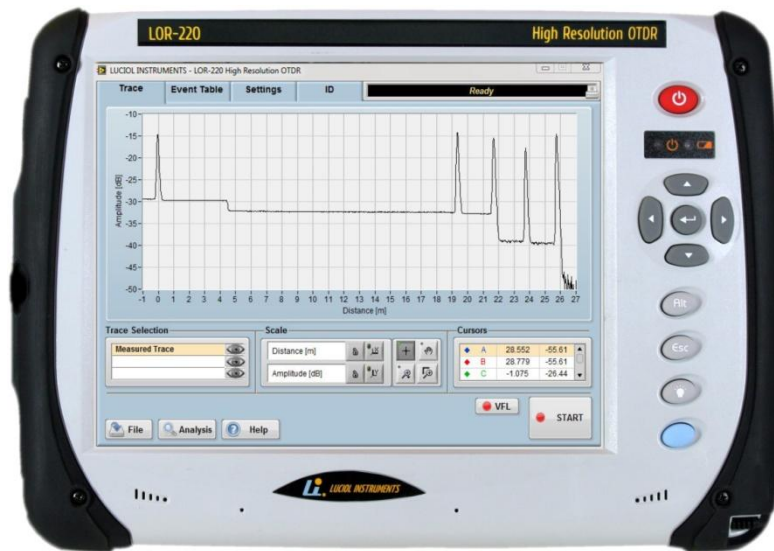


LOR-220

High Resolution OTDR for Aviation, defense, transportation and Oil and Gas applications



The LOR-220 from Luciol Instruments is new member of the LOR-200 family. It is the first **truly portable** High Resolution OTDR specially designed for short MMF assemblies, found for example in airplanes, ships and defense applications. The LOR-220 can **characterize** the original assembly, **monitor** possible evolution for preventive maintenance purposes and **troubleshoot** in case of a fault in the system. The extremely short deadzones (10 cm event deadzone, 40 cm attenuation deadzone) ensure that you can detect, localize and measure events, which no other OTDR can show, such as fiber breaks and bend-loss, even after a large reflection.

The LOR-220 is also available on a custom basis for SMF assemblies at telecom wavelengths.

APPLICATIONS

- Aviation, aerospace, defense, transportation and Oil and Gas...
- Characterization/monitoring/troubleshooting of fiber assemblies in harsh environments
- Fiber optic sensors
- And more...

Fully portable OTDR format

Industry-leading resolution (1 ns pulses)

Measures IL and ORL for all types of connectors

High dynamic range

Up to four wavelengths (530-980 nm)

Custom systems for most fiber types and wavelengths

Patented design; US patent # 7,593,098

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 LUCIOL INSTRUMENTS

SPECIFICATIONS

Optical

Wavelength options (standard)¹:

670 nm, 850 nm

Fiber types: MMF 200, 105, 62.5 or 50 μm

Optical connector:

Universal, PC type, with FC, SC or ST adapter

Optical pulse width: 1 ns

Measurement range:

1.25, 2.5, 5, 10, 20, 40, 80, 160 km

Distance units:

kilometer, meter, feet, miles, time(ns)

Sampling resolution:

Any multiple of 2.5 cm (250ps)

Dynamic range²:

Rayleigh backscattering: >20 dB (S/N=1)

Deadzones²:

Event deadzone: 10 cm;

Attenuation deadzone³: 40 cm.

Distance accuracy:

$\pm (10 \text{ mm} + 5 \times 10^{-5} \times [\text{fiber length}])$

Reflectance accuracy²: $\pm 1.5 \text{ dB}$

Loss accuracy: $\pm 0.1 \text{ dB} \pm 0.02 \text{ dB/dB}$

Hardware

OS: Windows 10 Home 32-bit

Processor: Intel N3350, 2x 2.4 GHz

RAM: DDR3L, 4 GB

Storage: SSD, 120 GB (more optional)

Display: Touchscreen TFT 10.4" (800x600)

Interfaces: 2x Ethernet RJ45
4x USB 3.0
1x HDMI
1x Headphone/Microphone
Wifi/Bluetooth (optional)

Power rating: 15V/ 4 A

Power input: AC operation with 100 to 240 VAC;
50/60 Hz universal adapter; DC operation on
batteries (Li Ion, 6.2 Ah)

Battery operating time: 5 h

Battery charging time: 3.5 h

Size: 320 x 240 x 90 mm, Weight: 3.1 kg

Environmental

Operating temperature: 0° to +40°C (32° to 104° F)

Storage temperature: -20° to +60° (-4° to 140°F)

Relative humidity: $\leq 80\%$ (0 to 30°C), decreasing
linearly to 50% at 40 °C

Maximum operation altitude: 2000 m

Pollution degree: 2

OPTIONS AVAILABLE

-VFL⁴

Visual Fault Locator on the OTDR output; can be
used as Fiber Identifier.

-OPM: Optical power meter for 850 nm, 1310, 1550
and 1610 nm.

Range: -50 dBm to +8 dBm for 850 nm

-55 dBm to +3 dBm for 1310, 1550 and 1610 nm

Linearity: $\pm 0.05 \text{ dB}$ (between -45 and 0 dBm)

Absolute power uncertainty: $\pm 0.2 \text{ dB}$

Resolution: $\pm 0.01 \text{ dB}$

-FSL

Fiber microscope; End-face verification of
connectors; USB connection; Video displayed on
LOR screen.

ORDERING INFORMATION

LOR-22X-MMFYY-W1(/W2/W3/W4)-CC

X= # of wavelengths

MMFYY = MMF62, MMF50

W1, W2...: wavelengths

CCC: connector type (ASC, AFC, SC, FC, ST)

Ordering example:

LOR-222-MMF62-670/850-FC-VFL

LOR-220 for MMF 62.5 μm , with 2 wavelengths at
670 nm and 850 nm, FC connector, with VFL.

Other wavelengths, fiber types and configurations
are available on a custom basis. Contact the factory
with your special requirements.

Notes:

1: Typical, $\pm 30 \text{ nm}$.

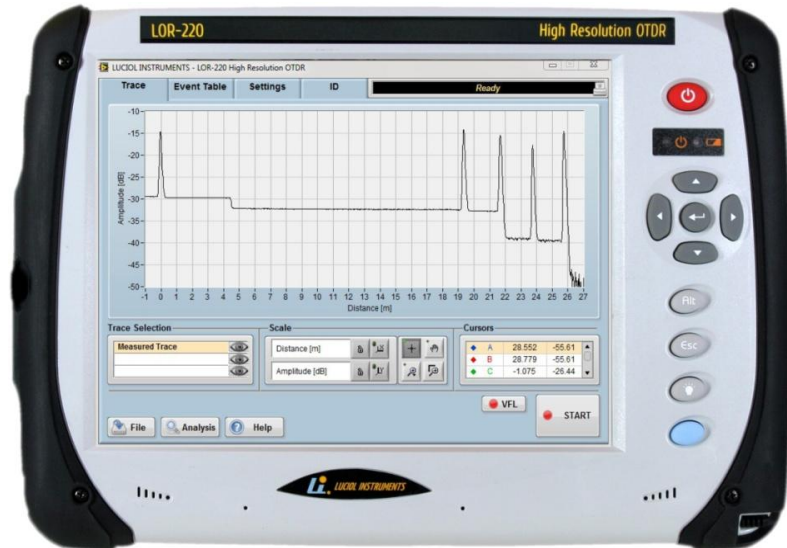
2: Typical

3: For ORL = 45 dB

4: Available with 670 nm option only

LOR-220

High Resolution Optical Time-Domain Reflectometer



The LOR-220 from Luciol Instruments is a fully portable high resolution OTDR. It is similar in shape and feel to a standard OTDR, but achieves unprecedented resolution. The LOR-220 distinguishes events with 10 cm separation and has a 40 cm attenuation deadzone. Its unique dynamic range for short pulse lengths (over 12 dB for 1 ns pulses) enables to see through optical splitters, even over very short distances.

APPLICATIONS

- See and localize events, which no other OTDR can show, such as weak reflections or attenuations immediately after a larger reflection or an optical splitter.
- Fiber optic sensors and fiber assemblies.
- Fiber manufacturing and verification.
- Loss and Optical Return Loss testing for optical components.
- Aviation and aerospace.
- And more...

Single output
SMF or MMF

Industry-leading
resolution (1 ns
pulses)

Fully portable OTDR
format

High dynamic range
with short pulses

Measures IL and
ORL for all types of
connectors

1625 nm option

Up to four
wavelengths
(1000 – 1650 nm)

Custom systems for
most fiber types
and wavelengths

Patented design; US
patent # 7,593,098

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 LUCIOL INSTRUMENTS

SPECIFICATIONS

Optical

Standard wavelength options* (± 20 nm):
1310 nm; 1480 nm; 1490 nm; 1550 nm; 1625 nm or 1650 nm;
Standard fiber types*:
Single Mode (9/125 μ m)
Multimode (50 or 62.5/125 μ m)
Optical connector:
Universal, APC or PC type, with FC, SC or ST adapter
Optical pulse width: 1 ns
Measurement range:
1.25, 2.5, 5, 10, 20, 40, 80, 160 km
Distance units:
kilometer, meter, feet, miles, time(ns)
Sampling resolution:
any multiple of 2.5 cm (250 ps)
Dynamic range¹:
Rayleigh backscattering²:
> 12 dB (S/N=1)
Deadzones¹:
Event deadzone: 10 cm
Attenuation deadzone³: 40 cm
Distance accuracy:
 $\pm (10 \text{ mm} + 5 \times 10^{-5} \times [\text{fiber length}])$
Reflectance accuracy¹: ± 1.5 dB
Loss accuracy⁴: ± 0.1 dB ± 0.02 dB/dB

Hardware

OS: Windows 10 Home 32-bit
Processor: Intel N3350, 2x 2.4 GHz
RAM: DDR3L, 4 GB
Storage: SSD, 120 GB (more optional)
Display: Touchscreen TFT 10.4" (800x600)
Interfaces: 2x Ethernet RJ45
4x USB 3.0
1x HDMI
1x Headphone/Microphone
Wifi/Bluetooth (optional)

Power rating: 15V/4 A
Power input: AC operation with 100 to 240 VAC;
50/60 Hz universal adapter; DC operation on
batteries (Li Ion, 6.2 Ah)
Battery operating time: 5 h
Battery charging time: 3.5 h
Size: 320 x 240 x 90 mm, Weight: 3.1 kg

Environmental

Operating temperature: 0° to +40°C (32° to 104° F)
Storage temperature: -20° to +60° (-4° to 140°F)
Relative humidity: $\leq 80\%$ (0 to 30°C), decreasing
linearly to 50% at 40 °C
Maximum operation altitude: 2000 m
Pollution degree: 2

OPTIONS AVAILABLE

-OPM: Optical power meter
Wavelength: 850 nm, 1310, 1550 and 1610 nm.
Range: -50 dBm to +8 dBm for 850 nm ;
-55 dBm to +3 dBm for 1310, 1550 and 1610 nm;
Linearity: ± 0.05 dB (between -45 and 0 dBm)
Absolute power uncertainty: ± 0.2 dB
Resolution: ± 0.01 dB

-FSL: Fiber microscope
End-face verification of connectors, USB
connection, Video displayed on LOR screen.

ORDERING INFORMATION

LOR-220

LOR-22X-FFF-W1(/W2/W3/W4)-CC;
X= # of wavelengths;
FFF= fiber type: SMF, MMF62, MMF50
W1, W2...: wavelengths with source type (FP or
DFB lasers, LED
CC= connector type: ASC, AFC, SC, FC, ST

Ordering example:
LOR-223-SMF-1310DFB/1480FP/1625DFB-AFC
LOR-200 SMF, with 3 wavelengths, one FP laser at
1310 nm, one FP laser at 1550 nm, and one DFB
laser at 1625 nm, FC/APC connector.

*Other wavelengths and configurations are
available on a custom basis. Contact the factory
with your special requirements.

Notes:

- 1: Typical
- 2: At a wavelength of 1310 nm
- 3: For ORL = 45 dB
- 4: For a LED source (or FP under specific conditions)

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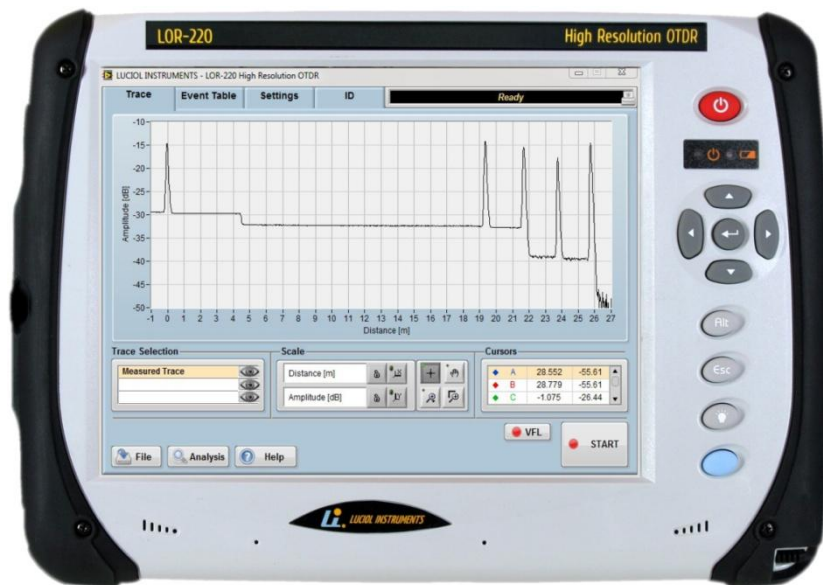
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LOR-220 SMF/MMF

High Resolution Optical Time-Domain Reflectometer



Dual output
SMF and MMF

Industry-leading
resolution (1 ns
pulses)

Fully portable OTDR
format

High dynamic range
with short pulses

Measures IL and
ORL for all types of
connectors

1625 nm option

Up to four
wavelengths
(1000-1650 nm)

Custom systems for
most fiber types
and wavelengths

Patented design; US
patent # 7,593,098

The LOR-220 from Luciol Instruments is a fully portable high resolution OTDR. It is similar in shape and feel to a standard OTDR, but achieves unprecedented resolution. The LOR-220 distinguishes events with 10 cm separation and has a 40 cm attenuation deadzone. Its unique dynamic range (> 12 dB for the 1 ns pulse-width) enables to see through optical splitters, even over very short distances.

APPLICATIONS

- See and localize events, which no other OTDR can show, such as weak reflections or attenuations immediately after a larger reflection or an optical splitter.
- Fiber optic sensors and fiber assemblies.
- Fiber manufacturing and verification.
- Insertion loss and return loss testing for optical components.
- Aviation and aerospace.
- And more...

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 LUCIOL INSTRUMENTS

SPECIFICATIONS

Optical

Standard wavelength options* (± 20 nm):

1310 nm; 1550 nm; 1625 nm

Standard fiber types*:

Single Mode (9/125 μ m)

Multimode (50 or 62.5/125 μ m)

Optical connector:

Universal, APC or PC type, with FC, SC or ST adapter

Optical pulse widths: 1 ns

Measurement Range:

1.25, 2.5, 5, 10, 20, 40, 80, 160 km

Distance units:

kilometer, meter, feet, miles, time(ns)

Sampling resolution:

Any multiple of 2.5 cm (250 ps)

Dynamic Range¹:

Rayleigh backscattering²:

> 12 dB (S/N =1)

Deadzones¹:

Event deadzone: 10 cm

Attenuation deadzone³: 40 cm

Distance accuracy:

$\pm (10 \text{ mm} + 5 \times 10^{-5} \times [\text{fiber length}])$

Reflectance accuracy¹: ± 1.5 dB

Loss accuracy⁴: ± 0.1 dB ± 0.02 dB/dB

Hardware

OS: Windows 10 Home 32-bit

Processor: Intel N3350, 2x 2.4 GHz

RAM: DDR3L, 4 GB

Storage: SSD, 120 GB (more optional)

Display: Touchscreen TFT 10.4" (800x600)

Interfaces: 2x Ethernet RJ45

4x USB 3.0

1x HDMI

1x Headphone/Microphone

Wifi/Bluetooth (optional)

Power rating: 15V/4 A

Power input: AC operation with 100 to 240 VAC;

50/60 Hz universal adapter; DC operation on

batteries (Li Ion, 6.2 Ah)

Battery operating time: 5 h

Battery charging time: 3.5 h

Size: 320 x 240 x 90 mm, Weight: 3.1 kg

Environmental

Operating temperature: 0° to +40°C (32° to 104° F)

Storage temperature: -20° to +60° (-4° to 140°F)

Relative humidity: $\leq 80\%$ (0 to 30°C), decreasing linearly to 50% at 40 °C

Maximum operation altitude: 2000 m

Pollution degree: 2

OPTIONS AVAILABLE

-OPM: Optical power meter

Wavelength: 850 nm, 1310, 1550 and 1610 nm

Range: -50 dBm to +8 dBm for 850 nm

-55 dBm to +3 dBm for 1310, 1550 and 1610 nm

Linearity: ± 0.05 dB (between -45 and 0 dBm)

Absolute power uncertainty: ± 0.2 dB

Resolution: ± 0.01 dB

-FSL: Fiber microscope

End-face verification of connectors, USB

connection, Video displayed on LOR screen.

ORDERING INFORMATION

LOR-220

LOR-22X-SMF/W1-MMFTT/W2-CC/CC;

X= # of wavelengths;

TT= fiber type: 62 for 62.5/125

50 for 50/125

W1, W2...: wavelengths with source type (FP or LED) (*DFB upon request*)

CC= connector type: ASC, AFC, SC, FC, ST.

Ordering example:

LOR-222-MMF62/SMF-1310FP/1550FP-FC/AFC

LOR-220 with one MMF62.5/125 channel (FC/PC) with 1310nm FP laser source and one SMF channel (FC/APC) with 1550 nm laser source.

*Other wavelengths and configurations are available on a custom basis. Contact the factory with your special requirements.

Notes:

1: Typical

2: At a wavelength of 1310 nm

3: For ORL = 45 dB

4: For a LED source (or FP under specific conditions)

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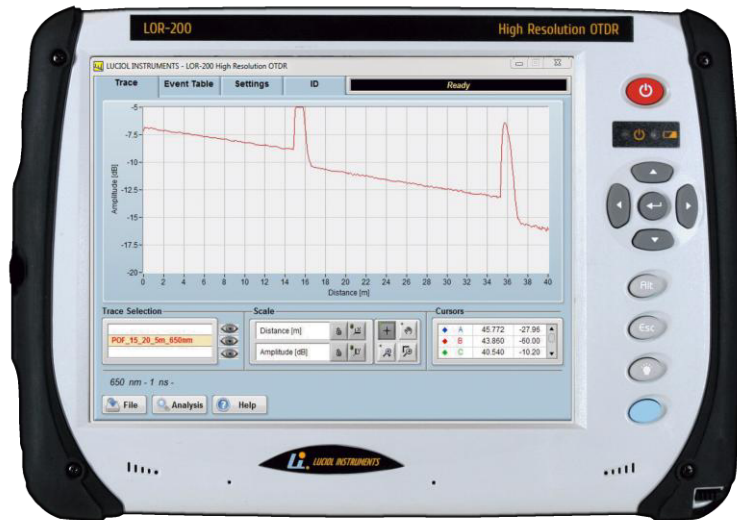
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LOR-220 POF

High Resolution Optical Time-Domain Reflectometer For Large Core Optical Fibers



Fully portable OTDR
format

Industry-leading
resolution (1 ns
pulses)

High dynamic range

Custom systems for
most fiber types up
to 1mm

Patented design; US
patent # 7,593,098

The LOR-220 POF from Luciol Instruments is new member of the LOR-200 family. It is a portable high resolution OTDR specially designed for testing large core optical fibers such as 1mm PMMA (POF) or others. The LOR-220 POF is a universal tool to characterize insertion losses and fiber attenuation. You can characterize the original assembly, monitor possible degradation for preventive maintenance purposes and troubleshoot in case of a fault in the system. The extremely short deadzones ensure that you can detect, localize and measure events, which no other OTDR can show, such as fiber breaks and bend-loss, even after a large reflection.

The LOR-220 POF is available on a custom basis for most large core optical fibers and it has several wavelengths options.

APPLICATIONS

- Fiber, cable manufacturing
- Characterization/monitoring/troubleshooting of fiber assemblies
Fiber optic sensors
- And more...

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 **LUCIOL INSTRUMENTS**

SPECIFICATIONS

Optical

Wavelength options (standard)¹:
650 nm, 520 nm
Fiber type: PMMA 1mm (standard)
others on request
Optical connector:
SMA, ST (others on request)
Optical pulse width: 1 ns
Measurement range:
1.25 km
Distance units:
kilometer, meter, feet, miles, time(ns)
Sampling resolution:
Any multiple of 2.5 cm (250ps)
Dynamic range² :
Rayleigh backscattering: >20 dB (S/N=1)
Deadzones²:
Attenuation deadzone (RL=45dB): 40 cm.³
Attenuation deadzone (RL=14dB): <1 m.³
Loss accuracy:
± 0.1 dB ± 0.02 dB/dB

Hardware

OS: Windows 10 Home 32-bit
Processor: Intel N3350, 2x 2.4 GHz
RAM: DDR3L, 4 GB
Storage: SSD, 120 GB (more optional)
Display: Touchscreen TFT 10.4" (800x600)
Interfaces: 2x Ethernet RJ45
4x USB 3.0
1x HDMI
1x Headphone/Microphone
Wifi/Bluetooth (optional)

Power rating: 15V/4 A
Power input: AC operation with 100 to 240 VAC;
50/60 Hz universal adapter; DC operation on
batteries (Li Ion, 6.2 Ah)
Battery operating time: 5 h
Battery charging time: 3.5 h
Size: 320 x 240 x 90 mm, Weight: 3.1 kg

Environmental

Operating temperature: 0° to +40°C (32° to 104° F)
Storage temperature: -20° to +60° (-4° to 140°F)
Relative humidity: ≤80% (0 to 30°C), decreasing
linearly to 50% at 40 °C
Maximum operation altitude: 2000 m
Pollution degree: 2

OPTIONS AVAILABLE

-VFL

Visual Fault Locator on the OTDR output; can be used as Fiber Identifier.

-OPM: Optical power meter for 850 nm, 1310, 1550 and 1610 nm.

Range: -50 dBm to +8 dBm for 850 nm ;
-55 dBm to +3 dBm for 1310, 1550 and 1610 nm;
Linearity: ± 0.05 dB (between -45 and 0 dBm)
Absolute power uncertainty: ± 0.2 dB
Resolution: ± 0.01 dB

ORDERING INFORMATION

LOR-22X-POFYYYY-W1(/W2/W3/W4)-CC
X = # of wavelengths
YYYY = Fiber diameter μm
W1, W2...: wavelengths
CCC: connector type (ASC, AFC, SC, FC, ST)

Ordering example:

LOR-222-POF1000-650/520-SMA-VFL
LOR-220 for 1 mm POF, with 2 wavelengths (650 nm and 520 nm), SMA connector, with VFL.

Other wavelengths, fiber types and configurations are available on a custom basis. Contact the factory with your special requirements.

Notes:

- 1: ±10 nm.
- 2: Typical
- 3: The attenuation deadzone will be increased by the fibers modal dispersion

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LOR-200/220-U

High Resolution Optical Time-Domain Reflectometer Table Top Format



Compact table top
format

USB connection to
external PC

Available for
LOR-200 and
LOR-220 OTDR

The LOR 200/220-U is a table top packaging option for the Luciol Instruments OTDR module. This option requires an external PC for control and operation. It is equipped with a standard USB port for convenient and easy connection to most Windows based PC.

The LOR-200/220-U option is available for all instruments from the LOR-200/220 family.

APPLICATIONS

- Laboratory environment OTDR testing
- Test bench integration
- And more...

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SPECIFICATIONS

Optical:

See LOR-200/220 datasheets

System requirements:

OS:

Windows 10 (32 and 64 bit)

Processor:

Pentium III/Celeron 866 MHz or equivalent

RAM:

1 GB

Disk Space:

500 MB

Interface:

1x USB Type 2

Power input:

DC input: 15V ($\pm 10\%$); 1 A

AC adapter: 100-240 VAC; 50/60 Hz; 1.4 A

Dimensions:

310 x 225 x 60 mm

Weight:

1.9 kg

Environmental:

Operating temperature: 0° to +40°C (32° to 104° F)

Storage temperature: -20° to +60° (-4° to 140°F)

Relative humidity: $\leq 80\%$ (0 to 30°C), decreasing linearly to 50% at 40 °C

Max. operation altitude: 2000 m / 5000 m (option)

Pollution degree: 2

OPTIONS AVAILABLE

-VFL

Visual Fault Locator on the OTDR output; can be used as a fiber identifier.

ORDERING INFORMATION

LOR-22X-U-YYYY-W1(/W2/W3/W4)-CC

X = # of wavelengths

YYYY = Fiber type

W1, W2...: Wavelengths

CCC: Connector type (ASC, AFC, SC, FC, ST)

Ordering example:

LOR-222-U-MMF62-670FP/850FP-FC

(LOR-220 for 62.5/125 μm fiber, with 2 wavelengths (670 nm and 850 nm), FC/PC connector.)

Other packaging options e.g. rack mounting are available on a custom basis. Contact Luciol Instruments with your special requirements.

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LOR-220-UD

Dual Detector – Dual Port High Resolution Optical Time-Domain Reflectometer



The LOR-220-UD is a dual detector version of our high resolution OTDR LOR-220. It can combine up to 4 wavelengths in the range of 500 to 1650 nm in one instrument. Multimode and singlemode options are available.

The LOR-220-UD requires an external PC for control and operation. It is equipped with a standard USB port for convenient and easy connection to most Windows based PC.

APPLICATIONS

- 850 nm multimode and 1310/1550/1625 nm singlemode fiber testing in one instrument
- Laboratory environment OTDR testing
- Test bench integration
- And more...

Dual Detector System

Wavelength Range
500-1650 nm

Multimode and
Singlemode Options

Compact table top
format

USB connection to
external PC

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SPECIFICATIONS

Optical:

See LOR-220 datasheets

System requirements:

OS:

Windows 10 (32 and 64 bit)

Processor:

Pentium III/Celeron 866 MHz or equivalent

RAM:

1 GB

Disk Space:

500 MB

Interface:

1x USB Type 2

Power input:

DC input: 15V ($\pm 10\%$); 1 A

AC adapter: 100-240 VAC; 50/60 Hz; 1.4 A

Dimensions:

310 x 225 x 60 mm

Weight:

1.9 kg

Environmental:

Operating temperature: 0° to +40°C (32° to 104° F)

Storage temperature: -20° to +60° (-4° to 140°F)

Relative humidity: $\leq 80\%$ (0 to 30°C), decreasing linearly to 50% at 40 °C

Max. operation altitude: 2000 m / 5000 m (option)

Pollution degree: 2

OPTIONS AVAILABLE

-VFL

Visual Fault Locator on the OTDR output; can be used as a fiber identifier.

ORDERING INFORMATION

Please contact us for detailed ordering information.

Other packaging options e.g. rack mounting are available on a custom basis.

Contact Luciol Instruments with your special requirements.

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