Acterna HST-3000

DDS 4-Wire Local Loop Option

Qualify and Troubleshoot Local Loop Installation Quickly

DDS continues to provide a revenue stream for local loop services. However, installing DDS services at the customer's premises can be extremely time-consuming and expensive. Technicians must be able to deploy and troubleshoot 4-wire DDS services effectively and efficiently – the first time out. To meet these challenges, an easy-to-use, versatile test solution is required that helps reduce failures and repeat rates while enhancing efficiency and ensuring consistent test practices.

The Acterna HST-3000 is a powerful and versatile handheld solution that tests DDS 4-wire Local Loop (4WLL), as well as the copper plant, T1 and ISDN. Hand-held, rugged and easy-to-use, the HST-3000 is ideal for field use. Its modular design provides a scalable, all-in-one solution for DDS local loop testing, as well as thorough testing of the facilities over which it is provided.

Equipped with the 4-Wire DDS testing option, the HST-3000 enables the necessary out-of-service testing, including loopback, straightaway and end-to-end testing to verify service and troubleshoot the loop.

Whether used by service providers, end users or manufacturers, the Acterna HST-3000 is a high-quality, proven product for qualifying and installing local loop services. Automated setups and advanced testing features give operators the control they need to initiate faster service turn-up and maintenance, better workforce productivity, lower costs and increased profitability. Each HST-3000 is built to order and is quickly and easily upgraded with new modules and software as application and technology needs change.

Highlights

- **CSU/DSU emulation mode provides straightaway, loopback and end-to-end testing**
- **Test DDS rates from 2.4 kbps to 64 kbps**
- **Thorough T1 Testing option including BERT, loopcodes and NIU/CSU emulation**
- **BER testing on primary and secondary channels**
- **In-depth copper measurements including DVOM, graphical TDR, RFL and load coil counter**
- **Modular hardware and software architecture is flexible and easily upgraded**
- **Field portable solution for 4-wire DDS service testing**

ACTERNA™
Communications Test and Management Solutions

A Powerful Field Service Solution

Out-of-service testing is essential to the deployment of DDS circuits to verify the physical layer, detect faulty equipment and ensure proper provisioning. With the HST-3000, a technician can emulate the CSU/DSU and plug into the 4-wire DDS circuit at the NID or DDS termination unit. Once connected to the circuit, the technician can qualify the local loop circuit by using a variety of BER patterns.

The test set enables user-friendly configuration of BER test patterns to match central office equipment or conduct loopback or straightaway BER testing for primary and/or secondary channels. For a complete end-to-end network test, a pair of HST-3000s can be used.

Loopback Testing

The Acterna HST-3000 can be used to terminate the circuit at the customer premises and initiate or respond to loopback request from the network card. The HST-3000 can initiate and respond to V.54, as well as respond to CSU and DSU loopbacks. Once the loopback is established, BERT patterns can be transmitted and received over the primary channel or the low-speed secondary channel. The HST-3000 can also perform BER analysis on the local loop to a hard loop at the OCU DataPort (OCU-DP) card, enabling the technician to test both pairs from the customer premises.

Straightaway Testing

Straightaway testing is useful to isolate problems between the customer premises and the central office. A known test pattern can be simultaneously transmitted in each direction, between the HST-3000 and network test equipment, providing for easier sectionalization of network and equipment troubles.

End-to-end Testing

If problems still exist after running straightaway or loopback testing, it is possible that errors were introduced by another provider's network. Testing through to the far end can determine if the problem is outside the immediate network. By using a pair of Acterna HST-3000s at either end of the line, end-to-end testing of the network, using both straightaway and loopback tests, will isolate the trouble.

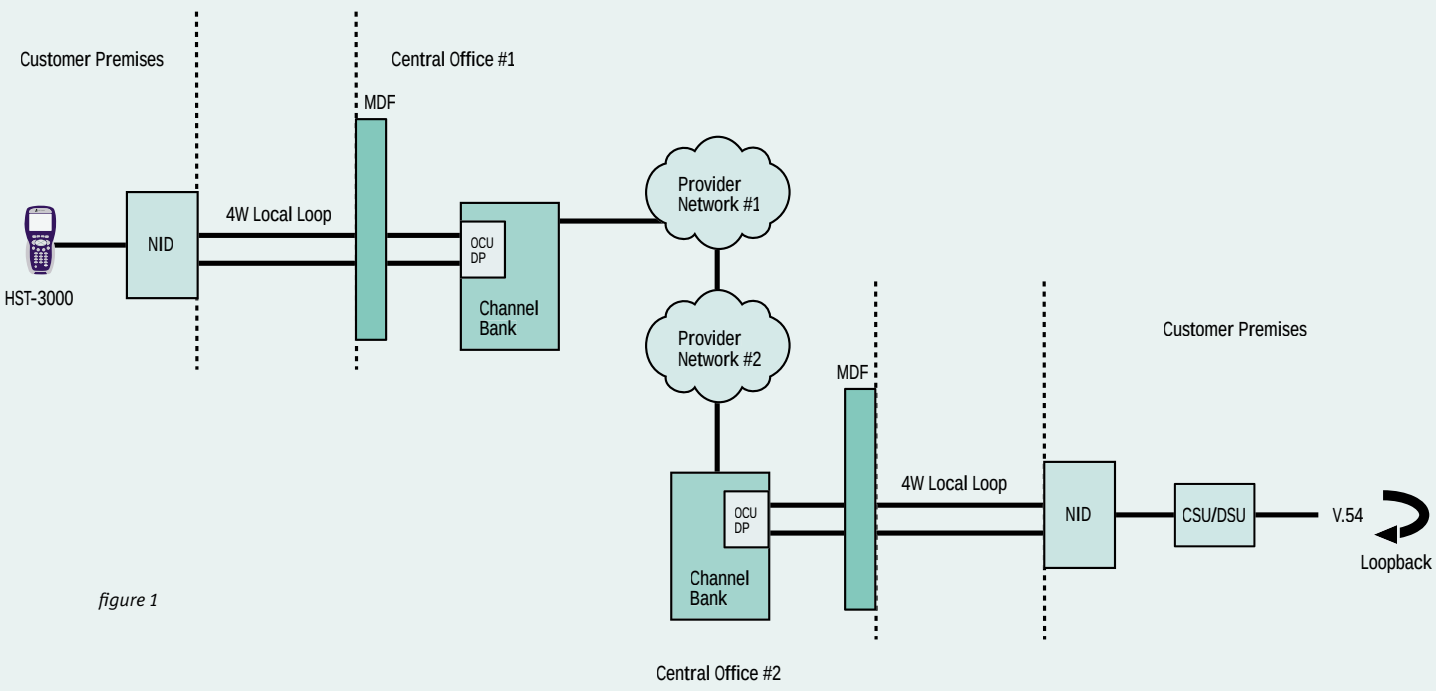


figure 1

Test the Copper, Test the Service, Improve the Process

Equipped with the Copper Testing option, the HST-3000 can quickly troubleshoot the local loop for line impairments that degrade or impair DDS-LL performance. With the HST-3000, technicians can quickly identify and locate cable impairments, including shorts, grounds, opens, crosses, bridged taps, wet sections and other high resistive faults. These impairments are easy to access with the HST-3000's advanced time domain reflectometer (TDR), precision digital volt/ohm meter (DVOM) and an accurate resistive fault locator (RFL) to pinpoint troubles prior to circuit installation. The HST-3000 can transmit and receive wideband tones and measure impulse and background noise confirming that noise and loss meet acceptable criteria. Copper test features are optimized for use anywhere on the local loop – at the NID, crossbox, pedestal, main distribution frame or anywhere a technician might gain access to the local loop to locate the source of trouble.

The 4-wire facility that carries the DDS service can be qualified by performing BER analysis with a number of patterns, including all ones, 63, 511, 2047 and DDS-1 through DDS-6. The HST-3000 responds to CSU, DSU and V.54 loopcodes, making it ideal as the responder for end-to-end or loopback BER testing.

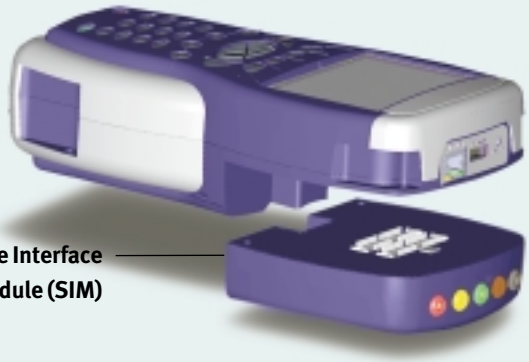
The HST-3000 offers pre-programmed tests and customized scripts ensuring that all technicians, including novice users, follow the same procedures, eliminating mistakes caused by improper test configurations or incorrect procedures.

Acterna's TechComplete™ software (optional customized) allows the HST-3000 to improve turn-up and maintenance processes. This is done by operating with service provider's dispatch and closeout report systems to offload stored test results for later trend analysis and coaching reports. With these features, the HST-3000 can reduce repeat rates and failures and improve overall process efficiency.

Flexible and Rugged Design

The HST's rugged, weather resistant design and long battery life are ideally suited for use in the field. Its modularity allows for field upgrades to support new testing requirements. Standard Ethernet, USB, and serial connections offer flexibility to easily download software and offload captured test data.

Easily configurable, the HST-3000 can be used by different technicians with different responsibilities to perform a wide number of tests. The HST-3000 is easily upgradeable with technologies and advanced options that support the changing needs of service installers.



Flexible, modular platform makes technology upgrades or hardware changes easy

HST-3000 Handheld Services Tester
Actual Size: 9.5 x 4.5 x 2.75 in
Weight: 2.7 lb with battery

Technical Specifications

Interfaces

DDS Local Loop 4-wire	RJ-48
10/100 BT Ethernet jack	8-pin modular
Serial port	DB9 female via cable (DCE)
USB Host	
USB Device	

DDS-LL Specifications

Operating Modes	Terminate CSU/DSU Emulation
Term Impedance	Rx 135 Ohms +/- 5%
	2.4, 4.8, 9.6, 19.2
DDS Data Rates	56 and 64kbps
Secondary Channel	IDLE, 511, 2047
Data Support	BERT
Clock Source	Internal Recovered
Receive Signal Range	+6.0 dB to –43dB (56k 64k rates) +6.0 dB to –34 dB (all other subrates)
Transmitter Output Levels	0dB, -3dB, -6dB, and -9dB

Physical specifications

Size (H x W x D)	9.5 x 4.5 x 2.75 in
Weight	2.7 lb with battery
Operating temperature	22°F to 122°F
Storage temperature	–40°F to 150°F
Battery life	10 hrs. typical usage
Charging time	7 hours from full discharge to full charge
Operating humidity	10% to 80% relative humidity
Storage humidity	10% to 95% relative humidity
Display	1/4 VGA monochrome transflective, 3.8-in diagonal (readable in direct sunlight)

General

Ruggedness	Survives 3-ft drop to concrete on all sides
Water-resistance	Splashproof: may be used in heavy rain
Language	English
Keypad	Typical 12-button keyboard

Ordering information

Base units

HST-3000C	HST-3000C base with copper testing Requires the purchase of a SIM – see separate listing for HST3000-CAR or HST3000-CU (Ethernet and serial ports included)
HST-3000	HST-3000 base without copper testing Requires the purchase of a SIM – see separate listing for HST-3000-CAR or HST-3000-AR (Ethernet and serial ports included)

SIMS (Modules)

HST-3000-DDS	4 wire local loop
HST-3000-T1	Dual Tx/Rx bantam T1 interface and T1 software option
HST-3000-CT1	Dual T/R/G interface for copper Testing and Dual Tx/Rx bantam T1
HST3000-T3	Dual Tx/Rx bantam T1 interface, and dual Rx, single Tx BNC DS3 interface and DS3 software option
HST-3000-BRI	U-MON and U Interface with To LT and To NT and ISDN BRI software option

Software options

HST3000-PRI	ISDN PRI software option
HST3000-TDR	TDR software option
HST3000-RFA	RFA/RFL software option
HST3000-WBTones	WB tones/TIMS software option
HST3000-VT100	VT100 option (Includes cable and software option)
HST3000-Script	Scripted testing software option
HST3000S-Web	Web browser software option
HST3000-PCMSIG	VF (PCM) signaling software option
HST3000-PCMTIMS	VF (PCM) TIMS software option
HST3000-T1DDS	T1 DDS software option

Accessories

Test leads	POTS - 5 ft. banana plugs to alligator clips, T1 - bantam to bantam, bantam to 310 Weco
Charger Adapter	AC/DC battery charger/adapter 120 VAC (50/60 Hz) input; 12 VDC (1 A) output
Soft Cover	Form fitting nylon glove for test set and leads
Carrying Case	Heavy duty, nylon case for test set, extra SIMs, accessories and cables
Battery	Lithium ion
41084	T1 repeater power supply
43141	repeater power supply multiplexer
44116	HDSL doubler power supply
44527	HDSL remote access shelf
41157	Repeater extender

Acterna is the world's largest provider of communications test solutions for telecommunications and cable network operators. A trusted communications test partner for more than eight decades, Acterna offers an unmatched portfolio of award-winning instruments, systems, software and services that help its customers reduce network costs while improving performance and reliability. Headquartered in Germantown, Maryland, USA – with European and Asia-Pacific operations based in Eningen, Germany and Hong Kong – Acterna serves nearly every major communications service provider and equipment manufacturer around the world through a skilled sales and support organization in 31 countries.

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