

CoLT-350



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



A NEXT-GENERATION TOOL FOR BROADBAND DEPLOYMENT

EXFO's CoLT-350 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 CoLT-350'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 CoLT-350'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

CoLT-350 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 CoLT-350 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 CoLT-350 is a very flexible tool for service providers qualifying service all the way from the central office to the customer's equipment. The CoLT-350 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 CoLT-350'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 CoLT-350 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 CoLT-350 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 CoLT-350 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 CoLT-350's integrated browser, carrying a laptop to the job location is no longer necessary. The CoLT-350 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 CoLT-350 data services test suite meets these requirements by providing automated tests for IP ping, traceroute and FTP upload/download. As with all the CoLT-350 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 CoLT-350 OPERATIONAL MODES

1

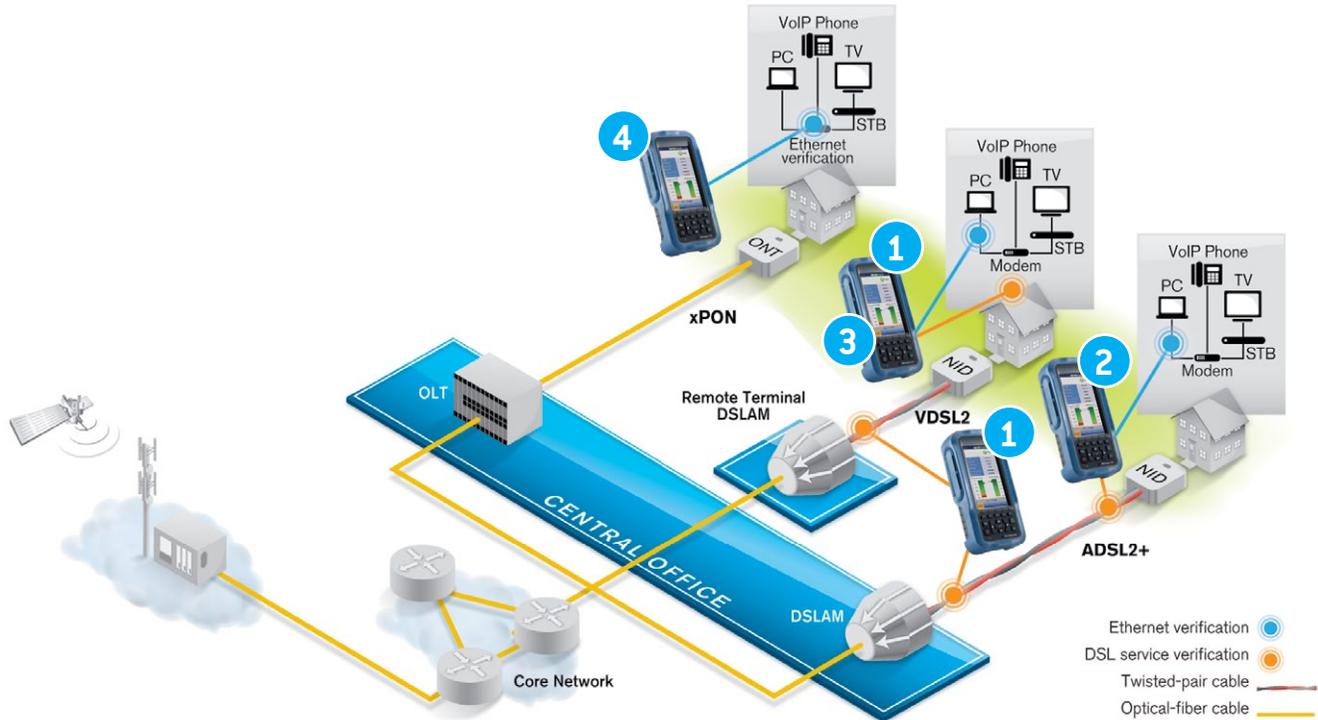
ADSL2+/VDSL2 Terminate Mode

The CoLT-350 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 CoLT-350 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 CoLT-350 automatically synchronizes with 10/100Base-T ports inside the customer premises and allows authentication as well as service testing. In this configuration, the CoLT-350 can be used in xDSL (FTTN), xPON (FTTH) or Ethernet deployments.

4

Ethernet Pass Through Mode

The CoLT-350 automatically synchronizes with 10/100Base-T ports inside the customer premises as traffic is passed between both Ethernet ports. In this configuration, the CoLT-350 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 CoLT-350 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 CoLT-350'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

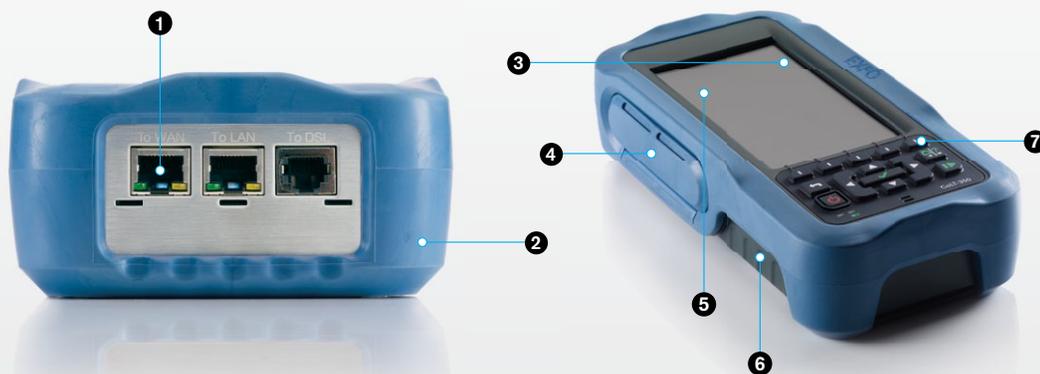
In today's highly competitive environment, quality of service is paramount for service providers. CoLT-350 allows reports of all tests to be uploaded in a variety of formats. Therefore, service providers can keep all results on file for future reference and confirm all required tests have been completed by the technician.

Battery Powered

CoLT-350 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)
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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
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WEB BROWSER

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

Interfaces supported	VDSL2, ADSL1/2/2+, Ethernet 10/100
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Supported video standards	MPEG2, MPEG4 part 2 and 10 (H.264/AVC), WM9
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Operating modes	DSL Terminate Ethernet Terminate
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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
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Key IP video QoS parameters	Packet loss, zap time, PID statistics
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Graphical results	Transport stream packet loss histogram Pass/fail indication for each stream
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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 storage	0 °C to 40 °C (32 °F to 104 °F) -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

CoLT-350-XX

Model ■
CoLT-350 = CoLT-350 test set

■ **DSL software options**
00 = Without software options
VDSL2MOD = VDSL2 Modem emulation
IPTV = IPTV analysis
BROWSER = Web browser option

Example: CoLT-350-VDSL2MOD

EXFO Headquarters > Tel.: +1 418 683-0211 | Toll-free: +1 800 663-3936 (USA and Canada) | Fax: +1 418 683-2170 | info@EXFO.com | www.EXFO.com

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