

MaxTester DSL



Fast, easy-to-use and cost-effective solution for installing FTx services over DSL

KEY FEATURES AND BENEFITS

ADSL2+ testing, with optional VDSL2 for hybrid networks

Ethernet testing for qualifying FTx service at the customer premises

IPTV test suite for automated quality of service (QoS) testing

Data testing and Web browser for complete service qualification

Configurable pass/fail results for automated testing

Rugged and weatherproof handheld unit designed for the outside plant



Assessing
Next-Gen Networks

A NEXT-GENERATION TOOL FOR BROADBAND DEPLOYMENT

EXFO's MaxTester DSL is the perfect tool for any service provider deploying VDSL2, ADSL2+ and triple-play services. It has been designed to stand up to the challenges of the outside plant environment. The MaxTester DSL's small form factor, rugged design and easy-to-use menu system are ideal for installation technicians. It makes the test process highly automated, and allows technicians to close their jobs quickly and efficiently.

The MaxTester DSL's large display makes it even more user-friendly, and when it comes to saving results, it provides technicians with many connectivity options for uploading tests and compiling reports.

TEST TRADITIONAL ADSL AND NEWLY DEPLOYED VDSL2

MaxTester DSL is based on the industry-leading Broadcom chipset, which ensures excellent interoperability for VDSL2 and ADSL2+ when testing against other Broadcom-based devices and other vendors' chipsets. It also allows the use of Broadcom's ADSL2+ Nitro mode to negotiate with Broadcom-based DSLAMs in order to achieve data rates as high as 30 Mbit/s (depending on DSLAM setup, loop length, noise influences and circuit quality). Nitro™ is a proprietary Broadcom approach that increases the throughput on links by compressing the ADSL2+ ATM header, thus requiring fewer bits to be transmitted.

Ensuring the highest quality triple-play services to customers is a must for service providers, but it is also quite a challenge with aging copper plant. One industry standard method that helps achieve this is the xDSL impulse noise protection (INP) parameter, which is particularly important when deploying IPTV services based on VDSL2 and ADSL2+. For example, INP helps reduce the amount of macro-blocking in an IPTV stream caused by short duration and intermittent impulse noise spikes. The MaxTester DSL has a complete implementation of the ITU-T INP standard for values ranging from 0 to 16.

| KEY FEATURES | |
|----------------------------------|---|
| IPTV test suite | Automated testing of channel operation and quality of service (QoS) |
| Ping, traceroute and FTP testing | Operates over DSL and Ethernet interfaces to prove network performance |
| IP login | Authenticates on the network and confirms correct operation |
| Web browser | Eliminates the need for an external PC and confirms web access |
| User-defined automatic testing | Easy-to-read results with graphical pass/fail thresholds |
| Ethernet testing | Emulates the customer equipment inside the home |
| Dual Ethernet ports | Monitor real-time traffic inside the customer premises via Pass Through mode |
| Modem replacement | Allows confirmation of service in the home or isolation of faults to the customer modem |
| Broadcom chipset | Industry-leading VDSL2 and ADSL2+ support |

SIMPLIFYING FTTx TESTING

Thanks to its xDSL and dual Ethernet ports, the MaxTester DSL is a very flexible tool for service providers qualifying service all the way from the central office to the customer's equipment. The MaxTester DSL also provides powerful capabilities in troubleshooting applications where it can be used in different modes to quickly isolate faults no matter where they are located (network, outside plant, customer equipment or inside wiring). Even in hybrid networks where FTTH is also being deployed, the MaxTester DSL's Ethernet ports can be used inside the home to test at any point where a LAN connection is available.



IPTV Testing

To boost their revenues, many telcos are using xDSL to deliver new triple-play services on their existing networks. Amongst these services, video (IPTV) is one of the fastest growing and is getting a high level of focus and investment. Knowing that customers are very sensitive when it comes to IPTV QoS, technicians must be equipped with the right test sets to quickly and efficiently turn up IPTV services and to meet customers' QoS expectations.

With this in mind, the MaxTester DSL offers an optional IPTV test suite to provide both expert and entry-level technicians with a simple method to check the operation and quality of the offered video channels. The MaxTester DSL can act as the subscriber's IPTV set-top box (STB) on either the xDSL circuit or the Ethernet interface at the customer premises. With the IPTV Auto Test feature, the MaxTester DSL can automatically join and leave, or simultaneously join multiple chosen channels. Zap time and key service parameters (including packet loss) can also be gathered for each channel and simple graphical pass/fail indicators show per-channel performance results, which are compared against pre-programmed thresholds.

Web Browser

Many telcos require that technicians use a Web browser to confirm service operation or as visual proof to the customer. Up to now, technicians required a PC in addition to the test set to do this. Thanks to the MaxTester DSL's integrated browser, carrying a laptop to the job location is no longer necessary. The MaxTester DSL browser allows the user to access websites and load a web page as part of any auto test directly from the test set. Just as any other browser, it can bookmark commonly used URLs and allows the user to save new ones in real-time as needed. Complete navigation and the selection of hyperlinks are all a part of this optional feature.

Data Service Testing

Data services are the backbone of most broadband networks, and subscribers continue to have higher and higher expectations of network performance as the popularity of multimedia sites and services continues to accelerate. For this reason, technicians must not only test the connectivity of data services but they must be able to validate performance against committed service levels.

The MaxTester DSL data services test suite meets these requirements by providing automated tests for IP ping, traceroute and FTP upload/download. As with all the MaxTester DSL tests, the data services tests can be executed over the xDSL or Ethernet interfaces for thorough installation and troubleshooting in the outside plant and inside the customer premises.



THE MAXTESTER DSL OPERATIONAL MODES

1

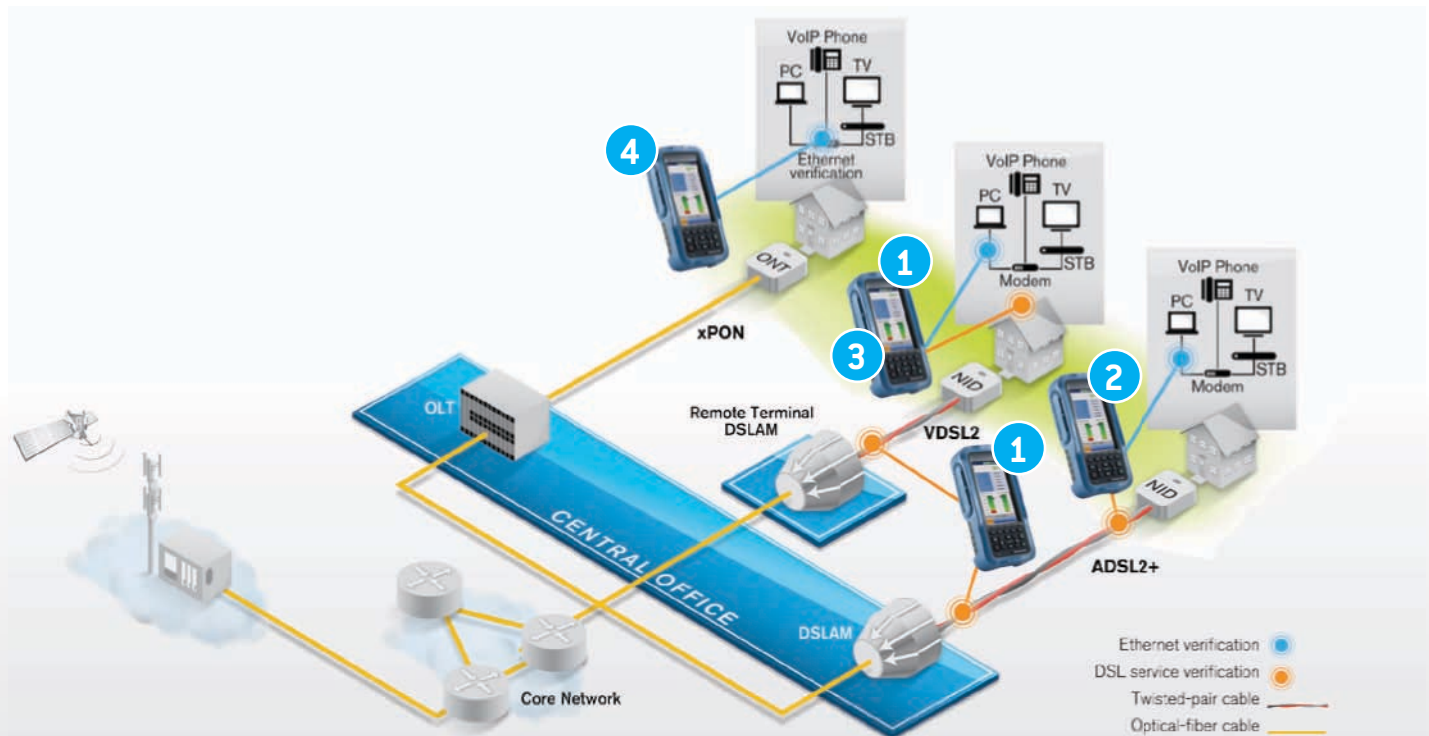
ADSL2+/VDSL2 Terminate Mode

The MaxTester DSL synchronizes with the DSLAM on the circuit in the outside plant or at the NID, allowing authentication and service testing.

2

xDSL Pass Through Mode

The MaxTester DSL replaces the customer modem or router, synchronizes with the DSLAM, and allows authentication and service testing. It also permits the customer's applications to be used to confirm the correct operation for services such as PC Web access, IPTV viewing, STB operation and VoIP.



3

Ethernet Terminate Mode

The MaxTester DSL automatically synchronizes with 10/100Base-T ports inside the customer premises and allows authentication as well as service testing. In this configuration, the MaxTester DSL can be used in xDSL (FTTN), xPON (FTTH) or Ethernet deployments.

4

Ethernet Pass Through Mode

The MaxTester DSL automatically synchronizes with 10/100Base-T ports inside the customer premises as traffic is passed between both Ethernet ports. In this configuration, the MaxTester DSL can be used in xDSL (FTTN), xPON (FTTH) or Ethernet deployments.

Applications

- > Ensures the customer has the required bandwidth (downstream and upstream rates) for delivering triple-play services
- > Assesses connectivity all the way to the customer equipment over most technologies
- > Ensures the IPTV and data services can operate on the circuit with the required QoS
- > Verify if the customer's modem/router, equipment and inside wiring are working correctly
- > Proves data flow between the network and end equipment

ALL THE RIGHT FEATURES FOR INSTALLATION TECHNICIANS

With its small form factor, the MaxTester DSL can go anywhere you need to go. It is rugged and light, and all connectors are protected from the rain—just what is needed for the demanding outside-plant environment.

Automated Service Testing

Thresholds can be set and saved for key DSL parameters as well as for the data and IPTV service tests. When tests are run, users are given a clear graphical pass/fail result so they can quickly move onto the next job or investigate further. Test profiles can be easily transferred between units to ensure all technicians from the same organization are testing to the same thresholds.

Easy to Use

The MaxTester DSL's next-generation user interface has been designed with the first-level technician in mind. The large display makes use of colored icons and graphics for easy configuration and operation, simple to use for experienced and novice users alike.

Capturing Results and Connectivity

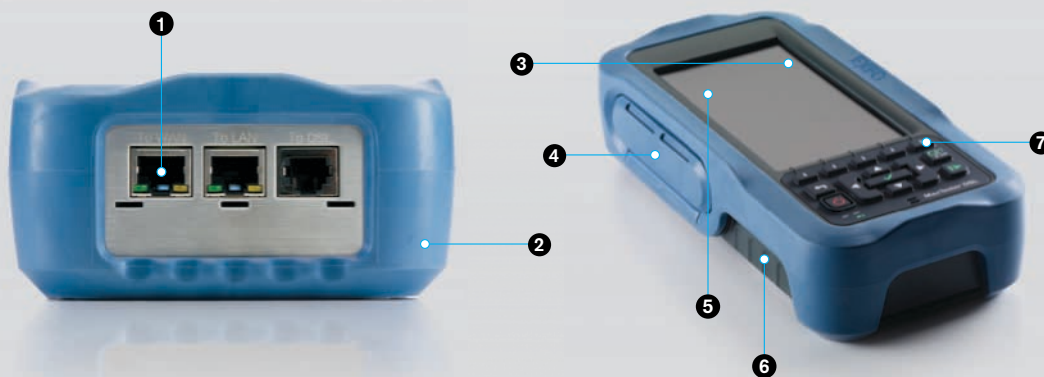
In today's highly competitive environment, quality of service is paramount for service providers. MaxTester DSL allows reports of all tests to be uploaded in a variety of formats. Therefore, service providers can keep all results on file for future reference and confirm all required tests have been completed by the technician.

Battery Powered

MaxTester DSL is fitted with a battery using the latest technology in rechargeable cells. It provides the maximum testing time between charges, even when using the high power demands of VDSL2. When charging is required, technicians can either use the optional 12 Volt vehicle charger or the supplied AC adapter.



KEY CHARACTERISTICS



- 1 DSL and dual Ethernet connectors—sealed against the environment
- 2 All round rubber bumper
- 3 Large 6 in daylight-visible color LCD
- 4 Interface connections—water and dirt protected
- 5 Innovative and icon-driven user interface
- 6 Handgrip area
- 7 Simple keypad

SPECIFICATIONS

DSL INTERFACE

| | |
|---|--|
| Chipset | Broadcom |
| Standards Compliance VDSL2 ADSL1/2/2+ | ITU-T G.993.2 Annex A version (over POTS): ITU-T G.992.5 (ADSL2+), ITU-T G.992.3 (ADSL2), ITU-T G.992.1 (G.DMT) and ANSI T1.413 Issue 2 Annex B version (over ISDN): ITU-T G.992.5 (ADSL2+), ITU-T G.992.3 (ADSL2), ITU-T G.992.1 (G.DMT) Annex L (RE-ADSL) and Annex M (optional) also supported |
| DSL measurements (upstream and downstream) | Maximum attainable bit rates Actual achieved bit rates Latency mode: fast, interleaved Capacity (%) Signal-to-noise ratio (SNR) margin Output power Attenuation Carrier load (bits/bin) Interleave depth Interleave delay Trellis coding Bit swapping |
| Miscellaneous functions | PhyR™ and INP support Nitro™ support FEC, CRC, HEC counters Loss of sync counter VDSL2 per band information |

DATA TESTING

| | |
|-------------------------|---|
| Interfaces supported | VDSL2 ADSL1/2/2+ Ethernet 10/100 |
| Encapsulation methods | PPPoE (RFC 2516), RFC 2684 supporting bridged Ethernet (IPoE), IPoA (RFC 1577), PPPoA/LLC and PPPoA/VC-MUX (RFC 2364) |
| Operating modes | DSL Terminate Modem Replacement (DSL to Ethernet) Pass Through Ethernet Terminate Ethernet/Ethernet Pass Through |
| Login format | Username and password using PAP/CHAP |
| IP connectivity support | DNS, DHCP client/server, NAT, VLAN |
| IP ping | Pings another device on the network Ping destination: gateway, IP address or URL Number of pings: 1 to 99 Packet size: 32 to 1200 bytes (32 is default) Timeout: 1 to 10 seconds Results: packets sent/received, average round-trip delay (ms) |

SPECIFICATIONS (continued)

Traceroute
 Determines the path used to reach a device on the network
 Timeout: In seconds, default is 1 s, maximum is 10 s
 Packet size: 32 bytes
 Number of hops: 1 to 32 (default is 30)
 Results: Indicate IP address of hop and round-trip time in milliseconds (ms)

FTP speed test
 Displays speed to upload and/or download a file
 Address: IP or URL
 Protocol: FTP
 Results: Time, kB transferred, speed in kbit/s

WEB BROWSER

Internet live feed
 Browses to websites over xDSL or Ethernet interfaces; user-definable bookmarks

IPTV TESTING

Interfaces supported
 VDSL2, ADSL1/2/2+, Ethernet 10/100

Supported video standards
 MPEG2, MPEG4 part 2 and 10 (H.264/AVC), WM9

Operating modes
 DSL Terminate
 Ethernet Terminate

IPTV parameters/functionality
 IGMP join/leave requests with STB emulation
 Automatic tests to join/leave and analyze up to five simultaneous streams
 Programmable channel list for storage of commonly used channels
 Bandwidth usage per channel
 IGMP packet and rate information per line and channel
 Multicast/unicast RTP/UDP IP stream support

Key IP video QoS parameters
 Packet loss, zap time, PID statistics

Graphical results
 Transport stream packet loss histogram
 Pass/fail indication for each stream

GENERAL SPECIFICATIONS

| | |
|-----------------------|--|
| Display | TFT LCD with backlight 152 mm (6 in) diagonal 800 x 480 resolution, WVGA |
| Size (H x W x D) | 254 mm x 124 mm x 62 mm (10 in x 4 ⁷ / ₈ in x 2 ⁷ / ₁₆ in) |
| Weight (with battery) | 1.5 kg (3.3 lb) |
| Temperature range | |
| operating | 0 °C to 40 °C (32 °F to 104 °F) |
| storage | -20 °C to 60 °C (-4 °F to 140 °F) |
| Humidity | 5 % to 95 % relative, non-condensing |
| Shock | 1 m (39 in) drop per GR-196-CORE |
| Water/dust ingress | Designed to comply with IP54 |
| Altitude | 3000 m (9842 ft) |
| Input power | 9 V to 24 V DC up to 1.67 A, minimum 15 W |
| Battery | Internal rechargeable Lithium, with battery-state and level indications through the software |
| Test connections | RJ-11 for ADSL2+/VDSL2 RJ-45 for Ethernet 10/100 WAN RJ-45 for Ethernet 10/100 LAN |
| Connectivity | USB 2.0 ports Three clients: Type A connectors One host: Type B connector |
| Results storage | 1.2 GB internal memory |
| Languages | English, French, Spanish, Chinese (Simplified) |
| CE and CSA marked | |

STANDARD ACCESSORIES

| |
|---|
| Test cable: RJ-11 to RJ-11 and telco clip with bed of nails (ACC-RJ11-TC), or RJ-11 to RJ-11 and 4 mm plugs with crocodile clips (ACC-RJ11-4MM) |
| Certificate of compliance |
| AC adapter (GP-2146) |
| Soft carrying case (GP-10-061) |

OPTIONAL ACCESSORIES

| |
|---|
| RJ-45 Ethernet cable (ACC-RJRJ-UTP) |
| USB host/client cable (GP-2053) |
| 12 V vehicle charger (CL4-CAR) |
| Form fitting, protective soft glove with shoulder strap (ACC-GLOVE) |

ORDERING INFORMATION

MAX-630-XX-XX

Model

MAX-630 = MaxTester DSL test set

DSL software options

- 00 = Without software options
- VDSL2MOD = VDSL2 Modem emulation
- ADSL2+M = ADSL2+ Annex M support ^a
- IPTV = IPTV analysis
- BROWSER = Web browser option

ADSL version

- A2XA = ADSL2+ Annex A
- A2XB = ADSL2+ Annex B

Example: MAX-630-A2XB-VDSL2MOD

Note

a. Annex A units only.

EXFO Corporate Headquarters > 400 Godin Avenue, Quebec City (Quebec) G1M 2K2 CANADA | Tel.: +1 418 683-0211 | Fax: +1 418 683-2170 | info@EXFO.com

Toll-free: +1 800 663-3936 (USA and Canada) | www.EXFO.com

| | | | |
|-------------------------------|---|---------------------------|-------------------------|
| EXFO America | 3701 Plano Parkway, Suite 160 Plano, TX 75075 USA | Tel.: +1 800 663-3936 | Fax: +1 972 836-0164 |
| EXFO Asia | 100 Beach Road, #22-01/03 Shaw Tower SINGAPORE 189702 | Tel.: +65 6333 8241 | Fax: +65 6333 8242 |
| EXFO China | 36 North, 3 rd Ring Road East, Dongcheng District Room 1207, Tower C, Global Trade Center Beijing 100013 P. R. CHINA | Tel.: + 86 10 5825 7755 | Fax: +86 10 5825 7722 |
| EXFO Europe | Omega Enterprise Park, Electron Way Chandlers Ford, Hampshire S053 4SE ENGLAND | Tel.: +44 2380 246810 | Fax: +44 2380 246801 |
| EXFO NetHawk | Elektronikkatie 2 FI-90590 Oulu, FINLAND | Tel.: +358 (0)403 010 300 | Fax: +358 (0)8 564 5203 |
| EXFO Service Assurance | 270 Billerica Road Chelmsford, MA 01824 USA | Tel.: +1 978 367-5600 | Fax: +1 978 367-5700 |

EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

For the most recent version of this spec sheet, please go to the EXFO website at www.EXFO.com/specs.

In case of discrepancy, the Web version takes precedence over any printed literature.

