

# EXD-350

NETWORK TESTING-ACCESS



An advanced, highly economical installers' tool, ideal for ADSL 1/2/2+ deployments

- Compact, easy to use
- Tests ADSL, ADSL2 and ADSL2+ services
- IP ping test (PPPoE, PPPoA, LLC-Bridge, LLC-Router) in stand-alone and Through mode operation
- Digital multimeter (voltage, resistance, capacitance) for basic line troubleshooting
- Load coil counter detection
- Carrier load information (bits/bin)
- Status LEDs

# Assessing ADSL2+ Service Performance

Ideal for ADSL2+ link installation and maintenance, the EXD-350 Advanced ADSL2+ Tester allows technicians to test copper loop quality, verify ADSL2+ performance and validate Internet connectivity.

EXFO's EXD-350 offers a quick and thorough method for installing ADSL2+ circuits. This test set not only verifies service and connectivity to the DSLAM, but also performs upstream and downstream performance measurements such as actual data rates, attenuation and noise margin. The EXD-350 facilitates the deployment of ADSL2+ services, making the technician's job easier than ever before.

Thanks to the EXD-350's standard, built-in digital multimeter, technicians can determine circuit quality using voltage, resistance and capacitance measurements. In addition, the EXD-350 provides distance-to-fault information whether testing against a short or open circuit ("shorts" and "opens" meter).

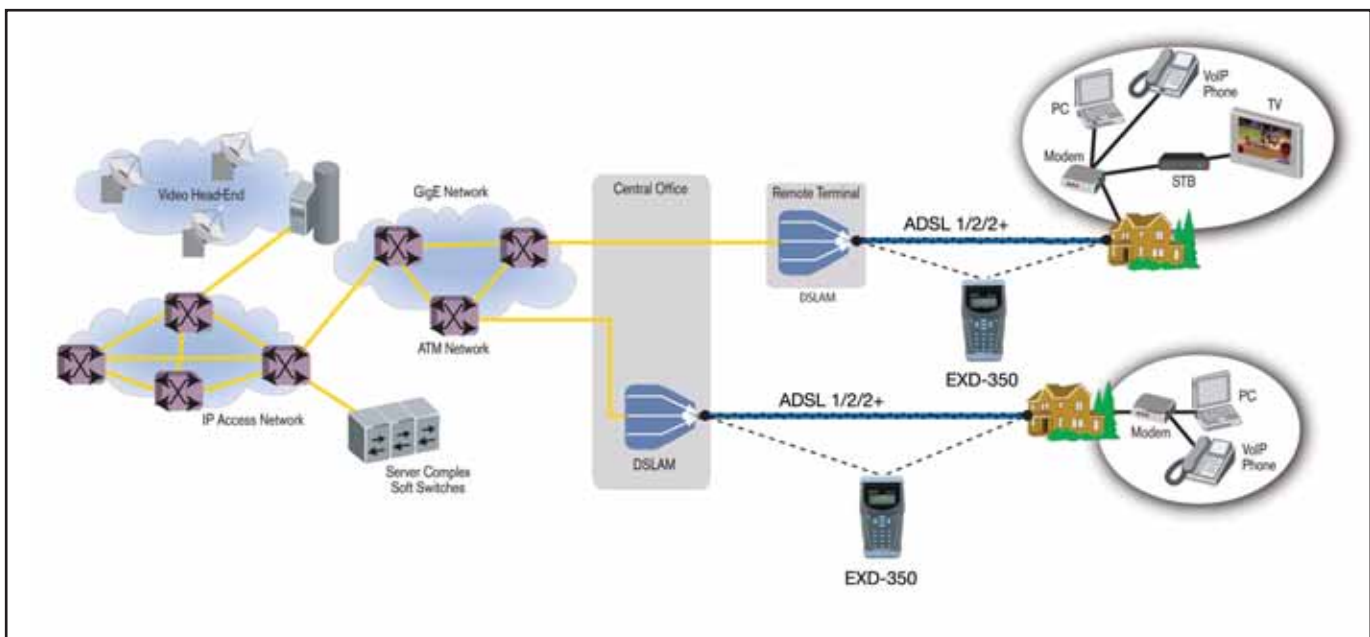
The EXD-350 also has a load coil detection feature—load coils prevent DSL delivery and must be removed from the circuit—to assist technicians in determining a circuit's ability to carry DSL services.



The EXD-350 Advanced ADSL2+ Tester

## APPLICATIONS

- Installation and troubleshooting of ADSL1/2/2+ services
- ATU-R modem troubleshooting via Terminate and Through mode operation
- Detection and isolation of copper loop faults
- Port verification for DSLAM commissioning



EXD-350 connection points in the network

### ADSL2+ ATU-R MODEM

|                      |   |
|----------------------|---|
| Chipset              | Conexant  |
| Emulation            | ATU-R   |
| Line coding          | DMT (discrete multitone)  |
| Standards            | T1.413 Issue 2<br>ITU-T G.994.1,<br>ITU-T G.992.1 annex A or annex B<br>ITU-T G.992.2<br>ITU-T G.992.3 annex A or annex B<br>ITU-T G.992.5 annex A or annex B   |
| Measurements         | Upstream and downstream parameters for:<br>Actual bit rates<br>Maximum bit rates<br>Noise margin<br>Attenuation<br>Output power<br>ATU-C and ATU-R vendor ID    |
| Link errors          | FEC, CRC, HEC   |
| Link alarms          | LOS, LOF, LOP, LCD  |
| Bits/Bin             | Tabular display   |
| Encapsulations       | PPPoE supporting static and DHCP addressing<br>PPPoA supporting static and DHCP addressing<br>IPoE supporting routed/bridge mode and static and DHCP addressing |
| Ping test            | Destination IP address, number of pings sent/received and round-trip delay for average, min/max   |
| Through mode support | Provide test in through mode operation  |
| Login support        | Using PAP/CHAP authentication, username, password, display local and gateway IP addresses   |
| ATM                  | F4/F5 OAM loopback  |

### DMM MEASUREMENTS

|                                   |                                     |                           |  |
|-----------------------------------|-------------------------------------|---------------------------|--|
| DC Voltage Measurement            |                                     |                           |  |
| Range (V)                         | 0 to 300                            |                           |  |
| Resolution (V)                    | 1                                   |                           |  |
| Accuracy                          | ±1 % of reading ±2 V                |                           |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| AC Voltage Measurement            |                                     |                           |  |
| Range (V)                         | 0 to 250                            |                           |  |
| Resolution (V)                    | 1                                   |                           |  |
| Accuracy                          | ±3 % of reading ±3 V                |                           |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| DC Current Measurement            |                                     |                           |  |
| Range (mA)                        | 0 to 200                            |                           |  |
| Resolution (mA)                   | 1                                   |                           |  |
| Accuracy                          | ±2 % of reading ±1 mA               |                           |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| Resistance Measurement            |                                     |                           |  |
| Range (ohm)                       | Resolution (ohm)                    | Accuracy                  |  |
| 0 to 2000                         | 1                                   | ±2 % of reading ±3 ohm    |  |
| 2000 to 20,000                    | 10                                  | ±2 % of reading ±20 ohm   |  |
| 20,000 to 200,000                 | 100                                 | ±2 % of reading ±100 ohm  |  |
| 200,000 to 2,000,000              | 1000                                | ±2 % of reading ±1000 ohm |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| Displays                          | Resistance, distance in meter/feet  |                           |  |
| Insulation Resistance Measurement |                                     |                           |  |
| Range (Mohm)                      | 100                                 |                           |  |
| Resolution (Mohm)                 | 0.1                                 |                           |  |
| Accuracy                          | ±10 % of reading ±0.2 Mohm          |                           |  |
| Testing voltage (V)               | 100                                 |                           |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| Capacitance Measurement           |                                     |                           |  |
| Range                             | Resolution                          | Accuracy                  |  |
| 4 nF to 40 nF                     | 10 pF                               | ±10 % of reading ±50 pF   |  |
| 40 nF to 400 nF                   | 100 pF                              | ±2 % of reading ±200 pF   |  |
| 400 nF to 4 µF                    | 1 nF                                | ±2 % of reading ±2 nF     |  |
| Connection                        | T-R, T-G, R-G                       |                           |  |
| Displays                          | Capacitance, distance in meter/feet |                           |  |
| Load Coil Detection               |                                     |                           |  |
| Load coil count (max)             | 5                                   |                           |  |

## GENERAL SPECIFICATIONS

|                  |  |                   |
|------------------|--|-------------------|
| Display          | 4 line x 16 character backlit display<br>LEDs for power, modem sync, WAN status, POTS status   |                   |
| Connectors       | RJ-11 DSL test port<br>RJ-45 Ethernet port for Through mode testing<br>RJ-11 RS232 serial port |                   |
| Batteries        | Rechargeable NiMH  |                   |
| Battery life     | 90 on/off cycles and tests from a full charge,<br>depending upon usage and conditions          |                   |
| AC operation     | Input: 115/230 V, 50/60 Hz (via external adapter)<br>Output: 9 V at 600 mA                     |                   |
| Temperature      |  |                   |
| operating        | 0 °C to 40 °C  | (32 °F to 104 °F) |
| storage          | -20 °C to 70 °C  | (-4 °F to 158 °F) |
| Humidity         | Up to 85% non-condensing   |                   |
| Size (H x W x D) | 180 mm x 100 mm x 45 mm (7 in x 3.9 in x 1.8 in)   |                   |
| Weight           | 0.65 kg (1.4 lb)   |                   |
| Results          | Stores up to 50 results into NVRAM   |                   |

## ACCESSORIES

|  |  |
|--|--|
| RJ-11 to telco clips test cable                |  |
| RS-232 cable                                   |  |
| AA NiMH batteries                              |  |
| AC/DC power adapter with interchangeable plugs |  |
| Operating manual                               |  |
| Softpack carrying case                         |  |

## ORDERING INFORMATION

### EXD-350-X

#### Model

EXD-350-A = Annex A for ADSL1/2/2+ over POTS  
EXD-350-B = Annex B for ADSL1/2/2+ over ISDN

Example: EXD-350-A

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

|                     |  |  |   |
|---------------------|--|--|---|
| <b>EXFO America</b> | 3701 Plano Parkway, Suite 160<br>Plano, TX 75075 USA   | Tel.: 1 800 663-3936                                 | Fax: 1 972 836-0164                                   |
| <b>EXFO Europe</b>  | Omega Enterprise Park, Electron Way<br>Chandlers Ford, Hampshire SO53 4SE ENGLAND  | Tel.: +44 2380 246810                                | Fax: +44 2380 246801                                  |
| <b>EXFO Asia</b>    | 151 Chin Swee Road, #03-29 Manhattan House<br>SINGAPORE 169876   | Tel.: +65 6333 8241                                  | Fax: +65 6333 8242                                    |
| <b>EXFO China</b>   | No.88 Fuhua, First Road<br>Central Tower, Room 801, Futian District<br>Beijing New Century Hotel Office Tower, Room 1754-1755<br>No. 6 Southern Capital Gym Road | Shenzhen 518048, CHINA<br>Beijing 100044 P. R. CHINA | Tel.: +86 (755) 8203 2300<br>Tel.: +86 (10) 6849 2738 |
|                     |  |  | Fax: +86 (755) 8203 2306<br>Fax: +86 (10) 6849 2662   |

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. All of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit [www.EXFO.com/recycle](http://www.EXFO.com/recycle). 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. 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 <http://www.EXFO.com/specs>

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