

# LDT 5412

## Thermoelectric Temperature Controller

### Product Features

High stability temperature control within 0.01°C

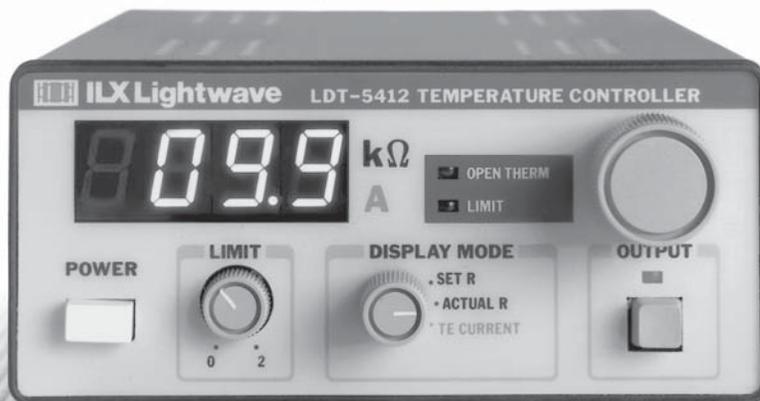
Hybrid P-I control loop for fast settling time

Three display modes provide easy operation

Application flexibility through user-set controls and limits

User-selectable thermistor current

Designed to be economical and flexible, the LDT-5412 Thermoelectric Temperature Controller offers a stable, low noise bipolar output and is optimized for controlling the temperature of laser diodes and photodetectors. The instrument controls and displays thermistor resistance while delivering bipolar 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**  
Laser Diode Instrumentation & Test Systems

# LDT 5412

## Thermoelectric Temperature Controller

### 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 setpoint resistance (temperature) level, (2) Actual Resistance, which displays the actual resistance of the thermistor sensor, and (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

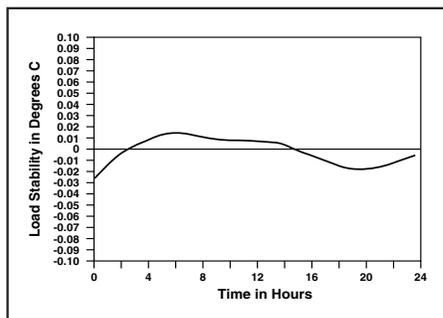
The incorporation of user-selectable thermistor source currents of 10 $\mu$ A and 100 $\mu$ A ensures versatility over a wide range of temperatures and applications. This allows the LDT-5412 to operate over a thermistor control range of 10 $\Omega$  to 200k $\Omega$ . For a typical 10k $\Omega$  thermistor, this corresponds to a temperature range of -20 $^{\circ}$ C to 50 $^{\circ}$ 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 LDT-5412 also offers an analog voltage output that corresponds to the thermistor resistance.

The unit's output can be current limited anywhere within its 0-2A 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.

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



With a typical drift within 0.01 $^{\circ}$ C over a 4 hour period, the LDT-5412 out-performs similar thermoelectric temperature controllers.

## Specifications

### OUTPUT

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

### DISPLAY

Type: 3.5-digit, green LED

	10 $\mu$ A	100 $\mu$ A	TE Current
Maximum Reading:	199.9k $\Omega$	19.99k $\Omega$	1.99A
Resolution:	0.1k $\Omega$	0.01k $\Omega$	0.01A
Accuracy:	$\pm$ 0.5k $\Omega$	$\pm$ 0.05k $\Omega$	$\pm$ 0.05A

### CURRENT LIMIT

Range: 0-2A  
Accuracy:  $\pm$ 0.25A

### ACTUAL R MONITOR

	10 $\mu$ A	100 $\mu$ A
Output:	100k $\Omega$ /V	10k $\Omega$ /V
Accuracy:	$\pm$ 5%	$\pm$ 5%

### GENERAL

AC Power: 100-120, 220-240VAC, 50-60Hz  
Size (HxWxD): 267mm x 140mm x 66mm,  
10.5" x 5.5" x 2.6"  
Weight: 1.8kg (4lbs)  
Operating Temperature: 0 $^{\circ}$ C-50 $^{\circ}$ C  
Storage Temperature: -40 $^{\circ}$ C to 70 $^{\circ}$ C  
Warm-up: One-hour for rated accuracy  
Output Connector: 15-pin D-sub connector  
Reference Input: BNC connector

### ORDERING INFORMATION

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

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