

VIAVI

OneExpert DSL (ONX-580)

For xDSL, G.fast and FTTH

Fast, consistent, and complete!

Consistently achieve high-performance results when deploying ultra-fast residential broadband over xDSL, G.fast, and FTTH.

OneExpert™ helps field technicians fix problems right the first time, every time. A multitouch, user- friendly interface and OneCheck™ automated tests ease complex tasks with clear pass/fail results. And, its future-proof modules ensure years of use supporting access and home networks.

Open, Modular Design

OneExpert offers the advantages of integrated cloud-based applications, touch screen interfaces, smartphones, and tablets. OneExpert helps technicians perform more efficiently and fix problems faster while ensuring service providers can invest in a long-term, open platform. Modular hardware means the meter can be updated as technology is updated. Software can be upgraded and enhanced in the field, so no down-time for these changes.

Key Benefits and Features

- Modular platform scales for new WiFi, fiber, and xDSL technology including VDSL Profile 35b and G.fast
- OneCheck automates field tests and simplifies Copper and DSL results to consistently close jobs correctly
- One button OneCheck TDR auto identifies fault types and locations right away
- Prove the true customer experience with a standardized TrueSpeed™ test (RFC-6349)
- OneExpert™ app uses everyday mobile devices for remote control, data enhancements, and connectivity
- StrataSync™ cloud-enabled asset and test data management provides visibility for test results and completed tasks and keeps track of used instrument inventory

Large screen, simplifies results analysis

Multitouch user interface for quick testing

StrataSync – cloud-based asset and data management

Wireless personal area network//WiFi ready connectivity



xDSL Testing up to G.fast

A sync test is essential in characterizing DSL link quality (bandwidth rates, margins, errors, and likelihood for errors). This test also helps determine whether issues are coming from the equipment (CPE or DSLAM/DPU ports) or from the profile settings. It shows important results on a single DSL summary screen page. The test uncovers errors (CRC, FEC, LOS, LOF, and LOM) that impact application layers such as IP video.

Module	ONX-TM-BDCM Broadcom xDSL/ V35b	ONX-TM-BDCM-212 BDCM/V35b/G.fast 212
ADSL	■	■
ADSL/VDSL Anx A/M/L (to 30a)	■	■
ADSL2 Bonded Anx A/M/L	■	■
VDSL2 Bonded Anx A/M/L (to 17a)	■	■
V35b	■	■
V35b Bonded	—	■
BDCM G.fast 106MHz	■	■
BDCM G.fast 212MHz	—	■
BDCM 106MHz Bonded	—	■

Specifications

DSL Modems

*Specifications apply to all modems listed unless a modem part is listed after the specification. When listed in the specification, it only applies to parts listed after the specification.

Test Interface

Replaceable test module; test access over copper test leads (tip A, ring B leads for single channel; T/A, R/B, T1/A1, R1/B1 for bonding) or 8-pin modular (RJ45 type) with pin assignments 4 and 5 for DSL single pair and 3, 4, 5, 6 for DSL bonding.

Modem Chipset and Version

Catalog #	Chipset	Configuration
ONX-TM-BDCM	Broadcom 63138	OneExpert Broadcom 63138 (ADSL/VDSL Bonded, V35B) Test Module
ONX-TM-BDCM-212	Broadcom 63158	OneExpert Broadcom 63158 V35B GFAST 212) Test Module

G.fast (Fast access to subscriber terminals) Standard Compliance

ITU-T G.9700 to 106MHz for module ONX-TM-BDCM & to 212 MHz for ONX-TM-BDCM-212

ITU-T G.9701 to 106MHz for module ONX-TM-BDCM & to 212 MHz for ONX-TM-BDCM-212

VDSL Standard Compliance

Standard compliance as supported by the Broadcom 63158 and 63138 chipsets

ITU-T G.993.2 — VDSL2

ITU-T-G.998.1 — ATM bonding

ITU-T-G.998.2 — PTM bonding

ITU-T-G.993.5 — Self-FEXT cancellation (vectoring)

ITU-T-G.998.4 — Improved impulse noise protection for DSL transceivers

Single-pair profiles: 8a/8b/8c/8d, 12a/12b, 17a, 30a

Dual-pair profiles: 8a/8b/8c/8d, 12a/12b, 17a

Vectoring profiles single-pair: 8a/8b/8c/8d, 12a/12b, 17a, 35b

Vectoring profiles dual-pair: 8a/8b/8c/8d, 12a/12b, 17a

Band plan 997 and 998, U0 band

ITU G.993.2 Annex Y vector-friendly mode

ADSL Standard Compliance

Standard compliance as supported by the Broadcom 63138 and 63158 chipsets

ITU-T G.992.1 Annex A, (ADSL)

ITU-T G.992.3 Annex A, L (ADSL2)

ITU-T G.992.5 Annex A, M (ADSL2+)

ITU-T-G.998.1 ATM bonding

ITU-T-G.998.2 PTM bonding

ANSI T1.413-1998, Issue 2

ITU-T G.992.5 INP Amendment 3

Specifications (continued)

Copper Test - DVOM

Test Interface

Tip/A – ring/B – ground/earth

Range	Resolution	Accuracy
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AC Volts

0 to 212 V RMS	0.1 to 1 V	1% $\pm$ 5 V
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DC Volts

0 – 300 V	0.1 to 1 V	1% $\pm$ 0.5 V
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Resistance

0 – 999 Ω	1 Ω	2% $\pm$ 2.5 Ω
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1 – 9.99 k Ω	10 Ω	2%
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10 – 99.9 k Ω	100 Ω	2%
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100 – 999 k Ω	1 k Ω	2%
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1.0 – 9.9 M Ω	10 k Ω	2%
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10.0 – 99.9 M Ω	100 k Ω	2%
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100 – 999 M Ω	1 M Ω	10%
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Leakage

100 – 999 M Ω	1 M Ω	10%
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Distance to Short (conversion from resistance measurement depending on cable setup)

0 – 30 k ft (0 – 10 km)

Capacitance/Opens (conversion from capacitance measurement depending on cable setup)

0 – 47.1 nF		1% $\pm$ 15 pF
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47.1 nF – 1.57 μ F		
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0 – 3 k ft (0 – 999 m)	1 ft (1 m)	2% $\pm$ 15 pF
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3 – 10 k ft (1 – 3.3 km)	10 ft (1m)	
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10 – 100 k ft (1 – 33.3 km)	100 ft (10m)	
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DC Current

0 – 110 mA	0.1	1% $\pm$ 0.5 mA
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Longitudinal Balance

20 – 70 dB	1 dB	$\pm$ 2 dB
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70 – 100 dB	1 dB	
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Power Influence (PI) – Noise to Ground

40 to 120 dBr n	0.1 dB	$\pm$ 2 dB
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–50 to +30 dBm	0.1 dB	$\pm$ 2 dB
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Metallic (Narrowband) Noise

0 to 50 dBr n	0.1 dB	$\pm$ 2 dB
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–90 dBm to –40 dBm	0.1 dB	$\pm$ 2 dB
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Narrowband Filters

IEEE 743 C-Message (dBr nC), IEEE 743 3K Flat (dBr n), O.41 Psophometric (dBmP)

Load Coil Test

up to 5 $\pm$ 1		
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POTS

Test Interface

RJ11, tip A – ring B

POTS Dialer

DTMF or pulse-dial mode

Ring detect

Caller ID (Bellcore Telcordia TR-TSY-000030)

Call log (last 10 calls)

Phonebook (quick dial)

Specifications (continued)

TDR		
Test Interface		
Tip A – ring B		
Range		
0 to 30 k ft (0 to 10 km)		
Test Modes		
Standard		
SmartGain		
In-home		
OneCheck		
CrossTalk (ONX 580P only)		
Dual Trace		
Features		
World view		
Peak hold		
QuickRange		
Reference trace set, show, save, load		
Stress TDR		
Typical Test Case		
500 ft (150 m) bridged tap visible at 18 k ft (5500 m) on a 20 k ft (6000 m) 24 AWG cable/0.5 mm cable		
Copper TIMS Option		
Wideband Characteristics		
Range	Resolution	Accuracy
Frequency		
10 kHz to 30 MHz		50 ppm
10 kHz to 35 MHz for ONX-580P		50ppm
Amplitude		
–80 to +10 dBm	0.1 dB	±2 dB
–90 to +10 dBm for ONX-580P	0.1 dB	±1 dB
Termination 100 Ω , 120 Ω , 135 Ω		
Narrowband (VF) Characteristics		
Frequency		
200 Hz to 10 kHz		50 ppm
200 Hz to 20 kHz for ONX-580P		50 ppm
Amplitude		
–80 to +10 dBm	0.1 dB	±0.5 dB
–90 to +13 dBm for ONX-580P	0.1 dB	±0.75 dB
Termination 600 Ω , 900 Ω , Bridged		
Technology Filter Selection		
Custom, ADSL, ADSL2+, VDSL 8 MHz, VDSL 12 MHz, VDSL 17 MHz, VDSL 30 MHz, VDSL 35 MHz (580P only), VDSL Upstream U0, Voice Frequency, HDSL, G-filter, G2-filter, J-25K8, J-138K8, J25K12, J-138K12, J-25K17, J-138K17, E-filter, F-filter, E1, IEEE-743 C-message, IEEE-743 3K Flat, O.41 Psophometric, no filter, power influence		
Spectral Test		
Technology filter selection		
Spectral Power Influence test		
Set reference, show reference		
Max hold		
Configurable external bridge		
Power spectral density	dBm, dBm / Hz, dBr n	

Specifications (continued)

Span Selection			
	Range	Resolution	Accuracy
Narrowband Frequency Range - ONX 580			
Power Harmonics	0 Hz to 3.0 kHz	2.0 Hz	50 ppm
POTS	0 Hz to 10 kHz	5.0 Hz	50 ppm
Narrowband Frequency Range - ONX580P			
Power Harmonics	0 Hz to 9.8 kHz 2 Hz	2 Hz	50 ppm
POTS	0 Hz to 20 kHz	5 Hz	50 ppm
Wideband Frequency Range			
ADSL	20.48 kHz to 1.5 MHz	1.078 kHz	50 ppm
ADSL2+	20.48 kHz to 2.2 MHz	1.078 KHz	50 ppm
VDSL 8 MHz	17.25 kHz to 8.9 MHz	4.3125 KHz	50 ppm
VDSL 12 MHz	17.25 kHz to 12.9 MHz	4.3125 KHz	50 ppm
VDSL 17 MHz	17.25 kHz to 17.9 MHz	8.625 KHz	50 ppm
VDSL 30 MHz	17.25 kHz to 30 MHz	8.625 KHz	50 ppm
VDSL 35 MHz	17.25 kHz to 35 MHz	8.625 kHz	50 ppm
Custom range selection			
Amplitude			
ONX-580	–80 dBm to 0 dBm	0.1 dB	±2 dB
ONX-580	–130 dBm/Hz to –40 dBm/Hz	0.1 dB	±2 dB
ONX-580P	–90 dBm to 0 dBm	0.1 dB	±2 dB
ONX-580P	–140 dBm/Hz to –35 dBm/Hz	0.1 dB	±2 dB
Viewable range			
	–90 dBm to 0 dBm for ONX-580P	0.1 dB	±2 dB
	–140 dBm/Hz to -35 dBm/Hz for ONX-580P	0.1 dB	±2 dB
	–130 dBm to 30 dBm		
	–160 dBm/Hz to –20 dBm/Hz		
Narrowband and Wideband RX Tones and Loss			
Meter and list view			
Configurable External Bridge			
Power level	dBm, dBr n		
Narrowband and Wideband Noise			
Technology filter selection			
Configurable external bridge			
Custom filter			
Noise power actual/min/max	dBm, dBr n		

Specifications (continued)

Wideband Impulse Noise

Technology filter selection	
Elapsed Time counter	
Threshold, +3 dB threshold, -3 dB threshold	
Configurable external bridge	
Configurable dead time	
Timeline view	dBm, dBr n, mV
Counter view	dBm, dBr n, mV

Wideband Impulse Noise Capture

Technology filter selection	
Single and continuous capture	
Trigger threshold	
Time and frequency domain capture	dBm, dBr n
Capture display	10%, 50%, 90%

RFL Test Option

Resistive Fault Locator

Single Pair RFL test mode	
Separate Pair RFL test mode 580P only	
Multiple gauge selection	
Temperature adjustment	
UFED support	
Results for distance to strap (DTS), distance to fault (DTF), distance strap to fault (DSTF), resistance to strap (RTS), resistance to fault (RTF), fault resistance	

	Range	Accuracy
Fault resistance (RF)	0 to 20 M Ω	
Loop resistance	0 to 7 k Ω	
Resistance to Fault (RTF)	RTS 1 Ω to 99 Ω	0.1% RTS $\pm 0.1\Omega$ $\pm$ RF/10M Ω
	RTS 100 Ω to 999 Ω	0.2% RTS $\pm 0.1\Omega$ $\pm$ RF/5M Ω

K-Test

Two-sided fault test		
Results include fault resistance 1, fault resistance 2		
UFED support		
	Range	Accuracy
Fault resistance (RF)	0 to 20 MΩ	
Loop resistance	0 to 7 kΩ	
Resistance to fault (RTF)		3% of Resistance to strap (RTS) or +/- 3 ohms, whichever is greater

Specifications (continued)

Battery	Li-ion internal rechargeable, 7.4 V nominal voltage, 6600 mAh
Operating time >4 hours for typical use cases	
Auto power down (adjustable)	
AC line operation via external adapter/car charger	
Connector	
DSL test module	Varies by module (8 Pin Modular and 6 Pin Modular)
Ethernet	2 x 8-pin modular (RJ45)
T/A, R/B, T1/A1, R1/B1 and ground/Earth	2 mm recessed banana
POTS	8-pin modular (RJ45) and tip A – ring B
USB	2 x USB 2.0 client ports
Connectivity	
USB flash drive	
Remote operation	
Mobile device application	
WiFi	
Standard	802.11 a/b/g/n (2.4/5 GHz)
Audio Support	
Speaker/microphone	
Bluetooth headset	
Permissible Ambient Temperature	
Nominal range of use	0 to 50°C (32 to 122°F)
Storage and transport	–10 to 60°C (14 to 140°F)
Humidity	
Operating humidity	10 to 90%
Water/Dust Ingress	
Complies with IP54	Designed to comply with IP54
Display	127 mm (5 in) diagonal color WVGA (800 x 480 pixels) backlit LCD with projected capacitive multitouch screen

Ordering Information

The OneExpert can be ordered fully configured for high-end ADSL2+ /VDSL2 /G.fast and copper test demands or scaled for specific needs and applications, such as all fiber only without copper.

Included Test Applications

(all mainframes and package orders except noted differently below)

Fiber Tests

- OneCheck Fiber
- Power meter (via Accessory)
- OTDR (via Accessory)
- Inspection (via Accessory)

Copper on mainframe ONX-580

- TDR
- OneCheck Copper
- DVOM
- Opens
- Longitudinal balance
- Load coil
- POTS TDR

Wiring Tools

- Wire map on mainframe ONX-580
- Hub flash
- Port discovery
- Ping tool

IP Data Tests

- Web browser
- IP ping
- FTP/HTTP speed test
- OneCheck Ethernet

WiFi

- Scan
- Access point
- WiFi Advisor support

StrataSync

- StrataSync Core Asset and Data Management

Ordering Information (continued)

Description	Catalog Number
Mainframe	
OneExpert; ONX-580 Pro ¹	ONX-580P
OneExpert; ONX-580 ¹	ONX-580
OneExpert; ONX-580A ¹	ONX-580A
Module	
OneExpert Broadcom 63138 (ADSL/VDSL Bonded, V35B) Test Module	ONX-TM-BDCM
OneExpert Broadcom 63158 V35B, GFAST 212 test module	ONX-TM-BDCM-212
OneExpert cover module	ONX-COVER
Software Options	
ADSL/VDSL bonding option	ONX580-BONDED
Broadcom G.fast option	ONX580-GFAST
V.35b option	ONX580-V35B
G.fast Amendment 3 Option	ONX580-GFAST-212
DSL Helper Utility	ONX580-DSL-HELPER
Mobile device connectivity	ONX580-MOBILE-001
HPNA	ONX580-HPNA
TrueSpeed	ONX-TRUESPEED
Ookla SpeedTest	ONX-OOKLA-SPEEDTEST
Broadcom Speedservice	ONX-SPEED-SERVICE
VIAVI Speedcheck	ONX-SPEEDCHECK
Smart Access Anywhere	ONX-SMART-ACCESS
IP video	ONX580-IPVIDEO
VoIP	ONX-VOIP
MOS ²	ONX-MOS
Resistive fault locator	ONX580-RFL
Transmission impairments and spectral ³	ONX580-TIMS
Copper Expert software	ONX580-COPPER-EXPERT
Cables	
Dual Pair Bed of Nails Copper Cables	CB-DUAL-BON
Single Pair Bed of Nails Copper Cables	CB-SINGLE-BON
Dual Pair Telco Clips Copper Cables	CB-DUAL-TELCO
Single Pair Telco Clips Copper Cables	CB-SINGLE-TELCO
Dual Pair Banana Copper Cables	CB-DUAL-4MM
Single Pair Banana Copper Cables	CB-SINGLE-4MM
Telco clip package for 4 mm banana	CB-CLIPS
Spectral monitor cable	CB-SPE-MON
Dual Pair Bed of Nails 8 Pin to Banana Cables	CB-DSL8-4MM
Dual Pair Bed of Nails 8 Pin to Telco Clip Cables	CB-DSL8-TELCO
Dual Pair Bed of Nails 8 Pin to Bed of Nails Cables	CB-DSL8-BON
Dual Pair Bed of Nails 6 Pin to Banana Cables	ONX-DSL6-4MM
Dual Pair Bed of Nails 6 Pin to Bed of Nails Cables	ONX-DSL6-BON

Ordering Information (continued)

Description	Catalog Number
Accessories	
Battery	ONX580-BATTERY-48WH
AC universal power adapter	AC-CHARGER
Large carrying case	CC-034601
Small carrying case	CC-CARRYING-CASE-SMALL
Soft glove	AC-GLOVE
Strand hook	AC-STRANDHOOK
Hand strap	AC-HANDSTRAP
Shoulder strap	AC-005101
Car adapter	AC-CAR-CHARGER
Bluetooth headset	AC-BLUETOOTH-HEADSET
Wire mapping smart remote; RJ11, RJ45	AC-WIREMAP-REMOTE
UFEDIIB bonded far end device with standard accessories	UFEDIIB-PKG-1
SDI-100 WAND	SDI-100
MP-60 – USB optical power meter	MP-60A
P5000i – USB fiber scope	FBP-P5000I
Services and Support Plans	
Bronze Support Plan 5 years	BRONZE-5
Silver Support Plan 3 years	SILVER-3
Silver Support Plan 5 years	SILVER-5

¹Includes test applications as specified above. Requires selection of battery, AC universal power adapter, and power cord.

²Requires VoIP software option.

³Enables copper RX tones, spectral, WB noise, wideband impulse noise, wideband impulse noise capture.

VIAVI Care Support Plans

Increase your productivity for up to 5 years with optional VIAVI Care Support Plans:

- Maximize your time with on-demand training, priority technical application support and rapid service.
- Maintain your equipment for peak performance at a low, predictable cost.

Plan availability depends on product and region. Not all plans are available for each product or in every region.

To find out which VIAVI Care Support Plan options are available for this product in your region, contact your local representative or visit: viavisolutions.com/viavicareplan

Features

*5-year plans only

Plan	Objective	Technical Assistance	Factory Repair	Priority Service	Self-paced Training	5 Year Battery and Bag Coverage	Factory Calibration	Accessory Coverage	Express Loaner
 BronzeCare	Technician Efficiency	Premium	✓	✓	✓				
 SilverCare	Maintenance & Measurement Accuracy	Premium	✓	✓	✓	✓*	✓		
 MaxCare	High Availability	Premium	✓	✓	✓	✓*	✓	✓	✓