

v-OTDR

Very High Resolution Optical Time-Domain Reflectometer



The v-OTDR from Luciol Instruments is a revolutionary OTDR, which characterizes optical fibers with an unprecedented resolution. It locates events, starting right from the front panel connector, with sub-cm precision; resolves events as little as 10 cm apart; and provides excellent dynamic range with short optical pulses. Unlike standard OTDRs, which rely on analog optical power detection, the v-OTDR uses photon counting technology, which provides unique sensitivity with fast detection, thus allowing the use of very short optical pulses (sub ns).

With excellent backscattering sensitivity, the v-OTDR can detect events such as macrobends, damages, and reflections as low as -80 dB (on APC connectors for example). It can measure insertion loss as low as 0.1 dB in connectors and splices. It is available in SMF, MMF, and POF models. Custom systems, non-telecom wavelengths, and/or non-standard fibers are also possible.

The v-OTDR is available as a module, which has to be connected to an external PC via USB port.

APPLICATIONS

- Reliability testing for optical fiber assemblies (fiber optic sensors, fiber lasers, EDFAs...);
- Qualification of optical harnesses for aviation, aerospace and automotive applications;
- Quality control of high value optical connectors and patchcords;
- FTTH
- And more....



Sub-cm resolution

High sensitivity

Photon-counting
technology

Up to four
wavelengths

Custom systems for
most fiber types
(including Plastic
Optical Fibers) and
wavelengths

SPECIFICATIONS

Optical:

Wavelengths (standard):

SMF: 1310, 1550, 1625 nm (up to 4 sources);

MMF: 650, 850 nm;

POF: 500, 650, 830 nm.

Optical Connector: Universal, APC or PC type,
with FC, SC or ST adapter

Dynamic Range¹:

Return loss²: 35 dB [50 dB];

Rayleigh Backscattering²: 12.5 dB [25 dB].

Insertion Loss Accuracy¹: ± 0.1 dB;

Reflectance Accuracy¹: ± 1 dB;

Deadzones¹:

Event deadzone²: 10 cm [15 cm];

Attenuation deadzone²: 40 cm [30 cm].

Spatial accuracy¹:

Short distance³: $\pm (3 \text{ mm} + \text{length} \times 5 \cdot 10^{-5})$;

Long distance⁴:

$\pm (3 \text{ mm} + 10 \text{ mm} + \text{length} \times 5 \cdot 10^{-5})$.

Sampling Points: 32,000.

Sample spacing²: 130 ps [260 ps].

Distance range²:

Up to 40 km (SMF only),

in windows of 200 m [800 m].

Hardware (need an external PC to operate)

Connection to PC: USB type 1

Power supply: 15V, 20 W universal adapter.

Instrument Size: 330 x 70 x 250 mm

Instrument Weight: 2 kg

Environmental:

Operating Temperature: -5°C to 40 °C

Storage Temperature: -20°C to 60 °C

Relative Humidity: 0% to 90% noncondensing

Notes:

- 1: Typical;
- 2: Different specifications for Telecom wavelengths (1000 to 1650 nm) and for VIS to NIR wavelengths (400 to 1000 nm) [in square brackets]; ORL= 45 dB .
- 3: Distance between two equally reflective events in a single window.
- 4: Distance between two equally reflective events in two measurement windows.

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ORDERING INFORMATION

v-OTDR

v-OTDR-N-XXF-W1/W2/...-CC

N= # of wavelengths

XXF= fiber type: SMF, MMF,POF

W1 to W4 = Wavelengths with source type
(DFB, FP, LED)

CC= Connector type (A for angled PC) :
AFC, ASC, ST

Ordering example:

v-OTDR-3-SMF-1310FP/1550DFB/1620LED-AFC

v-OTDR with 3 wavelengths; singlemode fiber;

1310nm Fabry Perot laser; 1550nm DFB laser;

1620nm LED; FC/APC connector

Since most v-OTDRs are customized to some degree (choice of source, wavelength, fiber type), we recommend that you contact the factory for further discussions. This will enable us to fine-tune the unit to your particular requirements.



A typical trace with the v-OTDR

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