Setup Guide – SKT-1165

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Developed, assembled, and tested in Switzerland

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1 General Information

1.1 Overview

The starter kit consists of the following components:

Components	Description
TEC Controller TEC-1091-NTC-PIN	Controller which drives / controls the Peltier element, the fan, and the display.
Display DPY-1113	Status display.
Peltier Assembly 1. Peltier Element 2. NTC Thermistor 3. NTC Thermistor 4. Heat Sink 5. FAN 6. Power Connector 7. USB Connector	> Cooling and heating (internally mounted) > Measurement of object temperature (internally mounted) > Measurement of sink temperature (internally mounted) > Removal of heat > Used for increased heat removal and improves the thermal efficiency of the Peltier assembly
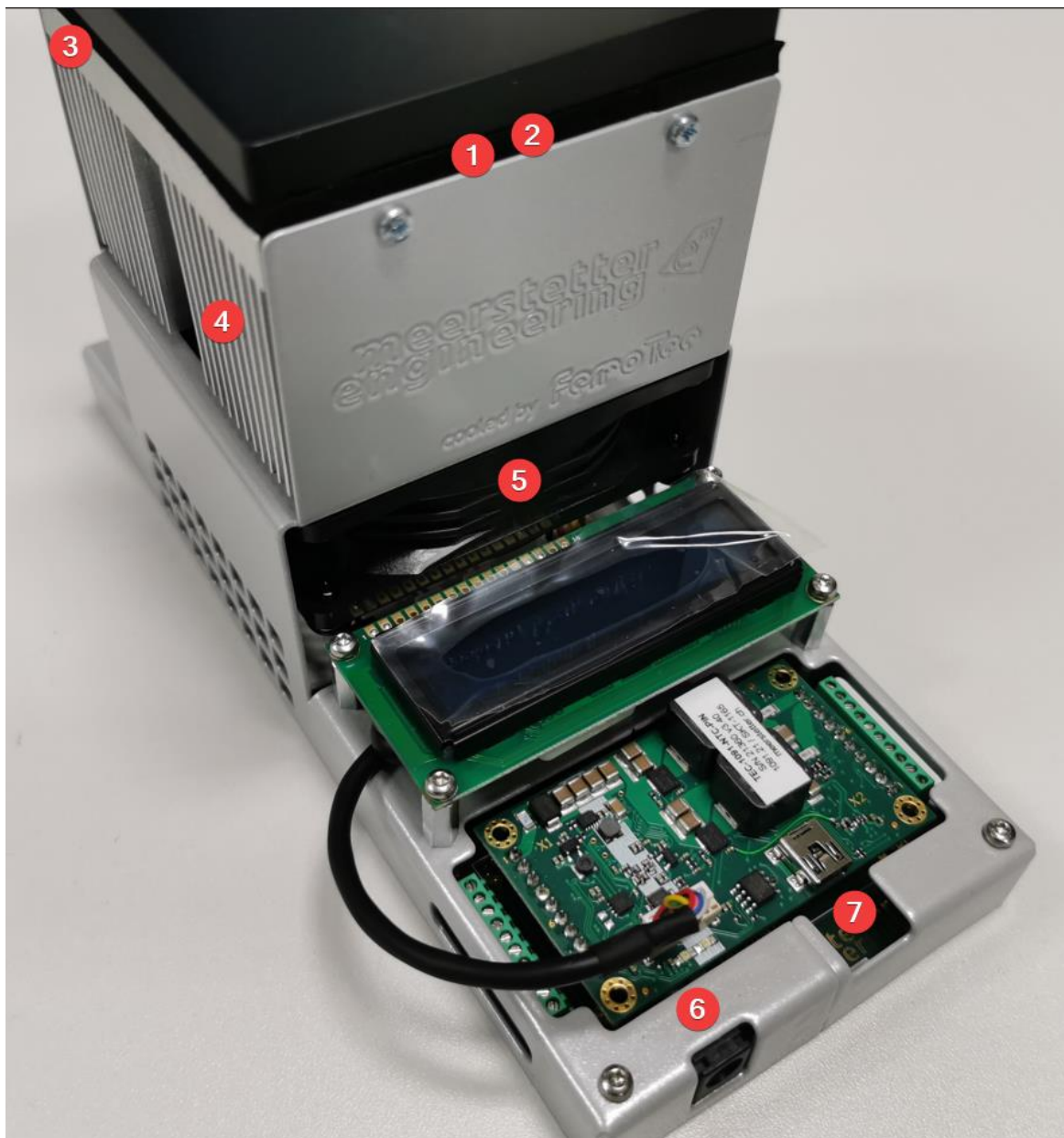
Figure 1: Overview SKT-1165

1.2   Package Outline and Pin Configuration of TEC-1091
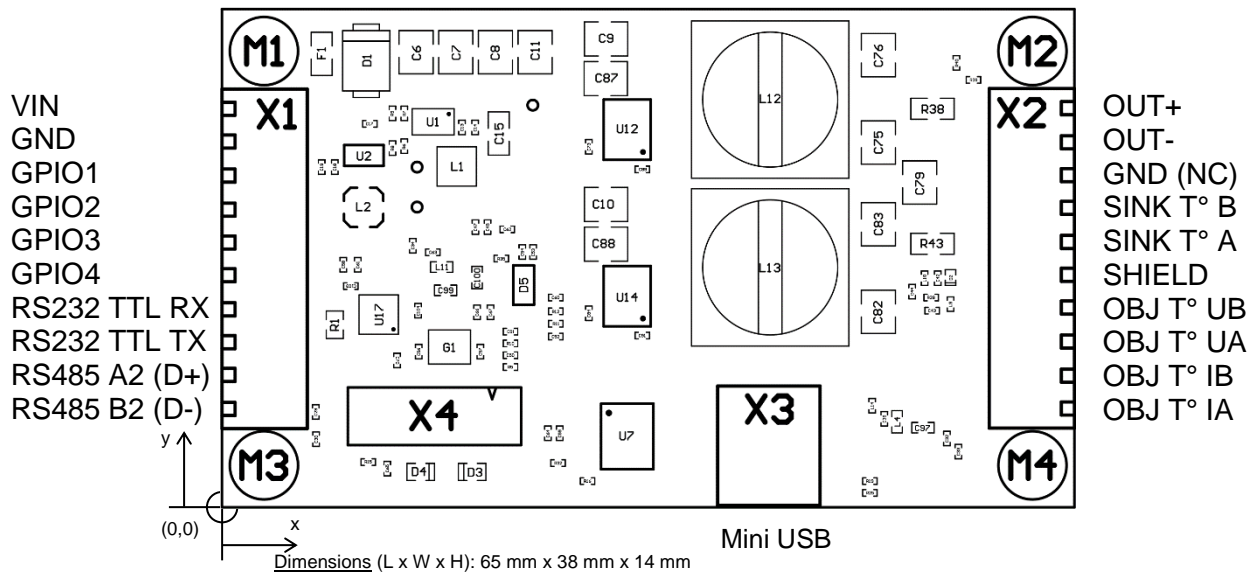
Figure 2: Package Outline and Pin Configuration of TEC-1091

1.3   Additional requirements

These parts are not included as standard:

- PC with Microsoft Windows 7 or newer
- Cable with Mini-USB-B connector
- Power supply (24 V, 5 A or more); Recommended [power supply](#)

T0he Starter Kit is not tested for CE compliance; it is intended as demonstration unit for laboratory use by trained personnel.

2   Setup

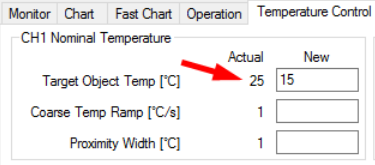| Step	Action	Information / Feedback
1	**Hardware Setup**	
1.1	⚒ Unpack your Starter Kit	ⓘ Your Starter Kit will be delivered fully assembled.
1.2	⚒ Be sure that the power supply has the following polarity: ⊖ ——●—— ⊕ ⚒ Plug in the power supply.	ⓘ The power supply must be able to provide enough electric power (24 V, 5 A). A fitting power supply can be ordered from our web shop. We can recommend the following [power supply]().
1.3	⚒ Connect the DC-Jack from the power supply to the X0 connector (number 6 in Figure 1) on the motherboard of the TEC Controller of your Starter Kit.	🔍 The green LED (D3, refer to Figure 2) starts flashing continuously on the TEC Controller. 🔍 The TEC Controller starts to cool / heat to 15°C.
2	**Install and Start the Software**	
2.1	⚒ [Download the TEC-Family Software Package (.msi).]() ⚒ Execute the MSI-file and follow the instructions.	ⓘ The MSI setup procedure will also provide you with the FTDI USB driver and Microsoft .NET files if you do not have the necessary versions already installed. 🔍 Two new icons appear on your desktop: "TEC Service Software vX.XX" and "TEC Software vX.XX Additionals" which contains further information. 🔍 The "… Additionals" folder also contains the firmware upgrade file for the TEC Controller itself and some other helpful stuff.
2.2	⚒ Connect the TEC Controller on X3 to your PC using a Mini-USB-B cable (number 7 in Figure 1). ⚒ Open the Service Software (TEC Service vX.XX).	🔍 The Service Software displays "Connected" and the connect status indicator is green. 🔍 The "Device Status" is green and running. ⓘ Information about your TEC Controller is displayed in the top right corner of the "Monitor" tab. ⓘ If an error occurs, the description is displayed in the "Monitor" tab in the lowest box of the rightmost column. Connected Connect: 🟩 Device Status 🟩 Run

3	Temperature Control	
3.1	⚒ In the tab "Temperature Control" →"CH1 Nominal Temperature", set "Target Object Temp [°C]" to 15. Monitor | Chart | Fast Chart | Operation | Temperature Control CH1 Nominal Temperature 　　　　　　　　　　　　　Actual　New Target Object Temp [°C]　　25　[15] Coarse Temp Ramp [°C/s]　　1　[　] Proximity Width [°C]　　　　1　[　]	ⓘ Our goal is now to keep an object at a constant temperature. First, we set the target temperature.
3.2	⚒ Save the changed settings to the TEC Controller by clicking "Write Config" in the bottom right corner of the window.	ⓘ 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.
3.3	⚒ Observe the temperature in the "Chart" tab.	🔍 The temperature will converge to 15 °C. 🔍 In the status bar at the bottom, the CH1 object temperature indicator is amber if the target temperature has not yet been reached. 🔍 If the measured "Object Temperature" equals the target temperature the indicator is green and the temperature on the display is close to 15 °C. ⓘ There can be a small difference between the desired target temperature and the measured object temperature.

3   Further Information

Component	Link	Reference
TEC Controller	TEC-1091 Datasheet	
	PID Autotuning TEC Family User Manual	Page 21
Display	DPY-1113 Display	
	Display Software Configuration TEC Family User Manual	Page 34
Peltier Element	TE72001-241-060BS	
Object Temperature Sensor	NTCLE305E4103SB	
Sink Temperature Sensor	NTCALUG01A103F161	
Recommended Power Supply	GST120A24-P1M	

A   Change history

Date of change	Doc/Version	Changed/ Approved	Change / Reason
15 February 2021	A	LS	• Initial release

19 March 2021	B	XF	• Removed general service software parameter information from annex as it is the same information as can be found in the TEC-Family User Manual
			• Adjusted the document to the new document template:
			   o Added index
			   o Added Meerstetter disclaimer
			• Fixed various typos and formatting errors

07 July 2021	C	XF	• Added step 3.3 in the Setup > Temperature Control section that explains how to save settings to the TEC Controller.
16 February 2023	D	NZ/RK	General revision and adaptation to Starter Kit v2.00 • Changed all images of the SKT-1165. • Deleted step 1.4 and 1.5, they are obsolete. • Modified step 1.3, because the new Starter Kit has only one plug for the power supply. • Adjusted the temperature in step 1.3 corresponding to the default config.ini. • Adjusted the temperature in step 3.1 and 3.3 so that the temperature is different to that one in step 1.3. • Updated the Links for the new Peltier element, object and sink temperature, the fan and the power supply. • Updated index • Added Package Outline and Pin Configuration