

DATA SCOUT 10G TECHNICAL SPECIFICATIONS

The Data Scout 10G (DS-10G) is the intelligent tablet that goes beyond test and measurement. It is the only simple to use, fast to learn hand held capable of simultaneously testing everything from 10G Ethernet to DS0/TIMS allowing field technicians to quickly provision and assure multiple data services.

KEY PRODUCT BENEFITS:

Faster Time to Results

- Ready to test 3X Faster*
- Unique 10G Ethernet to TIMS solution
- Tests multiple services simultaneously
- Remotely updateable

Simple to Use, Fast to Learn

- Touch screen Android tablet design
- Portrait and landscape modes
- Intuitive test configuration
- Exportable results

Rugged & Reliable

- Plug & Stay – no modules to lose!
- Replaces up to 8 handhelds*
- Light yet sturdy aluminum housing
- Protective non-slip boot with kickstand

Designed For

- Service Providers
- Utilities
- Mobility
- Enterprise

**As compared to competitive network analyzer models. Subject to change without notice*



PRODUCT OVERVIEW:

Productivity Applications

- Chrome web browser
- Google maps
- Email, notes & contacts
- PDF viewer
- Onboard training video's
- Remote control/upload via LAN

Business Ethernet & Metro-E Services

- Dual 10/100/1000T/X SFP Ethernet ports
- 10 Gigabit Ethernet SFP+
- BERT
- Optical power measurement
- PING & Traceroute
- RFC-2544 with quick test validation
- Loopback, monitor and thru modes
- Easy to read graphical reports

802.11 Wireless Validation

- Tests for proper 802.11 b,g,n configuration
- Performs channel scan
- Graphical frequency/channel/power display
- Remote control via Wi-Fi

DS3

- Automatic self test on connection
- STS-1 signal detection
- Simultaneously test Dual T1 and DS3

DS1

- Dual T1/E1 testing
- PRI-ISDN NT/TE emulation
- T1 to Ethernet Bridging
- DS0 Voice & Data Testing
- CSU/NIU Emulation Mode
- VT100 emulation
- Frame Relay option

Signaling – TIMS/DS0

- Comprehensive VF test suite
- TIMS 2/4 wire plus wideband
- CO/PBX emulation
- Replaces existing Am5, CXR-704, HP4935A

4 WIRE DDS

- CSU/DSU emulation
- 56K primary/secondary modes
- 64K clear channel mode
- Real-time received byte display
- Monitor received signal level

DATACOM

- Sync/Async & DTE/DCE modes
- V.35, RS232, RS449, RS530, X21

Intelligent Timing Verification

- Verifies network timing systems
- Combines oscilloscope, T1 test and switch box
- Composite clock/pulse analysis
- Eliminates need for expensive storage oscilloscope
- Test 10 T1/E1 circuits in second

STANDARD FEATURES

Applies to all DS10G Analyzer Kits

DISPLAY & INPUT

- Display:
 - 7" WVGA LCD touch screen
 - 800x600 resolution
- Buttons:
 - Home, Back, Menu, Power
- Indicators:
 - Power On, Battery Charging, Battery Low

WEIGHT & DIMENSIONS

- Dimensions:
 - 254 x 165 x 56 millimeters (WxHxD)
 - 10 x 6.5 x 2.2 inches (WxHxD)
- Weight (varies by configuration):
 - 0.91 kg (2.0 lbs) minimum
 - 1.36 kg (3.0 lbs) maximum

ENVIRONMENTAL

- Operating Temperature:
 - 10°C to 55°C
 - 14°F to 131°F
- Operating Humidity:
 - 0% to 93% RH non-condensing
- Storage Temperature:
 - 20°C to 70°C
 - 4°F to 158°F
- Battery:
 - Type:
 - Li Ion battery pack
 - Run Time:
 - 2-8 hours (varies by test mode)
- External Power:
 - Mains: 110-240VAC, 50-60Hz with adaptors
- Enclosure:
 - Shell: Rugged 1.5mm extruded aluminum
 - Boot: Rubber with WiFi antenna storage slot
 - Kickstand: Powder coated steel
- Reference:
 - User Manual:
 - Embedded PDF readable on screen
 - Training Videos:
 - Embedded viewable on screen

CONTROLLER OPTIONS

One controller option must be specified

W/O DATACOM (DS10G-HW-B1)

WITH DATACOM (DS10G-HW-B2)

Requires DST-SW-DCOM software option

INTERFACES

- Management: LAN 10/100 Base-T
- USB:
 - (2) USB – Client
 - (1) On-The-Go (OTG) - Host
- Headset: 2.5mm output jack
- Microphone: 2.5mm input jack

RECORD STORAGE

- Internal: 4GB flash
- Detail Levels:
 - Summary Log of all tests
 - Details per test
- Output: Display, Export to USB

ANDROID APPLICATIONS

- MobiSuite Office
- Chrome Web Browser
- Email
- Contact List
- Calendar
- Messaging
- Calculator
- VMLite VNC Server (requires DS10-SW-RC)
- *Productivity applications are open-source are provided at no additional charge

OPTIONAL TEST FEATURES

<i>Feature</i>	<i>Description</i>
DS10G-SW-RC	Remote Control



TEST INTERFACE OPTIONS

At least one interface option must be specified

ETHERNET (DS10-HW-ETH)

Available on all DS10G Analyzers

INTERFACES

- Electrical:
 - RJ45 (2) 10/100/1000BaseT
- Optical:
 - SFP (2) 100/1000BaseX
 - SFP+ (2) 10000BaseX
 - Safety: Laser Tx on/off control

STANDARDS

IEEE 802.3-2008 (I, U, X, Z, AB-E, AN, AQ)

BERT (QUICK TEST)

- Layers: L2
- Tests:
 - Throughout
 - Proper Test Configuration
- Frame Size:
 - Fixed: 64B-1518KB
 - Random
- Payload:
 - Incremental Data
 - PRBS-23
 - T1-Payload (Requires DS10G-HW-EBM)
- Results:
 - Frames Transmitted, Frames Received, Frame Check Sequence Errors, Octets Transmitted, Octets Received, Tx PAUSE CONTROL Frames, Rx PAUSE CONTROL Frames, Frames with Rx Errors, Frames with Tx Errors, UNICAST Packets Rcvd, MULTICAST Packets Rcvd, BROADCAST Packets Rcvd, UNICAST Packets Sent, MULTICAST Packets Sent, BROADCAST Packets Sent, Ethernet Frames Dropped, Total Octets Received Total Packets Received, Number of Frames Received in each size-range, Undersized, Oversized, <64 octets, 65-127 octets, 128-255 octets, 256-511 octets, 512-1023 octets, 1024-1518 octets, 1519-max octets, Jabbers, Fragments

LOOPBACK

Port B: Layers 1, 2

RFC-2544

- Layers: L2
- File formats: CSV, PDF
- Tests:
 - Throughout
 - Latency
 - Frame Loss
 - Back to Back (burst)
- Modes:
 - Port A (local) to Port B (local)
 - Port A (local) to Port B (remote)

ETHERNET (DS10-HW-ETH) Continued

Result Report:

Test Result Summary:

System and Test Configuration
Mode, Physical Interface, Ethernet Speed, Auto-Negotiation, Duplex Mode, Flow Control, Negotiated Link State

SFP+ Information:

Test Port, Identifier, Connector Type, Vendor Name, Vendor OUI, Part Number, Revision, Serial-Number, Mfg Date code, Diagnostic Support

Throughput & Frame Loss Tests

Selected Frames sizes, Maximum Test Load (%FPS), Minimum Test Load (%FPS), Load Step Size (%), Number of trials, Number of validations, Trial duration (seconds/step)

Latency Test

Selected Frames sizes, Test Load (%FPS)
Number of trials, Trial duration (sec/step)

Test Result Details:

Graphical charts for all selected tests

Throughput & Frame Loss:

Summary per iteration:

Test Parameter, Test Duration, Frames Sent, Frames Received, Frames Lost, Valid Frames Received, Errored Frames Received, Tx Frame Rate, Rx Frame Rate, Total Bytes Received, Bytes/Frame Received, Frame Throughput, Total Throughput

Per Iteration:

Frames Transmitted, Frames Received, Frame Check Sequence Errors, Octets Transmitted, Octets Received, Tx PAUSE CONTROL Frames, Rx PAUSE CONTROL Frames, Frames with Rx Errors, Frames with Tx Errors, UNICAST Packets Rcvd, MULTICAST Packets Rcvd, BROADCAST Packets Rcvd, UNICAST Packets Sent, MULTICAST Packets Sent, BROADCAST Packets Sent, Ethernet Frames Dropped, Total Octets Received Total Packets Received, Number of Frames Received in each size-range, Undersized, Oversized, <64 octets, 65-127 octets, 128-255 octets, 256-511 octets, 512-1023 octets, 1024-1518 octets, 1519-max octets, Jabbers, Fragments

Latency (by frame size tested):

Average Latency, Jitter

Back-to-Back (by frame size tested):

Max Measured Burst (avg.), Max Burst for 1s duration, % Deviation

OPTIONAL TEST FEATURES

Feature	Description
DS10G-SW-201	Dual Port 1GbE
DS10G-SW-110	Single Port 10GbE
DS10G-SW-210	Dual Port 10GbE (Available Q1-15)

**Wi-Fi (DS10-HW-WIFI)**

Available on all DS10G Analyzers

INTERFACE

Antenna: SMA with included antenna

GENERAL

Frequency Bands: 2.4GHz, 5GHz

NETWORK STANDARDSIEEE 802.11b
IEEE 802.11g
IEEE 802.11a
IEEE 802.11n HT20, HT40**NETWORK STANDARDS**

Bluetooth: BDR/EDR/LE

MODULATIONModes:
OFDM (64QAM, 16QAM, QPSK, BPSK),
DSSS (CCK, DQPSK, DBPSK),
DSSS-OFDM (64QAM, 16QAM, QPSK, BPSK)**ENCRYPTION**Hardware:
WEP, WPA/WPA2 (TKIP/AES-CCMP), WAPI**QUALITY OF SERVICE**

Standards: WMM, WMM-PS, 802.11e

TESTS*Channel Graph
Discovers and displays access points on channel graph overlay
Time Graph:
Detects & displays running histogram of AP communications
Channel Rating:
Indicates best channel for selected AP
AP List:
Detects and displays access point detailed information
Signal Meter:
Range: -100dBm to -40dBm
Pass/Fail: Color coded for quality
*Wifi Analyzer 3.6.3 open-source test application is preloaded and provided at no additional charge**DS1 (DS10-HW-PDH1)**

Available on all DS10G Analyzers

INTERFACES

DS1: Dual Bantam

STANDARDS

T1: ANSI T1.403, AT&T Pub.62411

DS1 RECEIVERModes:
Monitor, Term, Bridged, Emulate, CSU/NIU, FT1, Drop & Insert
Framing:
Auto, ESF, SF, SF-D4, SLC96, Unframed
Line Code:
B8ZS, AMI**DS1 (DS10-HW-PDH1) Continued****DS1 RECEIVER**Clock Receive:
1.544MHz \pm 300ppm recovered
Line Rate:
Full T1 1.544MHz, N x 56/64kbps
Impedance:
100 Ω nominal
Bridged > 1K Ω
Sensitivity:
Monitor: -15 to -32dB res.
Terminate & Bridge: +6 to -36dB
Freq Resolution & Accuracy:
0.1Hz, \pm 7ppm \pm 1.472Hz
Frequency Slips:
 \pm 1Hz
Round Trip Delay Resolution:
 \pm 1ms**DS1 RECEIVER**Excessive Jitter:
>128 bit attenuator tolerance
Level Resolution & Accuracy:
0 to -40dBsx
-1.0 to -39dB \pm 1.25dB
Modes:
Term, Drop/Insert, Bypass
Framing:
Auto, ESF, D4, SLC96, Unframed
Line Code:
B8ZS, AMI
Clock:
1.544MHz \pm 10ppm
Line Rate:
Full T1 1.544MHz, N x 56/64kbps
Impedance:
100 Ω nominal
LBO:
0, -7.5 and -15dB
Error Inject:
Logical, Framing-Loss (2 F-bits), BPV**BERT**Test Patterns:
Auto, QRSS, 1:7, All-1s, All-0s, 511, 2047, 2¹⁵-1, 2²⁰-1, 2²³-1, DALY, Bridge Tap, 1:1, 2in8, 1in16, D5D5
Errors Reported:
LOS, OOF, AIS, YEL,
Events Reported:
UAS, CRC, BPV, F-bits, 1's D, ExZ**LOOPBACK**Loopback Codes:
NREM, NLOC, NDU1, NDU2, CREM, CLOC, CDU1, CDU2, ARM, HTUR, HTUC, NRE1, NRE2, CSU, NIU4, NIU5, Westell
Smart Repeater codes:
ILR, IOR, Payload, Line, Network, Local, Self

**DS1 (DS10-HW-PDH1) Continued****DS0 TESTING (DST-SW-V)**

Interface:

RJ11 900Ω+2.16uF nominal impedance

Emulation:

CO, Station, PBX

Modes:

LS, GS, DID-imm, DID-Wink, E&M-imm, E&M-wink

DS0 to 2-wire Drop:

2600 feet max. 0±0.2dB, 250-3400Hz

OPTIONAL TEST FEATURES

Feature	Description
DST-SW-DT1	Dual T1
DST-SW-N1	CSU/NIU Emulation
DST-SW-V	DS0 Voice Analysis
DST-SW-X	Insert/Drop/Bypass
DST-SW-DCOM	DTE/DCE Datacom
DST-SW-E1	E1 On-The-Fly

DS1+DS3 (DS10-HW-PDH2)

Available on all DS10G Analyzers

STANDARDS

DS1:

ANSI T1.403, AT&T Pub.62411

DS3:

G.703, G.775, TSY-009-000499, T1.404, T1.102, T1.107

INTERFACES

DS1: Dual Bantam

DS3: BNC

DS1 RECEIVERSee [DS10-HW-PDH1](#)**DS1 TRANSMITTER**See [DS10-HW-PDH1](#)**DS3 RECEIVER**

Modes:

Monitor, Term, Term HI, CSU/NIU emulation, DS2 status, DS1 drop, DS3 thru, DS3 thru (no gen)

Framing:

C-bit, M13, Unframed, Auto

Line Code:

B3ZS

Clock:

44.736MHz ±20ppm

Impedance:

75Ω nominal

Sensitivity:

DSX: up to 26dB res.

HI/LO: +6 to -26dB

ALARMS & EVENTS

Current:

C-bit, BPV, F-bit, P-bit, FEBE

History:

LOS, OOF, AIS, X-bit, Idle, UAS, ExZ

DS1+DS3 (DS10-HW-PDH2) Continued**BERT**

Test Patterns:

2²³-1, 2²⁰-1, 2¹⁵-1, QRSS, 1:1, 1010, 1100, 1111, 3in24

Results/Errors Reported:

BIT, BER, ES, EFS, %EFS, SES, %SES

ERROR INJECTION

Errors: Logic, F-Bit, BPV, C-Bit, P-Bit, ExZero's

LOOPBACK

Modes: Local (self/line), Stuff bit M23

FEAC:

Transmits and displays any of 11 received FEAC codes or NONE

DS2 CIRCUIT ANALYSIS

Modes:

Real-time monitor of DS2 Channel #1 through #7

Alarms & Events:

RAI, AIS or LOF on any or all DS2 Channels

Error Inject:

RAI, AIS or LOF on selected DS2 Channels

DS1 DROP TESTING

Connector:

Bantam Tx & Rx jack

Line Code:

AMI, B8ZS

Clock:

1.544MHz ±200ppm

Impedance:

100Ω nominal

Signal Level:

DSX nominal

OPTIONAL TEST FEATURES

Feature	Description
DST-SW-H3	DS3 Through Mode
DST-SW-D1D	DS1 Drop
DST-SW-NX	DS3 CSU/NIU Emulation
DST-SW-DT1	Dual T1
DST-SW-N1	CSU/NIU Emulation
DST-SW-V	DS0 Voice Analysis
DST-SW-E	Euro/Asian ISDN-PRI Protocols
DST-SW-X	Insert/Drop/Bypass
DST-SW-DCOM	DTE/DCE Datacom
DST-SW-E1	E1 On-The-Fly

ISDN PRI (DS10-HW-P)

Available on all DS10G Analyzers

GENERAL

Interface: Dual Bantam

Modes: NT, TE

Clock: Recovered, Internal

Switch Type Support:

National ISDN-2 (default), DMS100, 5ESS, 4ESS, Euro-ISDN, VN6, 1TR6, QSIG, NTT, KDD

Country Codes:

USA & Canada (default), Euro-ISDN, France, Germany, Japan, Hong Kong, Korea

**ISDN PRI (DS10-HW-P) Continued**

Call Support: Voice, Data
Simultaneous Termination: 23 channels
Message Decode: Q.931

BERT

Test Patterns: All-1s, 511, 2047, Alt-0/1
Results Displayed:
Bit, BER, ES, EFS, %EFS, SES, %SES

OPTIONAL TEST FEATURES

<i>Feature</i>	<i>Description</i>
DST-SW-E	Euro/Asia PRI Protocol Support

DDS (DS10-HW-DDS)

Available on all DS10G Analyzers

GENERAL

Interface: RJ-48
Impedance: 135 Ohm
Modes Supported: Terminate, Through
Data Rates Supported:
2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 56K, 64K
Clock Source:
Internal, External, Network

LOOPBACK

Modes:
Remote Latching CCITT V.54
Remote DSU
Local CSU
Local DSU
Codes:
DMI – Data Mode Idle (all 1's)
CMI – Control Mode Idle
OOS – Out of Service (network out of service)
OOF – Out of Frame
UMC- Unassigned Mux Code
ASC – Abnormal Station Code
MOS – Mux Out of Sync

RECEIVE LEVEL

Detects and displays signal receive level

SEALING CURRENT

Detects and displays circuit sealing current

BERT

Test Patterns:
2047 (2¹¹-1), 511 (2⁹-1), SP1, SP2, SP3,
SP4, SP5, Packet, All-1's, All-0's, Alt 1:1
Test Results:
BER, ES, EFS, %EFS, SES, %SES
Error Injection: Bit

RECEIVED BYTE DECODE

Display:
Binary and hex
Invalid BPV

DATACOM (DS10-HW-DCOM)

Available on all DS10G Analyzers

GENERAL

Interfaces:
RS232, V.35, X.21, DB15, RS449, DB37, RS530
Emulation: DTE, DCE (T1/E1, DDS)
Modes: Synch, Asynch, Auto Detect
Clock Source: Internal, External

LOOPBACK

Modes: Bi-Directional

BERT

Test Patterns:
QRSS, 3in24, 1:7 (1in8), All-1's, All-0's, 1:1 Alt,
2²³-1, 2²⁰-1, 2¹⁵-1, 2047, 511 (2⁹), 2in8,
FOX
Test Results:
BER, ES, EFS, %EFS, SES, %SES
Error Injection: Bit

TIMS (DS10-HW-T)

Available on all DS10G Analyzers

GENERAL

Interfaces:
RJ11
Bantam

SIGNALING (2-wire)

Impedance:
900, 600, 1200Ω
CO output:
Dial-Tone
Ring
2 REN Line
Off-Hook > 20ma
CO Source: -48 ±1.5Vdc

Emulation:
CO, Station, PBX

Digits:
DTMF, MF, DP

Modes:
LS, GS, E&M I-V, DID-imm, DID-Wink

Timing:
Pre-Wink, Pre-Digit, Wink Delay

Voltage DC:
2 to ±90v ±1Vdc

Resolution:
0.1 V

Current:
±10 to 80 ±1.0mA

SELECTIVE SIGNALING (4-wire)

Modes: SS1, SS4
Output Level: -8dBm0
Break: 2600Hz ±2Hz
Make: 2400 ±2Hz
60:40 Inter-digit Interval: 250mS Quiet



TIMS (DS10-HW-T) Continued

2/4 WIRE VOICEBAND & WIDEBAND

Standard: IEEE 743-1995
Impedance: 100, 135, 900, 600, 1200Ω
Bridge Mode: > 1K Ω
Output Level: +10 to -50dBm ±.5dB
Level Measurements:
+13 to -60dBm ±0.5dBm to 500KHz
500KHz to 2MHz ±1dB

FREQUENCY MEASUREMENT

Voiceband: 50Hz to 16KHz ±1Hz
Wideband: 16KHz to 2MHz ± 1Hz

NOISE MEASUREMENT

Range: 92 to <10 dBm for all filters ±1 dB
Holding Tone: 1002-1022Hz
Noise Sensitivity: 29dBm-90 dBm
Notch: 1010Hz > 50dB attenuation

NOISE MEASUREMENT

Noise-to-Ground:
+60dBm to +110dBm 600/900 Ohms
Impulse Low Threshold Settings:
29dB to 84 dB, Count 9999 with Overflow/Clear

PHASE/AMPLITUDE

Jitter: +10dBm to -40dBm
Amplitude: 0.1%-100% peak ±5%
Phase: 0.1 to 350° ±5%

GAIN HITS

Ranges: 2, 3, 4, 6, 8, 10dB
Accuracy: ± .5dB
Count: 9999 with Overflow and Clear

PHASE HITS

Range: 5-75 degree
Accuracy: ± 10%
Count: 9999 with Overflow & Clear
Dropout: 12dB ±1dB

23-TONE SEQUENCE

Standard: IEEE 743-1995
Range: -8dBm, 0 to -40dBm
Individual Freq & Level 23-Tone Intermod Distortion:
2nd & 3rd Order
Output: -6 dBm to -40 dBm
Measurement: ±2 dB
23-Tone RMS Composite Tone:
IMD, EDD: 0 to 12ms ±.01ms
S/TD, S/NR: +/- 2 dB
Return Loss:
-ERL, SRL-Lo, SRL-HI
Output: -6 dBm to -10 dBm
Measure: 0-30dB ± 1dB

VOICEBAND FIXED TONES

Frequencies:
404Hz, 1004Hz, 2804Hz, 2713Hz, 1804Hz,
3204Hz, 1913Hz, 2413Hz
Accuracy: ± 1Hz

TIMS (DS10-HW-T) Continued

BROADBAND FIXED TONES

Frequencies:
28K, 40K, 48K, 82K, 96K, 196K, 392K, 1024K
Accuracy: ±1Hz

FREQUENCY SWEEP

Voiceband: 404Hz to 3204Hz
Wideband: 20KHz to 2MHz
Quiet Tone: 0Hz terminated
3 level speaker volume control

OPTIONAL TEST FEATURES

Feature	Description
DST-SW-PRO4	4-Button Frequency Program
DST-SW-4	4W Interface & Extended Range
DST-SW-EM	E&M Type I-V Signaling, Trunk, Tie
DST-SW-DG	Dropout, Gains, Hits, Phase, Jitter

DISCLAIMER

This specification is subject to change without notice. Errors and omissions excepted.

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