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**Data Sheet**

August 14, 2026

ILX LIGHTWAVE

# ILX Lightwave LDC-3744C " Laser Diode Controller, LDC-3700 Series

ILX Lightwave Motion Controllers. Accuracy:  $\pm 0.05\%$  of full scale, Resolution: 40  $\mu\text{A}$  / 80  $\mu\text{A}$  (dual range), Voltage: 10 V maximum.



MODEL

**ILX Lightwave  
LDC-3744C**

CALIBRATION

**Available on  
request**

CONDITION

**Used**

STATUS

**In stock**

RFQ / SKU

**LDC-3744C**

LISTING

<https://aumictechlabs.com/products/ldc-3744c-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

## This unit

The ILX Lightwave LDC-3744C is a precision laser diode controller integrating stable current source and thermoelectric temperature management. It delivers 0–4 A output with  $\pm 0.05\%$  setpoint accuracy and sub-20 ppm/FS short-term stability, supported by dual-range current selection and comprehensive diode protection. The TEC subsystem maintains  $\pm 0.004^\circ\text{C}$  temperature stability over one hour across a  $-100^\circ\text{C}$  to  $+199^\circ\text{C}$  range, accommodating thermistor, IC, and RTD sensors. A photodiode monitoring channel with  $\pm 0.05\%$  setpoint accuracy enables closed-loop optical feedback. Purpose-built for laser characterization, alignment, and manufacturing test, the controller combines low-noise performance ( $< 10\ \mu\text{A}$  ripple, low bandwidth) with high-bandwidth capability (DC to 250 kHz) and includes slow-start, intermittent contact protection, and output shorting relays. GPIB and USB connectivity with LabVIEW drivers support integration into automated test systems. Technical Specifications Laser Current Source

Output range: 0–4 A (dual 2 A / 4 A range) Setpoint accuracy:  $\pm 0.05\%$  of full scale Resolution: 40  $\mu\text{A}$  / 80  $\mu\text{A}$  (dual range) Short-term stability (1 hour):  $< 20$  ppm FS Long-term stability (24 hour):  $< 40$  ppm/ $^{\circ}\text{C}$  or  $< 40$  ppm FS Temperature coefficient:  $< 100$  ppm/ $^{\circ}\text{C}$  or  $< 100$  ppm FS/ $^{\circ}\text{C}$  Noise & ripple (low bandwidth):  $< 10$   $\mu\text{A}$  Noise & ripple (high bandwidth):  $< 20$   $\mu\text{A}$  Bandwidth (low): DC to 10 kHz or DC to 15 kHz (external modulation) Bandwidth (high): DC to 250 kHz Compliance voltage: 10 V maximum Current limit range: 0 to full scale Temperature Controller (TEC) Output:  $-4$  A to  $+4$  A,  $\pm 8$  V maximum Maximum power: 32 W Control range:  $-100$   $^{\circ}\text{C}$  to  $+199$   $^{\circ}\text{C}$  Setpoint resolution: 0.1  $^{\circ}\text{C}$  Stability (1 hour):  $\pm 0.004$   $^{\circ}\text{C}$  Stability (24 hour):  $\pm 0.01$   $^{\circ}\text{C}$  Current limit: 0–4 A with  $\pm 0.1$  A accuracy Current noise/ripple:  $< 1$  mA rms Sensor compatibility: Thermistor, IC, RTD Photodiode Monitoring Measurement range: 5–5000  $\mu\text{A}$  or 0–10,000  $\mu\text{A}$  Setpoint accuracy:  $\pm 0.05\%$  Current accuracy:  $\pm 4$   $\mu\text{A}$  Reverse bias control: 0 to  $-5$  V, user settable Monitor Current Range: 5–10,000 mA Accuracy:  $\pm 4$   $\mu\text{A}$  24-hour stability:  $2 \times 10^{-4}$  Key Features Dual-range current output with selectable 2 A or 4 A maximum Slow-start and intermittent contact protection Output shorting relays for safe diode handling Bipolar TEC driver with independent current limiting 5-digit front-panel display External modulation input (BNC) Compatibility & Integration GPIB and USB interfaces LabVIEW drivers included Power: 100–120 VAC or 220–240 VAC ( $\pm 10\%$ ), 50–60 Hz Dimensions: 127 mm H  $\times$  353 mm W  $\times$  345 mm D Weight: 11.3 kg

## LDC3744C Characteristics / Specifications

| PARAMETER                           | VALUE                                 |
|-------------------------------------|---------------------------------------|
| Laser Output Current Ranges         | 0 to 2000 mA and 0 to 4000 mA         |
| Laser Compliance Voltage            | 0 to 10 V adjustable                  |
| Laser Current Accuracy Setpoint     | plus or minus 0.05% of FS             |
| Laser Current Resolution High Range | 80 uA                                 |
| Laser Current Resolution Low Range  | 40 uA (selection guide)               |
| Noise Ripple                        | less than 10 uA rms (selection guide) |
| Short Term Stability 1 hour         | less than 20 ppm                      |
| Long Term Stability 24 hours        | less than 40 ppm                      |
| Modulation High Bandwidth           | DC to 250 kHz                         |
| Modulation Low Bandwidth            | DC to 10 kHz                          |
| Modulation Transfer Function Ranges | 200 mA/V and 400 mA/V                 |
| Modulation Input                    | 0 to 10 V, 1 kOhm                     |
| Forward Voltage Range               | 0.000 to 10.000 V                     |
| Forward Voltage Resolution          | 1 mV                                  |
| Forward Voltage Accuracy            | plus or minus 2.5%                    |
| Photodiode Current Range            | 0 to 10000 uA                         |
| Photodiode Current Resolution       | 1 uA                                  |
| Photodiode Current Accuracy         | plus or minus 4 uA                    |
| Photodiode Reverse Bias             | 0 to 5 V                              |
| Optical Power Display Range         | 0.00 to 5000.0 mW                     |
| Optical Power Resolution            | 0.1 mW                                |
| Output Current Display Accuracy     | plus or minus 0.1% FS                 |
| TE Current Range                    | -4.00 to +4.00 A                      |
| TE Voltage Range                    | -8.0 to +8.0 V                        |
| TE Output Power                     | 32 W                                  |

| PARAMETER                                | VALUE                                                       |
|------------------------------------------|-------------------------------------------------------------|
| TE Current Noise Ripple                  | less than 1 mA rms                                          |
| Temperature Control Range                | -100.0 C to +199.9 C                                        |
| Temperature Short Term Stability 1 hour  | less than 0.004 C                                           |
| Temperature Long Term Stability 24 hours | less than 0.01 C                                            |
| TEC Current Limit Accuracy               | plus or minus 0.1 A class listing                           |
| Display Type                             | 5-digit green LED (LASER and TEC)                           |
| Computer Interfaces                      | GPIB and USB                                                |
| Power Requirements                       | 100-115 VAC or 220-240 VAC, 48-66 Hz                        |
| Weight                                   | approx. 25 lbs (11.3 kg)                                    |
| Operating Temperature                    | 0 C to +40 C                                                |
| Storage Temperature                      | -40 C to +70 C                                              |
| Humidity                                 | less than 90% RH non-condensing                             |
| Laser Safety Features                    | key switch, interlock, and output delay (CDRH US21 1040.10) |
| Bandwidth                                | DC to 250 kHz                                               |

# General Specifications & Supplementary Characteristics

| PARAMETER             | VALUE                                                                                                                                                                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage temperature   | 40 C to +70 C                                                                                                                                                                                                                                                                                                              |
| Operating temperature | 0 C to +40 C                                                                                                                                                                                                                                                                                                               |
| Operating Temperature | 0 C to +40 C                                                                                                                                                                                                                                                                                                               |
| Humidity              | less than 90% RH non-condensing                                                                                                                                                                                                                                                                                            |
| Laser Safety Features | key switch, interlock, and output delay (CDRH US21 1040.10) Notes<br>Values are from Newport LDC-3744C product specs, ILX LDC-37×4C<br>user manual, and selection guide. Inventory labels LDC-3742 /<br>LDC3742 withoutCtypically denote current-only B-series cousins; this<br>file is the LDC-3744C controller with TEC. |

# Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

specifications provide 2 A / 4 A current ranges, 10 V adjustable compliance, USB and GPIB interfaces, and typical TEC stability of 0.004 C (1 hour).

Applications

The LDC-3744C is used for higher-current laser diode drive with simultaneous TEC control, constant current or constant power operation, modulated tests to 250 kHz high bandwidth, and automated characterization via USB/GPIB.

Key Features

Dual laser current ranges 2 A / 4 A with adjustable compliance to 10 V

Integrated bipolar 32 W TEC controller

Slow start, adjustable limits, intermittent contact protection, output shorting relays

Constant current low/high bandwidth and constant power modes

External analog modulation

5-digit green LED LASER and TEC displays

USB and GPIB remote interfaces

Technical Specifications

## Technical Specifications

| PARAMETER                           | VALUE                                 |
|-------------------------------------|---------------------------------------|
| Laser Output Current Ranges         | 0 to 2000 mA and 0 to 4000 mA         |
| Laser Compliance Voltage            | 0 to 10 V adjustable                  |
| Laser Current Accuracy Setpoint     | plus or minus 0.05% of FS             |
| Laser Current Resolution High Range | 80 uA                                 |
| Laser Current Resolution Low Range  | 40 uA (selection guide)               |
| Noise Ripple                        | less than 10 uA rms (selection guide) |
| Short Term Stability 1 hour         | less than 20 ppm                      |
| Long Term Stability 24 hours        | less than 40 ppm                      |
| Modulation High Bandwidth           | DC to 250 kHz                         |
| Modulation Low Bandwidth            | DC to 10 kHz                          |
| Modulation Transfer Function Ranges | 200 mA/V and 400 mA/V                 |
| Modulation Input                    | 0 to 10 V, 1 kOhm                     |
| Forward Voltage Range               | 0.000 to 10.000 V                     |
| Forward Voltage Resolution          | 1 mV                                  |
| Forward Voltage Accuracy            | plus or minus 2.5%                    |
| Photodiode Current Range            | 0 to 10000 uA                         |
| Photodiode Current Resolution       | 1 uA                                  |
| Photodiode Current Accuracy         | plus or minus 4 uA                    |

| PARAMETER                                | VALUE                                                       |
|------------------------------------------|-------------------------------------------------------------|
| Photodiode Reverse Bias                  | 0 to 5 V                                                    |
| Optical Power Display Range              | 0.00 to 5000.0 mW                                           |
| Optical Power Resolution                 | 0.1 mW                                                      |
| Output Current Display Accuracy          | plus or minus 0.1% FS                                       |
| TE Current Range                         | -4.00 to +4.00 A                                            |
| TE Voltage Range                         | -8.0 to +8.0 V                                              |
| TE Output Power                          | 32 W                                                        |
| TE Current Noise Ripple                  | less than 1 mA rms                                          |
| Temperature Control Range                | -100.0 C to +199.9 C                                        |
| Temperature Short Term Stability 1 hour  | less than 0.004 C                                           |
| Temperature Long Term Stability 24 hours | less than 0.01 C                                            |
| TEC Current Limit Accuracy               | plus or minus 0.1 A class listing                           |
| Display Type                             | 5-digit green LED (LASER and TEC)                           |
| Computer Interfaces                      | GPIO and USB                                                |
| Power Requirements                       | 100-115 VAC or 220-240 VAC, 48-66 Hz                        |
| Weight                                   | approx. 25 lbs (11.3 kg)                                    |
| Operating Temperature                    | 0 C to +40 C                                                |
| Storage Temperature                      | -40 C to +70 C                                              |
| Humidity                                 | less than 90% RH non-condensing                             |
| Laser Safety Features                    | key switch, interlock, and output delay (CDRH US21 1040.10) |

#### Notes

Values are from Newport LDC-3744C product specs, ILX LDC-37x4C user manual, and selection guide. Inventory labels LDC-3742 / LDC3742 without typically denote current-only B-series cousins; this file is the LDC-3744C controller with TEC.

# Laser Safety

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Laser Safety Features: key switch, interlock, and output delay (CDRH US21 1040.10) Notes Values are from Newport LDC-3744C product specs, ILX LDC-37×4C user manual, and selection guide. Inventory labels LDC-3742 / LDC3742 without typically denote current-only B-series cousins; this file is the LDC-3744C controller with TEC.

## Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: [sales@aumictech.com](mailto:sales@aumictech.com) · +1 (484) 841-9341

### Aumictech

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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.