TFS-3200C

Optical Spectrum Analyzer

- Auto Test Mode Zooms In on Active Channels
- < 1/2 Second Real Time Updates
- Setable Pass/Fail Thresholds and Drift Statistics
- Spectrum, Bar Graph and Table Displays
- Interchangable Fiber Optic Connectors
- USB Port

Trilithic's TFS-3200C™ Optical Spectrum Analyzer offers full featured analysis of CWDM systems in a rugged hand-held package ideal for installation, maintenance and upgrades of CWDM systems. With an extremely fast acquisition time of two seconds per scan, easy-to-use Pass/Fail and auto test features, and an easy-to-read color display, this field worthy optical spectrum analyzer is a road warrior.

The TFS-3200C features solid state optics, with no fragile or moving parts, a massive internal memory to store up to 1000 tests and a USB port to transfer data to a portable flash drive. Trilithic includes Windows® based certification software for fast and easy reporting and Test information can be displayed in Table, Spectrum or Channel form.

Graph Mode

While in graph mode, the use can quickly identify power per channel, compare active and non-active channels, and identify minimum and maximum thresholds being met.

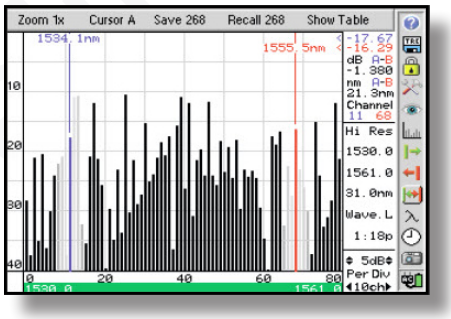
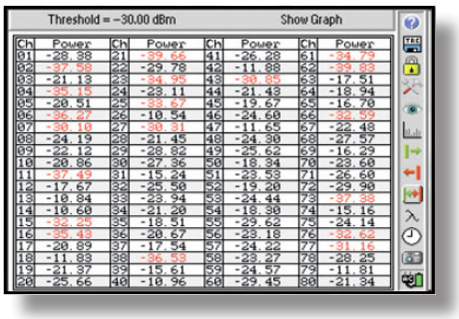


Table Mode

While in table mode, the minimum and maximum threshold power settings may be adjusted giving immediate indication of channels that pass or fail to meet these levels. Table mode displays minimum and maximum channel drift statistics.



TFS-3200C

Optical Spectrum Analyzer

SPECIFICATIONS

Wavelength Range	530-1570nm
Wavelength Accuracy	±0.1 nm
Channel Spacing	50 GHz, 100 GHz, CWDM
Channel Power Range	+10 dBm to -50 dBm
Absolute Accuracy	±1 dB
Readout Resolution	0.01 dB
PDL	±0.15dB
Measurement Time	< 1/2 Sec
Optical Rejection Ratio	40 dBc (@50GHz)
Return Loss	>40 dB
Optical Interface	Universal UPC (FC/SC)
Graphical Display	Bar Graph, Spectrum and Tables
Display	4 in. Color TFT
Dimensions	7.75 x 4.5 x 2.25 inches
Weight	2 lbs
Battery	Rechargeable NiMH - 8 hours operating time
Power	100-240 universal US, GB, EU, AU Mains
Environmental Operation	-10°C to + 50°C
Accessories Included	Universal power supply with mains for US, UK, CE and AU. Interchangeable FC and SC adaptors, Window'sTM Compatible Software, USB Cable, Manual and Rubber Boot

TFS-2250

Optical Time-Domain Reflectometer

- 32 dB Dynamic Range
- Instantaneous Testing
- Short Dead Zone
- One Button Testing
- Trace Overlay Capability
- Visible Fault Locator
- Event Table with Pass/Fail Feature
- USB and Mini USB Ports

The TFS-2250™ is the ideal OTDR for everyday use in the field on a wide variety of networks. Featuring speed, dynamic range, an easy to read color display, a rugged package, short dead zone and of course all at an affordable price. This light weight, easy-to-use OTDR can be operated by a novice while at the same time be appreciated by a seasoned user.

Trilithic's new OTDR series of fiber solutions are available in dual singlemode, dual multimode and quad wavelength configurations. Testing is made simple and fast with the press of the Auto Test button. Examine the trace using the zoom feature, A/B cursor selection button and touch-wheel. Zero in on events fast with the powerful event selection feature or with the event analysis table.

The abundant dynamic range and a 2 meter dead zone, makes the TFS-2250 ideal for links up to 240km as well as being perfect for short LAN links within the facility. Weighing in at just 2.0 pounds with a hardened water resistant enclosure, this OTDR is ideal for all conditions. The rubber boot will add protection and provides a kick stand for the ideal angle for viewing the display while operating on a workbench.

Trace analysis and reporting are fast and easy with a Pass/Fail feature, onboard event table or the compatible software with multi-trace capability. The OTDR has on board storage of 1000 traces with the ability to download traces directly to your computer via USB cable or use a USB Flash Drive.

Use a power meter and light source to accomplish insertion loss test measurements. When paired with a companion power meter or light source the units have auto-wavelength and auto-test capabilities for advanced end to end measurements.

TFS-2250

Optical Time-Domain Reflectometer

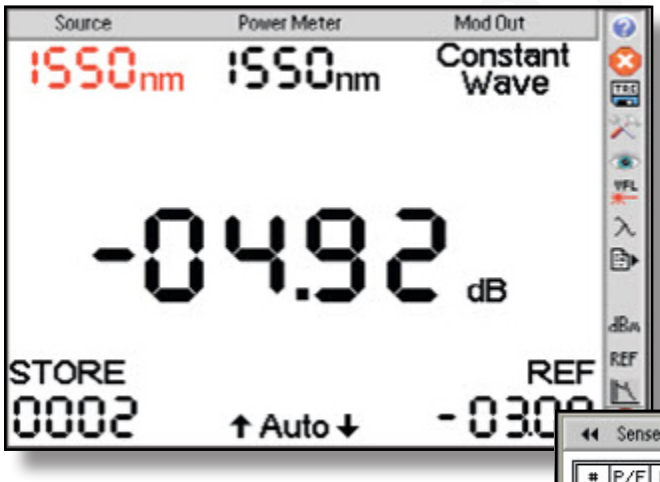
SPECIFICATIONS

Wavelength 850, 1300, 1310, 1490, 1550	850, 1300, 1310, 1490, 1550, 1625nm ±20nm
Dynamic Range 27/26dB MM, 32/30dB SM	27/26dB MM, 32/30dB SM
Pulse Width 20 - 10,000 ns	20 - 10,000 ns
Units of Measurement	km, kf
Event Dead zone 2m	2m
Attenuation Dead zone 2m	5m
Resolution	.25 - 64m
Distance Uncertainty	±(0.75m + 0.005% x distance + sampling resolution)
Full Scale Distance Range	1-64km MM , 1-240km SM
Typical Real-time Refresh Rate	4 Hz
Group Index of Refraction (GIR)	1.024 - 2.048
Linearity ± .05 dB/dB	± .05 dB/dB
Memory Capacity	1000
Memory Type	Internal and Flash Drive
Power Supply/Charger	Universal
Battery	8hr
Storage Temperature	-20 to 60 C
Operating Temperature Range	-10 to 50 C
Dimensions (w/out rubber boot)	7.75” L x 4.5” W x 2.25” H (197mm L x 114mm W x 57mm H)

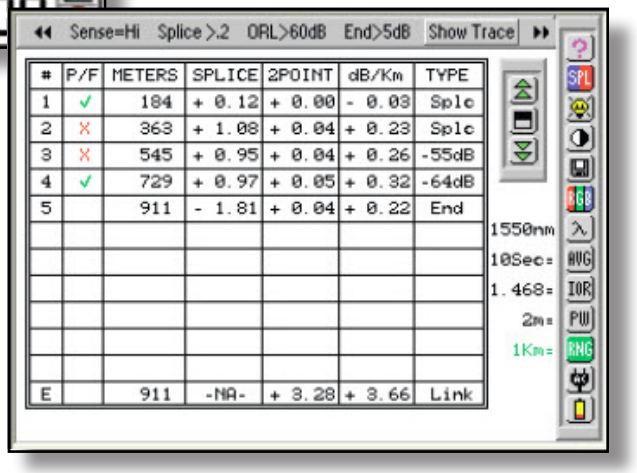
TFS-2250

Optical Time-Domain Reflectometer

Weight	2 lbs
Communications Ports	USB and USB Flash Drive Ports
Connector Styles	FC, ST, SC Interchangeable
Accessories Provided	Universal Power Adapter w/ US, UK, Continental Europe, and Australian Plugs, Interchangeable FC/ST and SC Adapters, Rubber Boot
Visible Light Source	
Emitter Type	Laser
Wavelength	650nm ±5nm
Laser Safety Class	Class IIFDA21 CFR1040.10 &1040.11 IEC 825-1:1993
Connector Type	2.5mm Universal
Output Power	1mW Max.



Integrate Loss Test Set

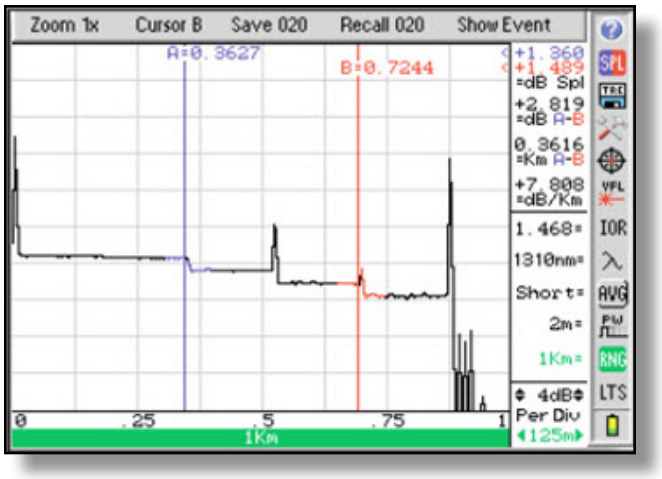


Interactive Event Table

Pressing the Select button while on a highlighted event will revert to the Trace View with the active cursor positioned at the selected event.

TFS-2250

Optical Time-Domain Reflectometer



Trace View

The Trace View is a graphic representation of fiber optic loss verses distance which includes measurements of interest and settable parameters.

TFS-401

Optical Test Set - Optical Power Meter with Light Source

- SOURCE 1310nm / 1550nm with ST, SC & FC Adapters
- METER 850nm / 1300nm / 1310nm / 1550nm
- Reference Storage
- Simultaneous Outputs

The TFS-401™ Optical test set gives technicians the capability to perform fast and accurate measurements in the field. Alone, the optical power meter is ideal for absolute measurements. When the power meter is used in conjunction with the source relative measurements can be made to accurately determine fiber loss.

Trilithic's new optical test set includes our TFS-201™ light source and TFS-301™ optical power meter, both specifically designed with the field technician in mind providing a long battery life and rugged construction that includes high impact rubber bumpers further protecting the light source and optical power meter.

TFS-301™ Optical Power Meter

The TFS-301™ features NIST traceable calibration at 4 wavelengths: 850nm, 1300nm, 1310nm, and 1550nm for accurate power level measurements.

When making relative measurements a technician has the ability to store zero references for reading for all four wavelengths independently. This allows all zero references to be taken at one time and also allows the unit to be turned off while moving between locations preserve battery life. By storing all four references a technician will have them available for immediate recall even when moving between locations.

TFS-201™ Optical Power Source

The TFS-201™ source allows simultaneous operation of both outputs or individual operation with either CW, 30Hz, 500Hz, or 2kHz modulation for use with leak detectors or fiber identifiers.

Quick-Charging

The TFS-401™ Optical Test Set deivces are powered by either four AA alkaline batteries or an AC/DC adapter with four AA NiMH batteries (both the adapter and NiMH batteries are included). In addition to standard charge mode, the units feature an emergency quick-charge mode that allows the user to charge the batteries in approximately 1 hour.

TFS-401

Optical Test Set - Optical Power Meter with Light Source

SPECIFICATIONS

Wavelength	1310 / 1570nm
Fiber Size (MAX)	100/140 (Power Meter)
Port Style	ST, FC, SC, others available
Source Pmin	-8 dBm
Source Stability	±0.1 dB/8hr typical
Source Bandwidth	5 (1310 nm) / 5 (1550 nm)
Meter Range	+3 to -6 dBm (1300 / 1310 / 1550 nm)
Meter Resolution	0.01 dB
Meter Accuracy	±0.25 dB
Meter Detector	Ge
Operating Temperature	0°C to + 50°C
Storage Temperature	- 10°C to + 60°C
Humidity	10% to 90%, non-condensing
Power	4 x AA NiMH or Alkaline Batteries, 120 VAC / 60 Hz
Typical Battery Life	10+ hours typical
Accessories Included	????

TFS-FS1

Optical Leakage Detector

- Identify Fibers at More than 300 Kilometers
- Long Distance and Local Applications
- Optimize Mechanical Splices and Connectors
- Find Breaks in Dark Buffered Fiber
- Locate Signals through Bulkheads / Dust Caps
- Audio / Visual Leak Indication
- Pinpoint Faults to Within Inches

The TFS-FS1™ optical leak detector is designed to locate energy leaks in fiberoptic systems due to splice loss, connector loss, breakage, or bending and to identify fibers over long distances. This optical leakage detector is the most sensitive fiber light finding instruments on the market today. By simply sweeping over a fiber, the leak detector will give an audio and visual indication whenever it encounters a light loss point. Often performing the same function as a visible laser source, this product is used in OTDR dead zone areas or splice enclosures where exact pinpointing of a fault is critical.

The major advantage of the TFS-FS1 over a visible laser however is that it can “see” cable faults in bright room light and in many blue, green, and black coated fibers. Find light reflected from connectors mated in bulkhead adapters and even through some dust caps. Locate fibers at distances of more than 300 kilometers, not just a few miles.

Applications

RAW FIBER IDENTIFICATION (End Access, Short and long distance)
In applications where it is necessary to find a strand of fiber in a bundle and the user has access to fiber ends, the TFS-FS1 allows scanning of the bundle without the use of a clamping device or bare fiber adapter. In addition, because of its infrared operation, the TFS-FS1 can outperform visible laser sources by over 1000%.

RAW FIBER IDENTIFICATION (Side Access, Short and long distance)
In emergency applications where a fiber identifier is not available and it is necessary to find a strand of fiber, the technician may bend a fiber or fibers over an appropriate mandrel to induce a detectable leak. In this way, the TFS-FS1 Optical Leakage Detection may function as a poor man’s fiber identifier.

CONNECTOR PANEL PORT IDENTIFICATION (Short and long distance)
In applications where it is necessary to find a specific connector port in a patch panel, the TFS-FS1 allows scanning of the entire face of the box without internal access and use of a clamping device or bare fiber adapter. In addition, because of its infrared operation, the TFS-FS1 can outperform visible laser sources by over 1000%.

FIBER BENDING LEAK DETECTION
The TFS-FS1 can locate severe bending due to crimped, folded, or otherwise pinched fibers where a loss is created. While the function is similar to a visible laser in this application, the TFS-FS1 Optical Leakage Detector will work in bright indoor or outdoor applications without the need to block ambient light. In addition, because of its infrared operation, the TFS-FS1 will work with many blue, green, and black buffer coatings which block visible red laser light.

TFS-FS1

Optical Leakage Detector

FIBER BENDING LEAK DETECTION
The TFS-FS1 can locate severe bending due to crimped, folded, or otherwise pinched fibers where a loss is created. While the function is similar to a visible laser in this application, the TFS-FS1 Optical Leakage Detector will work in bright indoor or outdoor applications without the need to block ambient light. In addition, because of its infrared operation, the TFS-FS1 will work with many blue, green, and black buffer coatings which block visible red laser light.

BROKEN FIBER LEAK DETECTION
The TFS-FS1 can locate fully fractured fibers and again, while the function is similar to a visible laser in this application, the TFS-FS1 Optical Leakage Detector will work in bright ambient light conditions. Also, as with bending loss location, the probe will work with many blue, green, and black buffer coatings which block visible red laser light.

CONNECTOR END FACE SPLATTER DETECTION
By probing connectors from the side with the TFS-FS1 Optical Leakage Detector, it is possible to identify damaged connector end faces by light they splatter from the normal emission cone without the need for a microscope.

SUB-SURFACE FRACTURE DETECTION (Ceramic ferrule based connectors)
By probing ceramic ferrule based connectors (ST, SC, FC, LC, MU, Military Termini, etc) from the side with the TFS-FS1 Optical Leakage Detector, it is possible to identify connectors where the fiber has either fractured inside the ferrule or where the fiber first meets the ferrule inside a connector. This is particularly common with anaerobic adhesive based connectorizations.

EPOXYLESS CONNECTOR LEAK DETECTION
By probing epoxyless connectors from the side with the TFS-FS1, it is possible to identify connectors where the internal mechanical splice is inefficient by sensing light leaking through the ferrule or the connector itself.

MECHANICAL SPLICE LEAK DETECTION
By scanning mechanical splices from the side with the TFS-FS1, it is possible to identify leaks either through the splice body or by light scattered into the jacket of the secondary fiber in the splice. Because of its infrared operation, the TFS-FS1 can outperform visible laser sources in this application by over 1000%.

FUSION SPLICE LEAK DETECTION
By scanning fusion splices from the side with the TFS-FS1 Optical Leakage Detector, it is possible to identify damaged splices through the splice jacket. Because of its infrared operation, the TFS-FS1 can outperform visible laser sources in this application as well by over 1000%.

BULKHEAD ADAPTER ALIGNMENT FAILURE DETECTION
By scanning the secondary side of connectorized bulkhead adapters in a patch panel, the technician may be able to locate worn or fractured alignment ferrules by virtue of the light scattered into the jacket of the secondary fiber.

RAW FIBER IDENTIFICATION (Side Access)
By scanning the secondary side of connectorized bulkhead adapters in a patch panel, the technician may be able to locate worn or fractured alignment ferrules by virtue of the light scattered into the jacket of the secondary fiber.

SPLITTER TROUBLESHOOTING
By scanning the secondary side of splitters, function may be verified in places where visible lasers will not function.