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DUAL WAVELENGTH LED SOURCE

Features:

- Rugged, compact, lightweight, dual wavelength LED source
- 850, 1300, and 1550 nm wavelengths available
- Long term stability
- Low temperature dependence
- Selectable internal modulation for CW, 270 Hz, 1 kHz, or 2 kHz
- Auto power-down mode
- Push-and-hold power keys to prevent accidental activation
- Low battery indicator
- Long battery life
- May be operated from AC power mains with optional adaptor
- Dust caps attached to the case
- Low cost

Dual LED Source

Applications:

- Installing and maintaining fiber optic networks
- Testing multimode fiber cables
- Testing passive optical components
- Verifying patchcord specifications
- Measuring insertion loss
- Calibrating optical receivers
- Laboratory research

Product Description:

The OZ Optics Dual Wavelength LED Source consists of two sources in a single, lightweight package, and is ideal for multimode fiber testing. Either one of the two outputs can be activated from the front panel. The user interface is controlled by a microprocessor and the optical outputs are thermally stabilized.

Indicator LEDs and simple keys on the front panel provide easy operation. Two LEDs indicate the wavelength. Three LEDs indicate the modulation frequency: 270 Hz, 1kHz, or 2 kHz. When all of these three LEDs are off, the output is continuous. The front panel keys are used to select on, off, modulation, and wavelength.

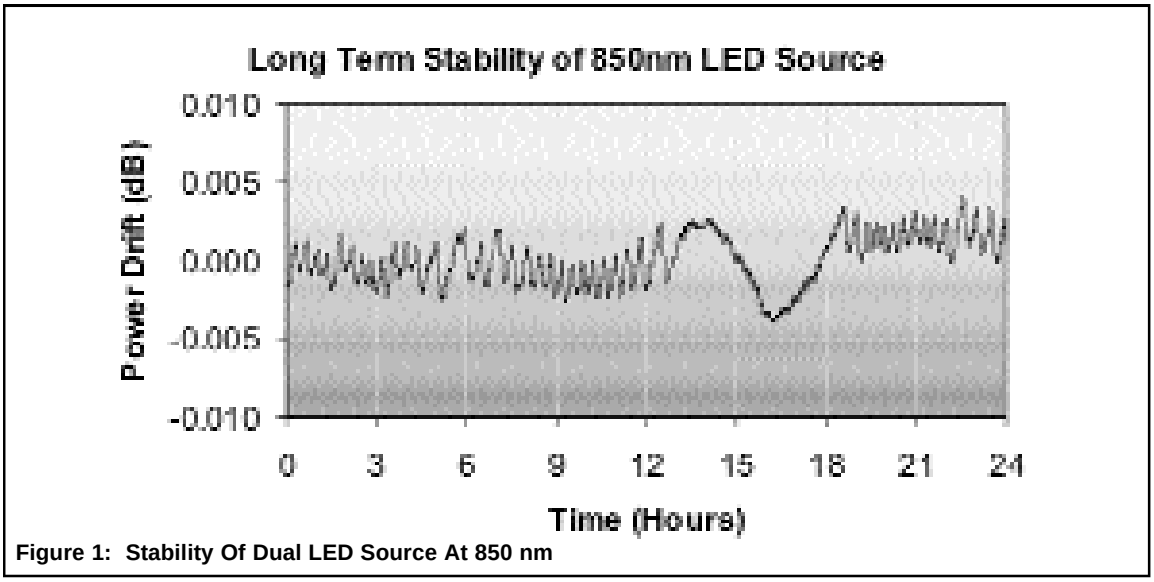

Figure 1: Stability Of Dual LED Source At 850 nm

Ordering Information For Standard Parts:

Bar Code	Part Number	Description
11441	DLEDS-850/3-1300/3	Dual LED Source with 850 and 1300 nm wavelengths, Standard Flat, Super and Ultra NTT-FC/PC receptacles.
13569	DLEDS-850/SC-1300/SC	Dual LED Source with 850 and 1300 nm wavelengths, SC receptacles.
13570	DLEDS-850/8-1300/8	Dual LED Source with 850 and 1300 nm wavelengths, ST receptacles.
13571	DLEDS-1300/3-1550/3	Dual LED Source with 1300 and 1550 nm wavelengths, Standard, Super and Ultra NTT-FC/PC receptacles.
13572	DLEDS-1300/SC-1550/SC	Dual LED Source with 1300 and 1550 nm wavelengths, SC receptacles.
13573	DLEDS-1300/8-1550/8	Dual LED Source with 1300 and 1550 nm wavelengths, ST receptacles.
13574	DLEDS-850/3-1550/3	Dual LED Source with 850 and 1550 nm wavelengths, Standard, Super and Ultra NTT-FC/PC receptacles.
13575	DLEDS-850/SC-1550/SC	Dual LED Source with 850 and 1550 nm wavelengths, SC receptacles.
13576	DLEDS-850/8-1550/8	Dual LED Source with 850 and 1550 nm wavelengths, ST receptacles.
11147	AC-5VDC-NA	5 VDC power supply adaptor, for North America.
12388	AC-5VDC-EU	5 VDC power supply adaptor, for Europe.
13577	AC-5VDC-UK	5 VDC power supply adaptor, for UK.

Standard Product Specifications:

Parameter		Specification		
Wavelength (nm)		850	1300	1550
Wavelength accuracy		±20 nm (maximum)	± 40 nm (maximum)	
Line width		50 nm, typical	30 nm, minimum 80 nm, maximum	
Output power	Using 50/125 MM fiber	-17 dBm (20 µW), typical -20 dBm (10 µW), minimum	-17 dBm (20 µW), typical -20 dBm (10 µW), minimum	
	Using 9/125 SM fiber	n/a	-30 dBm (1µW) Typical	
Stability [1]	After 30 minutes warm-up	±0.01 dB	±0.03 dB	
	After 3 hours warm-up	±0.005 dB	±0.01 dB	
Temperature coefficient (-20 to 50 °C)		0.04 dB/°C, maximum	0.04 dB/°C, maximum	
Connector receptacles		Super PC or Ultra PC Polished NTT-FC/PC, AT&T-ST, and SC.		
Internal modulation		CW, 270 Hz, 1 kHz, and 2 kHz		
Power supply		AA alkaline batteries (two), for more than 40 hours of operation. Optional AC/DC adaptor		
Temperature	Operating:	-20 to 50 °C		
	Storage:	-35 to 70 °C		
Dimensions (W x L x H)		65 x 130 x 23 mm (2.5 x 5.12 x 0.9 in.)		
Weight, with batteries		158 g (0.35 lb.)		

Note:

[1] Over 24 hours, at 23 °C ±1 °C, after 30 minute warm-up, using 50/125 multimode fiber with NTT- FC/PC connector

Ordering Examples For Standard Parts:

1. A customer in the USA needs an 850 and 1300 nm dual wavelength LED source, with FC/PC receptacles. He also wants an AC power supply adaptor.

Bar Code	Part Number	Description
11441	DLEDS-850/3-1300/3	Dual LED Source with 850 and 1300 nm wavelengths, receptacles for Standard Flat, Super and Ultra NTT-FC/PC.
11147	AC-5VDC-NA	5 VDC power supply adaptor, for North America.

2. A customer in Europe needs a 1300 and 1550 nm dual wavelength LED source, with an SC receptacle. He also wants an AC power supply adaptor.

Bar Code	Part Number	Description
13572	DLEDS-1300/SC-1550/SC	Dual LED Source with 1300 and 1550 nm wavelengths, SC receptacles.
12388	AC-5VDC-EU	5 VDC power supply adaptor, for Europe.

Ordering Information For Custom Parts:

OZ Optics welcomes the opportunity to provide custom designed products to meet your application needs. As with most manufacturers, customized products do take additional effort so please expect some differences in the pricing compared to our standard parts list. In particular, we will need additional time to prepare a comprehensive quotation, and lead times will be longer than normal. In most cases non-recurring engineering (NRE) charges, lot charges, and a 5 piece minimum order will be necessary. These points will be carefully explained in your quotation, so your decision will be as well-informed as possible. We strongly recommend buying our standard products.

Questionnaire For Custom Parts:

1. What are the wavelengths required for the LED sources?
2. What is required maximum output power of each LED source?
3. What type of receptacles are required for each LED source?

Dual LED Source

DLEDS-W_1/X_1-W_2/X_2

W_1,W_2 = LED source wavelength in nm(W_1< W_2):
- 850 = 850nm
- 1300 = 1300nm
- 1550 = 1550nm

X_1,X_2 = Connector receptacle:
- 3 = Flat, Super or Ultra NTT-FC/PC
- 8 = AT&T-ST
- SC = SC
- 1.25U = Universal receptacle for 1.25 mm diameter ferrule connectors (MU, LC, etc.)
- 2.5U = Universal receptacle for 2.5 mm diameter ferrule connectors (FC, ST, SC, etc.)

Contact OZ Optics Limited for custom requirements.

Ordering Examples For Custom Parts:

A customer in North America needs an 850/1300 nm dual wavelength LED source, with an ST receptacle on the 850nm source, and an FC connector on the 1300nm source. He also wants an AC adaptor.

Bar Code	Part Number	Description
N/A	DLEDS-850/8-1300/3	Dual LED Source with an 850nm LED, ST receptacle, and a 1300nm source with a receptacle for Standard, Super, and Ultra NTT-FC/PC connectors.
11147	AC-5VDC-NA	5 VDC power supply and adaptor for North America.

Frequently Asked Questions (FAQs):

Q: Can I operate both sources simultaneously?

A: No, only one source at a time can be active.

Q: Do you offer 1.25mm and 2.5mm ID universal adaptors for your sources?

A: We can, but we do not recommend them. Universal adaptors do not have a retaining mechanism, so the fiber can fall out if you do not hold it in place. In addition, the lack of a retaining mechanism will cause the coupled power from the source to be unstable. Universal receptacles can be used in applications where you are not concerned with the power stability, such as visible sources for fault location, or PFOSS or HIPFOSS polarized sources for PM fiber patchcords

Q: What is the output power of the LED sources?

A: Typical coupled power is 20 µW using 50/125um(0.22NA) multimode fiber.

Q: Can I use a DLEDS to test a singlemode system and what power level can be coupled to singlemode fiber?

A: You can use the source with singlemode fiber, but it is generally not recommended because of the low coupling efficiency into singlemode fiber; typically 1-2µW for 9/125um fiber. Normally, a laser diode source would be used to test a singlemode system. However, if a non-coherent source is required then a DLEDS may be appropriate.

Q: Do I need to use eye protection when using a DLEDS?

A: No. However, under certain conditions, the infrared optical output power may exceed Class 1 eye safety limits as defined by IEC 825-1 (1993-11). Do not use magnification (such as microscope) when viewing the device's output.

Application Notes:

The OZ Optics Dual Wavelength LED Source (DLEDS) uses the latest technology to provide two optical sources in a single, compact package. It provides highly stable LED light references for testing multimode fiber cable at 850, 1300 and 1550nm wavelengths. It is also used in test applications, in the manufacture of passive optical components, and to calibrate devices.

Easy to use:

The front panel LEDs indicate the wavelength and the modulation frequency. The indicator LEDs and simple keys provide easy operation of the unit. When no modulation frequency LED indicators are on, the output provides continuous waveform. The 850, 1300 and 1550nm outputs are controlled separately from the front panel.

Testing and manufacturing passive optical components:

LED sources are used mostly for multimode testing. While they provide a lower output power and a broader spectral width than a laser source, for multimode applications this is not an issue.

One of the key issues with testing multimode systems is that system losses are generally mode dependent. High order modes are typically attenuated more than low order modes. Thus, for accurate measurements one must excite all the modes in the fiber. LED sources are much better than laser diodes for this purpose.

Another advantage of LED sources over laser sources is the fact that the light produced is incoherent. Coherent light from lasers can cause problems if multiple reflections within the optical system interfere constructively or destructively. This interference patten can change dramatically over a short time period due to small temperature changes or stresses to the fiber. The incoherence of LED sources avoids these interference problems, and greatly simplifies the effort required to test or calibrate multimode systems.

Calibrating optical receivers:

Because of the low temperature dependence and long term stability of DLEDS, it is the ideal source to calibrate optical receivers. Battery life is a major convenience issue for a source used in this application. The DLEDS provides up to 40 hours of operation from two AA batteries. An auto power down mode, push-and-hold power keys to prevent accidental activation, as well as the low battery indicator, ensure the most convenience and continuous usage.

Choosing CW or modulation mode:

Unlike many other LED sources, the OZ Optics Dual Wavelength LED Source features a choice of continuous wave or modulated output. To change the mode, simply press the mode key on the front panel; the 270 Hz LED lights to indicate that the DLED is working at 270 Hz internal modulation mode. Press the mode key again to select the 1 kHz modulation setting. Continuous wave mode is active when no LEDs are on.

In some applications it is may be easier to detect a modulated signal rather than a continuous (CW) signal. This is especially true if the signal to be detected is very small. A CW signal may be indistinguishable from any offset that may exist in the receiver's electronics. A modulated signal, however, can easily be identified and separated from a constant background level.

Maintenance:

To ensure the best performance of the DLEDS, some simple maintenance is required.

Cleaning the connector:

A clean output connector ensures that good connections are made between the DLEDS and the fiber under test. Failure to clean connectors can cause permanent damage to both the fiber end and the connector of the DLEDS. When the output light appears circular, with little or no scattering, when projected against an IR card, the connector is clean. If the light is not approximately circular, clean the connector with compressed air.

Changing the batteries:

The DLEDS can use AC/DC power or AA alkaline batteries. The LED on the front panel indicates when laser power is active. A low battery condition causes the LED indicator to blink and indicates that new batteries are required. Continued operation when the LED is blinking can cause the output to become unstable, and eventually the unit will shut off.

Using bare fibers

A common application is to connect a fiber without any connector (bare fiber) to either another fiber or to a source or meter that contains a fiber stub. In these applications the best approach is to use a intermediate patchcord, with the appropriate connector on one end, and a bare fiber on the other end. The end with the connector is attached to the source or meter, and the bare fiber end is connected to the bare fiber on the device to be tested. Both fibers are first stripped, cleaned and cleaved and then spliced together. This can be done with a fusion splicer, or alternatively, a simple mechanical splice (OZ Bar Code #1933) can be used. Each fiber end is first dabbed into index matching gel (GEL-01, OZ Bar Code #2861) to act as a lubricant. One end is inserted about half way into the splice, while the other end is pushed in until it butts against the first fiber. Losses are typically less than 1dB, and the parts can be reused.