



### Putting Light to the Test

Cercis Model 520L Universal Reference 904 nm Laser is a handheld instrument used to simulate a pulsed laser for testing of target acquisition devices. It includes eight user-selectable modes—1, 2, 3 kHz and External up to 10 kHz, plus MILES (*Multiple Integrated Laser Engagement Systems*) Codes 0, 27, 29 & 30. Six energy levels are selectable—17.5, 22, 28, 34, 38 & 43  $\mu$ Ergs, and the user may adjust energy output from 1  $\mu$ Erg to 100  $\mu$ Ergs (~0.1 nW to 10 nW). The user can select word sequences (1, 2, 4, 8 or 16 words), and set trigger to send MILES codes in ~1 second intervals.

A diffusing adapter, designed to fit over a domed detector, includes lenses which diffuse the modal scattering of laser output and focus the beam onto the device under test. A detachable FC:FC multimode fiber jumper is included.



### Features

- ◆ FC/PC compatible optical port
- ◆ 904 nm laser diode source, fiber coupled
- ◆ LEDs illuminate at active mode and energy
- ◆ Compact, 3X5X1" plastic, handheld enclosure
- ◆ Internal 9V battery + AC port, 1.3 mm center negative
- ◆ Real keys—all features are key-accessible

### Safety / Service

This source is classified as Class I; it is advisable that a user not stare directly into the output port of the source or diffusing adapter when the power is on. The 904 nm wavelength is invisible, and only can be detected using an optical power meter or infrared-activated sensor.

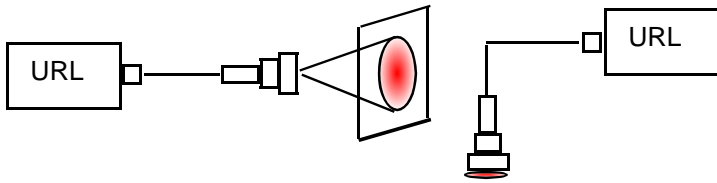
No user serviceable parts inside; consult Cercis.

Model 520L	Units	Typical
<b>Wavelength</b>	<b>nm</b>	<b>904 Fabry-Perot Laser</b>
<b>Wavelength Range</b>	<b>nm</b>	<b>+/-20</b>
<b>Spectral Width (FWHM)</b>	<b>nm</b>	<b>2</b>
<b>Stability</b> 1 hr. max. deviation	<b>dB</b>	<b>&lt;0.1</b>
<b>Mode Select – Adjustable Range</b> (approximate)	<b>nW</b> <b><math>\mu</math>Ergs</b>	<b>0.1 – 10</b> <b>1 - 100</b>
<b>Power—Battery</b> —Optional Adapters A604/A605	<b>V</b>	<b>Requires 1 9 Volt alkaline battery (&gt;30 hrs. life) or optional AC adaptors (neg. center) 120 VAC or 90-264 VAC</b>
<b>Battery Life</b> (approximate) Battery Low	<b>hrs</b>	<b>30-50</b> PWR LED flashes when battery low
<b>External Input</b> TTL signals 2.4 – 5V or 50 ohm	<b>MHz</b>	<b>0 – 10</b>
<b>Auto Shutoff / Shutoff Disable</b>		<b>Unit turns off ~15 min. after last key has been depressed</b> <b>User-selectable disable function</b>
Diffusing Adapter	Units	Typical / Description
<b>Optical Spot Size</b>	<b>cm<sup>2</sup></b>	<b>2.3</b>
<b>Description</b>		<b>Fits over Filtered Photodetector Module</b>
<b>Input Fiber – Core / Cladding</b>		<b>62.5 / 125</b>
<b>Dimensions—Length</b> —Max. Diameter (OD / ID)	<b>mm</b> <b>mm</b>	<b>82</b>

Specifications subject to change without notice.

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## Information

### Calibration

All Cercis Optical Laser Light Sources are calibrated using procedures and equipment traceable to the US National Institute of Standards & Technology (NIST)

### LED Indicators

Green, yellow and red LEDs indicate Power On (Laser Enabled), Mode, and Energy.

### Lasers

All lasers employ an extremely stable fiber coupling scheme, which yields reliable, long-life devices.

### Digital Signal Processing

Proprietary micro control circuitry features digital calibration, and microprocessor control of all 520L functions.

### Modulated Output Modes—Fixed Frequency or MILES Codes

The Model 520L URL uses a low-power pulsing of the laser diode. Select External, 1, 2 (default) or 3 kHz or MILES (0, 27, 29, 30) codes, and energy (17.5, 22, 28, 34, 38, 43  $\mu$ Ergs) level.

### Dust Cap

When the 520L is not in use, the dust cap should be replaced. The cap protects the interface against dirt and scratches. If disconnected from the URL Diffusing Adapter, the jumper dust caps should also be replaced to protect connector endfaces. For shipment, the jumper should be disconnected from the URL.

### Holster for Additional Protection and Convenience

Included with every instrument is a removable protective housing. This molded silicone shell protects against shock in the field, and has a pivoting bale to hold the instrument upright when required. Also, there are holes for a wrist or neck strap.

### AC Adaptors

Center negative adaptors are available for 120 V (Cercis A604) & International 90—264 V AC with interchangeable plugs (Cercis A605).

### Operating Manual

A complete operating manual is provided with each 520L

## Operational & Mechanical Data—URL

<b>Temperature Range</b>		
Operating	C (F)	-15 C to +50 C (20 to 50 F)
Storage	C (F)	-35C to +70 C (20 to 50 F)
<b>Dimensions</b>		
Instrument (with battery)	mm (in.)	Width X Length X Height 70 X 125 X 25 mm (2.75 X 5 X 1 in.)
Shipping		75 X 130 X 40 mm (3 X 5 X 1.5 in.)
<b>Weight</b>		
Instrument (with battery)	g	300 g (10.6 oz.)
Instrument w/ holster	(oz.)	350 g (12.4 oz.)

Subject to change without notice. MADE IN USA 9/04M520L-URL Rev. 0

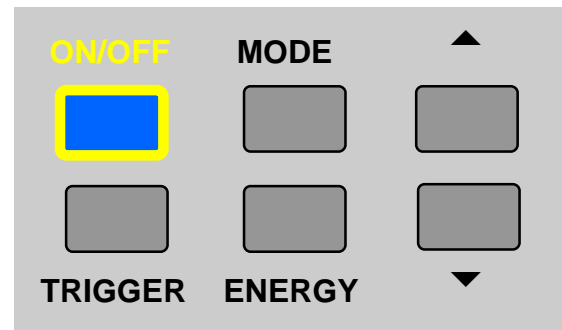
## Front Panel—Cercis LMIS Reference Laser

	EXTERNAL			PWR (BAT)
	1			ADJUST
(kHz)	2			17.5
<b>MODE</b>	3			22 <b>ENERGY</b>
NEAR MISS	(29)			28 ( $\mu$ Ergs)
UNIV KILL	(0)			34
MAN KILL	(27)			38
RESURRECT	(30)			43

POWER	LED on when URL on; blinks if battery low
EXTERNAL	Up to 10 MHz External Input
1, 2, 3 kHz	1, 2 (default), 3 kHz
MILES Words	3 = 1, 2 = 2, 1 = 4, Ext = 8, All = 16 MILES Words
MILES CODES	Near Miss (29), Univ. Kill (0), Man Kill (27), Resurrect (30)
ENERGY	17.5 $\mu$ Ergs (default), 22, 28, 34, 38, 43
ADJUST	Use $\uparrow$ $\downarrow$ keys to increase or decrease calibrated power density (~ range 0.1 nW to 20 nW; 1 to 200 $\mu$ Ergs)

## Keypad—

### Cercis LMIS Reference Laser (URL = Universal Reference Laser)



ON/OFF	Turns URL on; timed on (default). Hold ~1 sec. For NO AUTO SHUTOFF
MODE	Select EXTERNAL, 1, 2 (default) or 3 kHz or MILES Codes—Near Miss, Univ. Kill, Man Kill, Resurrect
MILES CODE	To access 1, 2, 4, 8 & 16 Words, one of the WORD COUNT MILES Code Modes (Near Miss, Univ Kill, Man Kill or Resurrect) must be active, depress & hold MODE key until LED blips, use $\uparrow$ $\downarrow$ keys to select Word
TRIGGER	Activates the MILES Codes (initializes on 2 kHz (LED blips) for calibration then sends MILES Code
CONTINUOUS TRIGGER	For Continuous Trigger, select any MODE (Near Miss, Univ. Kill, Man Kill or Resurrect), then press & hold TRIGGER key ~ 2 sec. (LED next to active Mode will blip). To exit, depress & hold TRIGGER
ENERGY	Default 17.5 $\mu$ Ergs; $\uparrow$ $\downarrow$ to select desired Energy Scroll Keys $\uparrow$ Up, $\downarrow$ Down

Part Number	Ordering Information
520L-9421NF	904nm LD, w/ FC (fixed) optical port
Part Number	Accessory Ordering Information
L113K1-23	Diffusing Adapter + Jumper Cable
A604N	Adapter 120VAC, 9V, 500mA (1.3mm neg. ctr)
A605N	Adapter 90-264 VAC, 9V, 10W (1.3mm neg ctr)