

First High-Current Addition to the Meerstetter TEC-Family

(Rubigen / July 2012) Meerstetter Engineering expands its newly developed family of full digital TEC controllers for high-precision OEM temperature control applications by the TEC-1123 model. The third member of the Meerstetter TEC-Family delivers ± 16 A / ± 19 V.

All TEC-Family Peltier controllers feature a 'no-compromise' design that is built from ground up around four core elements: low ripple power supply, high precision temperature acquisition, intelligent MCU control and comprehensive interfacing/safety features.

The current lineup of compact OEM TEC controllers consists of single (TEC-1089) and dual channel (TEC-1122) devices, the latter one now available as the new high-current variant TEC-1123. The base models feature true bipolar ± 10 A / ± 19 V output per device/channel, which can be paired to yield up to ± 20 A at low ripple. The high-current version delivers ± 16 A / ± 19 V for a maximum of ± 32 A total current. Because of highly efficient architecture, components and control signals, device cooling over the base plate is sufficient even for permanent operation at full load. The dual channel members of the TEC-Family of TEC controllers are the ideal complement to the Meerstetter LDD-Family range of advanced laser diode drivers (such as the LDD-1121), with shared Platform Bus and identical physical dimensions.

All TEC-Family models offer 0.001 °C resolution primary object temperature acquisition using Pt100, Pt1000 or NTC probes in 2- or 4-wire configuration. Auxiliary temperature input(s) allow monitoring the heat sink temperature, which information is internally used to optimize cooling/heating power in real time. Sensor characteristics are linearized using third order polynomials (PTCs) or according to the Steinhart-Hart equation for thermistors (NTC), starting from firmware version 0.7. All analog temperature input circuitry is factory-calibrated to ensure maximum repeatability and precision. Long-term stability well better than 0.01 °C has been demonstrated under various operating conditions. TEC devices are driven by a powerful MCU (with FPU) and extremely versatile firmware, taking care of sensor data conditioning, PID control, nominal value ramping, Peltier element modeling, system diagnosis, etc. All configuration and safety settings can be read and written by USB and RS485. Some features of the TEC-Family digital temperature controller are readily customizable: Reverse polarity protection, temperature measurement ranges and hardware, digital lines for control, diagnosis and communication protocols, etc. Finally, a convenient PC-software and a comprehensive user manual are shipped with the controllers, allowing for straightforward configuration, commissioning and system integration of these affordable high-performance OEM TEC controllers.

Meerstetter Engineering is a family-owned electronics engineering company, developing and manufacturing power electronics, high-voltage technology and embedded systems. With laser-electronics as its specialty, Meerstetter Engineering also consults clients. e.g. to help them finding a custom laser solution.

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