TEC-1089

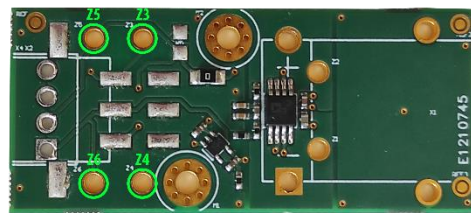
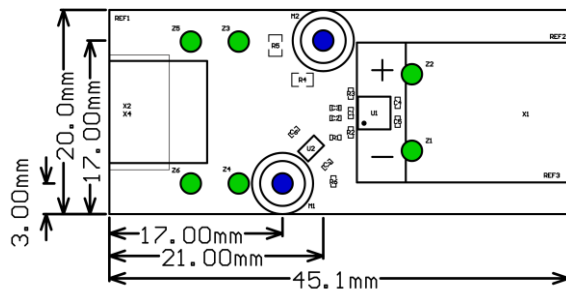
① We use our cable CAB-6154 to connect the TCI and the TEC Controller TEC-1089.

✗ Continue according to the “Board Connector” you have.

A: NC (no connector) - TCI-1181-?t?-?c?-NC

✗ Solder the cable according to the following table.

Hole	Pin Name	Function	Connect to CAB-6154 cable
Z3	TOIA	Positive Supply	IA - green
Z4	TOIB	GND	IB - pink
Z5	TOUA	Positive Output Terminal	UA - yellow
Z6	TOUB	Negative Output Terminal	UB - gray



✗ Connect the CAB-6156 to X7 (“Temp-Port” [UB; UA; IB; IA]) on your TEC Controller

B: SCREW (screw header) - TCI-1181-?t?-?c?-SCREW

✗ Connect the cable according to the following table.

Pin	Pin Name	Function	Connect to CAB-6154 cable
1	TOUB	Negative Output Terminal	UB - gray
2	TOUA	Positive Output Terminal	UA - yellow
3	TOIB	GND	IB - pink
4	TOIA	Positive Supply	IA - green



✗ Connect the CAB-6156 to X7 (“Temp-Port” [UB; UA; IB; IA]) on your TEC Controller

## 4 Software Setup

### 4.1 Default Configuration

- ① We assume that you set up a new TEC Controller with factory defaults. If yes, continue with Step 4.2
- ✗ If not, look for the default configuration in the “TEC software vx.xx Additional” folder you get, after installing the TEC Service Software (5216x TEC Default Config.ini).
- ✗ Load the default configuration by clicking on “Import Config” in the bottom right corner of the Service Software.
- 🔍 The new values appear in the text fields. They are not yet active on the TEC Controller.
- ✗ Save the changed settings to the TEC Controller by clicking “Write Config” in the bottom right corner of the window.
- ① Generally, you must set values by typing them into the corresponding fields and by clicking on “Write Config” to save them to the TEC Controller.

### 4.2 Temperature Measurement

- ✗ Go to Tab Advanced -> Temperature Conversion -> CHx Object Conversion Mode and set the “Sensor Type Selection” to “Voltage”
- ✗ Continue according to the “TC Type” you have.

CH1 Object Conversion Mode		
	Actual	New
Sensor Type Selection	Pt1000	Voltage

A: K (K-Type, standard temperature range) - TCI-1181-K-?c?-?d?

Under the same Tap by “CHx Object Voltage to Temp. Conversion”

- ✗ set “Reference Temp [°C]” to zero
- ✗ set “Reference Voltage [V]” to zero
- ✗ set “Temperature Slope [V/°C]” to 5e-3

CH1 Object Voltage to Temperature Conversion		
	Actual	New
Reference Temp [°C]	25	0
Reference Voltage [V]	0.85	0
Temperature Slope [V/°C]	0.01	5e-3

B: KH (K-Type, high temperature range) - TCI-1181-KH-?c?-?d?

Set “Reference Temp [°C]” to zero

- ✗ Set “Reference Voltage [V]” to zero
- ✗ Set “Temperature Slope [V/°C]” to 2.17105e-3

CH1 Object Voltage to Temperature Conversion		
	Actual	New
Reference Temp [°C]	25	0
Reference Voltage [V]	0.85	0
Temperature Slope [V/°C]	0.01	2.17105e-3

- 🔍 Save the changed settings to the TEC Controller by clicking “Write Config” in the bottom right corner of the window. Check if the temperature measurement in the “Monitor” shows realistic values. The value of “Object Temperature” should equal approx. ambient temperature.

Monitor		
CH1 Temperature Measurement		
Object Temperature [°C]		26.190
Sink Temperature [°C]		25.000
CH1 Temperature Control		
Target Object Temperature [°C]		25.000
(Ramp) Nominal Object Temperature [°C]		25.000
Thermal Power Model Current [A]		0.00
CH1 Output Stage Monitoring		
Actual Output Current [A]		0.01
Actual Output Voltage [V]		0.01



## 5 Further Information

Congratulations! Your TCI-1181 should now be working.

Please refer to the [TEC-Family User Manual](#) for detailed information about the Service Software and the TEC Controllers, and to find additional troubleshooting help.

[The TEC / Peltier Element Design Guide on our website](#) provides more information about how to design a thermoelectric application including calculations, choosing Peltier elements, temperature sensors, heat sinks and power supplies.

## A Change History

Date of change	Doc/Version	Changed/Approved	Change / Reason
15.08.2022	A	LS/RS	<ul style="list-style-type: none"><li>• Dokument erstellt</li><li>• Add Change Historie</li></ul>