

# OptiVisor™ 400 Optical Time Domain Reflectometer (OTDR)

A LANscape® Solutions Product

Corning  
Cable Systems

## Applications

- Testing and troubleshooting of LAN, telco, CATV and FTTx networks

## Description

Corning Cable Systems' OptiVisor 400 Optical Time Domain Reflectometer (OTDR) provides testing flexibility by offering a rugged platform with field-interchangeable multimode and single-mode modules. All OTDR modules can be used as CW light source and are available with an optional visual fault locator (VFL) installed. An optional power meter is available on the OptiVisor 400 OTDR mainframe. The standard unit provides internal memory for storage of up to 700 traces using Microsoft® Windows® CE technology, eliminating the need for a hard drive. If extra storage capacity is needed, there is a 1.44 MB floppy drive on the mainframe along with a PCMCIA port.

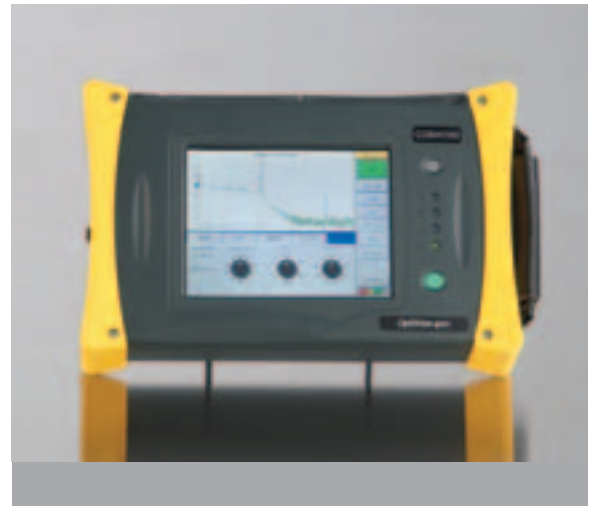
The OptiVisor 400 OTDR product line offers a wide variety of multimode and single-mode modules including a tri-wave-length single-mode module perfect for FTTx testing. Modules can be easily switched out in the field, without the use of tools, in just a matter of seconds.

The OTDR features a 7.7-inch high-quality color LCD touch screen that is resistant to most common chemicals used in the field. The screen is large enough to view both the trace and the event table, thereby eliminating the need to toggle back and forth between the two.

With three testing modes, the OptiVisor 400 OTDR offers something for every installer. Auto Mode allows the user to select the parameters automatically, making it perfect for basic OTDR applications or the occasional user. Advanced Mode offers more setup and measurement capabilities for the experienced OTDR user. Template Trace Mode allows the user to create a template for comparison with other traces, ideal for quick testing of multiple fibers.

## Features / Benefits

- Rugged, splash-proof mainframe
- Three operating modes: Auto, Advanced, Template Trace



OptiVisor 400 OTDR | LAN637

- 7.7-in color LCD touchscreen
- FTTx ready
- CW light source standard on all OTDR modules
- OTSView software for report generation
- Modules available with shortest event dead zone in the industry: 1 meter with 5 ns pulse width
- Fast testing with full averaging in as little as 45 seconds; four times faster than industry standard
- AC and battery operation
- Sample points of up to 128,000 resulting in better trace resolution



Product Specifications

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## Specifications

### 400 OTDR Main Frame

Parameter	Specification
Processor	Intel® StrongARM, 206 MHz
Interfaces	Serial RS-232C; Parallel Printer
External	Keyboard PS/2; PCMCIA Type II
Internal Memory <sup>1</sup>	32 MB total (700 traces typ.), standard
Additional Storage (optional)	PCMCIA flash cards, up to 6000 traces
Floppy Drive	3.5 inch floppy drive, 1.44 MB
Display	Color LCD touchscreen, 19.6 cm (7.7 in), 640 x 480, 256 colors
Touchscreen	Resistive, 8 wires; positional accuracy better than 2%, full scale, worst-case error $\leq \pm 0.5$ cm (0.18 in); resistant to most common chemicals <sup>2</sup>
External Power Supply	AC input: 100 to 240 V, 50 Hz to 60 Hz
Battery	Nickel metal-hydride (NiMH), rechargeable, smart
Battery Operating Time <sup>3</sup>	8 h - NiMH battery
RechargeTime	2.5 h (off), 8 h (on)
Size (H x W x D)	21.6 x 33.6 x 8.9 cm (8.5 x 13.25 x 3.5 in)
Weight <sup>4</sup>	3.7 kg (8.1 lb)
Operating Temperature <sup>5</sup>	-5° to 50°C (23° to 122°F)
Storage Temperature <sup>6</sup>	-40° to 60°C (-40° to 140°F), Shipping -20° to 50°C (-4° to 122°F), Long Term
Relative Humidity	0% to 95% max., non-condensing

### Power Meter

Detector	InGaAs
Calibrated Wavelengths (nm)	850, 1300, 1310, 1550, 1625
Power Range (dBm)	4 to -70
Uncertainty (%)	$\pm 0.05$ (0 dBm to -46 dBm)
Linearity (dB)	$\pm 0.05$ (0 dBm to -46 dBm); $\pm 0.1$ (-46 dBm to -57 dBm)
Display Resolution (dB)	0.01 (4 dBm to -63 dBm); 0.1 (-63 dBm to -70 dBm)
Tone Detection (Hz)	270/1000/2000

#### Notes:

<sup>1</sup> With GC language option, total storage is 550 traces (typical).

<sup>2</sup> Heptane, ethanol, isopropanol, acetone, methyl ethyl ketone, cellosolve acetate, toluene, carbitol acetate, hydrochloric acid, turpentine, Vm and naphta, unleaded gasoline, motor oil, diesel fuel, transmission fluid, antifreeze.

<sup>3</sup> According to Telcordia TR-NWT-001138, with monochrome display.

<sup>4</sup> OptiVisor 400 with OTDR module and battery.

<sup>5</sup> Excluding floppy drive (use is not recommended below 0°C). OTDR module performance can be affected at sub-zero temperatures.

<sup>6</sup> Excluding the battery.



# OptiVisor™ 400 Optical Time Domain Reflectometer (OTDR)

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## Specifications

### Multimode Module<sup>1</sup>

Model	Wavelength (nm)	Dynamic Range <sup>2</sup> at 100 ns/1μs (dB)	Event Dead Zone <sup>3</sup> (m)	Attenuation Dead Zone <sup>3</sup> (m)
400-MD25-XX <sup>4</sup>	850 ± 20/1300 ± 20	23/27	1.5/1.5	5/5

### Single-mode Module<sup>1</sup>

Model	Wavelength (nm)	Dynamic Range <sup>2</sup> at 10 μs (dB)	Dynamic Range <sup>2</sup> at 20 μs (dB)	Event Dead Zone <sup>5</sup> (m)	Attenuation Dead Zone <sup>5</sup> (m)
400-SD34-YY	1310 ± 20/1550 ± 20	35/34	36/35	1/1	5/6 (4/4) <sup>6</sup>
400-SD37-YY	1310 ± 20/1550 ± 20	38/37	39/38	1/1	5/6 (4/4) <sup>6</sup>
400-SD135-YY	1550 ± 20/1625 ± 10	37/35	38/36	1/1	6/6 (4/5) <sup>6</sup>
400-ST37-YY	1310 ± 20/1550 ± 20/1625 ± 10	38/37/35	39/38/36	1/1/1	5/6/6 (4/4/5) <sup>6</sup>
400-ST137-YY	1310 ± 20/1490 ± 10/1550 ± 20	38/34/37	39/35/38	1/1/1	5/6/6 (4/4/4) <sup>6</sup>
400-SD40-YY	1310 ± 20/1550 ± 20	40/40 <sup>10</sup>	41.5/40.5 <sup>10</sup>	3/3	10/15
400-SD140-YY	1550 ± 20/1625 ± 10	40 <sup>10</sup> /38	40.5 <sup>10</sup> /39	3/3	15/16
400-SD45-YY <sup>7</sup>	1310 ± 20/1550 ± 20	43.5/43.5 <sup>11</sup>	45/45 <sup>11</sup>	3/3	10/15
400-SD142-YY <sup>7</sup>	1550 ± 20/1625 ± 10	43.5 <sup>11</sup> /41.5	45 <sup>11</sup> /43	3/3	15/16
400-ST41-YY	1310 ± 20/1550 ± 20/1625 ± 10	41/40/38	42.5/41.5/39.5	3/3/3	8/10/10

General Specifications	400-MD25	400-SD34/ SD37/SD135/ST37/ST137	400-SD40/SD140/SD45/ SD142/ST41
Distance Range (km)	0.625, 1.25, 2.5, 5, 10, 20, 40	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260
Pulse Width (ns)	10, 30, 100 (850 nm) 10, 30, 100, 275, 1000 (1300 nm)	5, 10, 30, 100, 275, 1000, 2500, 10,000, 20,000	10, 30, 100, 275, 1000, 2500, 10,000, 20,000
Linearity (dB/dB)	± 0.05	± 0.03	± 0.05
Loss Threshold (dB)	0.01	0.01	0.01
Loss Resolution (dB)	0.001	0.001	0.001
Sampling Resolution (m)	0.08 to 5	0.04 to 5	0.08 to 5
Sampling Points	Up to 16,000	Up to 128,000	Up to 52,000
Distance Uncertainty <sup>8</sup> (m)	± (1 + 0.0025 % x distance)	± (0.75 + 0.0025 % x distance)	± (1 + 0.0025 % x distance)
Measurement Time	User-defined (60 min. maximum)	User-defined (60 min. maximum)	User-defined (60 min. maximum)
Real-time Refresh (s)	≤ 1	Guaranteed: ≤ 0.4 Typical: ≤ 0.3	≤ 1
Stable Source Output Power <sup>9</sup> (dBm)	-7	-8 (400-SD34); -4.5 (all others)	-5
Visual Fault Locator (optional)	Laser, 650 nm ± 10 nm CW, P <sub>out</sub> maximum: ≤ 800 μW	Laser, 650 nm ± 10 nm CW, P <sub>out</sub> maximum: ≤ 5 μW	Laser, 650 nm ± 10 nm CW, P <sub>out</sub> maximum: ≤ 800 μW

### Notes:

- <sup>1</sup> All specifications valid at 23°C ± 2°C (73.4°F ± 3.6 °F) with an FC/PC connector, unless otherwise specified.
- <sup>2</sup> Typical dynamic range with a three-minute averaging at SNR = 1 (for 400-SD34/SD37/SD135/ST37/ST137, typical dynamic range with 45-second averaging is only 1 dB lower than values given for three-minute averaging).
- <sup>3</sup> Typical dead zone of multimode modules for reflectance below -35 dB using a 10 ns pulse.
- <sup>4</sup> ORL measurement not available for this module.
- <sup>5</sup> Typical dead zone of single-mode modules for reflectance below -45 dB, using a 10 ns pulse (5 ns pulse for 400-SD34/SD37/SD135/ST37/ST137).
- <sup>6</sup> Typical dead zone of 400-SD34/SD37/SD135/ST37/ST137 single-mode modules for reflectance below -55 dB, using a 5 ns pulse.
- <sup>7</sup> Typical dynamic range on NZDS fiber with a three-minute average at SNR = 1.
- <sup>8</sup> Does not include uncertainty due to fiber index and sampling resolution.
- <sup>9</sup> Typical output power value at 1550 nm.
- <sup>10</sup> Typical dynamic range at 1550 nm for the 400-SD40 configuration is 2 dB lower at 10 μs and 1 dB lower at 20 μs.
- <sup>11</sup> Typical dynamic range at 1550 nm for the 400-SD45 configuration is 2 dB lower.



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## Ordering Information

### Basic Kits

Kits include OptiVisor 400 Mainframe, single-mode and/or multimode module, power supply, Smart NiMH battery, 9 volt battery, RS232 serial cable, CD with OTSView PC emulation software and user's manual, cleaning supplies, Quick Reference manual, and hard-shell transit case.

Part Number	Description
400BK-SD34-YY	Short-range dual single-mode (35/34 dB)
400BK-SD37-YY	Mid-range dual single-mode (38/37 dB)
400BK-ST37-YY	Mid-range triple single-mode 1310/1550/1625 nm (38/37/35 dB)
400BK-ST137-YY	FTTx SM 1310/1490/1550 nm (38/34/37 dB)
400BK-SD40-YY	Long-range dual single-mode (40/40 dB)
400BK-SD45-YY	Extended-range dual single-mode (43.5/43.5 dB)
400BK-MD25-XX	Dual multimode (23/27 dB)
400BK-MDSD-XX-YY	Dual multimode (23/27 dB) and single-mode (35/34 dB)

### Deluxe Kits

Kits include OptiVisor 400 OTDR Mainframe with power meter, single-mode and/or multimode module with VFL, power supply, Smart NiMH battery, 9 volt battery, RS232 serial cable, CD with OTSView PC emulation software, OTSBatch PC batch processing software and user's manual, cleaning supplies, Quick Reference manual, and hard-shell transit case.



OptiVisor 400 OTDR Basic Kit | LAN638

Part Number	Description
400DK-SD34-YY	Short-range dual single-mode (35/34 dB)
400DK-SD37-YY	Mid-range dual single-mode (38/37 dB)
400DK-ST37-YY	Mid-range triple single-mode 1310/1550/1625 nm (38/37/35 dB)
400DK-ST137-YY	FTTx SM 1310/1490/1550 nm (38/34/37 dB)
400DK-SD40-YY	Long-range dual single-mode (40/40 dB)
400DK-SD45-YY	Extended-range dual single-mode (43.5/43.5 dB)
400DK-MD25-XX	Dual multimode (23/27 dB)
400DK-MDSD-XX-YY	Dual multimode (23/27 dB) and single-mode (35/34 dB)

### Adapter Codes

XX = MM port SC = SC, FC = FC, ST = ST® compatible

YY = SM port SC = SC, FC = FC, ST = ST compatible



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## Ordering Information

### Mainframes

Standard components on mainframes include: PCMCIA port, RS232 port, 7.7 inch color touch screen, and floppy drive.

Part Number	Description
400-MAINF-STD	OTDR Controller, with 3.5 in floppy drive
400-MAINF-PM	OTDR Controller, with 3.5 in floppy drive and Power Meter

### OptiVisor 400 OTDR Modules

Part Number	Description
400-MD25-XX	Multimode OTDR Module, 850/1300 nm (23/27 dB)
400-SD34-YY	Single-mode Short-Range OTDR Module, 1310/1550 nm (35/34 dB)
400-SD37-YY	Single-mode Mid-Range OTDR Module, 1310/1550 nm (38/37 dB)
400-SD135-YY	Single-mode Mid-Range OTDR Module, 1550/1625 nm (37/35 dB)
400-ST37-YY	Single-mode Mid-Range OTDR Module, 1310/1550/1625 nm (38/37/35 dB)
400-ST137-YY	Single-mode Mid-Range OTDR Module, 1310/1490/1550 nm (38/34/37 dB)
400-SD40-YY	Single-mode Long-Range OTDR Module, 1310/1550 nm (40/40 dB)
400-SD140-YY	Single-mode Long-Range OTDR Module, 1550/1625 nm (40/38 dB)
400-SD45-YY	Single-mode Extended-Range OTDR Module, 1310/1550 nm (43.5/43.5 dB)
400-SD142-YY	Single-mode Extended-Range OTDR Module, 1550/1625 nm (43.5/41.5 dB)
400-ST41-YY	Single-mode Long-Range OTDR Module, 1310/1550/1625 nm (41/40/38 dB)
400-MDSD-XX-YY	Multimode/Single-mode Quad OTDR Module, 850/1300/1310/1550 nm (26/25/35/34 dB)
-VFL (add before connector code)	VFL option for above modules, example: 400-SD34-VFL-YY

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400BK-SD40-YY	Long-range dual single-mode (40/40 dB)
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