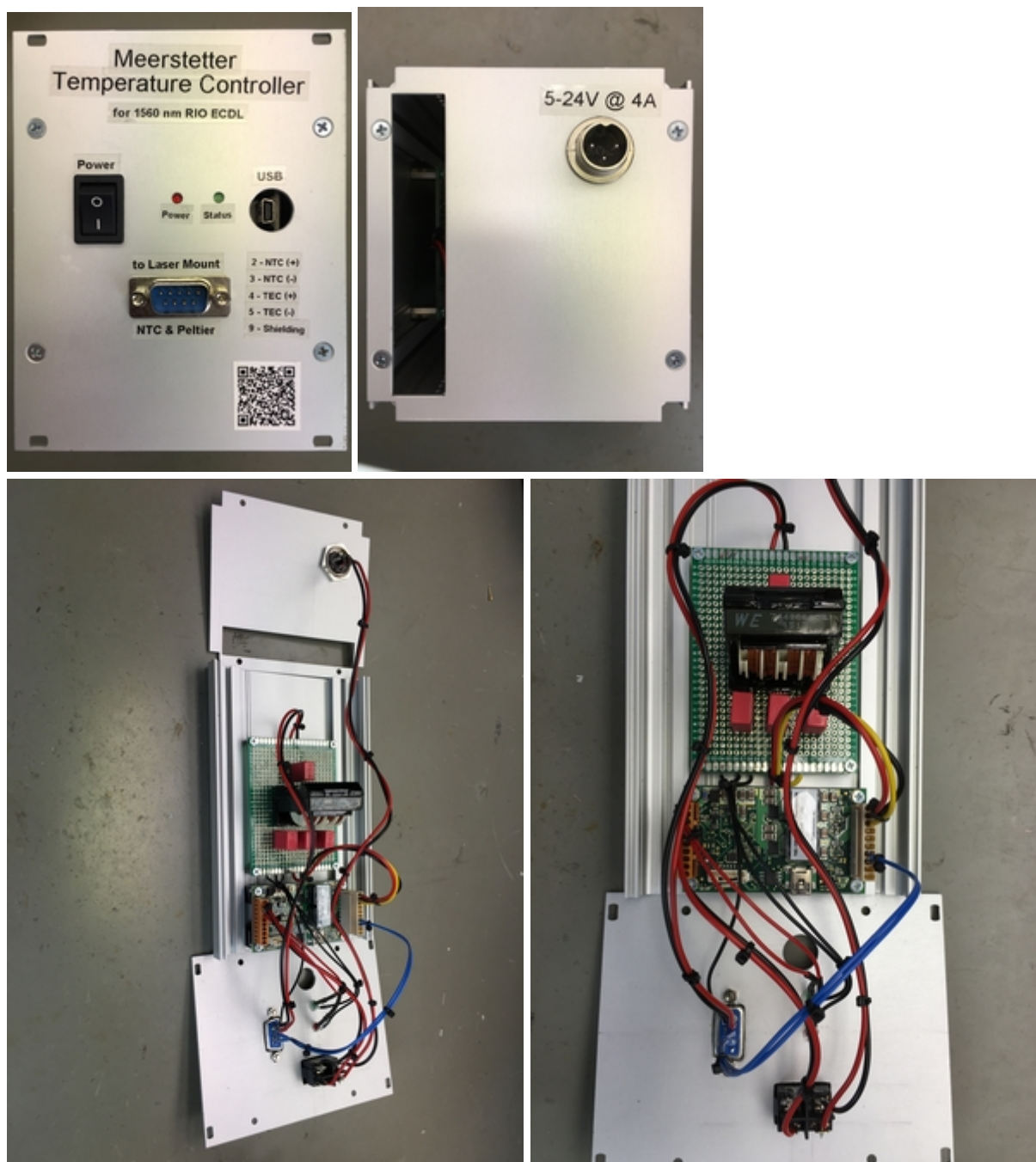# Temperature Controller

The temperature controller used for regulating and stabilizing the temperature of the laser diode is a **Meerstetter TEC-1091-NTC56k-Pinheader** - IQWiki entry

## Current Setup - Rack Mount



- **Switch**: controls connection between lab power supply and meerstetter
- **Power LED**: on = power on, off = power off
- **Status LED**: on = Temperature at setpoint, blinking = ramping to setpoint, off = power off or error

- **USB**: connection to PC, see [Meerstetter wiki entry](#) for more information
- **SUB D-9**: male connector, connects to [laser mount](#)

| Socket | Pin Name | Connected To | Explanation |
|---|---|---|---|
| X1 | VIN | XLR Plus | connections for the power supply |
| | GND | XLR GND | |
| | RES4 | LED Anode | status LED |
| X2 | OUT + | SUB D Pin 4 | TEC (+) |
| | OUT - | SUB D Pin 5 | TEC (-) |
| | OBJ T° UA | SUB D Pin 3 | NTC (-) |
| | OBJ T° UB | SUB D Pin 2 | NTC (+) |
| | Shielding | SUB D Pin 9 | GND for shield of cable |

# Old setup - in a Box

## Overview







- The **subD9 connector** is used to connect the Meerstetter to the Thorlabs mount for the laser diode and is configured specially for that purpose.

- The **XLR socket** is used to connect the Meerstetter to a power supply.
- The **Mini-USB socket** is used to connect the Meerstetter to a PC for configuration and data logging.

There is also a **status LED** connected to the Meerstetter. If the LED is constantly on, the wanted temperature is reached. A blinking LED means that the system is currently ramping towards the wanted temperature and if the led is off, there is an error or the Meerstetter is currently turned off.
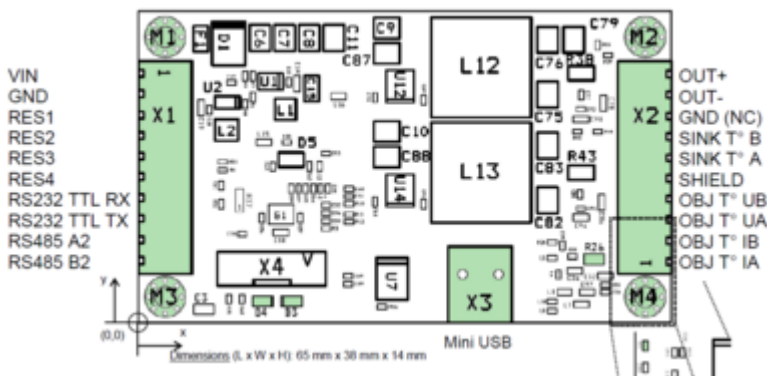
## Power Supply

The voltage range with which the Meerstetter can be powered is 5-24V DC, currently it is driven with **18V DC**. The power supply should be capable of delivering **4A**. Always use a **seperate power supply** for powering the Meerstetter.

## Connections within the Case

### Current Connections

Currently the connections are as shown in the table below:

| Socket | Pin Name | Connected To | Explanation |
|--------|----------|--------------|-------------|
| X1 | VIN | XLR Plus | connections for the power supply |
| | GND | XLR GND | |
| | RES4 | LED Anode | status LED |
| X2 | OUT + | SUB D Pin 4 | TEC (+) |
| | OUT - | SUB D Pin 5 | TEC (-) |
| | OBJ T° UA | SUB D Pin 3 | NTC (-) |
| | OBJ T° UB | SUB D Pin 2 | NTC (+) |
| | Shielding | SUB D Pin 9 | GND for shield of cable |



Different connectors were used for X1 and X2:
PSK for X1
JAE for X2

> 🛑 The SUB-D connector is wired up **especially** for the thorlabs mount. It is probably not

> ✋ compatible with other systems that use a SUB-D connector!

## Previous Connections

These were the **previous connections**. Differing connections were marked yellow.

| Socket | Pin Name | Connected to | |
|---|---|---|---|
| X1 | VIN | XLR Plus | connections for the power supply |
| | GND | XLR GND | |
| | RES4 | LED Anode | status LED |
| X2 | OUT + | SUB D Pin 4 | TEC (+) |
| | OUT - | SUB D Pin 5 | TEC (-) |
| | <hi #fff200>OBJ T° IB</hi> | SUB D Pin 3 | NTC (-) |
| | <hi #fff200>OBJ T° IA</hi> | SUB D Pin 2 | NTC (+) |
| | <hi #fff200>OBJ T° UB</hi> | SUB D Pin 9 | GND for shield of cable |

# Status LED

## Current Setup

An extra LED is installed at the "RES4"-Pin at the X1 side with a 2,4 kΩ resistor and connected to GND.
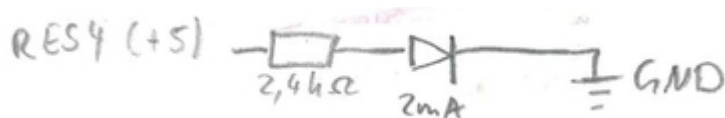


The Meerstetter is currently set up to control the LED like this:

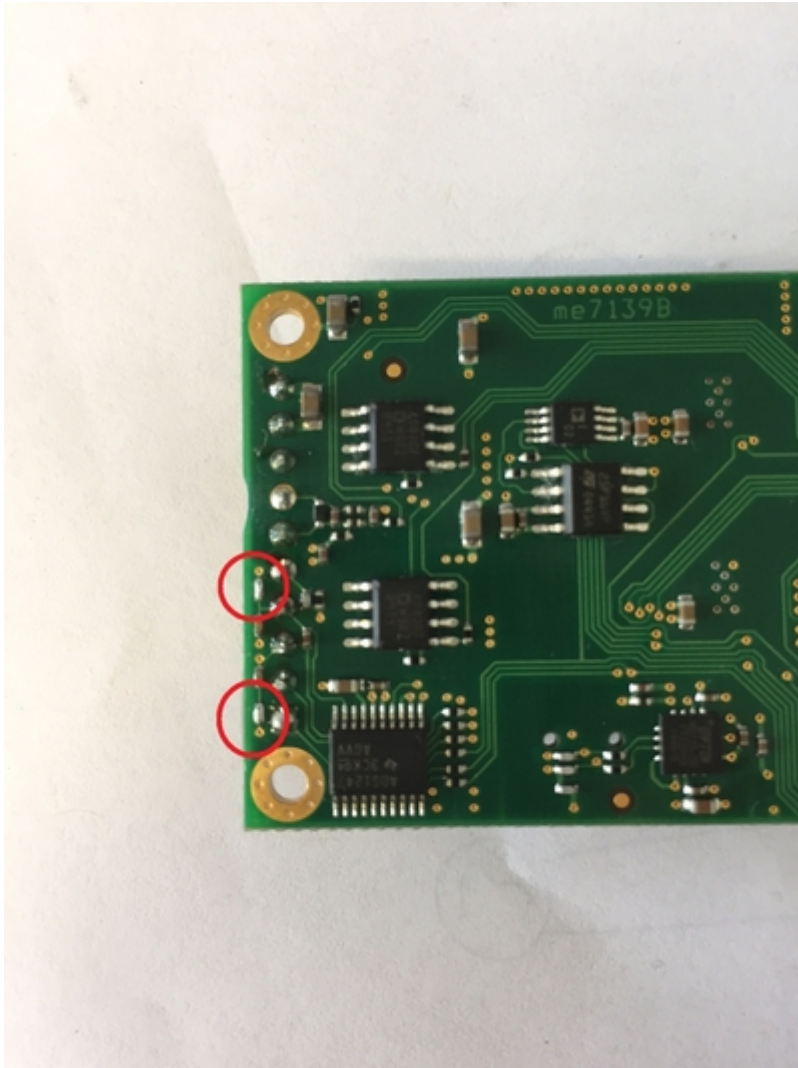| LED | Meaning |
|---|---|
| constanly on | target temperature is reached |
| blinking | ramping towards target temperature |
| off | error/Meerstetter is off |

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

# Other Modifications

> ⚠ What's the meaning of this?

On the back side of the circuit board at these two places, two soldering points have to be soldered together, so that 2 wires can be used to connect the NTC.