



PR-59 Temperature Controller

Frequently Asked Questions

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What is the TC-NTC-1?

Q. What is the TC-NTC-1?

A. It is a NTC-sensor that can be used for both control and alarm sensor input on the PR-59. The sensor head is 15 mm long with max 6mm diameter. full length of cables including head is 175 mm. R=10kOhms +/-2% at 0°C. B-value is 3860 +/-1%.

What is the NTC-2?

Q. What is the TC-NTC-2?

A. It is a high precision thermistor that is intended to be used as main temperature sensor with the PR59-controller. Tolerance is +/-0.1°C (25 to 95°C). Sensor head is 5mm long and diameter is 1.6mm maximum. Total length is 157mm (wires+sensor head).

What is the TC-WIRE2-PR-59?

Q. What is the TC-WIRE2-PR-59?

A. It is a piece of cable (700mm) with connector suited for the two alarm sensors and for the alarm relay output on the PR-59-controller.

What is the TC-WIRE3-PR-59?

Q. What is the TC-WIRE3-PR-59?

A. It is a piece of cable (700mm) with connector suited for the main temperature sensor on the PR-59controller. Note that all three wires should be connected to the sensor according to the connection description on the TC-XX-PR-59-drawing.

What is the maximum power output?

Q. What is the maximum power output that the controller can handle?

A. The maximum output current is 15A regardless of voltage. The maximum output current for the Fan outputs are 2A each.

Why doesn't the controller change behavior after I changed settings?

Q. I have changed the settings for the controller in the LT_Interface program but the controller has not reacted.

A. When a change in settings has been made in the LT_Interface program, this change will first take place after you have clicked on the SEND-button.

Why doesn't the controller keep its settings after a power down?

Q. Why doesn't the controller keep its settings after a power down?

A. When you change settings and click on the SEND-button you update the volatile memory in the controller. To keep the settings as power on default values you need to make a save to flash. This command is found in the Regulator-menu.

Do I need to download new firmware?

Q. Do I need to download new firmware to the regulator?

A. You NEVER need to download any firmware, unless you get a new firmware sent from us with the instructions to do so. The firmware is already in the regulator.

What does the LEDs on the board indicate?

Q. There are 4 LEDs on the PR-59 board. A yellow which I have had a mixture of flashing and on constantly, a red and 2 green. What is the significance of these LEDs and what do they indicate?

A. The two green LEDs is indicating that there is 12V and 5V internal supply voltage. The red LED is indicating that there is an alarm or any fault, but will also stay on for 4 s after a fault is cleared. When power-up, it will stay on for 4 s to indicate power-up phase, and if there is no faults or alarms, it will go off when 4s elapsed. The yellow LED is flashing to indicate that the command loop internally is running. If all four LEDs are steady on all the time, the unit is in bootloader mode. This mode is only entered if a new firmware is downloaded.

I had problems and tried to download new firmware, now all LEDs are on?

Q. I had problems and tried to download new firmware, now all LEDs are on. Unfortunately, also this afternoon when I was attempting to start the system, I seem to have lost contact with the regulator. I did try to download new firmware to the regulator and failed, though whether this was because I had already lost communication and didn't realize or caused communication to be lost I am not sure. All LEDs are on and nothing in a steady state manner.

A. You NEVER need to download a firmware. The lost communications could depend on many other things. Connect the serial cable, power-up the regulator board, start software, click on the connect button. If everything is correct you will get live data from the board. The board can be powered-up after the software has started as well.

But, if you lost communication DURING download of firmware. You need to download the firmware again. After that you NEVER need to download the firmware again, unless Supercool is advising you to do so.

The best way of downloading the firmware is:

- 1 Start the GUI, but do not start or click on anything
- 2 Power-up the regulator board
- 3 Select "Download firmware" from "Setup" menu. (Do not connect prior this)
- 4 Select file to download and wait until it is ready.
- 5 Now you can press connect button, and you will get live data.

I want to disable the filters in the PID-regulator?

Q. I would like to disable the two filters in the PID-regulator. What values should I put in to achieve this?

A. You enter the value 0.05 in the Tr and Te box to disable the filters.

What are the factors Ki and Kd?

Q. What are the factors Ki and Kd?

A. Ki is the integral constant that determines unit:1/seconds. Kd is the derivative constant thatunit:seconds.

What kind of temperature sensors can I use with the controller?

Q. What kind of temperature sensors can I use with the controller?

A. The controller is made to work with NTC-sensors only. The measuring span ranges from 200 Ohm to 500 kOhm so the sensor need to be working in this area to be useable with the controller. Measurement resolution is 0.1% or 1 Ohm whichever is greatest. To get better resolution the measured resistance should be between 400 and 250.000 Ohms.

Is there need for additional cooling when running at max load?

Q. Do I need additional cooling when running the controller at maximum load?

A. If the controller is mounted in a ventilated area there is no need to add cooling. If it is mounted in a closed compartment, you might need additional cooling. The temperature T4 senses the heat sink temperature for the MosFets and there is an alarm set at 60°C as default. If you go above these 60°C you need additional cooling.

My Laptop does not have a RS232. Can I use USB to connect?

Q. My laptop does not have a RS232-port. Is it possible to connect to the controller through a USB-port?

A. Yes, but you need a USB to RS232-converter like US232B from FTDI (see <http://www.ftdichip.com/Products/EvaluationKits/USB-Serial.htm>)

Is it possible to send new parameters without the software that came with the controller?

Q. Is it possible to send new parameters without using the software that came with the controller?

A. Yes, you can take full command over the controller, adjusting all parameters and issuing all commands available in the software and more.... See the document [PR-59 Serial Command Interface Manual](#) that you can download from our web site www.lairdthermal.com

Can I set multiple set points in the controller?

Q. Can the controller handle multiple set points?

A. No, the controller is a single set point device. If you want to change the set point you need to either use the GUI or write directly to the corresponding register through the RS232.

Can the controller handle voltages above 30V?

Q. Is it possible to work at a higher voltage than 30 VDC?

A. The controller is designed for maximum 30VDC. We do not recommend to use voltages higher than that.

I cannot get a connection to the controller?

Q. I cannot get a connection in LT_Interface to the controller.

A. Check the following:

1. Check that you have chosen Baudrate 115200 in global setup
2. Check that you have chosen the correct COM-port in global setup. If you do not know, you can try each listed COM-port in the list and try to connect. This should help you find the correct comport setting.
3. Check the wiring between computer and controller. Tx and Rx are easily mixed. Also make sure that the electrical connections are sufficient and that no insulation is clamped in the connection blocks or similar.
4. Check if the PC and the power supply to the PR-59 are powered from different power sockets. If they are, there can be ground loops generating electrical noise that is disrupting communication.
5. Check if the communication works with a terminal software. Use following settings:

- Baudrate 115200
- Databits 8
- Parity none
- Stopbits 1
- Flowcontrol none

If you connect and issue the command \$v and then press enter you should get a response like: SC_v2.6.23 SSCI_v1.6d if the communication is ok. If this works and LT_Interface does not connect, try to switch off all other applications on your computer and try again. It might be that the computer does not have time enough to keep the communication going.

About Laird Thermal Systems

Laird Thermal Systems develops thermal management solutions for demanding applications across global medical, industrial, transportation and telecommunications markets. We manufacture one of the most diverse product portfolios in the industry ranging from active thermoelectric coolers and assemblies to temperature controllers and liquid cooling systems. Our engineers use advanced thermal modeling and management techniques to solve complex heat and temperature control problems. By offering a broad range of design, prototyping and in-house testing capabilities, we partner closely with our customers across the entire product development lifecycle to reduce risk and accelerate their time-to-market. Our global manufacturing and support resources help customers maximize productivity, uptime, performance and product quality. Laird Thermal Systems is the optimum choice for standard or custom thermal solutions. Learn more by visiting www.lairdthermal.com.

Contact Laird Thermal Systems

Have a question or need more information about Laird Thermal Systems? Please contact us via the web www.lairdthermal.com

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