Fiber Guardian

STAND-ALONE REMOTE OTDR UNIT

An entirely stand-alone remote test unit designed to enable you to start monitoring critical fibers without the need to invest in a remote fiber test system (RFTS).

KEY FEATURES

All-in-one remote OTDR testing and monitoring functions

Multitasking test system for multiple users

Discovery and auto-provisioning functions

SMS-triggered test-on-demand

Flexible alert subsystem

OTDRs offering high measurement range and peak-level monitoring

Secure and seamless integration with your LAN

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AFFORDABLE—MONITORING AT YOUR OWN PACE

Remote, stand-alone unit

Fiber Guardian is an entirely stand-alone OTDR remote test unit, designed to enable you to start monitoring critical fibers without the larger investment required for a client-server RFTS application.

If any of these situations applies to you, Fiber Guardian is the ideal solution:

› Must fulfill stringent support-level agreements that require restoration time of less than a few hours or network/service availability of 99.99% or higher.

› Need to measure and improve contractor efficiency throughout the restoration process.

› Having difficulty finding qualified personnel for on-site troubleshooting.

› Want to begin investing progressively, starting with the most vulnerable part of your network.

No commitment, no hassles

Fiber Guardian is a plug-and-play solution that is simple enough for beginners, and powerful and flexible enough for your experts. The unit doesn't involve any additional infrastructure—no server, no external PC—only minimal software maintenance is required. You can access it remotely from virtually anywhere by simply using your personal login user name and password, as with any secured server on your LAN or through a dial-up connection. There is no need for third-party remote-access tools such as Virtual Network Computing (VNC) servers or pcAnywhere, no hanging views and no unexpected disconnection in low-bandwidth situations—just a reliable HTTP session.

Fully scalable, whenever you're ready

If your long-term plan includes expanding to a full-fledged client-server fiber test and monitoring solution, invest in one or two Fiber Guardians, and migrate seamlessly to EXFO's system solution (NQMS*fiber*) when you're ready. Scaling up to NQMS*fiber* doesn't require any change to the test units. NQMS*fiber* includes sophisticated functions, such as alarm management and reporting, trouble-ticket handling, and a view of the entire network status on a schematic. The system solution enables you to centralize your network operation and maintenance, and integrates with your existing network management systems. NQMS*fiber* can also be provided with network documentation based on GIS for mapping of the as-built and fault-on-map feature.
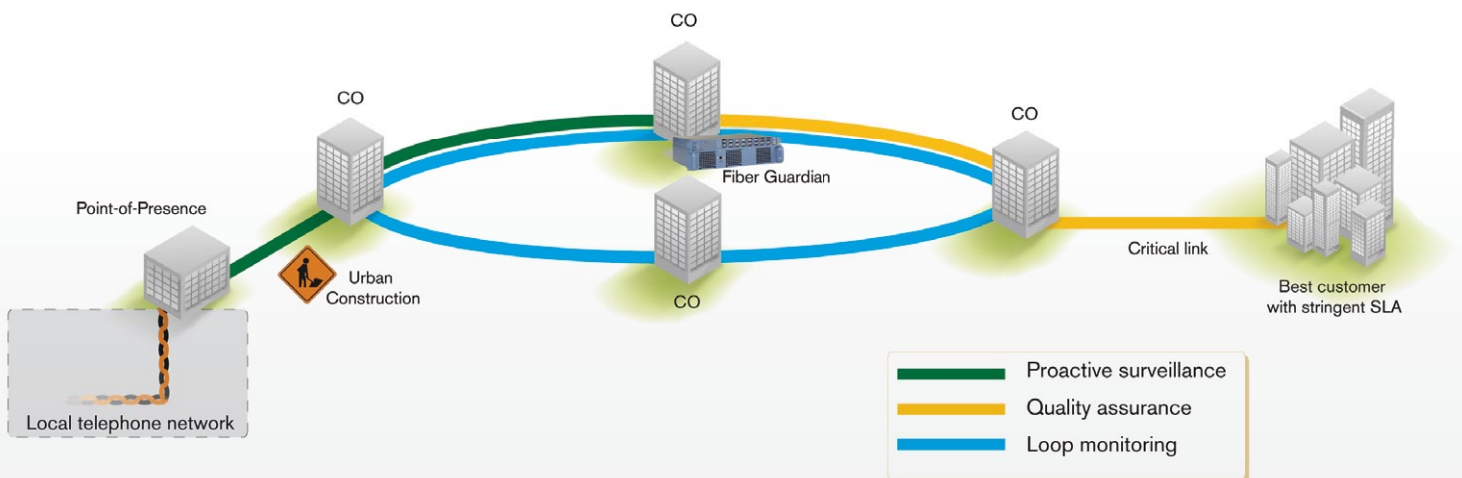

Figure 1. Typical configuration of a Fiber Guardian test application

PROACTIVE TESTING—BE A STEP AHEAD

From reactive to proactive

Define, run and analyze a series of OTDR acquisitions on multiple fibers, whenever you like, without having to do it all manually. Don't just wait for trouble to occur—put a Fiber Guardian to work and gain control of the situation. Fiber Guardian is a multitasking test unit that allows for several different tests to be run concurrently and that also enables multiple users to access and view results during testing or upon completion.

Fiber Guardian captures and logs events based on thresholds. These thresholds can be specific to each test or to each port. Each fault event, newly created or cleared, activates OTDR result storage, permitting analysis of intermittent situations without storing an enormous quantity of unnecessary measurements.
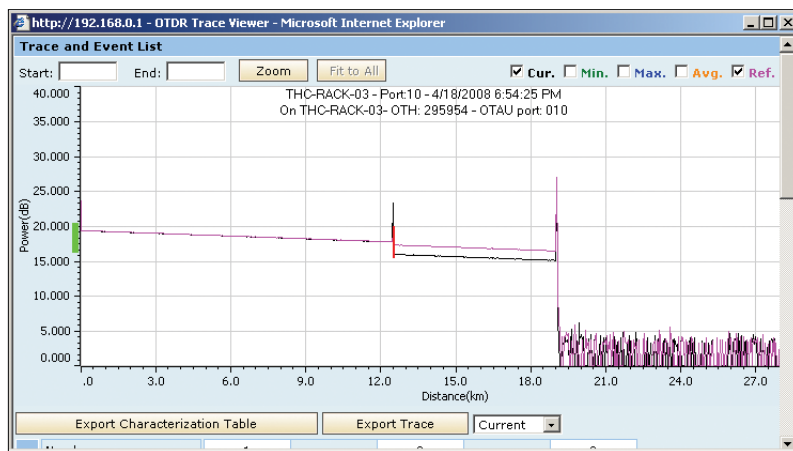

Figure 2. OTDR Trace Viewer displaying a fault along with reference

Top-of-the-line measurements

Fiber Guardian was designed to serve various sections of your network. The following are a few examples of the test and measurement know-how and expertise engineered into Fiber Guardian:

› Highest measurement range on the market, allowing you to maximize your investment

› High-resolution scans (1 m)

   › Resolve closely spaced events such as connectors or mechanical splices at an access site

› Degradation measurement based on peak-level monitoring

   › Can be used in conjunction with demarcation elements strategically located in the network

› Learning function

   › Automatically establishes and optimizes fault-detection thresholds across full dynamic range

› Season-change management capability

   › Extends learning to incorporate small changes to your reference data and to your fault detection thresholds—or reset to re-optimize around new average values

› Fast and simple operation

   › Immediately detects degradations and locates them accurately with only one reference trace, whereas other solutions require two scans to perform this task.

Fiber Guardian can be set to monitor certain parameters more closely than others. For example, it can check a particular section and/or total loss degradation more closely, while being less sensitive to event loss degradation or reflective peaks. Keep an eye on what you really want to know.

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Strategic operation

Fiber Guardian is also a multiport OTDR unit with the capability to record a situation at T0 and report it automatically, or on demand if the situation changes. Testing can be performed in various modes, from simple manual unplanned tests to programmed testing that can be executed repeatedly on an hourly, daily or weekly basis at a set time.

› **OTDR testing** – Performs unplanned and fully manual tests with a result download.

› **On-demand testing** – If a fault condition exists, it is logged and alerting starts.

› **24/7 monitoring** – Only fault-related events are stored.

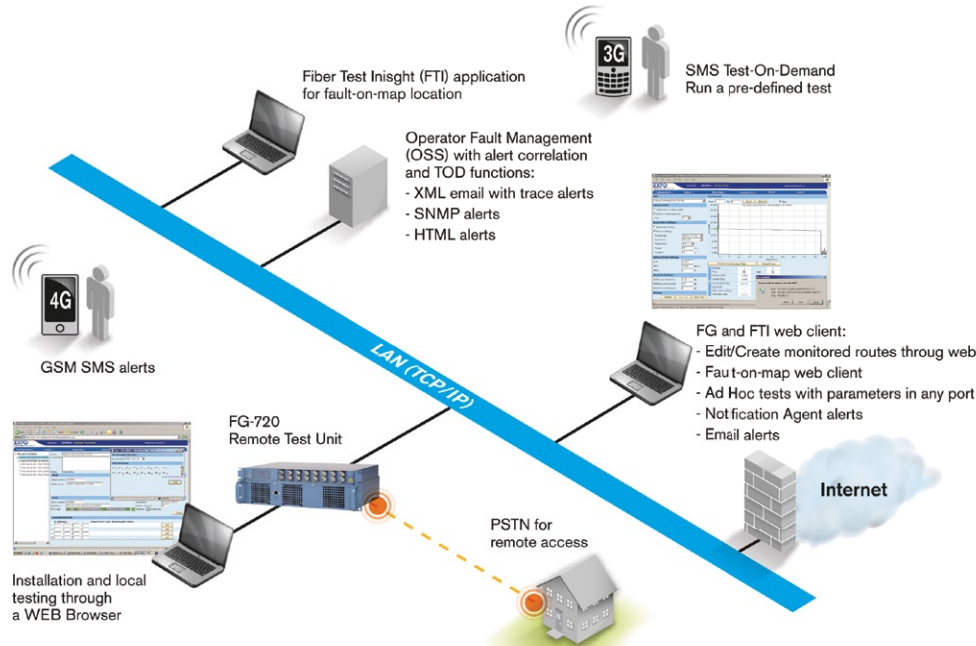› **Scheduled testing** – Tests can be set for predefined times and repeated (daily, weekly).

Figure 3. Fiber Guardian's functional diagram

SMS features: test and alert tool

Keep a close eye on your fibers and cables. When a problem occurs, Fiber Guardian can alert you through SMS, regardless where you are. An SMS message is only sent to you when faults occur, or when they are cleared by a user or resolved by the remote test unit. If you want to check the status of a fiber through SMS, simply enter an easy-to-remember SMS code identifying the port and test setup, and then send it to Fiber Guardian, which will process the test immediately. If a fault is found, an SMS alert will be sent back with details.

PEACE OF MIND—DOING ALL THE WORK FOR YOU

Figure 4. SMS messaging and test-on-demand triggering

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Open, secure and advanced

Based on today's most advanced technologies, Fiber Guardian is reliable and secure. Installed on your LAN, it provides a test access point to your field technicians, central office operators or test experts.

Fiber Guardian has a local data storage capacity of up to 80 GB, protected with a RAID configuration. Fiber Guardian provides the status of your RAID and other subsystems. A dry-contact relay opens if one of the subsystems becomes faulty, even in the event of a power shutdown.

Based on an embedded operating system, the unit is a web server that allows local or remote access, just like any other web server on the network.

Easy to integrate with your systems

If you want to integrate Fiber Guardian with your own network management system, this can be done quickly and efficiently thanks to the availability of documented (.chm) web services. Simply create a mailbox and capture XML alerts that your system can query and manage like any other alert from your other network elements.
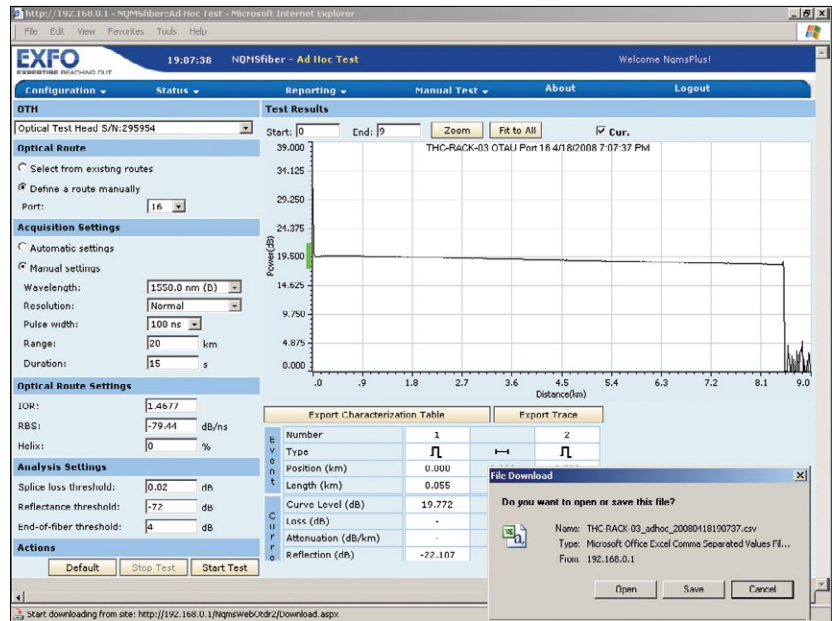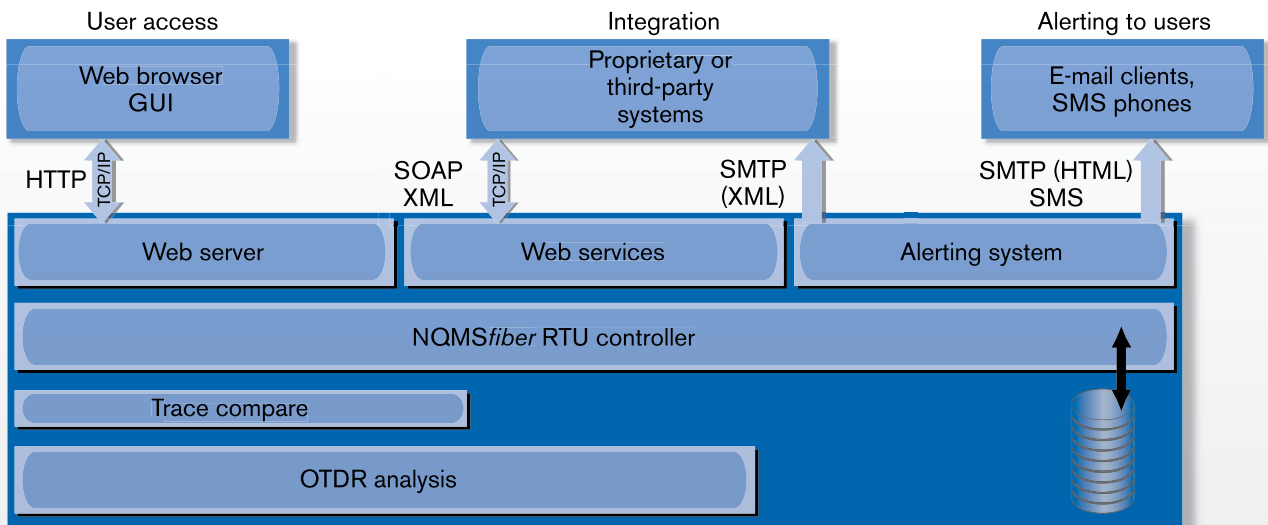

Figure 5. Manual OTDR testing

Figure 6. Fiber Guardian's architecture

Self-learning, plug-and-play unit

Fiber Guardian can be put to work right at your desk. Any free test port can be connected to a designated cable termination port, following which the unit will search for a new fiber and start monitoring when you decide it is time.

If you have limited knowledge of what the fault-detection thresholds should be for this new fiber, simply select the appropriate sensitivity level for each section or event—fine, normal or coarse—and Fiber Guardian will take care of the rest. Other discovery functions include:

› Auto-naming of all test entities and setups

› Auto-detection of optical modules and hardware to facilitate upgrades or module swap
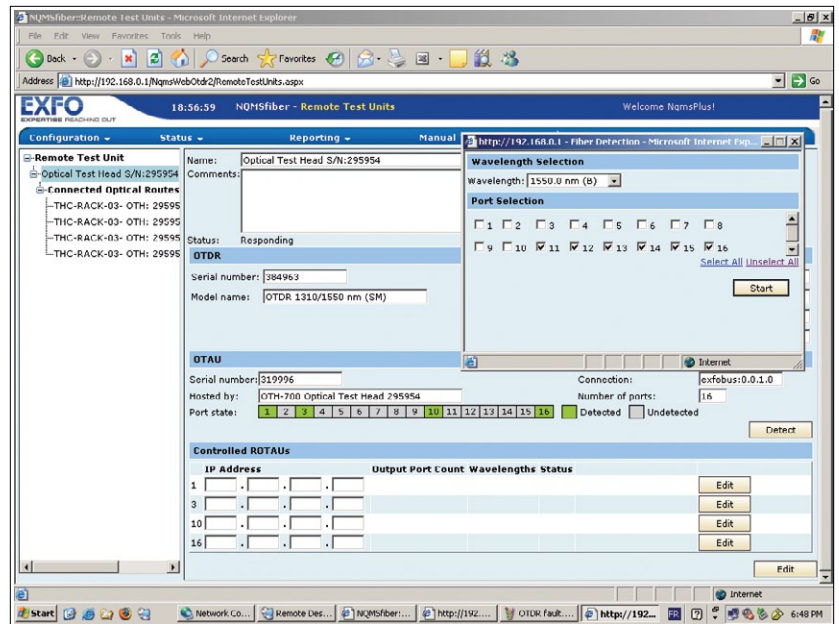

Figure 7. Fiber detection and auto-provisioning

Advanced functions

› Packages can be updated through a connection to a secure FTP site, and you can schedule your update to run at a predefined date and time

› PASS/FAIL remote verification of optical ports

› Check optical connection quality from your desk

› Multiple optical test heads, with each one containing an OTDR for a higher level of surveillance of your critical fibers

› Multimode fiber version of test head (on request)

› Adjust to seasonal variations efficiently

› Extend the learning function, which can be programmed automatically

› Demarcation point monitoring
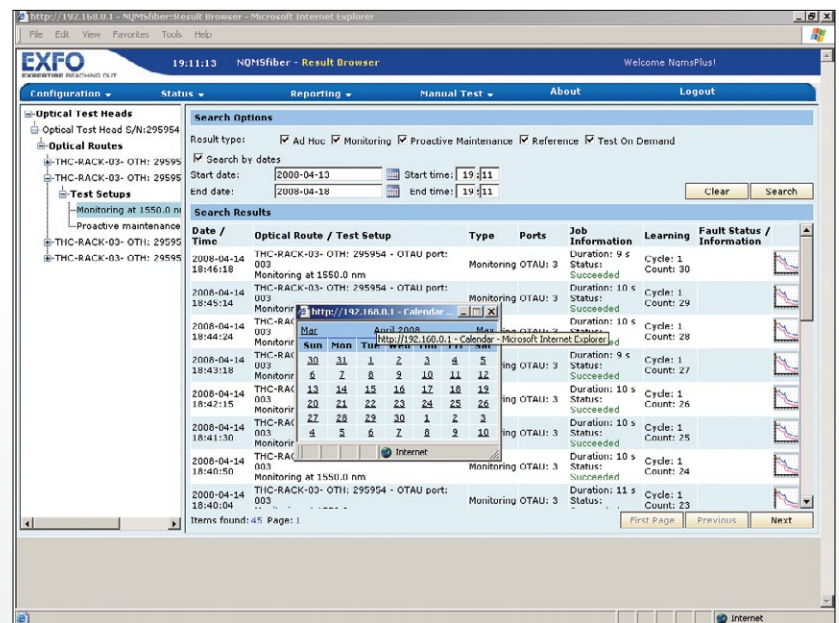
› Monitor peaks beyond RBS end-of-fiber

Figure 8. Result browser tool

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CUSTOMIZATION—THE RIGHT OPTIONS FOR THE RIGHT SITUATION

Configure and add options to your Fiber Guardian to make it your most powerful rackmounted optical test unit:

› One- or two-wavelength models (standard)

› OTDRs with dynamic range of 30 dB to 50 dB

› Three- or four-wavelength models (on request)

› Internal optical test access unit (OTAU) with 8 or 16 local ports.

› External optical test access unit (OTAU) with 24 to 96 local ports through RS-232

› External OTAU with 24 to 96 remote ports though IP network

 › Double star – connected to one of the local OTAU ports

› Filtered WDMs for live-fiber monitoring at 1625 nm or 1650 nm with a chassis

› GSM/GPRS modem

› Offline optical-measurement reporting software (see below)

› Filtered, narrow-laser OTDRs for live fiber monitoring

› Mapping and network documentation (on request)

› UPS for AC supply models

› Extended warranty, including software updates

› Spare-part kit

› Jumper cables

› Optical port inspection probes (FIP-400 series)

Additional value: Fibre Guardian and Fast Reporter

Get the most out of your EXFO equipment: Combine measurements taken with your monitoring system with baseline or construction traces for advanced analysis.

Applications include:

› Comparing proactive maintenance traces with traces taken at construction.

› Converting your Fiber Guardian reference, fault or proactive maintenance traces with the initial set of results taken on the fiber when it was deployed.

› Using Fiber Guardian to build a bank of fiber test results on an existing fiber before commissioning new services. Using Fast Reporter to create your fiber report.

› Uploading fault events and traces you receive through e-mail alerts, and analyzing the various events sorted by time.

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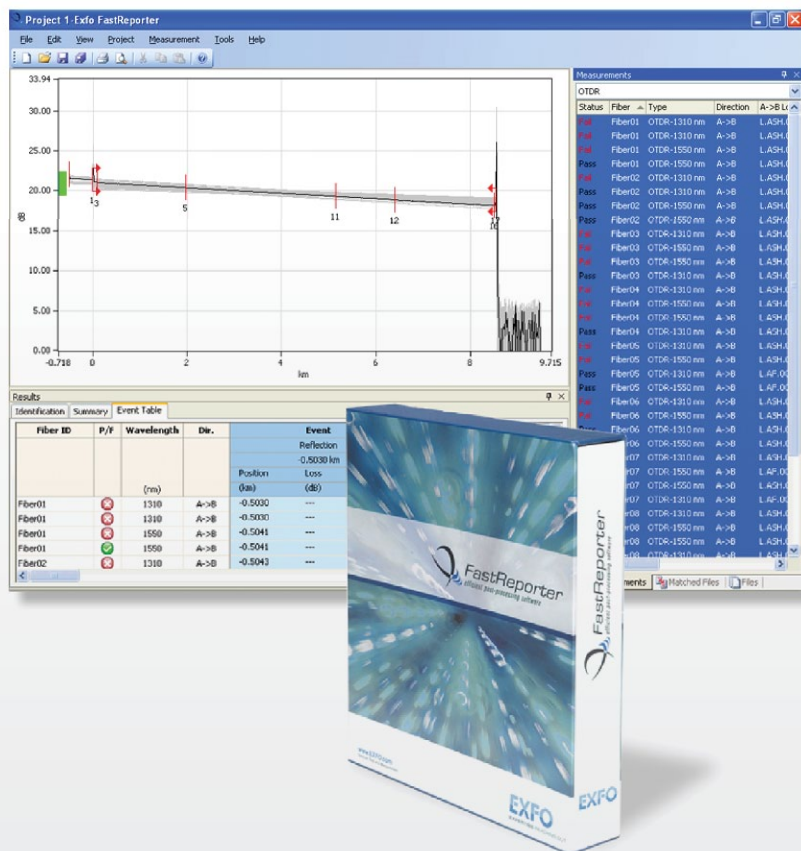
FIBER GUARDIAN REMOTE TEST UNIT

Standard OTDR modules (see below)	Metro Core Ultra
Optical ports	8 or 16
Number of external optical ports	Up to 96
OTDR-to-port loss (dB) (typical at 1550 nm, 8-port model)	0.8
Internal OTAU lifetime (cycles)	10 million 1 billion (on request)
Alarm relay output	System status
Network interfaces (2) (standard CAT-5 cable)	10/100 Base-T Ethernet (one dedicated to local access)
Dial-up modem (for dial-in remote access)	v. 92, 56 k
GSM modem (for alerting purpose only; optional)	EDGE (E-GPRS) CLASS 10 QUAD-BAND GSM
Unit status front LEDs	4
Storage capacity (HDDs)	80GB in RAID

Power supply
   AC
   DC
	
	100-240 VAC, 50/60 Hz
	-40/-57 VDC

UPS (optional)	15 min. autonomy

Power consumption steady state (watts)
   AC
   DC
	
	90
	70

Software user interface	Web-based
Local access, LAN and dial-up	Internet Explorer™
Rear port can be DHCP or fixed address	Mozilla™

GENERAL SPECIFICATIONS

Operating temperature	0 °C to 50 °C	(32 °F to 122 °F)
Size (H x W x D)	44 mm x 427 mm x 312 mm	(1.72 in x 16.8 in x 12.3 in)
Weight	13 kg (28.5 lb)	
Certifications	CE, CSA-UL, RoHS	

STANDARD ACCESSORIES AND FUNCTIONS

Functions	Notification agent for local alerting to any PC over LAN
Accessories	User guide Rackmount kit

Notes

a. SNR = 3 min. average using 20 µs pulse width.

b. For FTB-7500E 1310/1550 nm model, dynamic range at 1550 nm is 43 dB.

c. With NZDSF fiber (G.655).

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FIBER GUARDIAN REMOTE TEST UNIT

OTDR Module	Metro	Core	Ultra
FTB-7000 series model	FTB-7300E	FTB-7500E	FTB-7600E
Fiber type	Singlemode	1310/1550	1310/1550
Wavelength models (nm)	1550 1310/1550 1550/1625 1625	1310/1550 1550/1625	1310/1550 1550/1625

Dynamic range (dB) [a]
  1310 nm
  1550 nm
  1625 nm
	
	39
	37
	37
		
		45
		45 [b]
		45
			
			50 [c]
			50 [c]
			48 [c]

Notes

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LASER SAFETY

21 CFR 1040.10 AND IEC 60825-1
CLASS 1M

IEC 60825-1:2007   21 CFR 1040.10
INVISIBLE LASER RADIATION
DO NOT VIEW DIRECTLY
WITH OPTICAL INSTRUMENTS
CLASS 1M LASER PRODUCT
λ: 800-1200 nm, PW ≤ 1 µsec, Ppk ≤ 500 mW
λ: 1200-1400 nm PW ≤ 20 µsec, Ppk ≤ 250 mW
λ: 1200-1700 nm, PW ≤ 20 µsec, Ppk ≤ 500 mW
QST 572

ORDERING INFORMATION

FG-720-XXXX-XX-XX-XX-XX-XX

Models
FG-720-003M = Fiber Guardian unit, 1550 nm, 38 dB SM OTDR; metro
FG-720-023M = Fiber Guardian unit, 1310/1550 nm, 35/38 dB SM OTDR; metro
FG-720-004M = Fiber Guardian unit, 1625 nm, 36 dB SM OTDR; metro
FG-720-034M = Fiber Guardian unit, 1550/1625 nm, 38/36 dB SM OTDR; metro
FG-720-023L = Fiber Guardian unit, 1310/1550 nm, 45/43 dB SM OTDR; core
FG-720-034L = Fiber Guardian unit, 1550/1625 nm, 45/45 dB SM OTDR; core
FG-720-023U = Fiber Guardian unit, 1550 nm, 50/50 dB SM OTDR; ultra
FG-720-034U = Fiber Guardian unit, 1550/1625 nm, 50/48 dB SM OTDR; ultra

Rackmount kit
RK19 = RTU rackmount kit 19 in
RK23 = RTU rackmount kit 23 in
RKET = ETSI adapters

Power input
AC = 100-240 VAC, 50/60Hz
DC = -48 VDC power supply

Additional modem
GSM = GSM modem (USB external)

Connectors
58 = FC/APC
88 = SC/APC

Number of ports
08 = 8 ports
16 = 16 ports

Example: FG-720-004M-16-88-GSM-DC-RK19

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