

Meerstetter Temperature Controller

Refer to the **official documentation** of the Meerstetter for an **in-depth guide** to setting up and operating the system. The manual is very rigorous and covers everything required. This article just covers the main relevant points.

- [Official Website](#) - Further information
 - Concise data
 - In depth guides
 - Quick guide for the first setup
- Datasheet
- Manual
- Setup guide

Overview

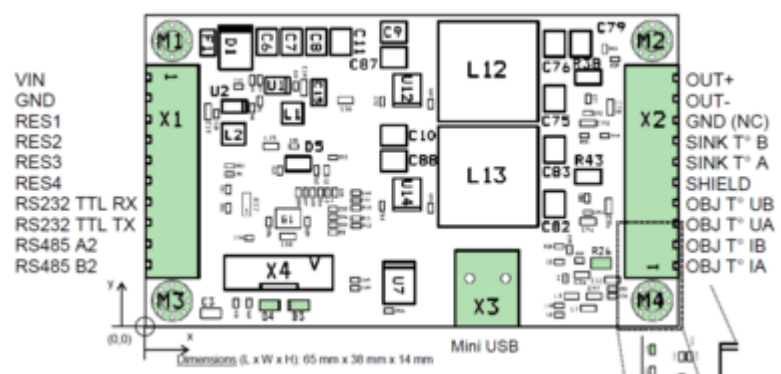
Basic Concept

The Meerstetter temperature controller is used to stabilize objects to a given temperature. It measures the temperature of the object using a thermal resistor and adjusts the object temperature accordingly by driving a heating/cooling element connected to the object.

Functionality

- Temperature stabilisation to sub mK range
- Exact control through software environment
- Easy configuration using autotuning function
- Custom programmable temperature ramps
- Temperature monitoring and data logging
- Programmable multi purpose pins for different applications

Hardware



X1: General connections

- power supply
- multi purpose pins
- serial connection

X2: Connections for temperature measurement and control

- peltier element/heating foil etc.
- temperature measurement

X3: USB for connection to PC

Software

Meerstetter provides a software for their temperature controller. This software is used to set up and monitor the temperature controller. It also provides a option for data logging. The newest version can be downloaded in the software section of the [Official Website](#).

Basic Setup

If you are setting up a Meerstetter temperature controller for the first time, refer to the

[official setup guide](#)

. It takes you through all main steps and introduces you to the service software. The

[Manual](#)

also covers this topic extensively. Refer to chapter 2.

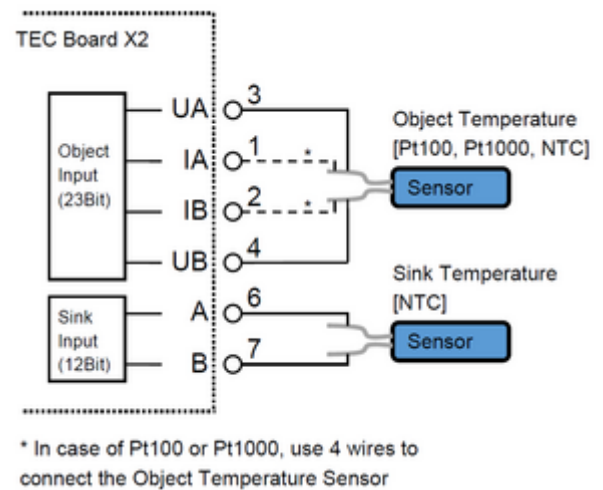
Power supply

The Meerstetter can operate in a voltage range of **5-24V DC** at a maximum current of **4A**. Connect the pins VIN and GND on X1 to a suitable lab power supply to power the meerstetter. The [current setup for the 1560 nm rio laser diode](#) runs at **18V**.

Peltier Element/Heating Foil

The Meerstetter can run with a peltier element as well as a resistive heating element like a heating foil. The peltier element/resistive heater is connected to the pins OUT+ and OUT-. To use it correctly, you must configure the meerstetter accordingly using the [service software](#).

Temperature Sensor



[See page 4 of the](#)

[Datasheet](#)

Object Temperature

The Meerstetter can do two-wire as well as [four-wire measurement](#). For this the pins OBJ T° IA, OBJ T° IB, OBJ T° UA and OBJ T° UB on X2 are used. UA and UB for two wire, all four for four wire. Compatible temperature sensors are [NTC](#), PT100 and PT1000.

Sink Temperature

The Meerstetter can also monitor the temperature of itself. This is optional. The temperature sensor is connected to SINK T° A and SINK T° B on X2. For this an NTC is used.

Software

[The newest version can be downloaded in the software section of the Official Website](#). Refer to the documentation given there to get started. If you want to look something up, refer to the

[Manual](#)

Further Options

Status LEDs

To add a status LED to the Meerstetter, you can follow this step-by-step guide:

- connect its anode to any of the pins labelled “RES” using a resistor
- connect its cathode to GND
- connect the Meerstetter to your PC via a mini-USB B cable

- connect a power supply
 - **ensure the Meerstetter is connected to a load, otherwise it might be damaged** * open the Meerstetter control software * make sure the Meerstetter is connected correctly and it says “ready” or “running” in the bottom left corner * type in “expert” at the bottom control panel and click the button labeled “login” * this makes the “Expert” tab show up at the top of the window * click on the tab labelled “Expert” * on the right side of the panel there are multiple selection fields labelled “RES1” to “RES8” * select the option you want to choose from the drop down menu corresponding to the pin the LED is connected to * Information on what these options exactly mean can be found on pages 47 and 48 of the manual
- write the settings to the Meerstetter using the button in the bottom right corner

Pufferkondensatoren

Data Logging

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Last update: **2018/03/16 09:58**

