

## HST-3000

### Option for Datacom Testing



#### Key Features

- Isolates and troubleshoots Datacom networks and Customer Premises Equipment (CPE)
- Supports RS232/V.24, RS449/V.36, V.35, EIA530, and X.21 interfaces
- Provides DTE/DCE emulation and bidirectional monitoring
- Contains a full suite of BERT patterns with data rate support up to 10 Mbps
- Verifies Frame Relay service over Datacom interfaces

The JDSU HST-3000 Datacom Service Interface Module (SIM) is designed for field technicians who install and maintain data communications circuits and network elements over RS232/V.24, RS449/V.36, V.35, EIA530, and X.21 interfaces. Technicians can verify end-to-end connectivity, identify clocking errors, and measure throughput with the bidirectional monitoring, data terminating equipment (DTE) emulation, and data communications equipment (DCE) emulation features.

When using the HST-3000 for network troubleshooting, technicians can quickly and easily isolate circuit problems to a specific direction by analyzing the performance of the entire digital link in both directions. The HST-3000 can also verify operation or locate network problems by generating bit error rate test (BERT) patterns and testing frame relay service.

Rugged, versatile, and portable, the HST-3000 is the ideal instrument for technicians to test the entire circuit, from the customer premises and throughout the network. It can be built to order and quickly and easily upgraded in the field with new modules as application and technology needs change.

Programmed with highly integrated applications for in-service and out-of-service testing, the HST-3000 examines both the physical layer and service levels to ensure that the network is performing properly.

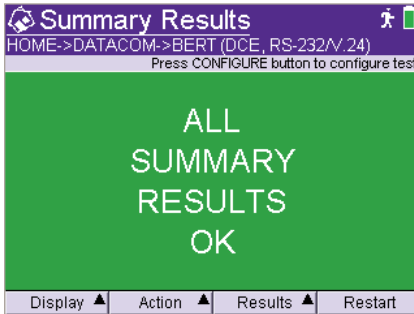


Figure 1 Datacom Configuration Menu

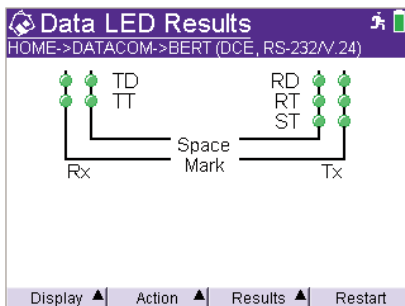


Figure 2 Datacom LED Results Page

DTE	
Verdict	Accepted
ES	0
ESR	0.0000000
SES	0
SESR	0.0000000
UAS	0

At the bottom, there is a navigation bar with buttons for 'Display', 'Action', 'Results', and 'Restart'.

Figure 3 G.821 Performance Results Page

### DTE/DCE Emulation

The HST-3000 Datacom SIM can replace either a DTE or DCE device and can test head-to-head with existing network elements. By emulating the customer premises equipment (CPE), the technician can control handshaking states between DTE and DCE devices to ensure proper transitions and to verify connectivity. Technicians can also sectionalize problems in the network by qualifying proper data transmissions and signaling states.

### Bidirectional Monitoring

The HST-3000 can passively monitor the transmission of the Datacom link in both directions to confirm physical layer results.

### Traffic Generation

With the HST-3000, users can send BERT patterns to verify error-free performance by transmitting ANSI, ITU, and user-programmable test patterns. Test head-to-head with other JDSU equipment or via loopback. Performance measurements such as round-trip delay and G.821 results allow users to verify that all circuit parameters fall within the required level of performance.

### Frame Relay over Datacom

With the Frame Relay software option, technicians can verify that frame relay service is functioning properly by testing Layer Management Interface (LMI) activity, Permanent Virtual Circuit/Data Link Connection Identifier (PVC/DLCI) status, congestion, lost frames, and committed information rates (CIR).

### Timing Analysis

When using synchronous timing, the receiving device must be properly synchronized to the clock signal, or misinterpretation of bits can cause bit errors and timing slips. The HST-3000 provides internal and interface clock source options, allowing technicians to rapidly diagnose and correct network timing problems.

### Verify End-to-End Connectivity

Technicians can quickly isolate any problem to a specific direction by analyzing the performance of the entire digital link in both directions. After the circuit is installed, the HST-3000 can be used to qualify proper channel routing, delay, and performance over the entire link.

### Self-Loop Testing

The HST-3000 provides an internal self-loop testing feature that connects the transmitter to the receiver without involving amplifiers or cables. This feature allows technicians to validate the unit settings and the selected test interface on the HST-3000. An external cable verifies the amplifiers as well as the current emulation cable.

### User-Configurable Setup

Technicians can select and configure the test interface, timing mode, timing source, data rate, flow control, and test pattern on the HST-3000. In addition to standard software LED result pages, the HST-3000 contains user-defined hardware Datacom LEDs on the module that displays signal states and mark/space.

### The HST-3000 is an All-in-One Tester

The HST-3000 is a modular platform that covers a broad range of interfaces and services.

**T1 and DS3** – Allows for monitoring, terminating, and drop and insert testing; standard and advanced BERT patterns; T1/DS3 and HDSL loopcodes; and PCM T1MS and signaling.

**Frame Relay** – Tests Frame Relay service over Datacom, T1, and DDS-LL links.

**BRI** – Places and receives voice and data calls using the two B channels on S/T and U interfaces.

**PRI** – Places and receives calls using all 23 B channels. Also supports NFAS and D-channel back up.

**DDS** – Supports 4-wire local loop and T1 DDS support, BERT, loopcodes, and CSU/DSU emulation.

**Copper qualification** – Supports DVOM, TDR, Wideband Tones, RFL, Spectral Analysis, Analog Loss and Noise, POTS Dialer, and Load Coil Counter.

**Ethernet** – Verifies Ethernet connectivity with receiver (RX) and transmitter (TX) bytes, frames, and errors. Also supports ping and tracerouting.

**VoIP** – Places and receives VoIP calls. Also verifies connectivity and quality of service (QoS).

**ADSL** – Verifies ISP and Internet connectivity. Supports ATU-R/C Emulation.

**G.SHDSL** – Supports installation and verification of G.SHDSL circuits with STU-R/C emulation.

### Saved Results

The HST-3000 can save hundreds of results that can then be exported directly to a printer or to a PC via serial or Ethernet ports, which can then be e-mailed, printed, or saved onto a PC. The HST-3000 file manager also allows technicians to view previously saved test information directly on the instrument.

### VT100 Emulation

With the HST-3000 VT100 emulation feature, technicians can access T1 and HDSL network equipment for configuration, performance data measurements, and loopback capabilities without having to carry a PC or laptop into the field.

### Flexible and Rugged Design

The rugged, weather-resistant design and long battery life of the HST-3000 are ideally suited for use in the field. Standard Ethernet, USB, and serial ports offer flexibility for easily downloading software and offloading captured test data.

Easily configurable, technicians with differing responsibilities can use the HST-3000 to perform a wide variety of tests. The HST-3000 is based on a modular platform, allowing for the addition of upgrades and options in the field. This flexibility also allows for the support of future growth in new technologies and advanced options to accommodate the changing needs of versatile technicians.

**Specifications**
**Interfaces**

Via adapter cables:  
 RS232/V.24, RS449/V.36, V.35, EIA530, X.21  
 10/100 Ethernet jack 8-pin modular  
 Serial port DB9 female via cable (DCE)  
 USB host  
 USB device

**Data rates (emulate and monitor)**

X.21	Sync 50 bps to 2,048 kbps
RS232/V.24	Async/Sync 50 bps to 128 kbps
EIA530	Sync 50 bps to 10 Mbps
V.35	Sync 50 bps to 2,048 kbps
RS449/V.36	Sync 50 bps to 10 Mbps

**Datacom**
**BERT Patterns**

Mark (All Ones), Space (All Zeros), 1:1, 1:3, 1:4, 1:7, 3:1, 7:1, 63, 511, 2047, 2047R INV, 2^15-1 (ANSI, ITU, INV), 2^20-1 (ANSI, ITU, INV), 2^23-1 (ANSI, ITU), QRSS, QBF1 (FOX), QBF (2,3), User Bit, User Byte, Delay

**Transmit Clock Sources**

Internal ±2.5 ppm, 1 ppm per year aging

**Interface**
**Signaling Lead Control**

Emulate DTE	RTS, DTR, LL, RL
Emulate DCE	CTS, DSR, DCD, TMA

**Self Loop**

Internal  
 External cable check

**Result Categories**

Summary, Signal, BERT, Data, LED, Data LED, Control LED, G.821, Time

**Physical**

Size (H x W x D)	9.5 x 4.5 x 2.75 in
Weight	2.7 lb (with battery)
Operating temperature	22 to 122°F
Storage temperature	-40 to 150°F
Battery life	10 hours 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 transreflective, 3.8-in diagonal (readable in direct sunlight)

**General**

Ruggedness	Survives a 3-ft drop to concrete on all sides
Keypad	Typical 12-button keyboard

**Software Options**

The following software options are available for the mainframe and Datacom module only.

HST3000-FR	Frame Relay
HST3000-VT100	VT100
HST3000-Script	Scripted testing
HST3000S-Web	Web browser
HST3000-VOIP	VoIP
HST3000-IP	IP Ping Suite

**Accessories**
**Datacomm Cables**

CB-44390	X.21 DTE/DCE Emulation
CB-44346	X.21 Y Monitor
CB-44385	RS232/V.24/EIA530 DTE/DCE Emulation
CB-44348	RS232/V.24/EIA530 Y Monitor
CB-44389	V.35 DTE/DCE Emulation
CB-44341	V.35 Y Monitor
CB-44388	RS449/V.36 DTE/DCE Emulation
CB-44347	RS449/V.36 Y Monitor

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
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**Ordering Information**
**Base Unit**

HST3000-NG	HST-3000 Mainframe without Copper (Color)
HST3000C-NG	HST-3000 Copper Mainframe (Color)

**Available SIMS (Modules)**

HST3000-CUCE	Copper only SIM, CE Marked
HST3000-AR2A-T1	ASDL2+ T1 (ATU-R, Annex A)
HST3000-AR2A	ADSL1/2/2+ (ATU-R, Annex A)
HST3000-AR2B	ADSL1/2/2+ (ATU-R, Annex B)
HST3000-AR2B-T1	ADSL2+ T1 (ATU-R, Annex B)
HST3000-CAR2A	ADSL1/2/2+ with Copper (ATU-R, Annex A)
HST3000-CAR2A-T1	Copper, ADSL2+ T1 (ATU-R, Annex A)
HST3000-CAR2B	ADSL1/2/2+ with Copper (ATU-R, Annex B)
HST3000-CAR2B-T1	Copper, ADSL2+ T1 (ATU-R, Annex B)
HST3000-CARB	Annex B Copper/ATU-R
HST3000-CARCA	Copper and ATU-R/C Dual Mode, AoPOTS
HST3000-CARCB	Copper and ATU-R/C Dual Mode, AoISDN
HST3000-CARCE	Copper and ATU-R (Annex A), CE Marked
HST3000-WB2	Wide Band 2 (up to 30 MHz) Copper Test
HST3000-VDSL-CNXT	VDSL with Connexant Chipset
HST-3000-VDSL-CNXT-WB2	VDSL and Copper (up to 30 MHz) with Connexant Chipset
HST3000-VDSL-IK	VDSL with Ikanos Chipset
HST-3000-VDSL-IK-WB2	VDSL and Copper (up to 30 MHz) with Ikanos Chipset
HST3000-INF-VDSL	VDSL with Infineon Aware Chipset

HST-3000-INF-VDSL-WB2	VDSL and Copper (up to 30 MHz) with Infineon Aware Chipset
HST3000-ETH	10/100/1000 Ethernet
HST3000-CT1	T1 and Copper
HST3000-DC	Datacom
HST3000-E1	E1
HST3000-E1-DC	E1/Datacom
HST3000-4WLL	4-Wire Local Loop
HST3000-T1	Dual TX/RX Bantam T1 Interface and T1
HST3000-T3	Dual TX/RX Bantam T1 Interface, and Dual RX/Single TX BNC DS3 Interface/and DS3
HST-BRA	ETSI (Euro) ISDN BRA
HST3000-BRI	ISDN BRI
HST3000-CSHCE	G.SHDSL and Copper
HST-GSH	G.SHDSL
HST3000-GSHCE	2-Wire G.SHDSL
HST3000-CSH4	Copper, 4-Wire G.SHDSL (STU-R/C, Annex A/B)
HST3000-BLK	Blank

**Software Options**

HST3000-BLUETOOTH	Bluetooth Wireless
HST3000S-WEB	Web Browser
HST3000-REMOP	Remote Operation
HST3000-SCRIPT	Scripted Test
HST3000-DSL2	ADSL2 and ADSL2+
HST3000S-IP	Advanced IP Suite—PING and Through Mode Support
HST3000S-IP-Video	IP Video Analysis
HST3000S-VMOS	Video MOS Analysis
HST3000-MSTV	Microsoft IPTV Video Analysis
HST3000-VT100	VT100 Emulation
HST3000S-VOIP	VoIP Software Analysis
HST3000S-H.323	H.323 VoIP Signaling
HST3000S-MGCP	SCCP MGCP VoIP Signaling
HST3000S-MOS	VoIP Mean Opinion Score
HST3000S-SCCP	SCCP VoIP Signaling
HST3000S-SIP	SIP VoIP Signaling
HST3000-UNISTIM	VoIP Signaling Call Controls for UNISTIM
HST3000-OPTETH	Optical Ethernet
HST3000-IPV6	IPv6
HST3000-MPLS	MPLS
HST3000-MSTR	Multiple Streams
HST3000-TCPUDP	TCP/UDP
HST3000-FTP	FTP
HST3000-WBTONES	WB TIMS
HST3000-PCMTIMS	TIMS (PCM)
HST3000-PCMSIG	Signaling (PCM)
HST3000-SPE	Spectral Noise
HST3000-RFL	RFL
HST3000-TDR	TDR
HST3000-PRI	ISDN PRI (NC Standard)
HST3000-ST	Basic Rate ISDN S/T (ANSI)
HST3000-T1DDSD	DDS-T1
HST3000-TxIMP	Transmission Impairments
HST3000-FR	Frame Relay
HST3000-PS	Pulse Shape

**Test & Measurement Regional Sales**

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