

# HST-3000

## T1 Service Interface Module (SIM)



### Key Features

- Thorough T1 testing including BERT, loopcodes, and NIU/CSU emulation
- VT100 emulation for access to T1, HDSL, HDSL2, HDSL2-4 wire performance statistics
- Copper option adds in-depth copper measurements including DVOM, graphical TDR, RFA/RFL, and load coil counter
- Lower repeat rates with automated close out tests, scripting, and pass/fail tests loaded with operator specific thresholds for methods and procedures
- Modular hardware and software architecture allows easy upgrades and enhancements
- T-BERD® advanced stress patterns, intelligent repeater loop codes, and BERT patterns included
- Lightweight, rugged, water resistant, and battery powered handheld test instrument
- NetAnalyst control of Data Network Analyzer test devices



The JDSU HST-3000 is the ideal instrument for testing T1 services with built-in functionality that reduces repeat rates, failures, and kickbacks and ensures that all tests are performed the same way, every time.

Reduced budgets, smaller workforces, and untrained technicians can limit a carrier's ability to promptly provision T1 service. Overcoming these obstacles requires resources that facilitate the efficient and rapid deployment of T1 services regardless of whether the T1 line uses traditional repeaters, HDSL, HDSL2, or HDSL2 4-wire circuits.

Technicians use the HST-3000 optional copper test features to qualify and troubleshoot the circuit, and the T1 test features to bit-error-rate test (BERT) the line and verify the service. With the VT100 emulation feature, the HST-3000 provides instant access to HDSL/2/4 performance statistics. There is no need for technicians to switch instruments or modules; the HST-3000 combines all the tests into one tool with one common interface. The HST-3000 custom scripting feature automates the testing process, ensuring that tests are done completely and thoroughly every time and helps reduce repeat rates and failures by ensuring that the processes used to test are consistent.

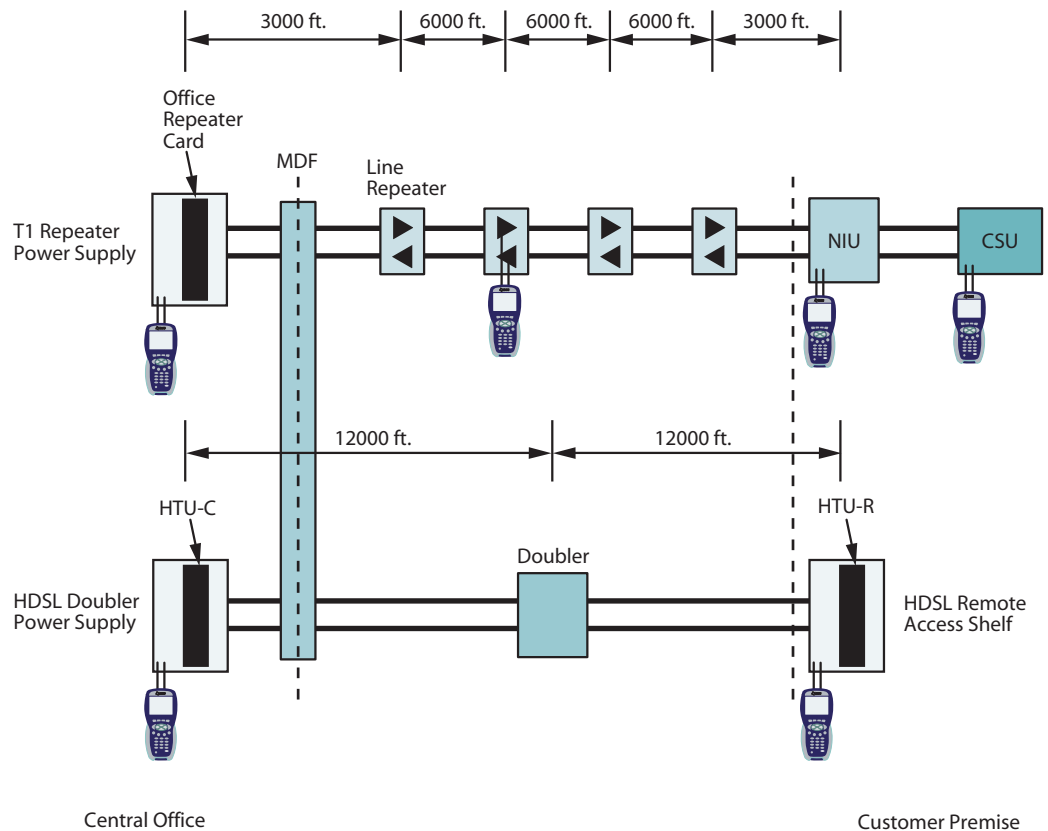
With the HST-3000, technicians can complete faster service turn-ups, reduce failure rates, and lower costs, which are all key components to surviving in today's competitive environment.

## Functional Overview

Beginning with the construction of the circuit, and throughout the life cycle of the service, operators must verify that customers are receiving the quality they ordered. Whether qualifying the copper before handing the circuit over to an installation and maintenance crew, a technician must run a bit-error-rate test (BERT) to prequalify the circuit to ensure that it will run T1 service error free.

### DS1 BERT

To verify proper T1 transmission over a traditional repeatered T1 or an HDSL circuit, a technician needs to test the entire span from the central office to the customer premises. A true end-to-end service test requires stressing the span and verifying the error tolerance of the copper plant and network equipment. The HST-3000 includes the advanced stress patterns of the T-BERD to properly stress the network.



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### Loopback Testing

Preprogrammed HTU-C, HTU-R, doubler, T1 CSU, T1 NIU, and repeater loopcodes enable the HST-3000 to quickly sectionalize transmission problems. In addition, Pairgain, Teltrend, Adtran, Westell, and ADC equipment specific loopcodes, as well as user configurable loopcodes, are supported.

The test set can also emulate T1 customer premises equipment, simulating a CSU or NIU. CSU/NIU emulation allows the test set to be looped up from the central office to verify T1 service across the entire length of the span.

### Dual T1 Transmit and Receive

The HST-3000 dual T1 transmit and receive capabilities give the ability to measure timing slips, passively monitor T1 circuits in both directions, and perform drop and insert testing. Using the split screen view in dual monitor mode, a span is easily sectionalized to quickly determine the location of a fault. Drop and insert testing allows the user to BERT single DS0s within a T1, without taking the entire T1 out of service.

### HDSL/2/4

Through the test instrument's VT100 emulation feature, technicians can access HDSL and T1 network equipment for equipment configuration, specific performance data measurements, and loop up capabilities, without having to carry a laptop into the field. With JDSU's repeater extender, technicians can also gain access to the circuit at T1 repeaters.

### Fractional T1

The HST-3000 performs fractional T1 (FT1) BER tests on selected channels to verify transmission on contiguous and noncontiguous FT1 bandwidth. This allows the technician to verify circuit performance with VF and 577 Hz ID tones at various output levels. In addition, the HST-3000 uses a variety of advanced stress patterns such as 55 octet, T1-DALY, and other long user patterns as recommended by the ANSI T1.403 standard to stress repeated T1/FT1 circuits.

With its enhanced T1 features and functions, the HST-3000 is the ideal test instrument for technicians to troubleshoot and qualify the line swiftly and effortlessly.

### Flexible and Rugged Design

The HST-3000 incorporates a rugged, weather-resistant design and long battery life that are ideally suited for use in the field and its modularity allows for field upgrades to support new testing requirements. The HST-3000 is easily upgradeable with technologies and advanced options that support the changing needs of service installers and its dynamic configurability allows it to be used by different technicians with different responsibilities to perform a wide number of tests. Standard Ethernet, USB, and serial connections offer flexibility to easily download software and offload captured test data.

### Specifications

#### Interfaces

Dual Tx/Rx T1	Bantam jacks
Optional dual Tip/Ring and ground	Color-coded, shrouded 2 mm "mini-banana" jacks
10/100 BT Ethernet	8-pin modular
Serial port	BDB9 female via cable (DCE)
USB port	

#### T1 Specifications

Payload	Full T1, 56k, 64k, Nx56, Nx64
Input impedance	
Bridge	>100 Ohms
Term	100 Ohms ±5%
DSX-MON	100 Ohms ±5%
Receive level	
Bridge	0 to -20.0 dBdsx
Term	+6 to -35.0 dBdsx
DSX-MON	+6 to -24 dBdsx
Framing	ESF, SF(D4), SLC-96, unframed
Transmitting timing sources	Internal clock Recovered clock
Line codes	AMI, B8ZS
Line build out level	0, 7.5, 15.0 and 22.5 dB of cable loss at 722 kHz
Line build out tolerance	±1 dB at 722 kHz with LBO or 0 dB
Error insert	Logic, BPV, frame, single, multiple, rate

#### Physical Specifications

Size (h x w x d)	9.5 x 4.5 x 2.75 in. (241 x 114 x 70 mm)
Weight (with battery)	2.7 lbs. (1.23 kg)
Operating temperature	22° F to 122° F (5.5° C to 50° C)
Storage temperature	-40° F to 150° F (-40° C to 65.5° C)
Battery life	10 hrs. typical usage
Charging time	7 hrs. from full discharge to full charge
Operating humidity	10% to 80% relative humidity
Storage humidity	10% to 95% relative humidity
Display	3.8" diagonal, 1/4 VGA, Color Active Matrix with backlight (readable in direct sunlight)

#### General Specifications

Ruggedness	Survives 3 feet (91 cm) drop to concrete on all sides
Water-resistant	Splashproof (may be used in heavy rain)
Languages	English, German, French, Spanish, Italian, Chinese, Turkish
Keypad	Typical 12-button keyboard

**Ordering Information**

HST3000-NG	HST-3000 Mainframe without Copper (Color)
HST3000-NG-BW	HST-3000 Mainframe without Copper Testing (B&W)
HST3000C-NG	HST-3000 Copper Mainframe (Color)
HST3000C-NG-BW	HST-3000 Copper Mainframe (B&W)

**Available SIMS (Modules)**

HST3000-4WLL	4-Wire Local Loop SIM
HST3000-AR2A-TI	ADSL2+ TI (ATU-R, Annex A) SIM
HST3000-AR2A	ADSL1/2/2+ (ATU-R, Annex A) SIM
HST3000-AR2B	ADSL1/2/2+ (ATU-R, Annex B) SIM
HST3000-AR2B-TI	ADSL2+ TI (ATU-R, Annex B) SIM
HST3000-ARB	Annex B ATU-R SIM
HST3000-ARCA	ATU-R/C Dual Mode SIM, AoPOTS SIM
HST3000-ARCB	ATU-R/C Dual Mode SIM, AoISDN SIM
HST3000-ARCE	ADSL (ATU-R) SIM
HST3000-BLK	Blank SIM
HST-BRA	ETSI (Euro) ISDN BRA SIM
HST3000-BRI	ISDN BRI SIM
HST3000-CAR	Copper (ATU-R) SIM
HST3000-CAR2A	ADSL1/2/2+ with Copper (ATU-R, Annex) SIM
HST3000-CAR2A-TI	Copper, ADSL2+ TI (ATU-R, Annex A) SIM
HST3000-CAR2B	ADSL1/2/2+ with Copper (ATU-R, Annex B) SIM
HST3000-CAR2B-TI	Copper, ADSL2+ TI (ATU-R, Annex B) SIM
HST3000-CARB	Annex B Copper/ATU-R SIM
HST3000-CARCA	Copper and ATU-R/C Dual Mode SIM, AoPOTS
HST3000-CARCB	Copper and ATU-R/C Dual Mode SIM, AoISDN
HST3000-CARCE	Copper and ATU-R (Annex A) SIM, CE Marked

HST3000-CSHHV	G.SHDSL, 380V SPAN, DVOM SIM
HST3000-CSH4	Copper, 4-Wire G.SHDSL (STU-R/C, Annex A/B) SIM
HST3000-CSHCE	G.SHDSL and Copper SIM
HST3000-CT1	T1 and Copper SIM
HST3000-CU	Dual T/R/G Interface to Copper Test SIM
HST3000-CUCE	Copper only SIM, CE Marked SIM
HST3000-CUVDSL-CNXT	VDSL and Copper with Connexant Chipset SIM
HST3000-CUVDSL-IK	VDSL and Copper with Ikanos Chipset SIM
HST3000-CUVDSL-INF	VDSL and Copper with Infineon Aware Chipset SIM
HST3000-DC	Datacom SIM
HST3000-E1	E1 SIM
HST3000-E1-DC	E1/Datacom SIM
HST3000-ETH	10/100/1000 Ethernet SIM
HST-GSH	G.SHDSL SIM
HST3000-GSHCE	2-Wire G.SHDSL SIM
HST3000-T1	Dual TX/RX Bantam T1 Interface and T1 SIM
HST3000-T3	Dual TX/RX Bantam T1 Interface, and Dual RX/Single TX BNC DS3 Interface/ and DS3 SIM
HST3000-VDSL-CNXT	VDSL with Connexant Chipset SIM
HST-3000-VDSL-CNXT-WB2	VDSL and Copper (up to 30 MHz) with Connexant Chipset SIM
HST3000-VDSL-IK	VDSL with Ikanos Chipset SIM
HST-3000-VDSL-IK-WB2	VDSL and Copper (up to 30 MHz) with Ikanos Chipset SIM
HST3000-VDSL-INF	VDSL with Infineon Aware Chipset SIM
HST-3000-VDSL-INF-WB2	VDSL and Copper (up to 30 MHz) with Infineon Aware Chipset SIM
HST3000-WB2	Wide Band 2 (up to 30 MHz) Copper Test SIM

**Software options**

HST3000-BLUETOOTH	Bluetooth Wireless Software Option
HST3000-DSL2	ADSL2 and ADSL2+ Software Option
HST3000-FR	Frame Relay Software Option
HST3000-FTP	FTP Software Option
HST3000-IPV6	IPv6 Software Option
HST3000-MPLS	MPLS Software Option
HST3000-MSTR	Multiple Streams Software Option
HST3000-MSTV	Microsoft IPTV Video Analysis Software Option
HST3000-OPTETH	Optical Ethernet Software Option
HST3000-PCMSIG	Signalling (PCM) Software Option
HST3000-PCMTIMS	TIMS (PCM) Software Option
HST3000-PRI	ISDN PRI Software Option (NC Standard)
HST3000-PS	Pulse Shape Software Option
HST3000-REMOP	Remote Operation Software Option
HST3000-RFL	RFL Software Option
HST3000-SCRIPT	Scripted Test Software Option
HST3000-SPE	Spectral Noise Software Option 7
HST3000-ST	Basic Rate ISDN S/T (ANSI) Software Option
HST3000-T1DDS	DDS-T1 Software Option
HST3000-TCPUDP	TCP/UDP Software Option
HST3000-TDR	TDR Software Option
HST3000-TxIMP	Transmission Impairments Software Option
HST3000-UNISTIM	VoIP Signaling Call Controls for UNISTIM Software Option
HST3000-VT100	VT100 Emulation Software Option
HST3000-WBTONES	WB TIMS Software Option
HST3000S-H.323	H.323 VoIP Signaling Software Option
HST3000S-IP	Advanced IP Suite – PING and Through Mode Support Software Option
HST3000S-IP-Video	IP Video Analysis Software Option
HST3000S-MGCP	SCCP MGCP VoIP Signaling Software Option
HST3000S-MOS	VoIP Mean Opinion Score Software Option
HST3000S-SCCP	SCCP VoIP Signaling Software Option
HST3000S-SIP	SIP VoIP Signaling Software Option
HST3000S-VMOS	Video MOS Analysis Software Option
HST3000S-VOIP	VoIP Software Analysis Software Option
HST3000S-WEB	Web Browser Software Option

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