

LDS100 Differential Sources

$\pm 0.001^{\circ}\text{C}$ STABILITY
PHOTONICS CIRCLE OF EXCELLENCE AWARD WINNER

System Use and Description

The *EOI* LDS series of differential temperature sources create precise, adjustable thermal contrast patterns primarily in testing and characterization of IR imaging systems.

The LDS Series features set point resolution of 0.001°C and stability of $\pm 0.001^{\circ}\text{C}$. These exceptional capabilities enable accurate evaluation of the most sensitive IR systems.

Configuration

These sources are available in stand alone configuration or integrated into one of the many Target Projectors/Simulators and Automatic Test Stations *EOI* offers. Source sizes (target area with 15°FOV) range from 1.8" x 1.8" to 12" x 12".

The optional MicroCavity[®] emitting surface provides a significant improvement in effective emissivity.



Controller

Each Laboratory Differential Source is supplied with a 19" rack mount digital controller. Operated manually from the front panel keypad or automatically using any of the four built in computer interfaces, this versatile controller also controls all optional equipment.



Menu Selections Include:

- Temperature Setting
- Control Mode Set
 - Differential Mode
 - Absolute
 - Differential Mode
 - Effective Differential
- Display Resolution
- K, °C, °F
- Remote/Local Control
- Ready Window Tolerance
- Interface Parameters
- Power On Configuration
- Self Test
- Calibration:
 - Access by User Assigned Password

Slew Control

A remote hand held controller box is included which may be used to facilitate observer optimization while measuring MRTD.

Differential Temperature Mode

Temperature control of the thermal contrast between controlled surface (source) and target.

Absolute Temperature Mode

Control of source at absolute temperatures.

Effective Differential Mode

Compensation for emissivity differences or losses in adjunct optical systems so that zero differential temperature corresponds to zero radiometric contrast.


Computer Interfaces

Complete computerized control of the system is available through built-in interfaces.

- IEEE 488
- RS-232
- RS-422
- RS-485

All four interfaces are resident in controller. The IEEE 488 and any one of the RS formats may be used at the same time.

Calibration

Each LDS100 System is calibrated at EOI prior to shipment. Recommended calibration cycle is 6 months. Calibration is traceable to . Calibration tables are stored in memory and are easily updated via the front panel keypad.

Targets

An extensive list of standard four bar, slit and circular targets is available. EOI also supplies custom targets. Custom targets can be any pattern with minimum dimension of 0.001" (0.025mm).

| Specifications | | Slew Rates Including Settling Time to 0.01°C | |
|--|------------------------------|---|-------------|
| Stability | ±0.001°C | | |
| Absolute Temperature Range | 5 to 95°C | | |
| Differential Temperature Range | -20 to +70°C | 0.1 delta T | < = 22 sec. |
| <u>Emissivity</u> Std Emitting Surface MicroCavity™ Emitting Surface | 0.97 ± 0.02 0.995 ± 0.005 | 1.0 delta T | < = 35 sec. |
| Absolute Temperature Accuracy | ±0.015°C | 10 delta T | < = 60 sec. |
| Set Point Resolution | 0.001°C | | |
| Display Resolution | 0.001 or 0.0001 | | |

Source Dimension in Inches

| Model Number | Depth to Emitting Surface | Useable Target Area Inches (mm) | Width | Depth | Height | Optical Height |
|--------------|---------------------------|---------------------------------|-------|-------|--------|----------------|
| | A | B | C | D | E | F |
| LDS100-02 | 1.2 | 1.8 (45) | 3.5 | 6.6 | 4.8 | 2.7 |
| LDS100-04 | 2.7 | 2.9 (73) | 8.0 | 8.5 | 7.5 | 3.5 |
| LDS100-06 | 2.7 | 4.6 (116) | 10.0 | 9.7 | 9.5 | 5.0 |
| LDS100-08 | 2.7 | 6.6 (167) | 12.0 | 10.4 | 11.5 | 6.0 |
| LDS100-10 | 2.7 | 8.6 (218) | 13.0 | 9.4 | 13.5 | 7.0 |
| LDS100-12 | 3.0 | 9.6 (243) | 14.0 | 9.0 | 14.5 | 7.5 |

Power Requirements

The LDS system operates from 100, 120, 220, or 240 VAC \pm 10% (switch selectable), 50/60 Hz. The larger systems require 220V and may require a power amplifier in addition to the controller. Standard cable lengths between controller and blackbody or controller/output stage and output stage/blackbody are 8 feet. The plug-in mains power cable is also 8 feet long.

How to Order

Select desired model and specify option by adding suffix; **Example:** Model LDS100-04/W Differential Source with 4" x 4" clear aperture/2.9"x2.9" useable target area with optional 12 position manual target.

This is data sheet E0662B. Information regarding this data sheet and any requests for data sheets may be directed to eo@electro-optical.com. Specifications subject to change.