



HST-3000 Handheld Services Tester

Platform Overview

Experience the Power of One™

- Industry-leading access network tester with the leading range of copper-to-cutting-edge functionality
- Customizable applications that create operational efficiencies, which lower operating costs and improve customer service
- Repeatable functionality enables technicians to ramp up quicker and resolve more issues daily, resulting in reduced training costs and repeat rates
- Flexible connectivity to export results to a PC or back-office system
- Outdoor-readable color screen, robust memory capacity, and advanced processing capabilities

The growth of converged services has changed the landscape of the telecommunications industry, creating new opportunities and posing new challenges. A need exists to deploy complex, new services to meet the demand for the triple play of voice, video, and data, coupled with the challenge to improve customer service and reduce operating expenses. The right set of tools to do the job quickly and effectively is needed to successfully navigate this dynamic new world.

The JDSU HST-3000 Handheld Services Tester is designed with all of this in mind. The modular platform provides maximum flexibility through software options and field-swappable service interface modules (SIMs) for copper- and fiber-based multi-service testing. As the role of the technician moves beyond the physical layer to testing services and applications, the lightweight, rugged, and battery-operated HST-3000 smoothly supports changing test needs.

Automated testing features further enable improved productivity and workprocess efficiency. Optional capabilities such as voice over Internet Protocol (VoIP), Internet Protocol video (IPTV), and various access fiber (FTTx) testing make the HST-3000 the one solution for the installation and maintenance testing of next-generation FTTx and Passive Optical Network (PON)-based triple-play.

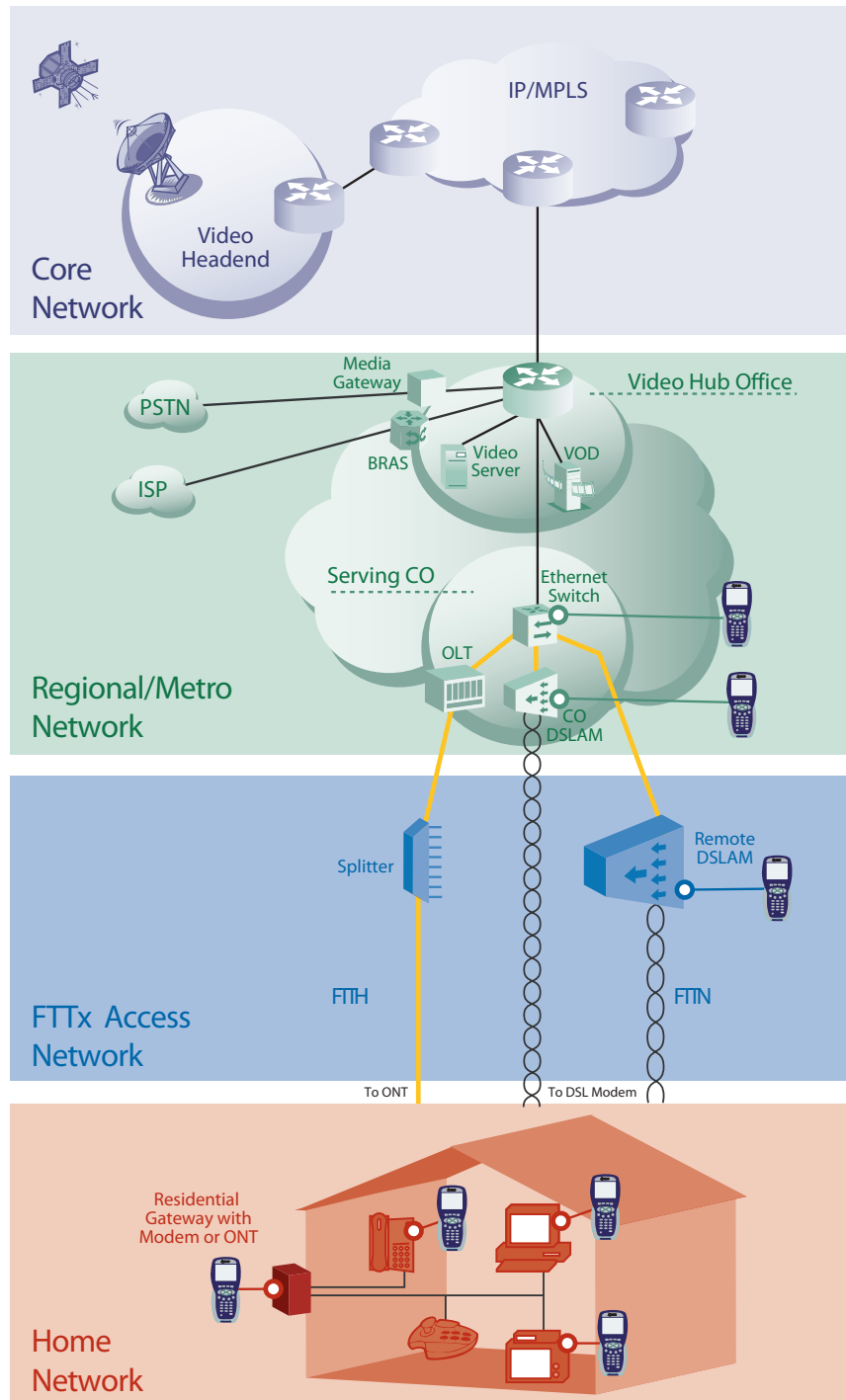
This brochure provides an overview of the HST-3000—the one tool trusted by providers worldwide to test the outside plant. The HST-3000 tests the physical layer, verifies services, and can improve operations processes. Designed to address virtually every test challenge from the network edge to the premises, the HST-3000 has become the one tool that today's telecom field technician can rely on to turn-up and verify converged services.

Test the Service



As deployment of FTTx and high-speed digital subscriber line (DSL) and Internet Protocol (IP)-based triple-play services accelerates, the HST-3000 smoothly supports evolving service test requirements—from asymmetric DSL (ADSL) to ADSL2+ and very high bitrate DSL (VDSL2) testing as well as the capability to add IPTV and VoIP testing. The HST-3000 can be upgraded in the field to support wideband copper qualification and trouble-shooting into the VDSL2 frequency range.

With the HST-3000, service providers experience the full power of one solution that spans technologies and applications. Existing equipment and training investments are leveraged while revenue potential is maximized because the HST-3000 ensures value-added services are offered at the highest quality of service (QoS) to ensure the best quality of experience (QoE).



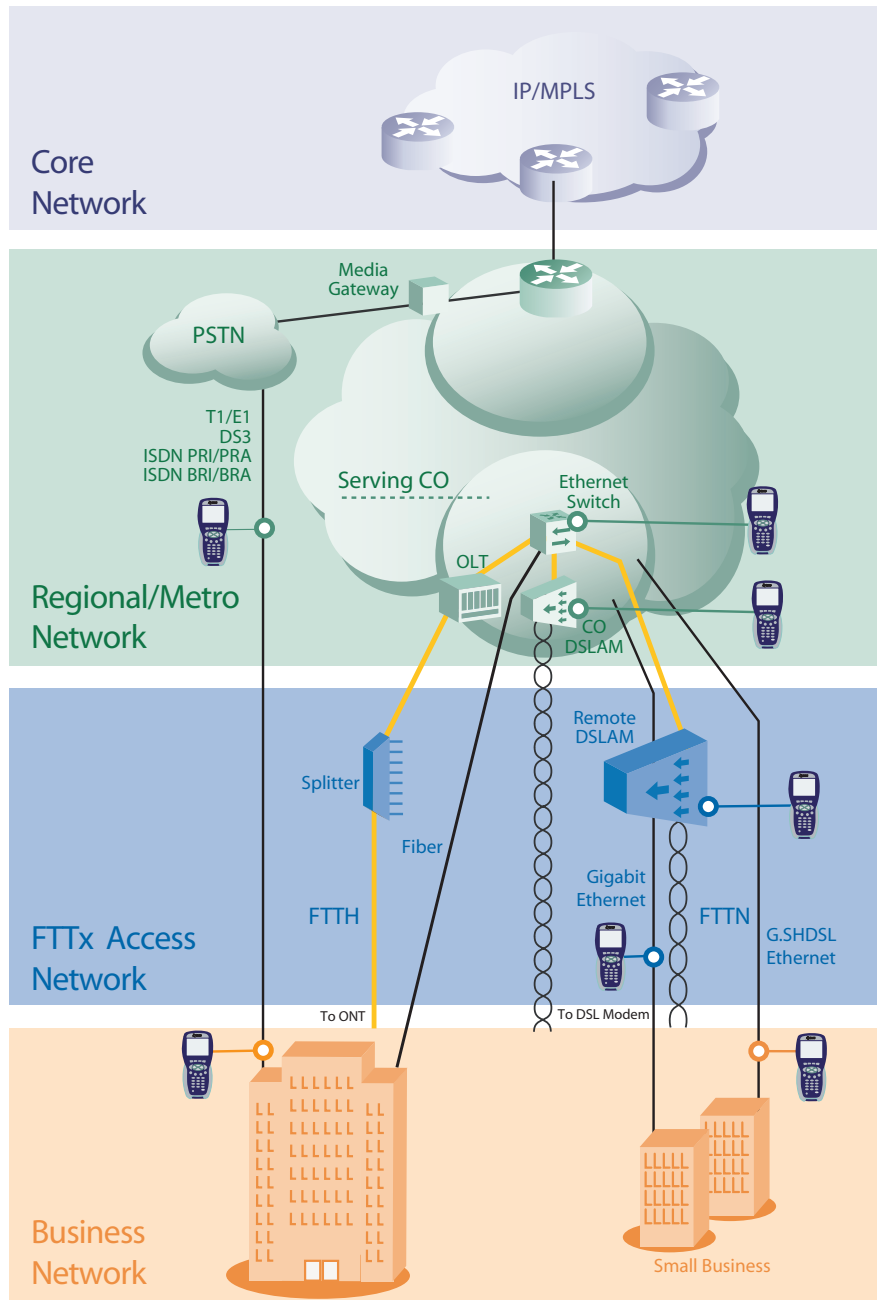
For residential networks, the HST-3000 provides maximum test flexibility, supports all of the newest DSL and IP-based triple-play technologies, and helps ensure the highest levels of user quality of service (QoS) and quality of experience (QoE).

Test the Network



Ethernet and fiber optic networks are emerging as key components in business service delivery. The HST-3000 enables providers to equip technicians to install and troubleshoot next generation networks efficiently while continuing to support legacy services.

By combining physical layer testing with service testing in one modular platform, the HST-3000 also streamlines the test process. Available test suites support access network services from DSL and T1 to Ethernet and DS3 and beyond. In addition to simple termination of a circuit and conducting bit error rate (BER) or cell/frame testing, the HST-3000 provides servicespecific test functionality for copper and optical media.



In enterprise networks, the HST-3000 tests DS3, Ethernet, and IP-based services such as VoIP in use by today's bandwidth-hungry businesses, enabling service providers to offer solutions and ensure service level agreements (SLAs) that match the growing demands of enterprise customers.

Improve the Process

The screenshot displays the HST-3000 automation interface with a dark blue header and a light blue background. It shows a series of test results for a DSLAM device. The tests include: 1. 'Show Time' with a table of performance metrics (Actual Rate, Max Rate, Capacity, Noise Margin, Attenuation) for UP and DOWN directions. 2. 'IP Ping In Process' followed by 'IP Ping Passed' with a table of ping statistics (Number of IP Pings, Ping from location, IP Ping MAX, IP Ping AVG, IP Ping Return %). 3. 'PPP Negotiation' followed by 'PPP Successful' with a table of user credentials (User Name, Password, IP Leased, PPP login). 4. 'FTP Speed In Process' followed by 'FTP Speed Passed' with a table of throughput metrics (FTP server dest, FTP throughput Up, FTP throughput Down). 5. A 'Summary' section showing 'All Jobs Passed' with a table of sync results (ADSL Sync, Data Sync, Ping, Throughput). Each test result is accompanied by a green checkmark icon. The interface includes navigation buttons like 'DETAIL', 'STOP', 'PREV', and 'RETURN'.

Actual Rate	UP	DOWN
160.0K	✓	576.0K
896K		8128K
18%		7%
31dB	✓	46.5dB
0.5dB	✓	2dB

Number of IP Pings	4
Ping from location	172.16.16.12
IP Ping MAX	30
IP Ping AVG	26
IP Ping Return %	100%

User Name	pppuser
Password	ppppassword
IP Leased	172.16.16.15
PPP login	PASS

FTP server dest	ftp://192.168
FTP throughput Up	174 Kbps
FTP throughput Down	492 Kbps

ADSL Sync	✓
Data Sync	✓
Ping	✓
Throughput	✓

HST-3000 automation features and test scripts display simple pass/fail results that increase technician efficiency and accuracy.

Today's high-bandwidth networks must perform at the increasingly exacting standards that are essential to widespread deployment of broadband access technology. In addition to ensuring "perfect" network performance, there is a business imperative to reduce operating expenses while adding new revenue-generating services—all within an environment that seems to grow more complex by the minute.

The HST-3000 is designed to improve efficiency and lower the costs associated with installing, maintaining, and troubleshooting business and residential services and networks using unparalleled process automation capabilities.

Copper and Fiber Network Process Challenges

For both copper and fiber deployment, two basic challenges exist: delivering triple-play services economically where profitability hinges on increasing the average revenue per unit (ARPU) of high-bandwidth service delivery and avoiding any type of repeat call to the premises beyond initial commissioning.

In copper deployments the complexity of migrating customers to high-bandwidth services is also a challenge. For example, migrating customers from ADSL to VDSL requires a different level of understanding and knowledge of the copper plant and the impact of various noise sources that limit or prevent delivery of services via VDSL2 or higher.

In fiber deployments, many challenges must be overcome to deliver services economically through a new physical plant in existing homes and buildings, including complex in-home and multi-dwelling unit (MDU) environments that have unknown wiring environments and a multitude of noise sources.

Process Automation Solutions

HST-3000 process automation solutions provide innovative ways to both reduce deployment costs and bring new customers online quickly. Solutions available include automated testing processes that improve technician efficiency, accuracy, and functionality that integrates the back office and HST-3000 units in the field, enabling data from the HST-3000 to be archived in the back office and verified for accuracy and consistency, allow for HST-3000 hardware and software upgrades to be automatically completed, and work tickets to be transmitted via the HST-3000.

This advanced level of process automation makes the HST-3000 the one tool needed to ensure uniform implementation of and compliance to specified test procedures and best practices, ultimately lowering operational costs and reducing customer churn.

Improve the Process

Field-Proven Process Improvement

The HST-3000 offers the highly configurable, customer-specific process automation vital to an effective automated workforce management solution.

Working closely with service providers, JDSU has developed a framework for sustained performance improvement. By automating and expediting service turnup and repair (while still adhering to established methods and procedures), JDSU is helping providers save time and money. Field trials show amazing potential for improvement. Selected results show:

- Repeat rates reduced from 24 to 5 percent
- Incident reports dropping by 30 percent during the first month of deployment
- DSL repair dispatches reduced by 25 percent
- Technicians spending 12 percent less time per installation, 15 percent less per dispatch
- A multi-million dollar reduction in repair, installation, and training costs



One Tool—from Copper Testing to Service Verification

The HST-3000 provides an integrated approach to field testing with test support for specific application use cases. Field-swappable SIMs are available for copper and multi-service testing.

Triple-Play Testing

Conduct advanced tests for the installation and maintenance of DSL and PON-based Triple-Play. Turn-up and troubleshoot IPTV services that carry video program content over access networks, including support for all video QoS measurements.

Complete Copper Testing

Perform copper testing including digital volt-ohm meter (DVOM), time division reflectometry, wideband transmission impairment measurement set (TIMS), spectral noise, and resistive fault locator (RFL). WideBand II test capabilities allow for copper troubleshooting and line qualifications testing up to 30 MHz for VDSL services. VDSL1 uses a frequency band from approximately 25 kHz to 12 MHz. VDSL2 extends the range up to 30 MHz.

xDSL Testing

Verify the circuit and service with modem emulation and replacement for ADSL, ADSL2, ADSL2+, Global Standard High-Bit-Rate DSL (G.SHDSL), and VDSL2.

GigE and 10/100 Ethernet Testing

Generate traffic and troubleshoot Ethernet links, both optical and electrical, for point-to-point or routed networks. Address the needs of Layer 1 thru Layer 7 testing with IP version 4 (IPv4) or 6 (IPv6) capability.

VoIP Testing

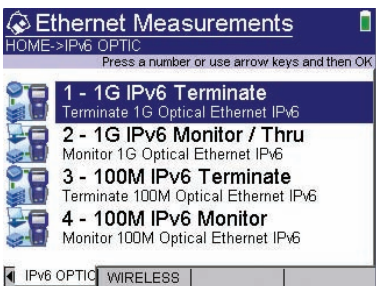
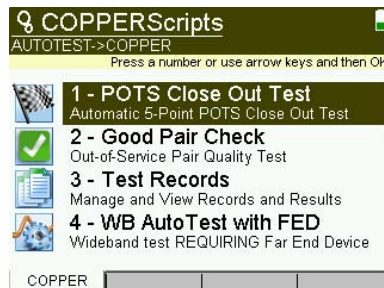
Turn up and troubleshoot VoIP service connectivity, feature availability and voice quality, and conduct IP ping, packet statistic, and trace route analysis to identify, diagnose, and sectionalize VoIP network and equipment problems.

FTTx Testing

Measure the optical power of the two downstream signals (1490 and 1550 nm) and the upstream signal at 1310 nm in a FTTx (PON) network simultaneously.

Services Testing

Turn up and troubleshoot North American business-class data services: Ethernet, T1, DS3, pulse code modulation (PCM) TIMS (T1 only), PCM Signaling (T1 only), digital data service-link layer (DDS-LL), Frame Relay, Internet Services Digital Network primary rate interface [23B+e] (ISDN PRI), ISDN basic rate interface (BRI), ISDN Primary Rate Access (PRA) for European Telecommunications Standards Institute (ETSI), and Datacom. Turn up and troubleshoot global business-class data services: GigE, Ethernet, E1, ISDN basic rate access (BRA), G.SHDSL, and Datacom.



The HST-3000 color display provides simple, easy-to-read results for a wide variety of tests.

HST-3000 Architecture



The architecture of the HST-3000 enables fast, easy field-swapping of a wide variety of test modules.

The HST-3000 architecture provides true platform capability. Multiple software options and field-swappable SIMs that handle a range of testing requirements can be packaged to match work group needs for residential or business services.

Weather-resistant and equipped with an intuitive, menu-driven graphical user interface, the HST-3000 has a liquid crystal display (LCD) specifically designed for viewing in outdoor lighting conditions. Special function keys and context-specific soft keys make navigation through the test screens and setup menus easy. The ability to store multiple configurations or test setups further simplifies repetitive tasks. Programmable thresholds for various test parameters set pass/fail/marginal levels, allowing control over results analysis and flexibility in tying them to Methods and Procedures (M&Ps).

The One Tool for the New World of Converged Services

The growth of converged voice, data, and video services supported on one packetbased infrastructure demands new test capabilities. Built to support a level of efficiency, ease of use, and process improvement never before possible, the HST-3000 equips the field technician with the one tool that meets the challenges of triple play.

Contact JDSU today to learn how to equip your field technicians with the HST-3000—the one tool providers worldwide trust to test the outside plant: one interface, one platform, one solution that makes for one really effective telecom field technician.



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