

Time – Temperature Controller for **PicoTrace** Safety Hot Plates

More safety of hot plates by separating their temperature controllers

In ultra trace element and isotope analysis, hot plates usually come into play at the end of an expensive and time-consuming preparation process. If they are used in a corrosive atmosphere over a long period of time, they present a special risk for a laboratory. Often they are the source of a fire, because of the sensibility of the integrated temperature controller. Since many laboratories are equipped with highly sophisticated instrumentation, even a small fire may cause tremendous damage and costs. Besides, the contamination of the laboratory will be a great problem.

The demands on temperature controllers are rather different:

- Very often a preset temperature should hold tolerating a large scale of deviation
- If temperature related reactions have to be controlled, the preset temperature should be stable within small limits
- Special methods, like different digestion techniques, need time related temperature programs with a number of well defined segments.

PicoTrace Safety Concept for hot plate temperature controllers

- The temperature controller is separated from the hot plate and positioned outside the aggressive atmosphere.
- The hot plate is controlled by a microprocessor, operating with great precision and highly resistant to wear and tear. The temperature and its regulation are continuously displayed.
- The temperature controller TR 1031 is programmable and used to control complex time related temperature diagrams. **A second Pt100 temperature sensor provides the ability to measure and control an additional temperature (i.e. reaction temperature, distillation temperature)**
- The reliable control of the temperature guarantees reproducible conditions for chemical reactions.
- Both, controller and hot plate are supplied with independent temperature limitation switches.
- The controller is at least twice protected against overriding a set temperature.
- If its safety elements fail, three independent temperature limitations of the hot plate will react successively. Two of them will be reset, if the temperature of the hot plate has decreased 6 to 10°C. A third limitation finally switches off the power supply of the heating circuit. This circuit has to be reactivated manually after a check of the system.
- The safety functions can be easily checked.

The price for this technical solutions appears to be high. However, in the face of the potential danger emanating from traditional hot plates, it is economical. This high safety standard is absolutely necessary if perchloric acid is involved in your preparations.

Wolfsgarten 7, D-37120 Bovenden

FON: +49 - (0)5594 - 9 31 31

FAX: +49 - (0)5594 - 9 31 90

e-mail: info@picotrace.de

internet: www.picotrace.de

Temperature Controller TR 1040

This controller is equipped with an additional Pt100 temperature sensor. Beside the controlling of the hotplate, a second temperature may be measured (i.e. the temperature of the liquid during subboiling distillation or the reaction temperature during acid digestion of samples).

The temperature controller is installed in a stable housing. It may be easily removed if any service is necessary. An electronic power switch, the main switch and the main fuse are positioned at the front panel. The power connectors, the line of the thermocouple and the power connections to the hot plate are at the rear panel.

The unit is programmable. Up to 9 programs may be stored with up to 19 related values for time and temperature.

Please remind: If the controller has to be positioned more than 2 meters away from the hot plate, the desired length of the appropriate cables should be mentioned with your order.

Technical data:

Dimensions:	L: 260 mm W: 260 mm H: 160 mm
Weight:	5 kg or less (metal housing)
Current:	up to 3000 W / 220-250 V (depending on the hot plate used)
Range with Pt100:	20 to 700 °C
Range with PicoTrace Hot Plates	20 to 250 °C (Because PTFE and PFA is used as coating and isolating material)