LDT 5412

Thermoelectric Temperature Controller

Product Features

- High-stability temperature control within 0.01°C
- Hybrid P-I control loop for fast settling time
- Three display modes provide easy operation
- Application flexibility through user-set controls and limits

Designed to be economical and flexible, the LDT-5412 Thermoelectric Temperature Controller offers a stable, low-noise bipolar output and is optimized for the temperature control of laser diodes and IR photodetectors. The instrument controls and displays thermistor sensor resistance while delivering constant current to a thermoelectric module. The unit's hybrid proportional-integral control loop offers fast settling times with a typical temperature stability of 0.01°C.

Low-cost, high-stability thermoelectric temperature control

ILX Lightwave
Photonic Test & Measurement Instrumentation

LDT 5412

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Easy operation

The intuitive front panel features a highly visible LED display, which has three display modes for easy operation. (1) Set Resistance, which displays the set-point resistance (temperature) level. (2) Actual Resistance, which displays the actual resistance of the thermistor sensor. (3) TE Current, which displays the drive current to the TE module.

Two visual fault indicators located on the front panel provide immediate information of fault conditions. The OPEN THERM indicator lights when the connection to the thermistor sensor is open. When this occurs, the unit's output automatically shuts off. The LIMIT indicator lights whenever the output is actively limited to the user-set, current limit value.

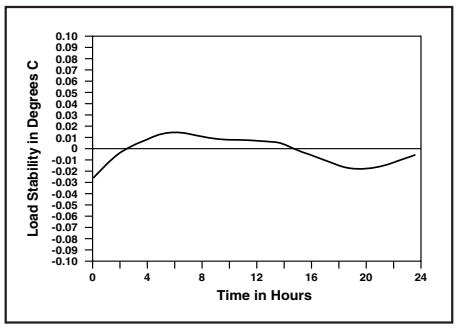
Application flexibility

The incorporation of user-selectable thermistor source currents of 10 µA and 100 µA ensures versatility over a wide range of temperatures and applications. This allows the LDT-5412 to operate over a thermistor control range of 10 Ω to 200 kV. For a typical 10 kΩ thermistor, this corresponds to a temperature range of -20°C to 50°C. Other temperature ranges are possible with different thermistors.

The LDT-5412 allows the user to bypass the internal set resistance function of the front panel knob and externally connect a resistor of known value. This is convenient for reproducing the same temperature quickly and accurately.

In addition, the LDT-5412 optimizes slew rate and settling time. Adjustment is easy with the rear-panel GAIN control. For automated testing, or to remotely compute actual temperature, the 5412 also offers an analog voltage output that corresponds to the thermistor resistance.

The unit's output can be current limited anywhere within its 0-2 A range by using the recessed front panel LIMIT control knob. During operation, the thermoelectric module current is unconditionally held to the set limit value, ensuring the TE module cannot be overdriven.



With a typical drift within 0.01°C over a 4 hour period, the 5412 out-performs similar thermoelectric temperature controllers.

Specifications

OUTPUT

Output Type:	Bipolar current source
Current Range:	–2 to 2 A, floating
Compliance Voltage:	>2 V, DC

DISPLAY

Type:	3.5-digit, green LED		
	10 µA	100 µA	TE Current
Maximum Reading:	199.9 kΩ	19.99 kΩ	1.99 A
Resolution:	0.1 kΩ	0.01 kΩ	0.01 A
Accuracy:	±0.5 kΩ	±0.05 kΩ	±0.05 A

CURRENT LIMIT

Range:	0–2 A
Accuracy:	±0.25 A

ACTUAL R MONITOR

	10 µA	100 µA
Output:	100 kΩ/V	10 kΩ/V
Accuracy:	±5%	±5%

GENERAL

AC Power:	100–120, 220–240 VAC, 50–60 Hz
Size (HxWxD):	267 mm x 140 mm x 66 mm,
Weight:	1.8 kg (4 lbs)
Operating Temperature:	0°C–50°C
Storage Temperature:	-40°C to 70°C
Warm-up:	1 hour for rated accuracy
Output Connector:	15-pin D-sub connector
Reference Input:	BNC connector

ORDERING INFORMATION

LDT-5412	Thermoelectric Temperature Controller (4 W, Includes one TS-510 Thermistor)
CC-501S	TE Controller/Unterminated Interconnect Cable
CC-505S	TE Controller/Laser Diode Mount Interconnect Cable
TS-510	10 kΩ Calibrated Thermistor (±0.2°C)
TS-520	10 kΩ Uncalibrated Thermistor (±1.5°C) (-20°C to 50°C)
TS-521	Uncalibrated 5 kΩ Thermistor (±1.5°C) (-45°C to 30°C)
TS-523	Uncalibrated 20 kΩ Thermistor (±1.5°C) (-10°C to 70°C)
TS-525	Uncalibrated 100 kΩ Thermistor (±1.5°C) (10°C–110°C)
UCA-350	Unipolar Heater Control Adapter

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notification and without liability for such changes.

ILX Lightwave
Photonic Test & Measurement Instrumentation
P.O. Box 6310, Bozeman, MT 59771 • FAX: 406-586-9405
www.ilxlightwave.com

For information call
1-800-459-9459
International Inquiries: 406-586-1244
email: sales@ilxlightwave.com

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