JDSU HST-3000C T1 / T3 Specs
Provided by www.AAATesters.com

HST-3000

Wireless Infrastructure Test Applications

Key Features

- Isolate and troubleshoot physical layer troubles from RF problems

- Conduct DS1 signal analysis and BER testing with standard and advanced stress patterns

- Conduct DS3 signal analysis and BER testing with patterns for both M13 and C-bit framing

- Offers dual DS1 receivers and transmitters for in-service monitoring as well as drop-and-insert and head-to-head testing

- Offers dual DS3 receivers for bidirectional monitoring

- Accurately measure frequency and signal level to ensure optimal T1 and T3 circuit performance

- Lightweight, rugged, water resistant, and battery-powered handheld test equipment ideal for the needs of wireless field technicians

- Functions as a traditional T-BERD® with innovative copper applications

The JDSU HST-3000 is a rugged, versatile, and portable tester that is ideal instrument for wireless technicians in the field who conduct T1/T3 tests with advanced stress patterns, T1 autotests, and VT100 emulation. Specifically designed for the outdoor field technicians, the HST-3000 can be built to order and can quickly and easily be upgraded with new modules as application and technology needs change.

In this extremely competitive wireless market, it is crucial for providers to offer the best service and the broadest coverage area. The public relies heavily on their cellular devices for voice and new data applications, including text messaging, e-mail, Internet access, and digital photography. Customers will seldom tolerate noisy signals, dropped calls, or busy lines. Losing customers remains a constant threat; therefore, the pressure on wireless providers to maintain error-free and reliable networks has become enormous.

Continued explosive growth in the demand for next-generation wireless services is driving increased deployment of base stations and land lines. This growth has increased the requirement for accurate and reliable test solutions ensuring proper installation and maintenance of services. The ability to quickly and accurately diagnose and isolate network problems is key to a successful business.

The HST-3000 offers a test solution that addresses the need to reduce failures, repeat rates, and kickbacks—especially for leased lines.

Wireless technicians use the HST-3000 to qualify and troubleshoot the circuit. They can also use the T1/T3 test features to bit error rate test (BERT) the line and to measure frequency and signal level on the circuit under test. Technicians can quickly qualify networks for accurate operation with dual transmitter and receiver T1 interfaces and with dual DS3 receivers. With advanced copper test capabilities, the HST-3000 can detect and identify copper loop problems, resolving finger-pointing issues on leased lines from the local exchange carrier (LEC).

Programmed with highly integrated applications for in-service and out-of-service testing, the HST-3000 examines both the pipeline and service levels to ensure that networks are performing properly.

2

Summary Settings	
CONFIG->SUMMARY	
1 - Test Mode	Terminate
2 - Pri. Input	Terminate
3 - Payload	Full Rate
4 - Framing	ESF
5 - Line Coding	B8ZS
6 - Pattern	3 in 24

SUMMARY	DS1	PATTERN	LOOP

DS1 Test

DS1 Physical Layer Testing

The best way to test the network is to monitor the traffic at the T1 interface with an in-service test at the base transceiver station or cell tower, the base station controller, or the mobile switching center. The HST-3000 helps to ensure the proper performance of network connections to base stations by performing signal, alarm, and timing tests together with BERT analysis.

The abilityof the HST-3000 to monitor and perform BER testing in both directions of a circuit simultaneously streamlines the identification and isolation of circuit problems from faulty network equipment. Further sectionalize troubles within the network using standard or user-programmable loop codes to loopback network equipment and to locate faulty repeaters. Advanced timing analysis also helps technicians pinpoint signal delays, timing slips, and mismatches between switch and remote equipment.

Locating problems in your network is especially important if the backhaul lines are leased and finger-pointing issues must be resolved. With the HST-3000, technicians can verify whether the fault is inside or outside of their network responsibilities.

BERT Results	
HOME->T3->BERT (TERM, FULL T3)	
	Primary
Pattern Sync	ON
Pattern Losses	0
Pattern Slips	0
Sync Loss Seconds	0
Bit Errors	0
Bit Error Rate	0.00E+00
Error Seconds	0
Error Free Seconds	119

Pattern	2^23-1	Framing	C-Bit
1 Insert 1 DS3 Frame Err...		3 Enable DS3 AIS	
Display ▲	Action ▲	Results ▲	Restart

DS3 Test

DS3 Physical Layer Testing

The HST-3000 provides a comprehensive DS3 testing capability to ensure that the circuit is functioning properly and to confirm that the line is clean. Evaluation of BER test results, frequency, and signal level helps identify potential sources of problems such as faulty or loose cable crimps, improper line build out, or miss-optioned or faulty network equipment.

The HST-3000 lets users qualify DS3 circuits with an array of BER testing patterns for both M13 and C-bit framing. It also supports the verification of frame synchronization on the circuit. For more comprehensive and flexible testing, technicians can insert test patterns or tones on single, multiple, or all DS1 channels within the DS3 circuit. The HST-3000 DS3 BER testing measurements include:

- DS3 FEAC loopback codes
- Advanced stress patterns
- Signal level and frequency
- Insertion of logic and frame errors

Easy-to-read result menus allow technicians to view physical layer measurements, BERT results, parity errors, far-end block errors (FEBEs), and alarm conditions. Additionally, the summary screen provides a rapid assessment of overall test performance.

3

Straightaway Testing

Straightaway testing is useful in isolating problems between the base stations and the mobile switching center. 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. Looping up a customer service unit (CSU), which only requires one test set, can also verify T1/T3 circuits.

End-to-End Testing

If problems remain after running straightaway or loopback tests, it is possible that another providers' network introduced errors. Testing through to the far end, also known as end-to-end testing, can determine whether the problem is outside the immediate network. With a pair of HST-3000s at either end of the line and conducting end-to-end testing of the network using both straightaway and loopback tests will isolate the trouble.
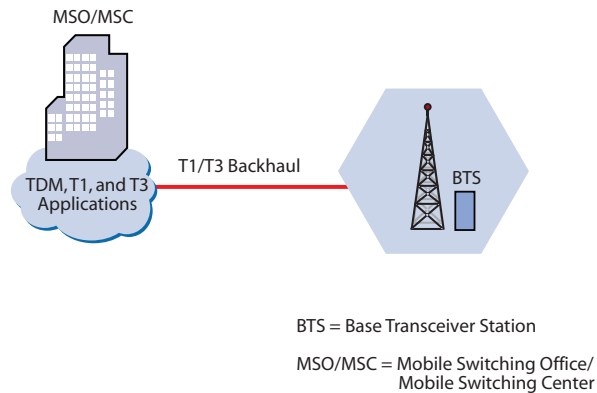
MSO/MSC

T1/T3 Backhaul

TDM, T1, and T3 Applications

BTS

BTS = Base Transceiver Station

MSO/MSC = Mobile Switching Office/
Mobile Switching Center

Figure 1. T1/T3 Backhaul Testing

4

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.

T1 Autotest

The HST-3000 standard T1 Autotest allows technicians to select a series of BERT patterns and the time duration for each pattern. All standard and advanced T1 patterns are available to choose from, giving the user a lot of flexibility. Results can be easily saved and can also be associated with a work order ticket.

Saved Results

Save hundreds of results on the HST-3000 and then export them directly to a printer or to a PC via serial or Ethernet connections. Then e-mail, print, or save the results files on a PC. The HST-3000 file manager also allows technicians to view previously saved test information on the test instrument.

Copper Plant Testing

The HST-3000 copper features enable wireless technicians to quickly troubleshoot their T1/T3 copper lines for faults and conditions that can degrade the service. This option can locate physical plant impairments proving to leased-line providers that problems exist on the cable. The HST-3000 has an advanced time domain reflectometer (TDR), precision digital volt/ohm meter (DVOM), and an accurate resistive fault locater (RFL) to pinpoint troubles.

5

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. 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 variety of tests. The HST-3000 is based on a modular platform allowing for the addition of upgrades and options in the field. Other supported testing applications include: ADSL, G.SHDSL, DDS-LL, PCM Signaling and TIMS, BRI, and VoIP.

To accommodate the future and changing needs of wireless field technicians, the HST-3000 is an easily upgradeable platform that will allow for the support of new technologies and advanced options.

Figure 2. The architecture of the HST-3000 enables fast, easy field-swapping of a wide variety of test modules.

Specifications

Interfaces

DS3 (Single Tx/Dual Rx) BNC	
DS1 (Dual Tx/Rx) bantam jacks	
10/100 BT Ethernet jack 8-pin modular	
Serial port DB-9 female via cable (DCE)	
USB host	
USB device	

T1

Operating modes	Self test, T1 unframed, T1 D4, T1 ESF, FT1 D4 framed, FT1 ESF framed, T1 test loopback, T1 line loopback
Input impedance bridge	>1000 Ω
Term	100 Ω ± 5%
DSX-MON	100 Ω ± 5%
Receive level bridge	0 to −20.0 dBdsx
Term	+6 to −35.0 dBdsx
DSX-MON	+6 to −24.0 dBdsx
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 of 0 dB
Error insert Logic, BPV, Frame	

DS3

Operating modes	Terminate and Monitor

Receiver (input)

Frequency	44,736 Mbps + 300 ppm
Impedance	Nominal 75 Ω at 22 MHz (unbalanced to ground)
Term	0 to 12 dB of cable loss at 22 MHz
DSX-MON	−20 dB loss plus 0 to 9 dB of cable loss from high signal 22 MHz
Transmitting timing sources	internal clock, recovered (from network) clock
Tests	BERT, Monitor, Framing Auto, Unframed, M13, C-bit
Line coding	B3ZS
Error/Alarm types	Logic, BPV, Parity, Frame, AIS, RAI
FEAC loop codes	NIU, DS3 line, DS1 line

Physical

Size (h x w x d)	241 x 114 x 70 mm (9.5 x 4.5 x 2.75 in.)
Weight (with battery)	1.23 kg (2.7 lbs.)
Operating temperature	5.5 to 50℃ (22 to 122°F)
Storage temperature	−40 to 65.5℃ (−40 to 150°F)
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

Ruggedness	Survives 91 cm (3 ft) 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

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
HST-3000-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-T1DDS	DDS-T1
HST3000-TxIMP	Transmission Impairments
HST3000-FR	Frame Relay
HST3000-PS	Pulse Shape

Test & Measurement Regional Sales

NORTH AMERICA	LATIN AMERICA	ASIA PACIFIC	EMEA	www.jdsu.com/test
TOLL FREE: 1 866 228 3762	TEL: +1 954 688 5660	TEL: +852 2892 0990	TEL: +49 7121 86 2222	
FAX: +1 301 353 9216	FAX: +1 954 345 4668	FAX: +852 2892 0770	FAX: +49 7121 86 1222	