

Cercis 520L(S)

**Universal Reference Laser
(URL) MILES Code Source
and Diffusing Adapter**

Operating Manual

520L-URL MILES Code Reference Laser Light Source, 905 nm

Introduction

The Cercis Model 520L Reference Laser Source provides up to six set power ranges – 17.5, 22, 28, 34, 38 & 43 μ Ergs – plus an adjustable power range. It also includes modulation of 1, 2, & 3 kHz, with an external modulation input up to 10 MHz. MILES codes generated are: Near Miss (29), Universal Kill (0), Man Kill (27), and Resurrect (30) in default 4-Word sequence. The 905 nm laser has a pulsed output – as necessary to generate the MILES codes. MILES Code Word sequences can be changed to 1, 2, 4, 8 or 16. Any MILES Code word sequence can be set to continuously fire (trigger) in approximately 1 second intervals.

The diffusing adapter fits over a filtered detector on a target vest or helmet. It includes a fiber output coupled to a lens and yields approximately a 2.3 cm² spot.

Please read this Operator's Manual to familiarize yourself with the operation and safety procedures for the Model 520L before using the instrument. **IMPROPER OPERATION OR HANDLING OF THIS INSTRUMENT COULD RESULT IN DAMAGE TO THE INSTRUMENT OR DIFFUSING ADAPTER.**

Features

- ◆ FC/PC compatible optical port
- ◆ 905 nm laser diode source
- ◆ LEDs illuminate when laser is activated
- ◆ Compact, 3X5X1" plastic, handheld enclosure
- ◆ Internal 9V battery + 110 VAC (grounded US standard outlet) AC port, 1.3 mm center negative
- ◆ Real keys responsive to light touch; all features are key-accessible

Safety

***** **INVISIBLE WAVELENGTH - DO NOT STARE AT THE OUTPUT PORT BEAM** *****

This source is classified as Class I; however, 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 905 nm wavelength is invisible.

Any operator should fully read, understand, and follow this manual prior to operation of this laser source. At no time should any operator look directly at the optical bulkhead output when the laser is activated. The 905 nm wavelength is invisible to the human eye; light may only be detected using an optical power meter or infrared-activated sensor. Protective eyewear is suggested when working with any operating laser source.

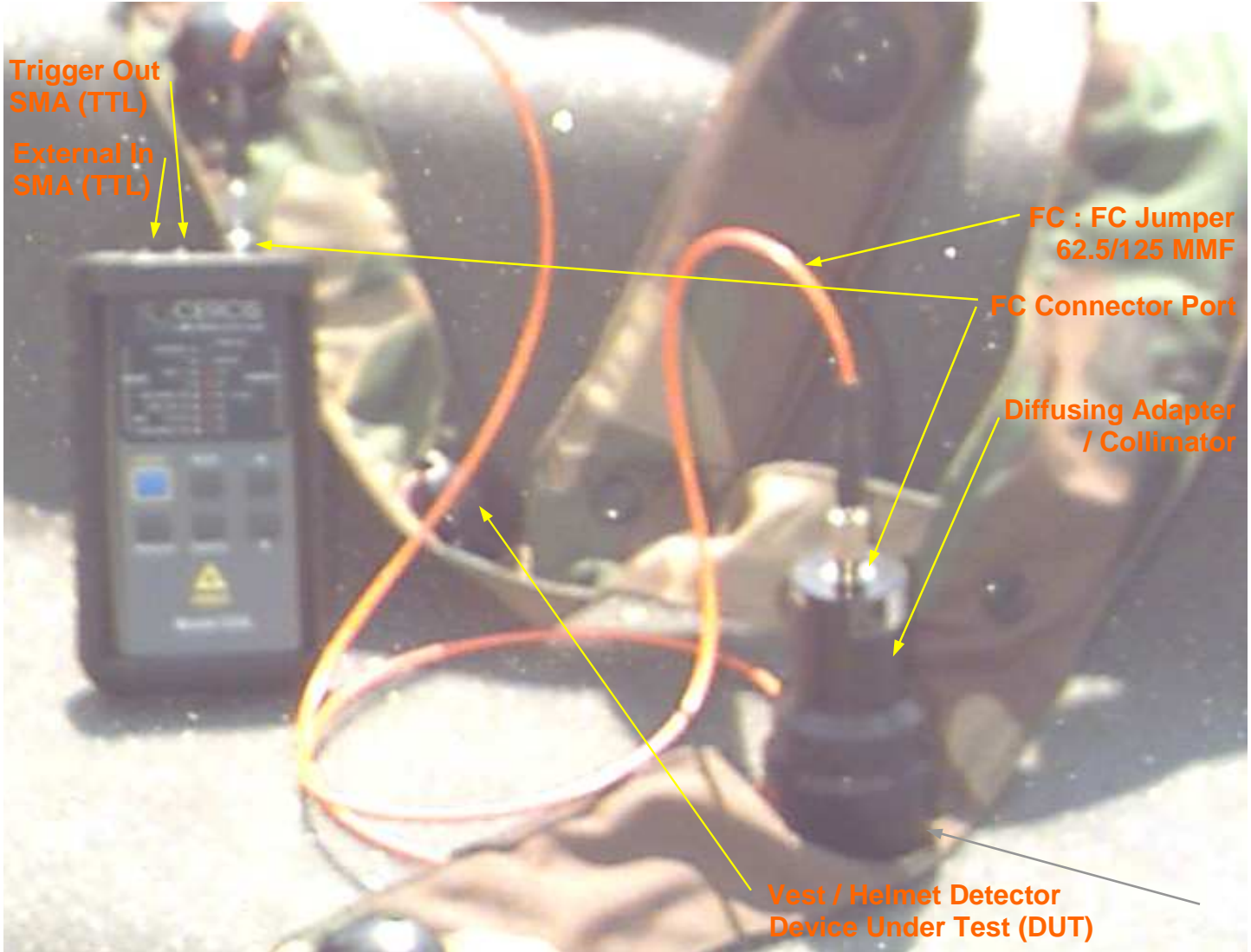
Service

No user serviceable parts inside. Refer servicing to qualified personnel. This unit is a custom design based on Cercis Model 520-Series handheld laser light sources.

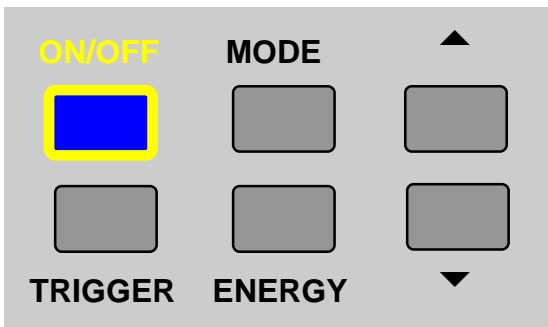
Front Panel—Cercis 520L Reference Laser

Identification

	EXTERNAL	● ●	PWR (BAT)	POWER	LED on when URL on; blinks if battery low
	1	● ●	ADJUST	EXTERNAL	Up to 10 MHz External Input
(kHz)	2	● ●	17.5	1, 2, 3 kHz	1, 2 (default), 3 kHz
MODE	3	● ●	22	<i>MILES Words</i>	<i>Ext = 1, 1 = 2, 2 = 4, 3 = 8, All = 16 MILES Words</i>
NEAR MISS	(20)	● ●	28 (μErgs)	<i>MILES CODES</i>	Near Miss (29), Univ. Kill (0), Man Kill (27), Resurrect (30)
UNIV KILL	(0)	● ●	34	ENERGY	17.5 μErgs (default), 22, 28, 34, 38, 43
MAN KILL	(27)	● ●	38	ADJUST	Use ▲ ▼ keys to increase or decrease calibrated power density (~ range 0.1 nW to 20 nW; 1 to 200 μErgs)
RESURRECT	(30)	● ●	43		



Keypad— Cercis 520L-URL MILES Code (URL = Universal Reference Laser)



ON/OFF	Turns URL on; timed on (default). (Last WORD COUNT selected remains) 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
<i>MILES CODE</i>	<i>To access 1, 2, 4, 8 & 16 Word Counts, 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 ▲ ▼ keys to select Word Count</i>
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 and hold TRIGGER key ~ 2 sec. (LED next to active Mode will blip). To exit, depress & hold TRIGGER
ENERGY	Default 17.5 μErgs; ▲ ▼ to select desired Energy
▲ ▼	Scroll Keys ▲ Up, ▼ Down

Operating Instructions

1) CONNECTOR INPUT/DIFFUSING ADAPTER:

Connect or assure connection of FC/PC or FC/UPC connector to the FC optical port of the source. Connect the opposite end of the jumper to the diffusing adapter by mating to the FC port. Do not over-tighten the FC connector to either port.

The FC connector must be kept clean and free of debris. Use commercially-available connector cleaners like CLETOP or similar, or douse a Kimwipe (or similar) lint-free cloth with ethyl alcohol, and wipe the connector end face to remove dirt, oil or other contaminants. To ship, disconnect the jumper and place the dust cap over the FC port -of the source and of the diffusing adapter - to protect it. Replace the ferrule caps over the connector ferrule at each end of the jumper while not in use; the jumper must not be kinked.

The AR coated lens within the diffusing adapter should be kept clean; it should not be touched. If lens is dirty, spray with ethyl alcohol and swab with lint free cloths to clean.

2) POWER SOURCE (BATTERY / AC):

Be sure 9 Volt battery is properly installed. If AC power (center negative) adapter (Cercis A604N or A605N interchangeable international or equivalent) is used, connect (A604N) to a 110 VAC (90-264 VAC for the A605N) grounded wall outlet.

3) SOURCE ON/OFF KEY:

Switch the power on using the ON/OFF key, a green (PWR) LED will illuminate while the source is on. The laser will also be activated (ON) when the unit is on. The green PWR (power) LED will blink if battery power is low.

AUTO SHUTOFF / NO SHUTOFF: The default is AUTO SHUTOFF which automatically turns off the light source if a key is not depressed within 15 minutes. Depress any button within the 15 min. interval to restart the timer. To set the source to NO AUTO SHUTOFF, hold the ON/OFF key down ~ 1 second. This disables the power saver feature, and the light source will not shutoff until (unless) the battery discharges or an operator pushes ON/OFF. Once turned off, the source will reset to AUTO SHUTOFF mode.

4) MODE KEY:

Select MODE by depressing the MODE key. The unit initializes at 2 kHz, and a green LED will illuminate; the default energy level is 17.5 μ Ergs.

A low frequency APC (automatic power control) circuit is enabled at 1, 2, & 3 kHz settings for calibrated laser output. The APC uses laser back facet monitor photodiode for automatic power control of the laser output, and continuously samples at 2 kHz, except when in 1 or 3 kHz Mode or External Mode.

Any time the URL is turned off, it remains at the last selected Code Word sequence. To change MILES Code Word sequences, refer to instructions below.

By pressing and releasing MODE, the unit will scroll to 3 kHz, then the MILES Codes (Near Miss, Univ. Kill, Man Kill, and Resurrect – each MILES Code is designated by a yellow LED), External, 1 kHz, and back to 2 kHz. The LED beside each MODE will illuminate as it is activated.

5) TRIGGER KEY (MILES CODES):

To activate the selected MILES Codes, press the TRIGGER key.

In MILES Code mode between triggers, there is 2 kHz calibration tone to maintain APC control.

6) ENERGY KEY: Energy default is 17.5 μ Ergs. A red LED will illuminate beside each energy level as the user scrolls through 17.5 (start), 22, 28, 34, 38, 43, and ADJUST.

ADJUST ENERGY:

When ADJUST is activated, the user can depress the up or down (\blacktriangle \blacktriangledown) keys to increase or decrease the calibrated power density. The approximate adjustable laser output range is 0.1 nW to 10 nW (1 to 100 μ Erg).

The ADJUSTED level will be saved until re-adjust is done by the user. If the instrument is turned off with the ON/OFF key, the last ADJUSTED ENERGY level will be saved. When in ADJUST mode, the default power is zero. When unit is turned off, it reverts to default MODE 2 kHz and default ENERGY 17.5 μ Ergs.

7) SMA INPUT / OUTPUT:

OUTPUT: TTL Level compatible output which mirrors the laser driving pulse/laser output level for synchronizing external instruments to the output pulses.

INPUT: 0 – 5 Volt TTL INPUT used to drive the laser with external codes.

8) MILES CODE WORD COUNTS – 1, 2, 4, 8, & 16

In any MODE (Near Miss, Univ. Kill, Man Kill or Resurrect), press and hold the MODE key until all four bottom MILES Code (yellow) LEDs (Near Miss, Univ. Kill, Man Kill or Resurrect) illuminate. Use scroll keys (▲ ▼) to select desired MILES code word count (red LED):

External	=	1 MILES Code Word Count
1 kHz	=	2 MILES Code Word Count
2 kHz	=	4 MILES Code Word Count
3 kHz	=	8 MILES Code Word Count
All (Ext, 1,2,3 kHz)	=	16 MILES Code Word Count

To set Word Count, press and hold MODE key; URL will remain at the selected MILES Code Word Count. To select another Word Count, press and hold MODE key again, use scroll keys to choose another Word Count, then press MODE key to reset. Turning URL off then on will not reset the MILES Code Word sequence.

9) CONTINUOUS TRIGGER

To activate continuous trigger (MILES Codes fired continuously at ~ 1 second intervals), select any MODE (Near Miss, Univ. Kill, Man Kill or Resurrect) then press and hold TRIGGER key ~ 2 seconds. The LED next to the activated MODE will flash blink to indicate that Continuous Trigger has been activated.

To exit Continuous Trigger and return to Single Trigger, press and hold TRIGGER key ~ 2 seconds. The LED adjacent to the activated MILES Code (Near Miss, Univ. Kill, Man Kill or Resurrect) will blink once to indicate that Single Trigger has been restored.

EXAMPLES:

1) Setting Universal Kill Mode & Resurrecting:

To set MODE at Universal Kill (0), depress the MODE key until the yellow LED beside “Universal Kill” illuminates. Press TRIGGER to activate the Universal Kill MILES Code.

The diffusing adapter should be in place over the filtered detector being tested.

The vest should beep and readout DEAD.

To resurrect, use the MODE key to scroll down to Resurrect (30), and again press the TRIGGER key. Again, the vest should beep and readout ALIVE.

2) Selecting MILES CODE WORD COUNT = 8:

Press and hold the MODE key (all 4 yellow LEDs beside MILES Codes illuminate) and one green LED beside currently selected Word Count will illuminate—if set at 4 Words, LED 2 kHz will illuminate). Scroll down ▼ to 3 kHz and press MODE key to set at 8 Words. (Note: Red LED will illuminate at selected energy level.)

3) Setting Continuous Trigger to Fire MILES Code “Man Kill”:

Illuminate the yellow LED beside Man Kill then press TRIGGER key ~ 2 secs. The LED will flash blink (blip). The Man Kill MILES Code will then fire continuously (~ 1 sec. intervals) until the user exits.

Specifications

Model 520L	Units	Typical
Wavelength	nm	904 Fabry-Perot Laser
Wavelength Range	nm	+/-20
Spectral Width (FWHM)	nm	2
Stability 1 hr. max. deviation	dB	<0.1
Source Fiber Pigtail—Core/Cladding	µm	5/125
Mode Select – Adjustable Range (approximate)	nW	0.1 – 10 1 - 100
Battery Life (approximate) Battery Low	hrs	7—10 PWR LED flashes when battery low
External Input TTL signals 2.4 – 5V or 50 ohm	MHz	0 – 10
Diffusing Adapter	Units	Typical / Description
Optical Spot Size	cm²	2.3
Description		Fits over Filtered Photodetector Module 12959442
Input Fiber – Core / Cladding	µm	62.5 / 125

Warranty / Repairs

Cercis makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that the product be free from defects in materials and workmanship: 1 year limited warranty (unless otherwise specified) for instrument.

Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alternations made outside our facilities or to a lack of maintenance. Cercis limits all implied warranties to the period specified above from the date the product was purchased. Except as stated herein, any implied warranties of merchantability and fitness are excluded. Cercis shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damage arising from the use of its products. To take advantage of this warranty, the product must be approved for return for examination, postage prepaid, to Cercis. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, Cercis will either repair or replace the product with a product of equal or higher performance. If it is determined that the defect resulted from causes not within the scope of Cercis warranty, then the purchaser must bear the cost of repair and return shipping.

Cercis, Inc.
25 Rt. 31 South, Ste. C 2030
Pennington, NJ 08534
TEL: 609-737-5120
FAX: 609-564-0546
URL: www.cercis.com
EMAIL: info@cercis.com

This operating manual is provided for use with any Cercis Universal Reference Laser Sources and Diffusing Adapters, including the following 1st articles:

URL Serial Numbers:

224085, 224086, 224087, 224088, 224089, 224090, 224091, 224092, 224093, 224094

Diffusing Adapter Serial Numbers:

711060, 711088, 711089, 711090, 711091, 711092, 711093, 711094, 711095, 711096