360 DSP

Installation & Service Meter

- Advanced Home Certification Capabilities Simplify Installation and Troubleshooting
- Intuitive Color Touch Screen with Simple Pass/Fail Indicators Reduce Installer Entry Errors and Improves Decision Making
- Next-Generation Autotest Apps Streamline Certification
- Convenient Multiple Standard Tests in a Single Autotest App help to Standardize Tech Processes & Procedures
- Powerful Troubleshooting Tools Improve the Overall Health of the System

The precision of a field analyzer with the power of a smart device.

The Standardization Solution

Trilithic's 360 DSP™ is the first meter designed specifically to simplify Home Certifications. Built from the ground up, tailored specifically for the needs of fulfillment, this meter is ideal for standardizing processes and procedures for installation and service — and includes a price point that makes it feasible for system operators to outfit their entire fleet.

Tailored for the challenges faced by installers, contractors and service techs, this go-to next-gen meter comes equipped with all of the powerful troubleshooting tools for the advanced tech, yet helps simplify decision making and streamline standard processes and procedures for the more novice tech. This improves tech efficiencies, the overall health of the entire system and allows techs to grow with the meter.

Next Gen Features

The 360 DSP features an intuitive color touch screen interface, simple pass/fail indicators, and autotest apps to streamline certification and make the installer's job easier.

Everything about this next-gen meter was built with the technician in mind, from the longest battery life and quickest charge time of any installation meter to its unique built-in LED flashlight and glow in the dark keypad for those dark cramped spaces.

Including next-generation smart device technology the 360 DSP is virtually the easiest, most feature-rich, best-performing installation & service meter available today.

Comprehensive Testing

The 360 DSP makes Home Certification a breeze for technicians at all levels including installation, service, and contractor. Techs will appreciate the advantages of a quick and efficient device at their disposal that features a flexible and easy-to-operate interface that is inspired by modern smart devices.

This next gen fulfillment tool comes equipped with powerful troubleshooting tools and simplified autotest apps to perform triple play tests, set Home Certifications standards and measure both Analog and Digital signals. With its built-in CableLabs Certified DOCSIS 3.0 (8x4) Modem, Ethernet and Wi-Fi communications capabilities, all testing results can be easily forwarded to ViewPoint in the back office in near real-time.

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STANDARD INTERFACES:

- RF Test Port (F-Type)
- DOCSIS 3.0 modem 8x4 (100/304 Mbps)
- RJ45 Management Port (10/100 Mbps)
- Cable Modem Thru RJ45
- 802.11 “b/g” 2.4 GHz Wi-Fi (Up to 60 Mbps)
- USB 2.0 Flash Drive Port

OPTIONS AVAILABLE NOW:

- Upstream Linear Distortions Measurement
- Frequency Domain Reflectometer
- Bluetooth Communications Adapter

OPTIONS COMING SOON:

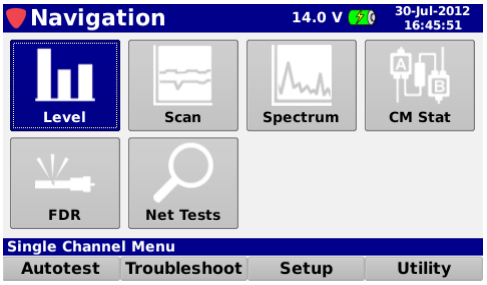
- Forward Spectrum Analysis (50 to 1000 MHz)
- Analog & Digital HUM Measurement

The 360 DSP supports a variety of functions, including:

- Multi-user support
- Multi-language support
- Create work orders right on the meter
- Built-in web browser, real-time data transmission
- Interactive home certification process

Simple Yet Powerful

Providing the widest range of functions for an installer available today (as standard options), the 360 DSP includes virtually all the testing options an installer or service technician needs to verify service quality and easily identify and fix problems in the field.



STANDARD TESTING FEATURES:

- Return Spectrum Analysis (4 to 110 MHz)
- Level Measurement
- C/N Measurement
- QAM Measurement (MER/BER/Constellation/EQ)
- Complete Channel Plan Scan with Tilt Measurement
- Ping, Trace Route, VoIP & Throughput Measurements
- Cable Modem Statistics

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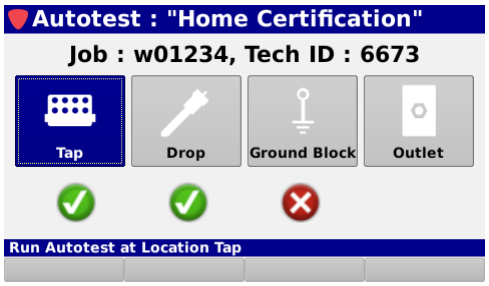
Autotest Apps

The 360 DSP features next generation autotest applications that practically walk the technician through a job. By performing standardized measurement tests at various required locations on the job site using user set test plans, channel plans and limit sets, the meter very clearly indicates (using color and symbols) what areas still need attention, before the technician leaves the job site.



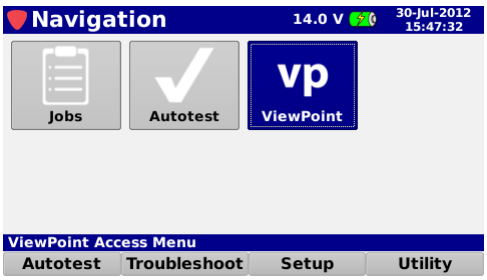
Multi-user support allows technicians that work in various territories to easily switch channel plans and standardized autotest apps and test limits or login as a completely different user. The built-in web browser allows techs to upload job data in near real-time as well as transmit and receive channel plans, autotests, work orders and firmware.

Leaving less room for entry error, this new simple user interface can translate into less training and more efficient time in the field for techs. Although the 360 DSP comes equipped with all of the required troubleshooting tools for the advanced technician, it also offers a higher comfort factor for novice technicians, reducing decision making in the field, which can ultimately result in more productive work days and more satisfied customers.

Justify ROI

Field operations managers can now easily verify that all of their technicians are performing the proper tests and are doing so at the right place and time—in near-real time. The potential benefits include identifying techs who need additional training, improving team performance, reducing truck rolls and cutting operating costs could obviously be significant.

At a higher level ViewPoint can deliver simple, standardized, system-wide reports and dashboards that can help a director or VP of technical operations view the entire operation at a glance to gain information that can be used to reduce service and repeat trouble calls.



Essentially, this integrated system approach allows cable operators to see much more of their home certification operations and use the information in practical ways. The insights can enable them to identify both localized problems and high-level system issues to make decisions based on a clearer understanding of their overall operations and the associated ROI.

Combining 360 DSPs in the field with the new ViewPoint WFM Module in the back office, managers can view the health of their entire system-- in near real-time, for total home-certification management.

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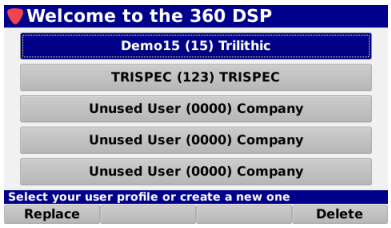
STANDARD FEATURES

The 360 DSP includes all of the following features standard.

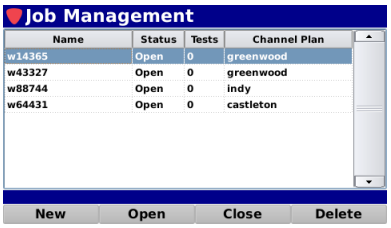
Multiple User Profiles

- Allows up to 5 technicians to share a 360 DSP
- Each technician has his or her own profile, which loads in completely different sets of channel plans, autotest, etc.



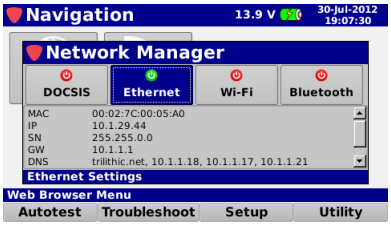
Job Management

- Create and close out your jobs from this screen
- Shows what channel plan and how many tests have been run on a particular job



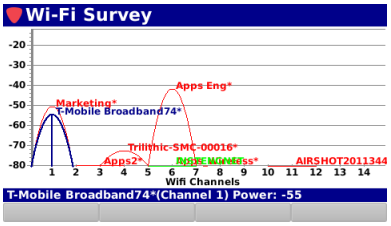
Simple Network Management

- Choose between DOCSIS 3.0 (8x4) modem, Ethernet, Wi-Fi or Bluetooth connection methods
- Provides connection details such as MAC, IP, gateway and DNS



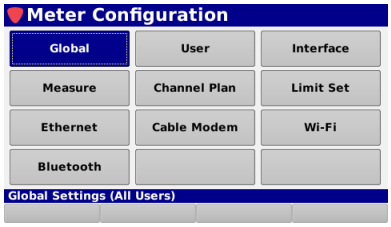
Built-In Wi-Fi with Survey Test Mode

- Actively view live signal strengths of Wi-Fi networks in the area
- Provides Wi-Fi details such as SSID, Channel and power level



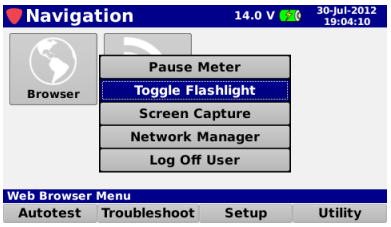
Easy Setup & Configuration

- Global configuration settings can be applied to all users of the device while other settings can be tailored to suit each user
- Setting adjustments can be locked out using the ViewPoint software



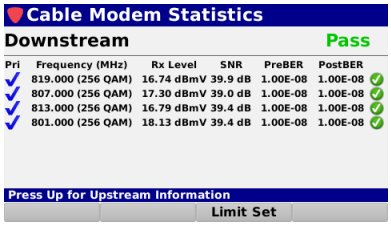
LED Flashlight

- High intensity LED for working in dark spaces
- Control is provided through the Fuction menu for quick access from any screen



Cable Modem Staistics

- Shows up to 8 downstream channels and 4 upstream channels
- Provides performance metrics for all downstream and upstream channels



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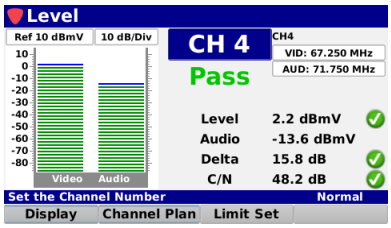
INCLUDED MEASUREMENT FUNCTIONS

The 360 DSP includes all of the following measurement functions standard.

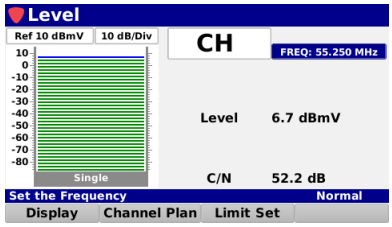
Analog Level Measurement

- Shows the analog channel and its associated measurements
- Provides Pass/Fail results for limit sets



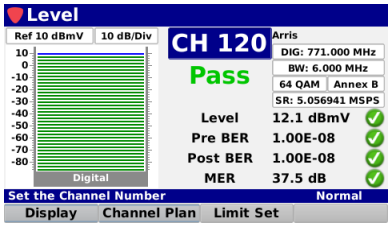
Single Frequency Level Measurement

- Shows the level of the analog carrier
- Displays the Carrier to Noise ratio of the analog carrier



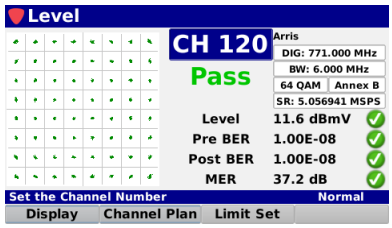
Digital Level Measurement

- Shows the level, MER and BER of a QAM channel
- Users can change the display to view BER over time, Equalizer Tap and Constellation



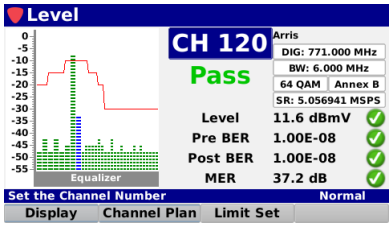
QAM Constellation

- Shows the constellation diagram of the specified QAM channel
- Shows the level, MER and BER and provides Pass/Fail results for limit sets



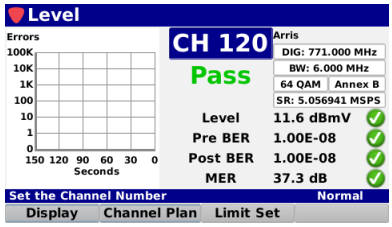
Equalizer Tap Display

- Displays the equalizer stress and whether the DOCSIS specification is being broken
- Shows the level, MER and BER and provides Pass/Fail results for limit sets



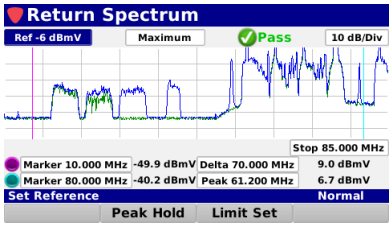
Bit-Error Rate Display

- Shows the BER on a graph with a 150 second measurement period
- Shows solid green lines for pre-errors and solid red lines for post-errors



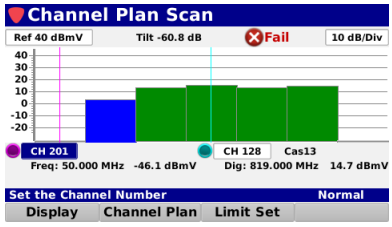
Return Spectrum Measurement

- Provides the ability to view raw return spectrum traces from 4 to 110 MHz
- Fast DSP spectrum snapshots give the user extreme speed to capture fast transients on the upstream



Scan & Tilt Measurement

- Full channel plan scan displays the frequency response of the entire channel lineup
- Provides Pass/Fail results for limit sets
- Color coded channels, green for digital and blue for analog



OPTIONAL FEATURES

The following optional features are available for the 360 DSP.

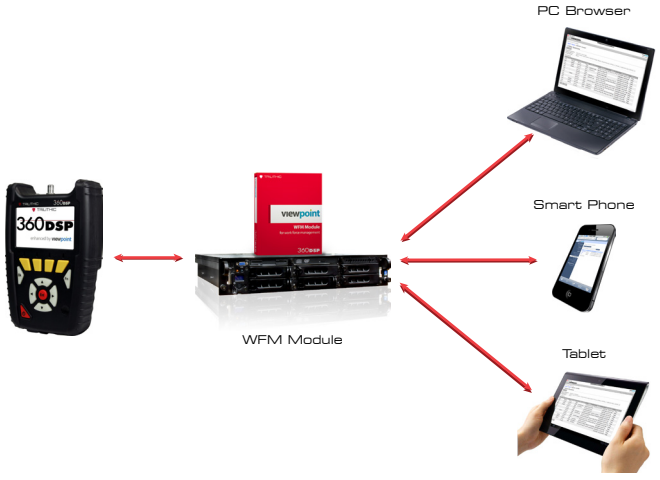
Communications	
Bluetooth Communications Adapater	This is a software and hardware option package that is used to connect the 360 DSP to an iPad via Bluetooth for remote control of the meter during operation. This package includes a software activation key for the BCA option on the 360 DSP and a Class II Mini Bluetooth Adapter (v2.1) with a 10 meter range for speeds up to 3 Mbps. This option is compatible with the iPad and iPhones that have device tethering enabled by the service provider.
Forward Path Testing	
Forward Spectrum	The Forward Spectrum feature enables the 360 DSP to view raw forward spectrum traces from 50 to 1000 MHz with DSP spectrum snapshots to give the user your downstream channels.
Upstream Testing	
Upstream Linear Distortions	The UP-LD feature enables the 360 DSP to view the pre-equalization of the upstream channel, along with the in-channel frequency response and group delay to determine if equalization is hiding potential problems within the upstream.
Drop Testing	
Frequency Domain Reflectometer	The FDR feature enables the 360 DSP to provide a simple, convenient and accurate tool for determining the distance to cable faults by sending a sweep into the cable and analyzing the complex reflected wave to determine the distance to various sources of reflection (opens, shorts, splitters, etc.). The reflecting events are indicated on a distance versus amplitude display, and markers are used to identify the distance to the source of the reflection, and the return loss at that point.

Total System Management

Combining the 180 DSP, 360 DSP, 720 DSP & 1G DSP meters in the field with the new ViewPoint Integrated Server in the back office, managers now have simplified access to intelligent management tools for monitoring, assessing and improving the efficiency of their total operation while making it even easier to obtain consistent, repeatable results that give supervisors that birds-eye view of the field for Total System Management.

By unifying an entire MSO's field operations in one convenient dashboard, managers can easily verify compliance and quality throughout the entire plant, either by home, system, region, division or any other attribute from a billing system.

This simple and completely customizable integrated system of field analysis and reporting tools allows managers to watch over their entire field operations in one convenient dashboard that compares each location in the system, analyzes the overall health of their entire organization and addresses concerns in near real-time.



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SPECIFICATIONS

Level Measurement

Channel Bandwidth	**Standard:** 6 MHz **Optional:** 8 MHz
Amplitude Range	-40 dBmV to +50 dBmV
Modulation Types	Analog: NTSC, PAL B/D/G/H/I/K/N & SECAM B/D/G/H/I/K/L Digital: 16/32/64/128/256 QAM Annex A, 64/256 QAM Annex B
Analog Measurement Accuracy	±0.75 dB @ 77 °F (25 °C) ±2.0 dB from 0 to 122 °F (-18 to 50 °C)
Digital Measurement Accuracy	±0.75 dB @ 77 °F (25 °C) ±2.5 dB from 0 to 122 °F (-18 to 50 °C)
Resolution	0.1 dB

Spectrum Measurement

Frequency Range	Return Path: 4 to 110 MHz Forward Path: 50 to 1000 MHz (Optional)
Resolution Bandwidth	300 kHz
Display Spans	Return Path: 4 to 42 MHz, 4 to 65 MHz, 4 to 85 MHz or 4 to 110 MHz Forward Path: User-selectable in 1 MHz steps
Display Scale	1, 2, 5, or 10 dB/division
Display Range	8 vertical divisions (when marker bar is hidden)
Spurious Free Dynamic Range	60 dB @ 25˚ C (77˚ F) (+50 dBmV)
Sensitivity	-40 dBmV (4 MHz to 1 GHz)

Digital Channel Measurement

Deep Interleave Compatibility	Yes
Downstream MER	40 dB @ +6 dBmV RF Input Level 34 dB @ -6 dBmV RF Input Level
Downstream BER	**Method:** True BER, derived from code words not from MER **Standard:** ITU J.83 annex A, B, C **Range:** 1 E-7 to 1 E-9 @ -6 dBmV RF Input Level
Symbol Rates	≥ 2 msps; ≤ 6.952 msps

Cable Modem Measurement

Protocol Support	DOCSIS 1.1 / 2.0 / 3.0 compliant (US & Euro DOCSIS 8x4) SNMP V1, V2c, V3 IEEE 802.3, 802.3u
Compliance Certificates	CE mark RoHS compliant CableLabs wave 80 (DOCSIS 8x4)
Receiver Demodulation	**Demodulation:** 64 QAM, 256 QAM **Data rate:** Up to 304 Mbps with 8 downstream channel bonding (DOCSIS 8x4) Up to 400 Mbps with 8 downstream channel bonding (EuroDOCSIS 8x4) **Channel bandwidth:** 6 Mhz (DOCSIS, DOCSIS-J) 6/8 MHz (Dual mode 8x4) **Maximum modem input signal level:** 17 dBmV
Transmitter Modulation	**Modulation:** QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM, and 128 QAM (SCDMA only) **Data rate:** Up to 108 Mbps with 4 upstream channels bonding **Frequency (edge to edge):** 5 to 42 MHz (DOCSIS) 5 to 65 MHz (EuroDOCSIS) 5 to 65 MHz (DOCSIS-J) Output level of CM can be controlled by CMTS though power ranging function **Step:** 1 dB

Carrier-to-Noise Measurement (In-service, non-scrambled standard channels only)

Minimum Input Level for Full Range	+10 dBmV
Dynamic Range	50 dB
Resolution	< 0.5 dB

Tilt Measurement

Max Number of Carriers	10
High/Low Delta Resolution	0.1 dB
Scan	Video, audio, pilot, and digital carriers

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Physical Specifications

Construction	Rubber overmolded plastic housing
Control	Glow in the dark keypad and LCD touch screen and/or via a wireless connection to a mobile device such as a laptop, tablet, iPad® or iPhone®, or Android® handset
Display	Color LCD touch screen 480 x 272 pixels (approx 4" x 2.25")
Annunciators	Audible annunciator for key strokes
Antenna	Internal Wi-Fi antenna, 2 dB gain
Flashlight	High intensity LED (0.25W)
Dimensions w/o Case (H x W x D)	8.0 x 5.5 x 2.0 in (20.32 x 13.97 x 5.08 cm)
Dimensions w/ Case (H x W x D)	9.0 x 6.5 x 3.0 in (22.86 x 16.51 x 7.62 cm)
Weight w/o Case	2.4 lbs (1.09 Kg)
Weight w/ Case	3.4 lbs (1.54 Kg)

Available Interface Types

RF Test Port	Replaceable F-Type connector DOCSIS 3.0 Modem (8x4)
Ethernet	RJ45 Ethernet Port (10/100 Mbps)
Wi-Fi	802.11 b/g 2.4 GHz Wi-Fi Adapter (Up to 60 Mbps)
USB	USB 2.0 Type-A Standard Port
Bluetooth (Optional)	Class II Mini Bluetooth USB Adapter (v2.1) with a 10 meter range for speeds up to 3 Mbps

Battery & Power Specifications

Operating Time	8 to 10 hours, dependant on use
Charge Time	4 hours
Battery	Two 2600 mAh @ 7.2V Li-Ion internal batteries, factory replaceable
Power Adapter	**Input:** 100 to 240 VAC ~ 47 to 63 Hz, 1.1A Max **Output:** 15 VDC, 3.3A

Environmental Specifications

Storage & Operating Temperature	-18˚ to +50˚ C (0˚ to 122˚ F)

INCLUDES THE FOLLOWING:

360 DSP Meter

Protective carrying case

Shoulder strap

AC to DC Power Adapter & Battery Charger

Touchscreen Stylus

SOFTWARE:

ViewPoint Express Configuration Software for the 360 DSP
P/N 0930215000

ViewPoint Integrated Server with WFM-I Module for the 360 DSP
P/N 2011656002

ACTS™ software
P/N 0930144000

RELATED PRODUCTS:

Precision test cable (I/O-15)
P/N 2071527048

I-Stop 1 GHz Test Probe
P/N 2010838002

TLB-60 Return Measurement Low-Pass Filter
P/N 20110666000