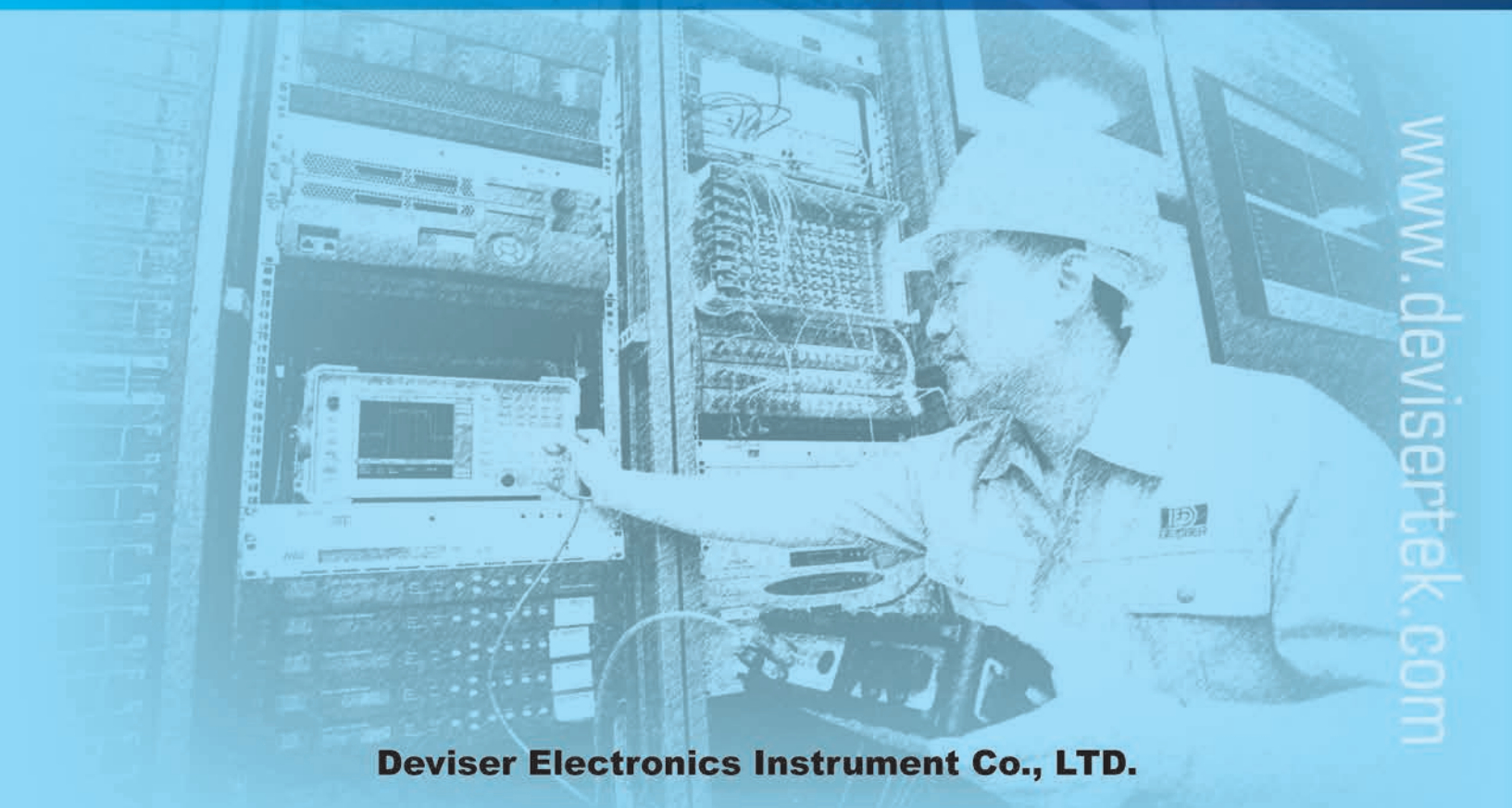
DEVISER

# Product Catalog
## 2013



www.devisertek.com

**Deviser Electronics Instrument Co., LTD.**

# Company Profile

Tianjin Deviser Electronics Instrument Co., Ltd. is the leading research and manufacturer of TV & Broadcast and communication test and measurement in China. Deviser mainly offers Wireless Communication Measurement, Spectrum Monitoring, Fiber/ Cable Measurement, DVB Signal Analysis, Electronic Apparatus Parts Test and other RF Measurement solutions.

Deviser is a fast developing company with over 20 years' history and the revenue had increased 20%-35% every year during the past two decades. Up to today, Deviser has over 90 engineers and 280 employees, 4 R&D departments and 6 assembly lines. Deviser has the capability of manufacturing over 30000pcs of instruments every year where more than 1/3 of them are for exports. Other than having the diligent, modest, professional, enterprising and sincere employees, we also invested many Hi-technical labs for Aging Test, Anti-static Test, Low/High Temperature & Humidity Test,

Destructive Test, etc. In order to guarantee our customer will receive the top-quality products, every product must strictly pass 6 inspection and calibration procedures before it gets shipped out. Back in 1996, Deviser passed and obtained ISO9001 Certification which ensured the quality of every single instrument.

Every year, Deviser puts in a lot of affords in developing new products and technologies to meet the market demands better. Deviser is proud to announce that every product made by Deviser is independently researched and developed, and Deviser owns the independent intellectual property for all products. Deviser's products earned high reputation for Concision, duration, agreement and rely.

For international market segment, Deviser sells a large quantity of products including Signal Level Meter, QAM Analyzer, Optical Power Meter, Spectrum Analyzer, Vector Network Analyzer, OTDR and Return Path Monitoring System to USA, India, Korea, and some other European and Asian countries.

In a word, we commit ourselves to maximizing customer satisfaction as always.

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# Contents

# DS1610 "KingStone"
# Broadband Network Monitoring System

## Overview

DS1610 monitoring system offers real-time signal monitoring and analyzing on multiple return and forward paths of HFC network simultaneously. The captured results could also be saved and managed for further operations. The operator is able to monitor the entire network on live through a PC located at the head end office or any remote locations.

DS1610 system is capable of capturing any transient noise and ingress noise which is less than 1ms.Other key features of DS1610 such as alarm setting, data storage, data analysis, data comparison in 3D and video record would simplify the installation, maintenance and troubleshooting of HFC network.

## Key Features

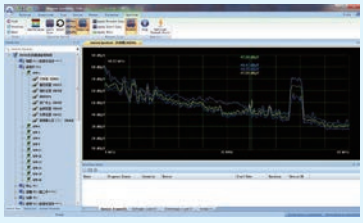
- Module designed, with maximum 16 cards and 128 ports in 1 housing
- Sweep time ≤ 1 ms
- 50 dB dynamic range
- 1 year history data record
- 24 hours real time sweep and monitor
- Remote control
- User management could set users with different authority levels

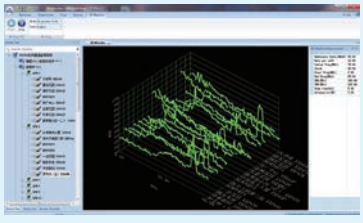
## System Configuration

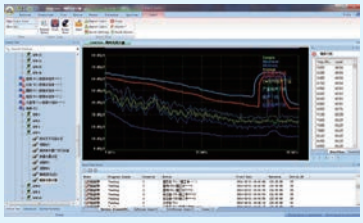
| Standard Configuration | |
|---|---|
| DS1610 | Housing with built-in Local Management Software |
| | DS1610 Server Software |
| | DS1610 Client Management Software |

| Optional Module | |
|---|---|
| DS1610-1D | Return Path Monitor Card |
| DS1615 | RF FSK Modulator |
| DS1610-3 | Forward Path Monitor Card |

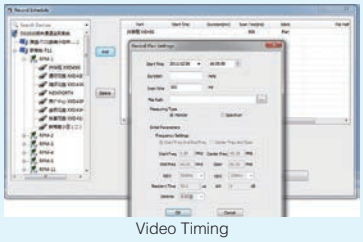
## Software Interface

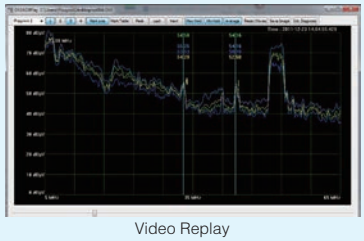

Real–time Monitoring


3D Monitor


Limit Lines Setup

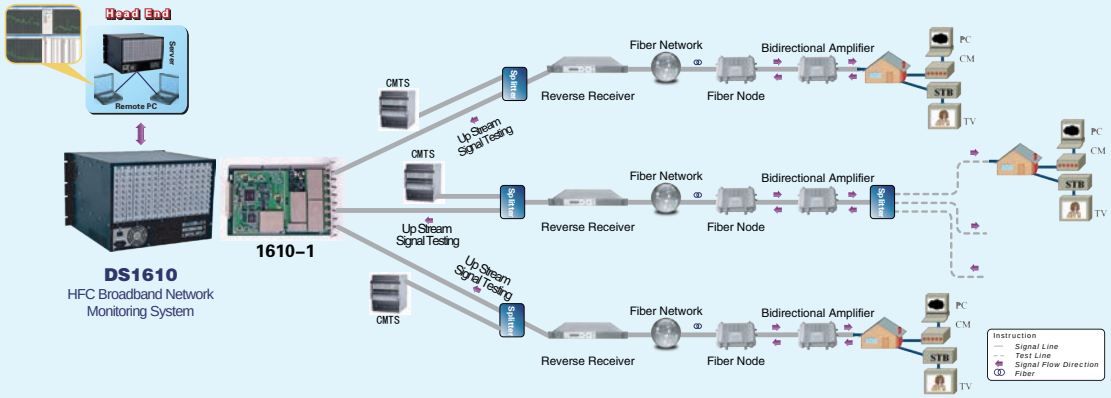

Spectrogram History


Video Timing


Video Replay

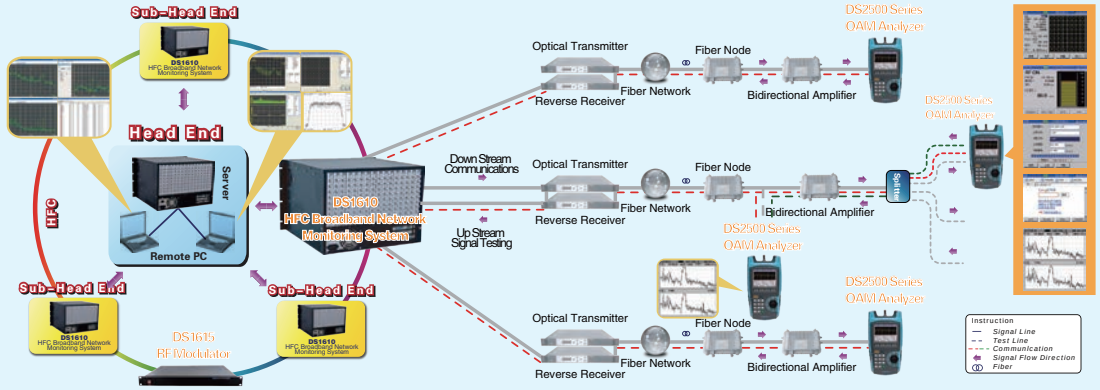
## 1. Return Path Monitoring Solution

The return path signal transmits from cable modem finally to CMTS via splitter, reverse amplifier, fiber network and reverse receiver. DS1610 monitoring system with DS1610-1D card could monitor the real-time signal before it enters the CMTS and help capture the injected noises and troubleshoot the errors.



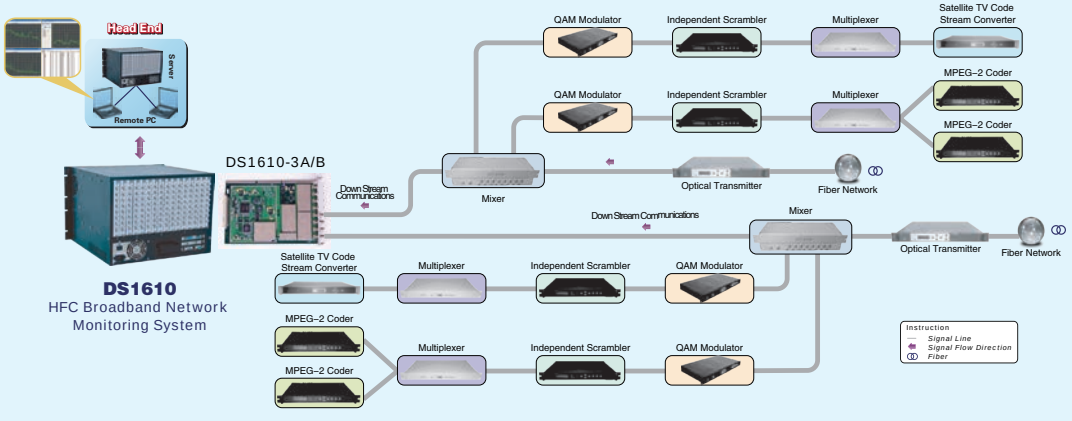

## 2. Return & Forward Path Debugging and Troubleshooting Solution

The combination of DS1610-1D with 1U rack RF FSK Modulation DS1615 and Handheld Analyzer DS2500R could fully meet the requirements of network installation, debugging and maintenance for both forward and return paths.




## 3. Forward Path Monitoring Solution

DS1610 monitoring system with DS1610-3 card could monitor the forward signal in real-time at different nodes within the network such as modulator, mixer, fiber receiver, etc. The forward path monitoring module offers QAM Constellation, MER, BER, V/A, C/N, HUM, CTB/CSO and so on.



## Specifications

| DS1610-1D | |
|---|---|
| **Frequency** | |
| Range | 5 MHz ~ 65 MHz |
| Span | 500 kHz ~ 60 MHz |
| Sweep Time | ≤1 ms (Full Span) |
| RBW | 30 kHz ~ 300 kHz 1-3 Step |
| VBW | 30 kHz ~ 300 kHz 1-3 Step |
| **Amplitude** | |
| **Level** | |
| Max. Safe Input | +110 dBμV 25 V DC |
| Displayed Average Noise Level | ≤18 dBμV, 5 MHz ~ 65 MHz(No Input Signal, 0dB Attenuation, 300 kHz RBW, 30 kHz VBW, Sampling Demodulation) |
| **Attenuator** | |
| Range | 0 dB ~ 30 dB |
| Step | 1 dB |
| **Spurious Responses** | |
| Second Harmonic | <-55 dBc for +80 dBμV Signal at input mixer |
| Third Order Intermodulation | <-55 dBc for two +80 dBμV Signals at input mixer with ≥1MHz Separation, Amplifier Off |
| **Display** | |
| Logarithm Scale | 0.1 ~ 0.9 dB/div at 0.1 dB Step: 1 ~ 40 dB/div at 1 dB Step |
| Linear Scale | 8 Divisions |
| Scale Unit | dBm, dBmV, dBμV |
| Trace Detector | Sample |
| Reference Level | 0 dBμV ~ +140 dBμV |
| Level Accuracy | Typical ≤±1.5 dB@+20 ˚C |
| **Others** | |
| Working Temperature | 0 ˚C ~ +40 ˚C |
| Storage Temperature | -10 ˚C ~ +50 ˚C |

| DS1615 | |
|---|---|
| Structure | 1U Rack |
| Power Supply | AC 220 V / 50 Hz |
| RF Frequency | 87 MHz ~ 120 MHz |
| Output | 75 dBμV ~ 100 dBμV, 1 dB Step |
| Modulation Type | FSK (±67 kHz) |
| Data Baud Rate | 38.4 kbps |
| Port to connect DS1610 | RS232 |

| DS1610-3 | | |
|---|---|---|
| | DS1610-3A | DS1610-3B |
| **Frequency** | | |
| Range | 5 MHz ~ 1000 MHz | |
| Sweep Range | —— | 0 Hz( Zero Span), 1 MHz ~ 1000 MHz |
| Sweep Time | —— | ≤20 mS (Full Span) |
| RBW | 280 kHz | 10 kHz ~ 3 MHz 1-3 Step |
| VBW | —— | 1 kHz ~ 1 MHz 1-3 Step |
| **Amplitude** | | |
| **Level** | | |
| Max. Safe Input | +120 dBμV 25 V DC | |
| Displayed Average Noise Level | —— | ≤15 dBμV, 5 MHz ~ 1000 MHz ( No Signal Input, 0 dB Attenuation, 300 kHz RBW, 30 kHz VBW, Sampling Demodulation) |
| **Anttenuator** | | |
| Range | 0 dB ~ 50 dB | |
| Step | 1 dB | |

| | DS1610-3A | DS1610-3B |
|---|---|---|
| **Spurious Responses** | | |
| Second Harmonic | —— | <-65 dBc for +87 dBμV Signal at input mixer |
| Third Order Intermodulation | —— | <-65 dBc for two +87 dBμV Signals at input mixer with ≥1 MHz separation and amplifier Off |
| **Display** | | |
| Logarithm Scale | 0.1 ~ 0.9 dB/divison, 0.1 dB Step; 1 ~ 40 dB/division, 1 dB Step | |
| Linear Scale | 10 Divisions | |
| Scale Unit | dBm, dBmV, dBμV | |
| Reference Level | 0 dBμV ~ +140 dBμV | |
| **Analog CATV** | | |
| Level | 20 dBμV ~ 110 dBμV ±1.5 dB@+20˚C S/N >30 dB | 20 dBμV ~ 110 dBμV ±1.0 dB@+20˚C S/N >30 dB |
| V/A | ±1 dB (S/N >30 dB) | |
| **HUM** | | |
| Range | —— | 1% ~ 20% |
| Accuracy | —— | ±0.5% at 1% ~ 5% ±1% at 5% ~ 20% |
| **Modulation Depth** | | |
| Range | —— | 40% ~ 95% |
| Resolution | —— | 0.1% |
| Accuracy | —— | ±1.5%(C/N >40 dB) |
| **C/N** | | |
| Optimum Input Range | 60 dBμV ~ 67 dBμV 0 dB Attenuation, Amplifier Off | 92 dBμV ~ 97 dBμV 0 dB Attenuation, Amplifier Off 72 dBμV ~ 77 dBμV 0 dB Attenuation, Amplifier On |
| Max. | 40 dB wtih ±1 dB Accuracy | 60 dB with ±1 dB accuracy 65 dB with ±3 dB accuracy |
| Resolution | 0.5 dB | 0.1dB |
| **CTB/CSO** | | |
| Optimum Input Range | —— | 82 dBμV ~ 87 dBμV 0 dB Attenuation, Amplifier Off 62 dBμV ~ 67 dBμV 0 dB Attenuation, Amplifier On |
| Max. | —— | 63 dB 78 channels with ±1.5 dB accuracy 70 dB 78 channels with ±4 dB accuracy |
| Resolution | —— | 0.01 dB |
| **DVB-C** | | |
| **Modulation** | | |
| Type | 16/32/64/128/256QAM, QPSK ITU-T J.83 Annex A,B&C DOCSIS, EuroDOCSIS | |
| Constellation Display | QPSK 16/32/64/128/256QAM Zoom In/Out | |
| **Power Level** | | |
| Range | 40 dBμV ~ 110 dBμV | |
| Resolution | 0.01 dB | |
| Accuracy | Typical ±1.5 dB@+20˚C | |
| MER | > 38 dB | > 40 dB |
| Accuracy | ± 0.5 dB 22 ~ 30 dB; ±1.0 dB 30 ~ 35 dB; ± 1.8 dB 35 ~ 40 dB | |
| EVM | 0.65% ~ 4.1% | |
| BER | 2E-3 ~ 1E-9 | |
| SR | 1 ~ 7 MS/s | |
| **Others** | | |
| Operating Temperature | 0 ˚C ~ +40 ˚C | |
| Storage Temperature | -10 ˚C ~ +50 ˚C | |

# DS8831H
# Spectrum Analyzer

## Key Features

- 1U rack spectrum analyzer for remote head end monitoring
- 1 ~ 1000 MHz frequency span
- LAN connection
- Same performance as DS8831Q
- Workbench remote control software

# DS1500
# RF Multiplexer

## Key Features

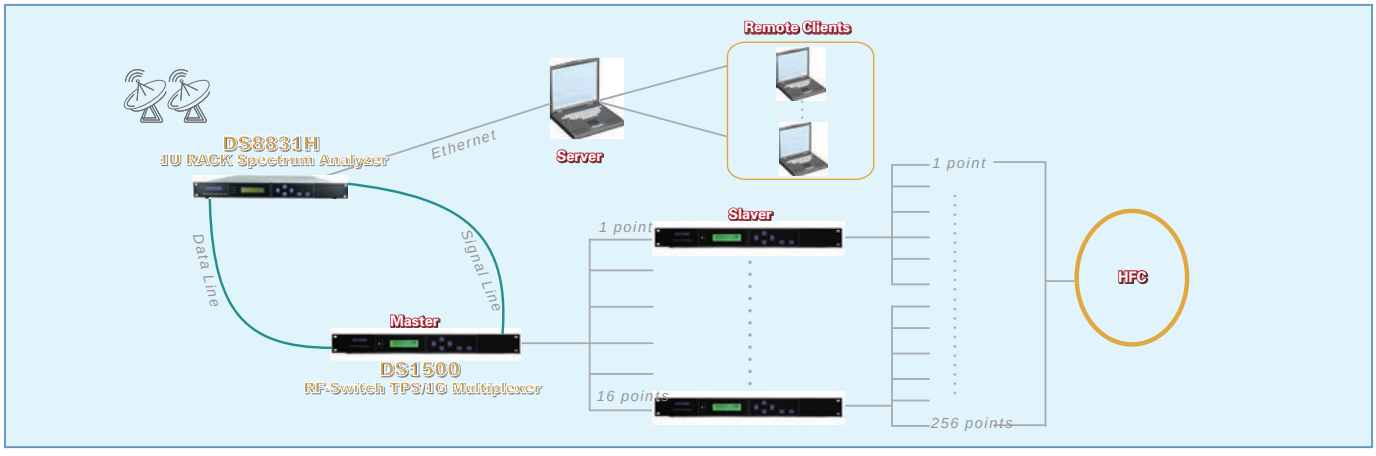
- Cost-effective to modify network configuration
- Full 1 GHz performance RF matrix 16 x 1
- Units can be daisy chained to support up to 256 inputs

## Specifications

| | |
|---|---|
| RF Input | 16 |
| RF Output | 1 |
| **Communication Port** | |
| RS232 | 1 input, 1 output |
| LAN | 10M RJ45 input |
| Pass band | 1 ~ 1000 MHz |
| Insert loss | -0.5 dB |
| Flatness | ±1 dB |
| Return Loss all inputs | 15 dB typical |
| Return Loss outputs | 15 dB typical |
| Maximum Signal level | 48 dBmV Single signal |
| CTB | -70 dBc min 100 channels@19 dBmV |

| | |
|---|---|
| CSO | -65 dBc min 100 channels@19 dBmV |
| Input Crosstalk | -60 dB typ. |
| Isolation 16 inputs | -60 dB typ. |
| Switching differential | ± 0.25 dB max |
| Noise floor | < -110 dBmV / Hz typ. |
| Dimension | 1 RU x 19" x 304 mm |
| Mass | 3 kg |
| Operating Temperature | 0 to +40 ℃ |
| Storage Temperature | -40 to +70 ℃ |
| Charging | 19 V DC ± 10% |
| Supply Current Consumption | 200 mA typ. |

## Solution: DS8831H+DS1500+Workbench Software=HFC Monitoring System



# DSA8853Q/DSA8831Q Spectrum Analyzer

## Overview

DSA8853Q/DSA8831Q is portable spectrum analyzer and it is used to analyze RF signals with a comprehensive scope of measurement in the HFC network. This can also be used in analyzing the system of mobile communication, satellite and so on.

The DSA8853Q/DSA8831Q series provides CATV, DVB-C and spectrum analysis as below:

**CATV Analysis:** Level, HUM, Depth of Modulation Depth, C/N, CSO/CTB, Cross-Modulation, In Channel Frequency Response, Differential Phase /Gain, Chrominance to Luminance Delay Inequality, etc.

**DVB-C Analysis:** Constellation, Power Level, MER, BER, EVM, EVS, MER/BER Statistics, etc.

**Spectrum Analysis:** Very Fast Sweep Time, Small RBW/VBW, High Accuracy, etc.

DSA8831Q

DSA8853Q

## Key Features

- TFT LCD Display
- Remote control
- Communicate with PC via LAN, SCPI Compatible Protocol
- USB storage and upgrade
- Built-in Battery

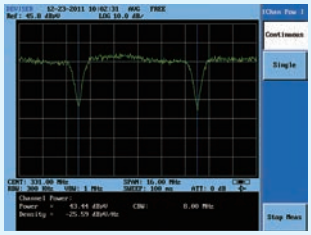
## Model Guide

- DSA8853Q

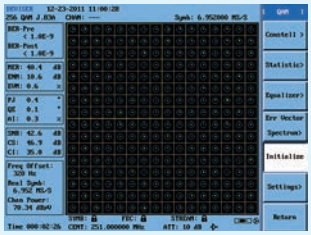
| No | Module | DSA8853Q 3G | DSA8831Q 1G |
|---|---|---|---|
| 1 | Spectrum Analysis | √ | √ |
| 2 | Workbench-PC Management Software | √ | √ |
| 3 | CATV | √ | √ |
| 4 | DVB-C | √ | √ |
| 5 | ASI Output | √ | √ |
| 6 | 8VSB | ○ | × |
| 7 | Tracking Generator-3 GHz | √ | × |
| 8 | Tracking Generator-1 GHz | × | √ |
| 9 | 30/100/300 Hz RBW | ○ | ○ |
| 10 | Spectrum Monitoring | ○ | ○ |

Remark: √ standard configuration × not available ○ optional

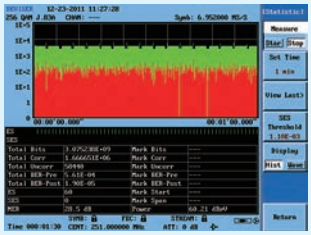
## 1. DVB-C Analysis



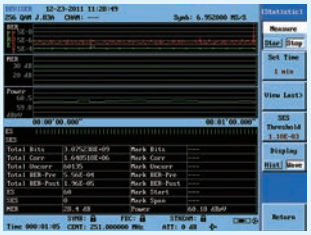
Power Level



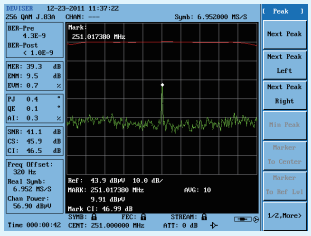
MER/BER/Constellation Analysis



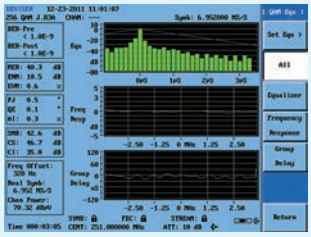
BER Statistic Analysis



MER/BER Statistic Analysis

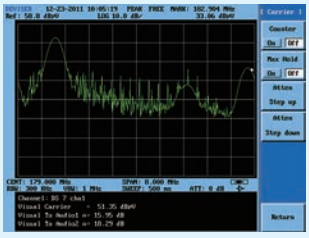


EVS(Find Interference under QAM Mask)

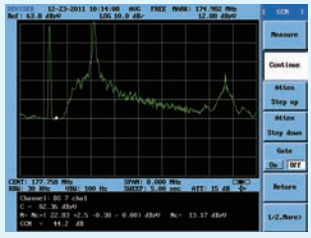


Equalizer

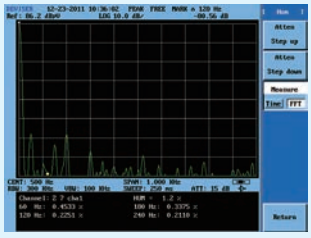
## 2. CATV Analysis



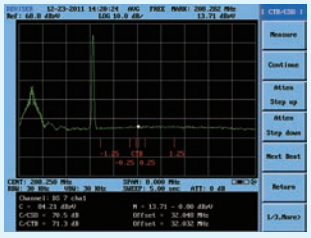
Level



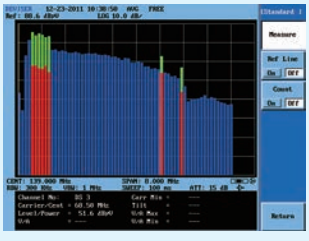
C/N



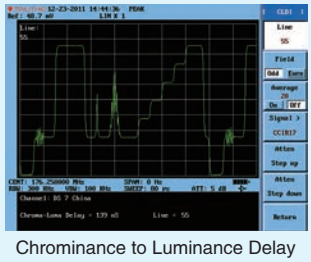
HUM



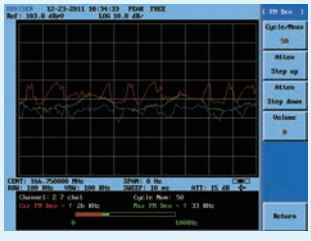
CSO/CTB



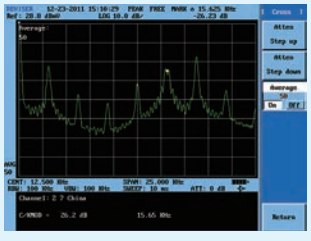
Channel Sweep



Chrominance to Luminance Delay Inequaltiy

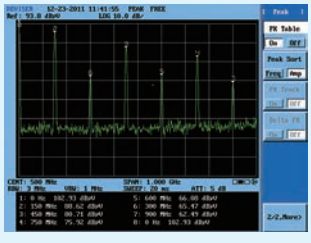


FM Demodulation

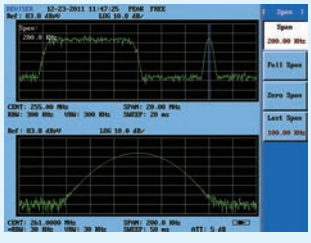


Cross–Modulation

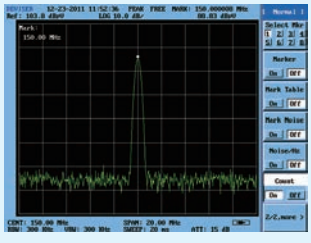
## 3. Spectrum Analysis



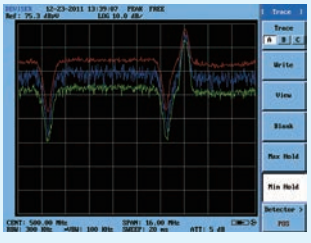
8 Marks



Two–windows Mode



Frequency Counter(Up to 1Hz)



Trace Analysis

## 4. Workbench- PC Management Software

The workbench is used to establish network communication between a PC or laptop computer with DSA8853Q/31 series, and manage all data, tests and test results.

It performs the following tasks:

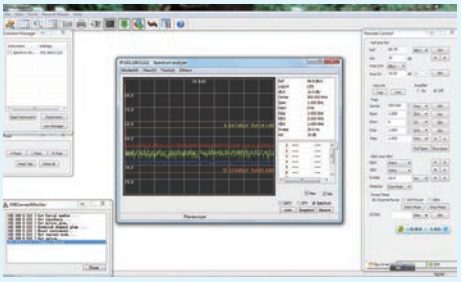
-Communicate with and remote control DSA8853Q/31 series via LAN

-Create, edit, upload and download Channel Plan

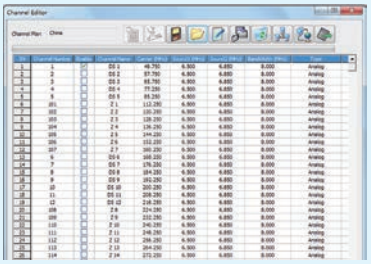
-Download and review the screen captures

-Transfer and save test results

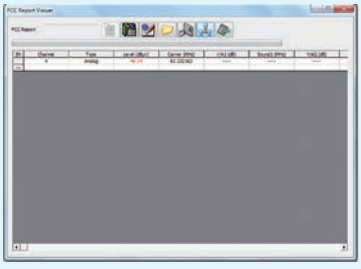
Remote Control via LAN



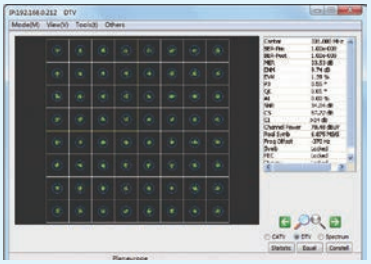
Workbench Software GUI



Channel Table Edit



FCC Report



QAM Analysis

## 5. 8VSB- Software and Hardware Upgrade

Modulation Type of ATSC(Terrestrial Digital TV Standard)

## 6. Tracking Generator-Software and Hardware Upgrade

It will be a simple scalar network analyzer after adding this option, and used to generally test amplifiers, filters and splitters etc.

| Specifications | DSA8831Q | DSA8853Q |
|---|---|---|
| Frequency | 1 GHz | 3 GHz |
| Amplitude | 0 dBm ~ -60 dBm | 0 dBm ~ -30 dBm |
| Accuracy | ±1.5 dB | ±2 dB |
| Voltage Standing wave Ratio | ≤2.0 | ≤2.0 |

## 7. 30/100/300Hz RBW-Software Upgrade

## 8. Spectrum Monitoring- Hardware Upgrade

Real-time monitor spectrum and record

## 9. ASI Output

This function is MPEG2 Transport Stream Output and only DS8853Q supports it.

## Specifications

| Model | DSA8831Q | DSA8853Q |
|---|---|---|
| **Frequency** | | |
| Range | 1 MHz~1000 MHz | 500 kHz~3000 MHz |
| Frequency Stability | ±2 × $10^{-6}$(0 ~ 50 ℃) | |
| Frequency Resolution | 10 Hz | 1 Hz |
| Counter Resolution | 1 Hz | |
| Sweep Range | 0 Hz(zero span), 1 kHz, 1000 MHz | 0 Hz(zero span), 1kHz, 3000 MHz |
| Sweep Time | 20 ms to 500 s(span > 0 Hz)<br>20 us to 500 s(span = 0 Hz) | 20 ms to 250 s(span > 0 Hz)<br>20 us to 500 s(span = 0 Hz) |
| RBW | 1 kHz ~ 3 MHz (1-3 Step) | |
| VBW | 30 Hz ~ 1 MHz (1-3 Step) | |
| Phase Noise Stability | < -120 dBc/Hz @ 100 kHz offset from CW signal<br>< -95 dBc/Hz @ 10 kHz offset from CW signal | < -120 dBc/Hz @ 100 kHz offset from CW signal<br>< -100 dBc/Hz @ 10 kHz offset from CW signal |
| **Amplitude** | | |
| Measurement Range | Displayed Average Noise Level to Max. Safe Input Level | |
| Accuracy | ±1 dB @ +25 ±5 ℃ | |
| Resolution | 0.01 dB | |
| Attenuator | 0 dB ~ 55 dB, 5 dB Step | 0 dB ~ 50 dB, 5 dB Step |
| **Internal Amplifier** | | |
| Range | 1 MHz ~ 1000 MHz | 500 kHz ~ 3000 MHz |
| Gain | 20 dB | 15 dB |
| Noise Figure | 4 dB | |
| Max Safe Input | +128 dBμV 100 V DC | +123 dBμV 100 V DC |
| **Display** | | |
| Logarithm Scale | 0.1 to 1 dB/div in 0.1 dB step 1 to 40 dB/div in 1 dB step | |
| Linear Scale | 10 divisions | |
| Scale Units | dBm, dBmV, dBμV, mV | |
| Marker Readout Resolution | 0.03 dB for log scale; 0.03% of ref level for linear scale | |
| Trace Detector | Sample, Positive-Peak, Negative-Peak, Normal, Average | |
| Reference Level | -130 dBm ~ +40 dBm | |
| Resolution Bandwidth Switching Uncertainty | < ±0.1 dB | |
| Input Attenuator Switching Uncertainty | < ±0.3 dB (typical) | |
| Response Flatness | ±1.0 dB | |
| **Analog CATV** | | |
| Level Amplitude Range | 20 dBμV ~ 125 dBμV, ±1.0 dB @ +25 ±5 ~ (S/N > 30 dB) | |
| **HUM/Low Frequency Disturbances** | | |
| Range | 1% ~ 20% | |
| Accuracy | ±0.5% from 1% to 5% ~ ±1% from 5% to 20% | |
| **Modulation Depth** | | |
| Range | 40% ~ 95% | |
| Resolution | 0.1% | |
| Accuracy | ±1.5% (C/N > 40 dB) | |
| **C/N** | | |
| Optimum Input Range | 92 dBμV ~ 97 dBμV 0 dB Attenuation, Amplifier Off<br>72 dBμV ~ 77 dBμV 0 dB Attenuation, Amplifier On | |
| Max. | 60 dB with ±1 dB Accuracy; 65 dB with ±3 dB Accuracy | |
| Resolution | 0.1 dB | |

| Model | DSA8831Q | DSA8853Q |
|---|---|---|
| **CTB/CSO** | | |
| Optimum Input Range | 82 dBμV ~ 87 dBμV 0 dB Attenuation ~ Amplifier Off<br>62 dBμV ~ 67 dBμV 0 dB Attenuation ~ Amplifier On | |
| Max. | 63 dB with ±1.5 dB Accuracy and 78 channels<br>70 dB with ±4.0 dB Accuracy and 78 channels | |
| Resolution | 0.1 dB | |
| **Cross Modulation** | | |
| Range | -45 dB to -65 dB | |
| Accuracy | ± 2.0 dB for Cross Modulation < 55 dB, CCN > 40 dB<br>± 4.5 dB for Cross Modulation < 60 dB, CCN > 40 dB | |
| Resolution | 0.1 dB | |
| **In-Channel Frequency Response** | | |
| Range | ±12 dB | |
| Accuracy | ±0.2 dB | |
| Resolution | 0.1 dB | |
| Differential Phase Accuracy | ±2% | |
| Differential Gain Accuracy | ±3 ° | |
| Chrominance to Luminance Delay Accuracy | ±40 ns | |
| **DVB-C** | | |
| **Modulation** | | |
| Type | 16/32/64/128/256QAM, QPSK ITU - T J.83 Annex A/B/C | |
| Interleave Capability | Up to128 × 4 in Annex B, 12 × 17 in Annex A/C | |
| Constellation Display | QPSK 16/32/64/128/256QAM full constellation with Zoom capability | |
| **Power** | | |
| Amplitude Range | 30 dBμV ~ 120 dBμV | |
| Resolution | 0.1 dB | |
| Accuracy | Typical ±1.0 dB @ (25 ±5 ℃, C/N > 20 dB) | |
| Bandwidth Range | 200 kHz ~ 200 MHz | |
| **MER** | | |
| Range | 22 dB ~ 43dB | |
| Accuracy | ±0.5 dB (22 ~ 30 dB); ±1.0 dB (30 ~ 35 dB);<br>±1.8 dB (35 ~ 43dB) | |
| BER | 2 × $10^{-3}$ ~ 1 × $10^{-9}$ | |
| EVM | 0.65% to 4.1% (Error Vector Magnitude) | |
| BER Statistics | 1 ~ 4320 Minutes | |
| SR(Symbol Rate) | 1 ~ 7 MS/s | |
| **Power Supply** | | |
| Battery Type | 14.8 V / 6 Ah Rechargeable Lithium-Ion | 14.8 V / 8 Ah Rechargeable Lithium-Ion |
| External AC Adapter | 19 V / 3.42 A | |
| Charge Time | 5 Hours | 6 Hours |
| Working Time | >3 Hours; >2.5 Hours<br>(Including Optional Tracking Generator) | |
| **Others** | | |
| Operating Temperature | 0 °C ~ +40 °C | |
| Storage Temperature | -10 °C ~ +50 °C | |
| Dimension (W×H×L) | 360 mm ×180 mm × 350 mm | 360 mm ×180 mm × 360 mm |
| Weight (With Battery) | 9 kg | 10 kg |
| Display | 16 cm (6.4 inches) TFT Color LCD | 19 cm (7.5 inches) TFT Color LCD |
| Display Resolution | 640 × 480 Pixels | |

# DS2500 Series QAM Analyzer

## Overview

DS2500 series is designed for HFC network installation, maintenance and troubleshooting. This QAM analyzer could meet all types of measurement of QAM & Analog TV Signal Index, Cable Modem and EoC.

## Key Features

- 4 inch TFT LCD
- USB storage and upgrade
- Communicate with PC via LAN
- Module designed: Simple to upgrade to another model

## Model Guide

| Module | Configuration |
|---|---|
| DS2500 | Basic |
| DS2500C | DS2500 plus Cable Modem module (Docsis 1.0/1.1/2.0/3.0 with 8*4 Channels Bonding) |
| DS2500R | DS2500C plus network communication module |
| DS2500R+ | DS2500R plus units communication module |
| DS2500E | DS2500 plus EoC module |

## Specifications

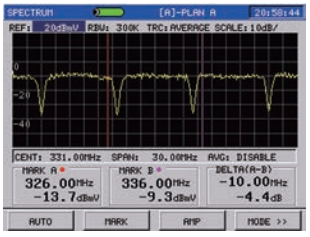
| Model | DS2500 | DS2500C | DS2500R | DS2500R+ | DS2500E |
|---|---|---|---|---|---|
| **Frequency** | | | | | |
| Range | 5 MHz ~ 1000 MHz | | | | |
| Resolution | 10 kHz | | | | |
| Accuracy | ±10 × $10^{-6}$ | | | | |
| **DVB-C** | | | | | |
| Power Level | 30 dBμV ~ 110 dBμV | | | | |
| Level Resolution | 0.1 dB | | | | |
| Level Accuracy | ±1.5 dB (C/N >20 dB) | | | | |
| MER | ~ 40 dB | | | | |
| MER Accuracy | ±2 dB | | | | |
| BER | 1E-3 ~ 1E-9 | | | | |
| Modulation Type | 16/32/64/128/256 QAM ITU-T J.83 ANNEX A/B/C | | | | |
| Constellation | √ | | | | |
| Statistics | √ | | | | |
| **Analog CATV** | | | | | |
| Level | 30 dBμV ~ 120 dBμV | | | | |
| Level Resolution | 0.1 dB | | | | |
| Level Accuracy | ±1.5 dB | | | | |
| Other Functions | C/N, V/A, Tilt, Limit Test, Auto Test, Channel Sweep/Management, Trunk Volt | | | | |
| **Specturm Analysis** | | | | | |
| Level Range | 10 dBμV ~ 120 dBμV | | | | |
| Level Resolution | 0.1 dB | | | | |
| Level Accuracy | ±1.5 dB | | | | |
| Dynamic | 60 dB | | | | |
| RBW | 30 kHz / 100 kHz / 300 kHz / 1 MHz / 3 MHz (Self-Adapt) | | | | |

| Model | DS2500 | DS2500C | DS2500R | DS2500R+ | DS2500E |
|---|---|---|---|---|---|
| Sweep Time | 300 ms / field (8 MHz) | | | | |
| Span | Max. 995 MHz | | | | |
| Return Noise Test | √ | | | | |
| **QAM Source** | | | | | |
| Frequency | × | 5 MHz ~ 65 MHz | | | × |
| MER | × | >38 dB | | | × |
| Modulation Type | × | QPSK; QAM (8/16/32/64); CW | | | × |
| SR | × | 160/320/640/1280/2560/5120 KSym/s | | | × |
| Level Output | × | 68 dBμV ~ 120 dBμV | | | × |
| **Communication Module** | | | | | |
| Freq-Transmission | × | × | 5 MHz ~ 65 MHz | | × |
| Freq-Receiving | × | × | 100 MHz ~ 110 MHz | | × |
| Frequency Accuracy | × | × | ±10 kHz | | × |
| Modulation Type | × | × | FSK, f = 67 kHz | | × |
| Level Output | × | × | 90 dBμV ~ 110 dBμV (1 dB Step) | | × |
| Level Accuracy | × | × | ±1.5 dB | | × |
| Phase Noise | × | × | -100 dBc /Hz @ 400kHz | | × |
| Date Baud Rate | × | × | 38.4 Kbps | | × |
| Receiving Range | × | × | 40 dBμV ~ 110 dBμV | | × |
| **Others** | | | | | |
| Dimension | 247 mm × 130 mm × 67 mm | | | | |
| Weight | 1160 g | | | | |
| Battery | 14.8 V / 2.1 AH Rechargeable Lithium-Ion | | | | |
| Charge Time | 4 ~ 5 Hours | | | | |
| Working Time | >5 Hours | | | | |

## 1. DS2500

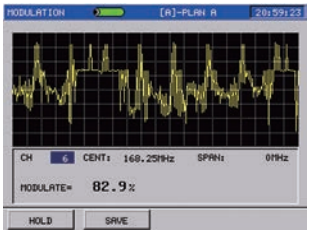
DS2500 is the basic model with high performance, which supports all types of measurement of QAM and analog signal indexes such as HUM, Modulation Depth, MER, BER, Constellation, Spectrum, Power Level, Sweep, etc.

Constellation

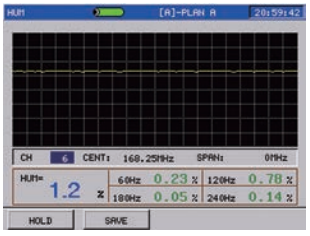


Spectrum

C/N



Depth of Modulation

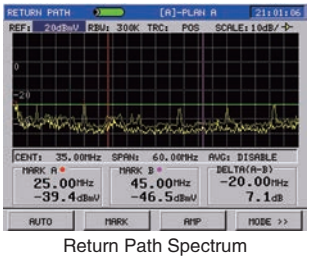


HUM

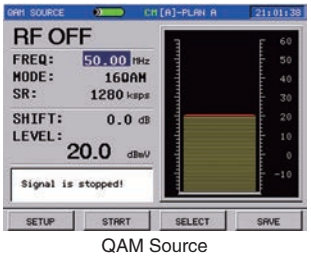
BER Statistic

## 2. DS2500C

DS2500C has the cable modem module which supports Docsis 1.x, 2.0 and 3.0. It provides CM Register& Statistic, Ping, FTP, Web Browser, QAM Source, Return Spectrum Sweep, etc.

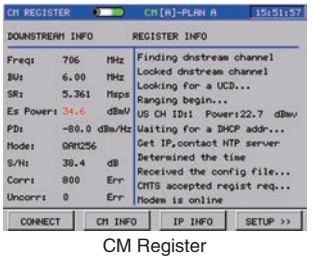


Return Path Spectrum

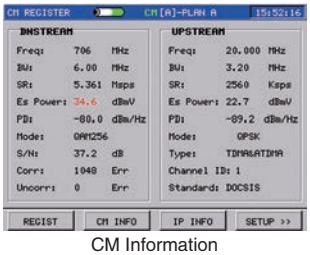


QAM Source

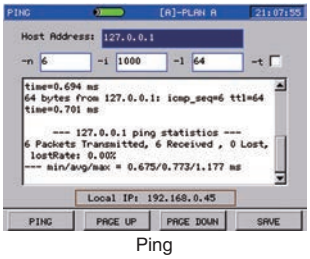
Web Browser



CM Register



CM Information

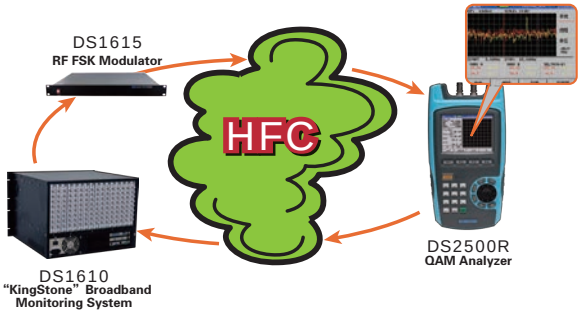


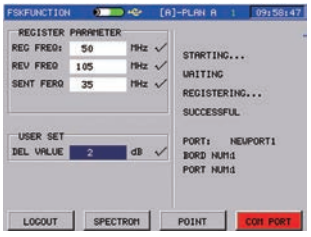
Ping

FTP

## 3. DS2500R

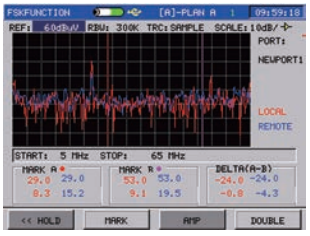
DS2500R adds communication module on top of DS2500C in order to communicate with DS1610 Kingstone HFC Broadband Monitoring system which is settled at head end. It could assist operator make both forward and return paths debugging more effective and ensure the service quality.




Register

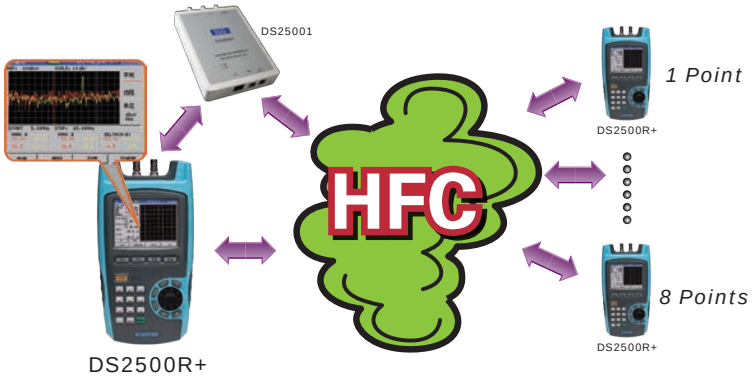

Troubleshooting




Debugging between Local and Remote

## 4. DS2500R+

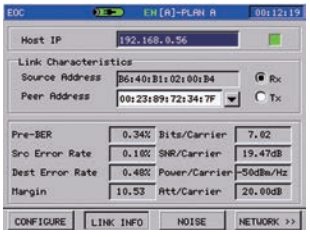
DS2500R+ adds the designated software which supports communication between multiple DS2500R+, and it is very helpful to troubleshoot errors between network nodes without disconnecting the signal.



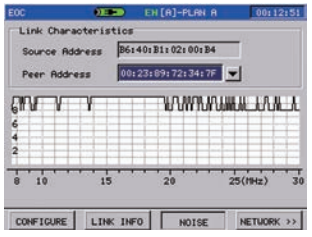

## 5. DS2500E

DS2500E adds EoC module on basis of DS2500, which is compatible with HomePlug AV Stanndard.

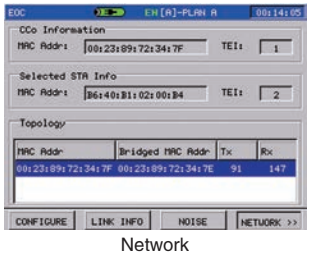

Configure



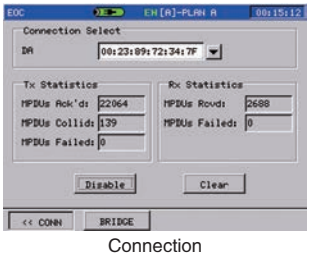

Link Information



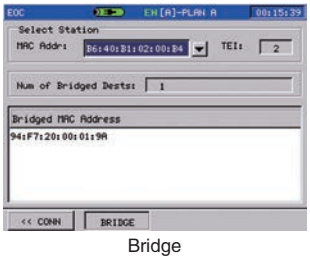

Noise




Network




Connection




Bridge

# DS6300 Series
# Network Certification Meter

## Overview

DS6300C is mainly applied for the installation of data service of HFC Network, which is compatible with DOCSIS & Euro DOCSIS 1.1/2.0/3.0. Also it provides simple measurement of Analog TV, DVB-C and Spectrum.

## Key Features

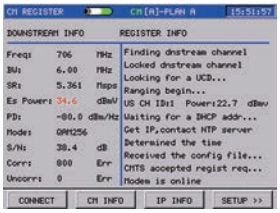
- 3.5 Inch TFT LCD
- USB storage and upgrade
- Toolbox - PC Management Software

## Specifications

| | |
|---|---|
| **Frequency** | |
| Range | 5 MHz ~ 1000 MHz |
| Resolution | 10 kHz |
| Accuracy | ±10 × $10^{-6}$ |
| **DVB-C** | |
| Power Level | 30 dBμV ~ 110 dBμV |
| Resolution | 0.1 dB |
| Accuracy | ±2.0 dB(C/N >20 dB) |
| MER | ~38 dB |
| MER Accuracy | ±2 dB |
| BER | 1E-3 ~ 1E-9 |
| Modulation Type | 64/128/256 QAM ITU-T J.83 Annex A/B/C |
| **Analog CATV** | |
| Level | 20 dBμV ~ 120 dBμV |
| Resolution | 0.1 dB |
| Accuracy | ±2.0 dB (C/N >20 dB) |
| Functions | Level, C/N, V/A, Tilt, Limit Test, Channel Scan, HUM |
| **Spectrum** | |
| Span | Max. 995 MHz |

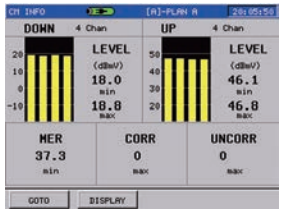
| | |
|---|---|
| **QAM Source** | |
| Range | 5 MHz ~ 65 MHz |
| MER | >38 dB |
| Modulation Type | QPSK; QAM (8/16/32/64); CW |
| SR | 160/320/640/1280/ 2560/5120 KSym/s |
| Level Output | 68 ~ 120 dBμV |
| **Others** | |
| Dimension | 247 mm × 130 mm × 67mm |
| Weight | 1160 g |
| Battery | 7.4 V / 4.4 AH Rechargeable Lithium-Ion |
| Charge Time | 3 ~ 4 Hours |
| Working Time | >5 Hours |

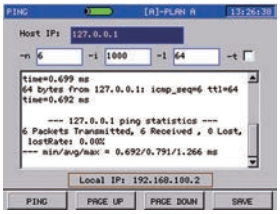
## Applications


Cable Modem Registration

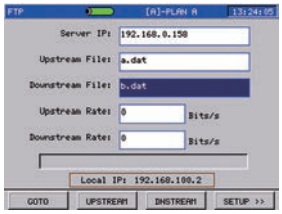

IP Information

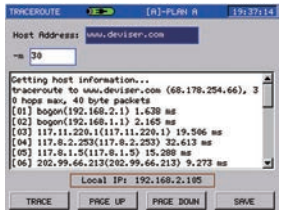

Cable Modem Information

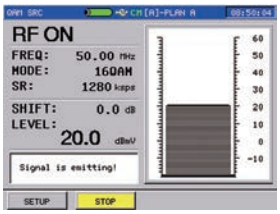

Level Information

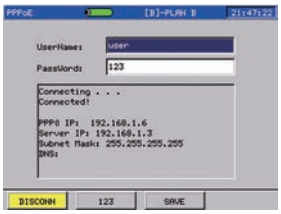

Ping

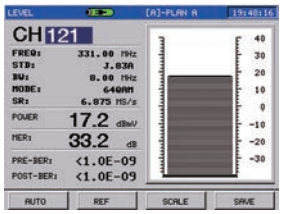

Web Browser

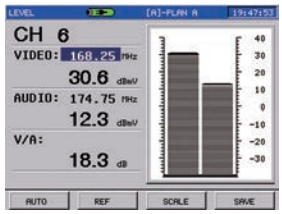

FTP


Trace Route


QAM Source


PPPOE


Power Level/MER/BER


Analog Level

# DS2400 Series
# QAM Analysis Meter

## Overview

DS2400 series is mainly used for initial network construction and project maintenance, which supports QAM and analog signal indexes measurement.

DS2400 series' friendly interface and simple operation could simplify the operator's work and resolve the problems much quicker.

## Key Features

- 2.8 Inch TFT LCD
- Communicate with PC via USB cable
- Toolbox - PC Management Software

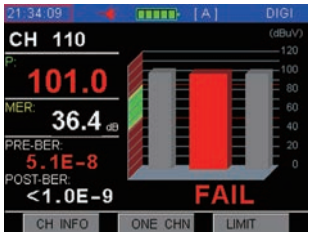
## Model Guide

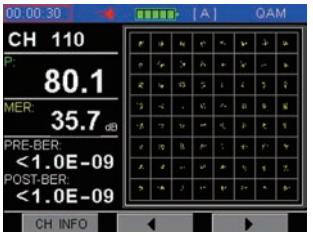
| Module | Configuration |
|---|---|
| DS2400B | Analog: Level, Limit & Auto Test, Spectrum, Tilt Channel Scanning etc (Remark: USB cable and Toolbox is optional for DS2400B.) |
| DS2400Q | DS2400B plus MER, BER, Constellation, Power Level, etc |

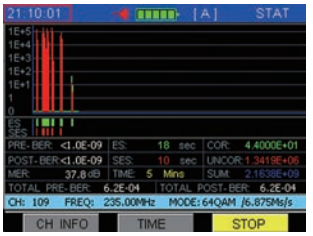
## Specifications

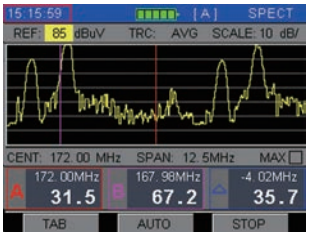
| | DS2400Q | DS2400B |
|---|---|---|
| **Frequency** | | |
| Range | 5 MHz ~ 1000 MHz | |
| Accuracy | ±50 × $10^{-6}$ (20 ˚C ±5 ˚C) | |
| Resolution | 10 kHz | |
| **Analog CATV** | | |
| Level | 30 dBμV ~ 120 dBμV | |
| Accuracy | ±1.5 dB | |
| Resolution | 0.1 dB | |
| Channel Sweep | Max. 150 Channels | |
| HUM | √ | |
| **DVB-C** | | |
| Power Level | 30 dBμV ~ 110 dBμV | |
| Accuracy | ±2.0 dB | |
| Resolution | 0.1 dB | |

| | DS2400Q | DS2400B |
|---|---|---|
| Modulation Type | ITU T J.83 Annex A/B/C, 16/32/64/128/256 QAM | × |
| SR | 4 MS/S ~ 7 MS/S | × |
| MER | 22 dB ~ 39 dB | × |
| MER Accuracy | ±2 dB | × |
| BER | 1E-3 ~ 1E-9 | × |
| BER Statistics | √ | × |
| Constellation | √ | × |
| **Spectrum** | | |
| Sweep Span | 2.5 MHz / 6.25 MHz / 12.5 MHz / 25 MHz / 62.5 MHz / Full Span | |
| **Power Supply** | | |
| Battery | 11.1 V / 1.5 AH Rechargeable Lithium-Ion | |
| Charger | AC 90 V ~ 240 V 50 / 60 Hz | |
| Working Time | 5 Hours | |
| Charge Time | <3 Hours | |



# DS5200/DS5112/DS5103 Digital Source Generator

## DS5200 QAM Source Generator

### Overview

DS5200 is the ideal return path generator for HFC system installation and maintenance.

### Key Features

- Wide frequency covers return path
- Large level dynamic range
- Multi-function module: RF, Pulse, Sweep
- Parameter setup memory

### Specifications

| Frequency | |
|---|---|
| Range | CW: 5 MHz ~ 120 MHz<br>Digital Signal: 5 MHz (Left Edge Frequency) -120 MHz (Center Frequency) |
| Accuracy | ±2 ppm |
| Resolution | 10 kHz |
| **Level** | |
| Range | 0 ~ 60 dBmV |
| Accuracy | CW: ±1.5 dB<br>Digital Signal: ±2.0 dB |
| Resolution | 1.0 dB |
| Output Impedance | 75 Ω |
| VSWR | <2.0 |

| Spectrum Pureness | |
|---|---|
| Harmonic Restraint Ratio | ≤-40 dBc |
| Non Harmonic Stray | ≤-40 dBc |
| Phase Noise | (At 50 MHz CW) 85 dBc @10 kHz 105 dBc @ 100 kHz |
| **Modulation Signal** | |
| Type | QPSK, 16/64/256 QAM |
| SR | 1 MS/s ~ 7 MS/s |
| BW | 1.25 MHz ~ 8.75 MHz |
| Roll Off | α=0.25 |
| MER | >36.0 dB |
| BER | <1 E - 9 Errors |
| FEC | RS (204, 188) |

| Frequency Sweep | |
|---|---|
| Range | 5 MHz ~ 120 MHz (CW) |
| Step | 10 kHz ~ 1 MHz |
| Frequency Interval | 10 ms |
| Level Flatness | <2.0 dB |
| **Others** | |
| Advance Setup | 5 |
| Communication Port | RS 232 C |
| Working Temperature | -20 ℃ ~ 50 ℃ |
| Dimension | 218 mm × 95 mm × 49 mm |
| Weight | 800 g |
| Working time | >4 Hours |

## DS5112 HFC Return Path Source Generator

### Overview

DS5112 is an ideal HFC return path generator with frequency range of 5 MHz ~ 65 MHz. It offers continuous adjustment of the amplitude, advanced DDS technique and high speed D/A chip.

DS5112 also has other characteristics such as small dimension, light weight, concise interface, background light, portable and LCD display.

### Key Features

- Advanced DDS technique and high-speed D/A chip
- Automatic temperature supplemental circuit and output protect module
- Small dimension,light weight

### Specifications

| | |
|---|---|
| Frequency Range | 5 MHz ~ 65 MHz |
| Frequency Accuracy | ±20 × $10^{-6}$ |
| Frequency Resolution | 100 kHz |
| Maximum Output Level | 110 dBμV |
| Maximum Output Attenuation | 30 dB / 1 dB step |
| Output Level Accuracy | < ±2 dB |
| Output Impedance | 75 Ω / BNC |
| Battery | 2 Ah AA Ni-MH battery |
| Working Time | > 4.5 Hours |

## DS5103 Two Frequency Points

### Key Features

- Two frequencies output simultaneously
- Output level is adjustable.
- Small dimension,light weight

### Specifications

| | |
|---|---|
| Output Frequency | 20 MHz / 40 MHz |
| output Level | 90 dBμV ~ 105 dBμV (Adjustable) |
| Battery | 2 Ah AA Ni-MH battery |
| Working Time | > 3 Hours |

# DS2002/DS2003/DS1001
# Signal Level Meter

## DS2002/DS2003 Handheld Signal Level Meter

### Overview

DS2002/DS2003 handheld signal level meter has added the streamlined appearance design into the newest model which makes the body smaller, lighter, more practical and convenient to operate.

Several new features such as frequency range (46 MHz ~ 1 GHz), digital channel power measurement and 6 channel tilt have been added into the new DS2003.

### Key Features

- More reliable: made of high strength material; passed the various shock and bump tests
- Smart design: high technique integrated design; lighter weight make you enjoy your working
- Level, Tilt and C/N measure
- Channel plan edit(DS2003)

### Specifications

| | DS2002 | DS2003 |
|---|---|---|
| **Frequency** | | |
| Range | 46 MHz ~ 864 MHz | 46 MHz ~ 1 GHz |
| Frequency Step | 50 kHz, 100 kHz, 1 MHz, 10 MHz and 100 MHz | |
| **Level Measurement** | | |
| Range | 30 dBμV ~ 120 dBμV | |
| Accuracy | ±2 dB (20 ˚C ± 5 ˚C) | |
| Resolution | 0.5 dB | |
| Digital Power Range | —— | 40 dBμV ~ 110 dBμV |
| **Voltage** | | |
| Input Range | 1 V ~ 100 V (AC / DC) | —— |
| Measured Accuracy | ±2 V | —— |

| | DS2002 | DS2003 |
|---|---|---|
| Resolution | 1 V | —— |
| **Others** | | |
| Dimension | 168 mm × 71 mm × 42 mm | |
| Weight | 368 g (Including the battery) | |
| Working Temperature | -10 ˚C ~ 40 ˚C | |
| Audio | Built-in speaker (Auto on in SINGLE FREQUENCY mode) | —— |
| Power Supply | 3.6 V / 2.1 AH Ni-MH battery(Rechargeable) | 3.6 V / 2.5 AH Ni-MH |
| Working Time | ≥6 Hours (Shut off the audio and LCD backlight) | ≥4 Hours |
| Charging Time | 10 ~ 12 Hours (Power off the meter) | |

## DS1001 Signal Level Meter


### Overview

DS1001 is specially designed for CATV system maintenance, which features small size (160 mm × 130 mm × 65 mm), light weight (less than 600 g), long operating time (more than 6 hours), and well-built from appearance to architecture. It includes the most practical functions such as Level, V/A, Tilt, Trunk voltage measure and also supports measuring dual channels and displaying the data. Aseismatic design makes this meter more durable than you can expect, even it can continue to work well after being dropped from 5 meters high.

### Key Features

- Level measure
- Tilt and C/N measure
- Customized channel plan
- Mini size and light weight
- Aseismatic design

### Specifications

| | |
|---|---|
| **Frequency** | |
| Frequency Range | 46 MHz ~ 864 MHz |
| Accuracy | ±50 ppm |
| Tuning Resolution | 50 kHz |
| **Level Measurement** | |
| Range | 30 dBμV ~ 120 dBμV |
| Accuracy | ±2 dB @ 25 ºC |
| Resolution | 0.5 dB |
| **Voltage** | |
| Input Range | 1 V ~ 100 V (AC / DC) |
| Accuracy | ±2 V |
| Resolution | 1 V |

# S7000
# TV & Satellite Analyzer

## Key Features

- All standards in one: QAM(J.83A/B/C), 8VSB, DVB-T/H/T2, DVB-S/S2
- Digital/Analog TV and Satellite TV analysis
- MPEG2 Transport stream analyzer and monitoring via TS-ASI input &RF input
- Fast spectrum analysis with 5 ~ 2150 MHz frequency span
- DSP Technology to support different Video decoding: MPEG-2 , MPEG-4 and H.264 for 1080i, 720p and 576i, support PAL/NTSC/SECAM color system
- Support SD&HD Video format
- DVB-CI module (Conditional Access) for encrypted channels
- TS-ASI input and output
- TS record and TS replay
- IPTV analysis option
- GPS option
- HDMI, LAN and USB interface
- Easy to use
- High resolution 7" TFT LCD with bright display for indoors and outdoors use
- W245×H194×L105, light weight.
- Working time > 5 hours (battery)

**All IN ONE**

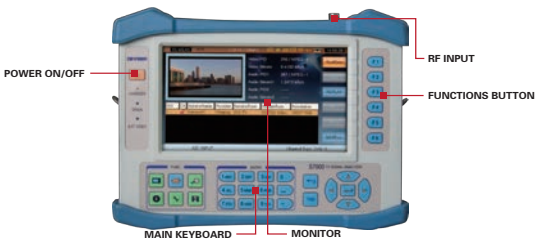
- Digital TV Analyzer : DVB-C/T/H/T2/S/S2
- Video decoder: MPEG2/4/H.264, SD/HD
- Handheld TS Analyzer
- Spectrum Analyzer
- GPS

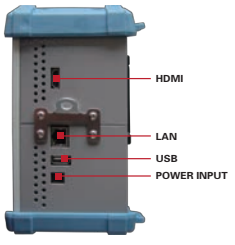
## Model Guide

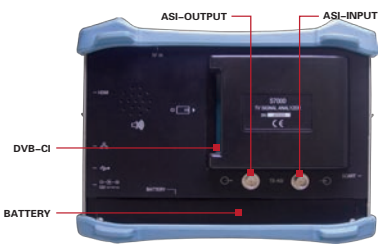
| | S7000 | S7000L |
|---|---|---|
| Analog TV、FM | ■ | ■ |
| DVB-C | ■ | ■ |
| DVB-T | ■ | ■ |
| DVB-S/S2 | ■ | ■ |
| DVB-T2 | □ | × |

| | S7000 | S7000L |
|---|---|---|
| DTMB | □ | × |
| CI Module | □ | × |
| ASI Output/Input | ■ | × |
| TS Analyzer Module | □ | □ |
| IPTV | □ | □ |

Remark: ■ : Included □ : Software Option × : Not Available




## TV Monitoring

S7000 provides analog and digital TV monitoring. It supports different video decoding with DSP Technology: MPEG-2, MPEG-4 and H.264 for 1080i, 720p and 576i, and supports PAL/NTSC/SECAM color system. It supports SD&HD video format and CAM module (Conditional Access) for encrypted channels.

MPEG4 HD for 1080i Decode

## Friendly GUI and Easy to Use

S7000 has windows style main menu. It is very easy to operate the analyzer with navigation keyboard, even without the operate manual.

TV Main Menu

Satellite Main Menu

## Spectrum Measurement

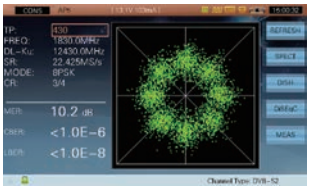
S7000 has spectrum analysis function. The sweep span covers TV& Broadcasting signal(5-1050 MHz) and Satellite IF signal (950-2150 MHz ).

TV Signal Sweep

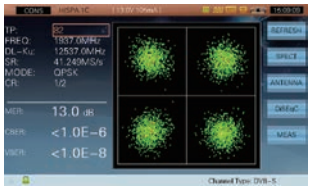
Satellite Signal Sweep

## DVB-S/S2 Signal Analysis

S7000 supports DVB-S/S2 standard and provides Power level, MER, BER, constellation measurement.



DVB–S2 Constellation



DVB–S Constellation

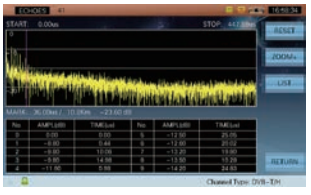
DVB–S/S2 Signal Measurement

Display Max. 12 Transponder Signals' quality to Align Dish Antenna

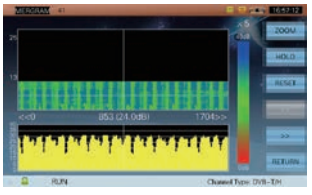
## DVB-T/T2 Signal Analysis

DVB–T signal measurement

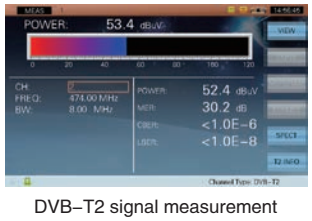
DVB–T constellation



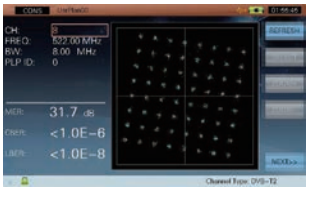
DVB–T Echo pattern displaying to locate SFN interference



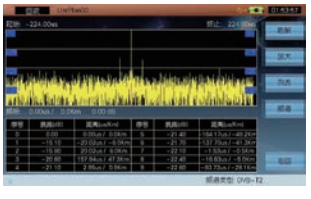
DVB–T MER versus carriers



DVB–T2 signal measurement



DVB–T2 constellation



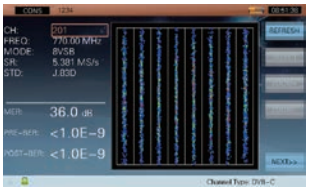
DVB–T2 Echo pattern displaying to locate the SFN interference

## DVB-C Signal Analysis

S7000 supports J83 A/B/C/D standard and provides Power level, MER, BER, constellation measurement. The EVS tool is helpful to find the interference signal under the QAM mask.


QAM signal quality measurement


QAM constellation measurement


8VSB signal analysis

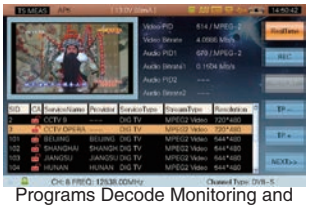

EVS measurement

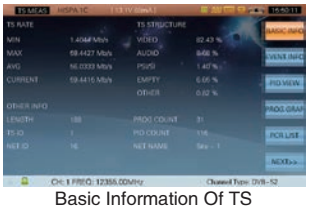
## Remote Feeding and Control Signal Setting

S7000 provides feeding power 5/13/15/18/24V and Max. power is 5W. The 22 kHz control signals is compatible with DiSEqC 1.2 and SaTCR.

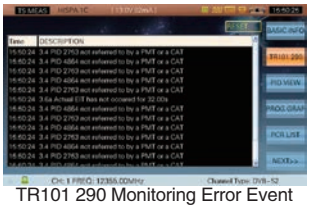

## TS Analysis and Monitor

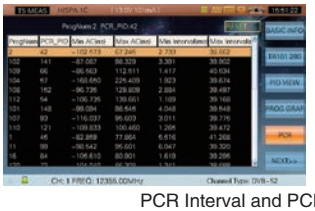
S7000 is a handheld TS analyzer. It provides TR101 290 3 level monitoring and list PSI/SI and program PID of transport stream. S7000 also lists the details of all programs running in a TV network or a transponder. The TS is from RF signal or TS-ASI input. S7000 has 8GB hard disk to save TS file and can replay and analysis TS file.

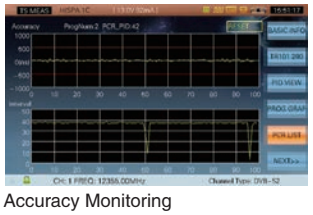

Programs Decode Monitoring and List

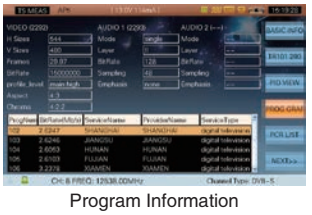

Basic Information Of TS

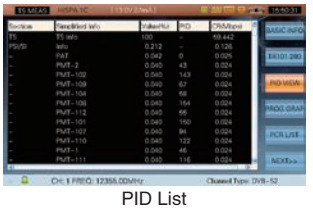

TR101 290 Three Level Monitoring

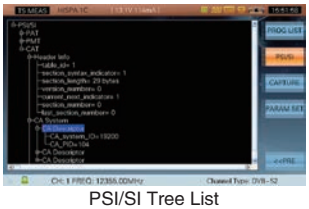

TR101 290 Monitoring Error Event List

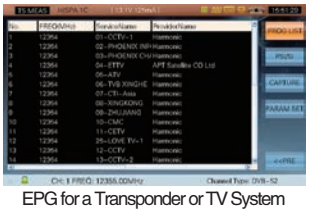

PCR Interval and PCR Accuracy Monitoring

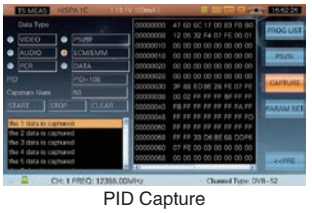


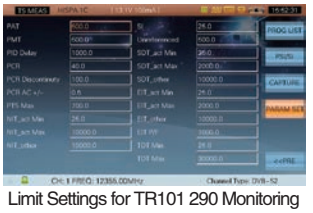

Program Information


PID List


PSI/SI Tree List


EPG for a Transponder or TV System


PID Capture


Limit Settings for TR101 290 Monitoring

## Specifications

| | |
|---|---|
| **Spectrum Analyzer** | |
| Frequency Range | 5 MHz ~ 1050 MHz (TV), 950 MHz ~ 2150 MHz (Satellite) |
| Frequency Span | 1 MHz ~ 1045 MHz (TV), 10 MHz ~ 1200 MHz(Satellite) |
| Frquency Step | 10 kHz (TV), 1 MHz (Satellite) |
| Resolution Bandwidth (-3 dB) | 30 kHz, 100 kHz, 300 kHz, 1 MHz,<br>3 MHz (TV) 1 MHz, 3 MHz Auto Select (Satellite) |
| Level Measurement Range | 10 dBμV ~ 120 dBμV (TV) 30 dBμV ~ 120 dBμV (Satellite) |
| Accuracy Of Measurements | <1.5 dB |
| Measurement Detector | Peak, sample, AVG (TV) , No Select for Satellite |
| Reference Level | 30 dBμV ~ 120 dBμV |
| Markers | 2 (TV) 1 (Satellite) |
| **Analogue TV Measurement** | |
| Standards | B/G, I, D/K, L/L´, M/N |
| Colour Standards | PAL, SECAM, NTSC |
| Frequency Step | 10 kHz |
| Hum Measurement | > 50dB |
| C/N | > 50dB |
| Level Measurement Range | 30 dBμV ~ 120 dBμV |
| Accuracy Of Measurements | < 1.5 dB |
| Level Resolution | 0.1 dB |
| **Digital CATV Measurement** | |
| Modulation Type | 16/32/64/128/256 QAM ITU-T J.83 ANNEX A/B/C |
| Symbol Rate | 4.0 MS/s ~ 7.0 MS/s |
| Power Level Range | 30 dBμV ~ 110 dBμV |
| Level Resolution | 0.1 dB |
| Power Level Accuarcy | ±1.5 dB(C/N > 20 dB) |
| MER Measurement | ~40 dB |
| MER Accuracy | ±2.0 dB |
| BER | 1E-3 ~ 1E-9 |
| Constellation | √ |
| **DVB-T/H Measurement** | |
| Modulation Type | QPSK, 16 QAM, 64 QAM |
| Power Level Range | 25 dBμV ~ 110 dBμV |
| Level Resolution | 0.1 dB |
| Power Level Accuarcy | ±1.5 dB (C/N >20 dB) |
| MER Measurement | > 30 dB |
| MER Accuracy | ±2.0 dB |
| CBER/VBER | √ |
| Constellation | √ |
| MER Versus Carriers | √ |
| Echo Pattern | √ |
| **DVB-T2 Measurement** | |
| Modulation Type | QPSK, 16 QAM, 64 QAM, 256QAM |
| Power Level Range | 25 dBμV ~ 110dBμV |
| Level Resolution | 0.1dB |
| Power Level Accuarcy | ±1.5 dB(C/N >20 dB) |
| MER Measurement | >30 dB |
| MER Accuracy | ±2.0 dB |
| CBER/LBER | √ |
| Constellation | √ |
| Echo Pattern | √ |
| **ATSC Measurement** | |
| Modulation Type | 8 VSB |
| Power Level Range | 25 dBμV ~ 110 dBμV |
| Level Resolution | 0.1 dB |
| Power Level Accuarcy | ±1.5 dB(C/N >20 dB) |
| MER Measurement | >35 dB |
| MER Accuracy | ±2.0 dB |
| BER | √ |
| Constellation | √ |
| **DTMB Measurement** | |
| Carriers | C=1, 3780 |
| Power Level Range | 25 dBμV ~ 110 dBμV |
| Level Resolution | 0.1 dB |
| Power Level Accuarcy | ±1.5 dB (C/N >20dB) |
| MER Measurement | >28 dB |
| MER Accuracy | ±2.0 dB |
| BER | √ |
| Constellation | √ |
| Echo Pattern | √ |
| **DVB-S/S2 Measurement** | |
| Modulation Type | QPSK, 8PSK |
| Symbol Rate | 2 - 45 MS/s (DVB-S)<br>1 - 45 MS/s (QPSK DVB-S2)<br>1 - 45 MS/s (8PSK DVB-S2) |
| Power Level Range | 40 - 110 dBμV |
| Level Resolution | 0.1 dB |
| Power Level Accuarcy | ±1.5 dB (C/N>20dB) |
| MER Measurement | > 25 dB |
| MER Accuracy | ±2.0 dB |
| BER | DVB-S (CBER/VBER)<br>DVB-S2 (CBER/LBER) |
| Constellation | √ |
| **Video/Audio Decoder** | |
| Video | MPEG1/2/4, H.264 |
| Video Resolution | 1080i, 720p and 576i |
| Audio | MPEG1/2/4, AAC |
| CAM Module | EN50221 (DVB-CI) PCMCIA interface |
| TS-ASI Input And Output | √ |
| TS Record | √ |
| **TS Analyzer** | |
| **En 50083-9(DVB SPI, ASI)** | |
| DVB-ASI Interface | 75 Ω BNC |
| DVB-ASI Clock | 270 MHz |
| DVB-ASI Max Data Rate | 0 to 72 Mbps |
| DVB-ASI Output Signal Level | 1.0 Vp-p nominal |
| DVB-ASI Return Response | > 15dB |
| DVB-ASI Input Level | 800 mV +/- 10% |
| Realtime Decoder | Display the real television pictures (through CA system). Including program numbers, program names, provider information, video & audio PIDs |
| TR101290 Monitor | TR101 290 three levels real time monitor |
| Base Information | Count the PIDs percent according to the type of the streams. Videos, Audios, PSI/SI, Null Packages |
| PID List | Display all the PIDs in current stream |
| Program Information | The detail infos about a program if it isn't be encrypted.<br>The video resolutions and audio compress rate. |
| PCR Monitor | Calculate PCR interval and PCR accuracy |
| PSI/SI List | Display the PSI/SI infos by tree view. Including PAT,PMT,CAT,( NIT,SDT,RST,TDT,EIT options) |
| Program Info | EPG |
| PID Capture | Capture a specified PID by it's type: Video, Audio, PSI(PAT,P MT,NIT,TDT,RST,SDT,EIT) etc. And display the data in HEX format |
| Transport Stream Record and Replay | <2 GB (udisk) for TS record and TS Replay |
| **Interface** | |
| RF Input | 75 Ω F |
| **HDMI Output** | |
| USB | 1 USB 2.0 |
| LAN | 1 10/100 M |
| DVB-CI | 1 PCMCIA |
| TS-ASI Input/Output | 2 75 Ω BNC |
| DC Supply Input | 12 V / 5 A |
| GPS Input | USB |
| **General** | |
| Display | 7 inches TFT LCD 800 × 480 pixels |
| AC/DC Adapter | AC 100 - 240 V/50-60 Hz DC 12 V/5 A |
| Battery | Li-ion, 7.4 V/13 Ah |
| Charge Time | Around 5 Hours |
| Working Time | >5 Hours |
| Remote Feeding | 5/13/15/18/24 V, Max. 5 W |
| 22 kHz Control Signals | DiSEqC 1.2 and SaTCR |
| Dimension (W×H×L) | 245 mm × 194 mm × 105mm |
| Weight | Around 2.8 kg |
| Working Temperature | -10 ~ +50 ˚C |
| Storage Temperature | -20 ~ +70 ˚C |

# DS2400T
# DVB-T/T2 Meter

## Overview

DS2400T is an ideal combo meter for DVB-T/T2/C network installation. It is lightweight, simple to use and suitable for field test. As a professional device, DS2400T demodulates and measures the signal with high accuracy. A test report is easy to be obtained via PC Toolbox Software.

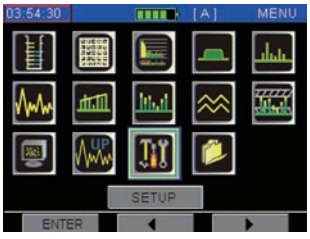
| | | |
|---|---|---|
| DS2400T | Standard | DVB-T |
| | Option | DVB-C/DVB-T2 |

## Key Features

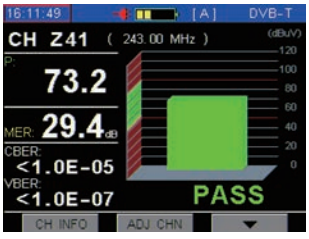
- Compatible with DVB-T/T2 and DVB-C standard
- DVB-T/T2: Comply with ETS300744 standard/ Support Power, MER, CBER and VBER
- DVB-C: Support Digital and Analog TV Measurements
- Spectrum Function (5~1000MHz)
- Easy to use

## Specifications

| | | |
|---|---|---|
| **DVB-T** | | |
| Frequency Range | | 5 ~ 1000 MHz |
| Function | | Power, MER, CBER, VBER, ECHOES and MER Versus Carriers |
| DVB-T Signal Parameters | Carriers | 2 k / 8 k (Set by user) |
| | Guard Interval | 1/4 1/8 1/16 1/32(Set by user) |
| | Code Rate | 1/2 2/3 3/4 5/6 7/8 |
| | Modulation | QPSK 16QAM 64QAM |
| | Spectral Inversion | Automatic |
| Channel Power | Range | 30 ~ 100 dBμV |
| | Accuracy | ±2.0 dB |
| MER | Range | ~30 dB |
| | Accuracy | ±2.0 dB |
| BER | | CBER, VBER |
| **DVB-T2** | | |
| Modulation Type | | QPSK, 16 QAM, 64 QAM, 256QAM |
| Power Level Range | | 25 dBμV ~ 110dBμV |
| Level Resolution | | 0.1dB |
| Power Level Accuarcy | | ±1.5 dB(C/N >20 dB) |
| MER Measurement | | >30 dB |
| MER Accuracy | | ±2.0 dB |
| CBER/LBER | | √ |
| Constellation | | √ |
| **Power Supply** | | |
| Battery | | 11.1 V 1.6 AH Lithium Battery(Chargeable) |
| Charger | | AC 100 V to 240 V 50-60 Hz |
| Working Time | | 5 Hours (Fully Charged) |
| Charge Time | | ~ 3 Hours |
| **Others** | | |
| Serial Port | | RS 232 C |
| Operating Temperature | | 0 ℃ ~ 50 ℃ |
| Dimension | | 218 mm × 95 mm × 49 mm |
| Weight | | 700 g |
| Display | | 320 × 240 TFT |

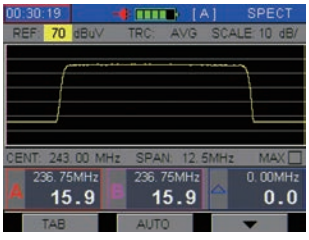



Main Menu(DVB–C and DVB–T)




DVB–T Power and MER


DVB–T Constellation Diagram




Spectrum

# S30
# Satellite Meter


## Overview

S30 is a battery powered handheld satellite meter, which features small size, simple to use and spectrum analysis. It powers LNB and can set the satellite parameter via USB interface by PC software.

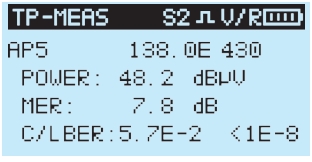
This instrument is extremely fast and accurate with high sensitivity and stable display which make satellite identifying much easier.

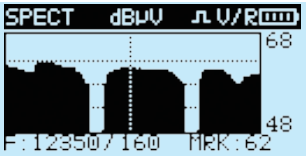
## Key Features

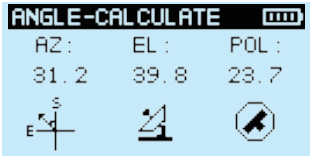
- Supporf DVB-S/S2
- C, Ku, Ka or L Band
- MER and BER
- Spectrum function
- Support DiSEqC 1.0/1.1
- Signal level and quality display together
- 128×64 matrix LCD with back-lighted
- Large lithium battery capacity, over 4 hours working time
- Software upgrade and parameter set via USB interface

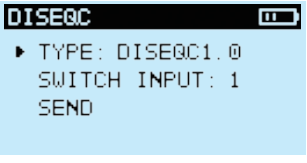
## Specification

| | |
|---|---|
| RF Input Range | 950 ~ 2150 MHz |
| Level Range | 30 dBμV ~ 110 dBμV |
| Symbol Rate | 1 Msps ~ 45 Msps (QPSK,8PSK) |
| LNB Supply Volt | 13V, 18V, OFF |
| LNB Supply Current | ≤400 mA |
| Battery Capacity | 7.2 V/1600 mAH lithium battery |
| Dimension | 153 mm × 93 mm × 42mm |
| Weight | 358 g |
| Working Time | > 4 Hours (13 V) |



# FC-1
# Portable Test Platform

FC-1

## Description

FC-1, the telecom portable test platform, is recently released by Deviser. FC-1 portable test platform is uniquely featured with handheld modular design, multi-communication protocols, outstanding outlooks, extremely long operating hours and user friendly interface which all these make FC-1 a trust given and handy instrument of telecom test and measurement.

## Key Features

- Handheld DWDM optical power meter for 8 channels
- Powered by 7.4V/2.4AH Lithium battery, long working time, FC/SC/ST Interchangeable connector
- With general functions such as relative power measurement
- Store up to 500 groups of data, editable by TOOLBOX management software

## Specification

| Parameter | Index |
|---|---|
| Display | 7"LCD, Colored, 800x480 Resolution, Touch Screen |
| Interface | 2 X USB 2.0 ports, RJ-45 LAN, 10/100/1000M, SD card |
| Memory | 8GB Flash Disc |
| Battery | Rechargeable Lithium Battery<br>>8 Hours Operating Time |
| Power | AC/DC Adapter, Input: 100~240VA,50~60Hz,1.5A<br>Output:12VDC, 5A |
| Processor | Samsung 6410 Processor<br>Linux Operating System |
| Demension | 252 x 184 x 76 (mm) |
| Weight | 1.3kg |
| Operating Temperature(℃) | 0℃ ~ 50℃ |
| Power Supply | 7.4V/2.4AH lithium battery, 15V adaptor, charging time 4 hours |
| Humidity | 0% ~ 90% |

# AE4000 Series
# OTDR Module
## -Advanced, Quick, Expandable

AE4000 Series

## Description

AE4000 Series OTDR Module is recently released by Deviser and it meets very high industrial standard of requirements such as 45dB dynamic range, 0.8m event dead zone, 3kg of weight and over 8 continuous operating hours. It is the ideal solution of field operation due to its dexterity and packaging design.

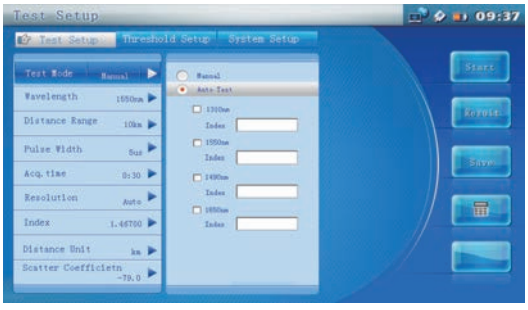
| Model | Wavelength | Dynamic Range(dB) | Event DZ (m) | Attenuation DZ (m) |
|---|---|---|---|---|
| AE4000A | 1310/1550 | 37/35 | 1 | 5 |
| AE4000B | 1310/1550 | 40/38 | 0.8 | 4 |
| AE4000C | 1310/1550 | 43/41 | 0.8 | 4 |
| AE4000D | 1310/1550 | 45/43 | 0.8 | 4 |
| AE4000E | 1310/1550/1625 | 39/38/38 | 0.8 | 4 |
| AE4000F | 1310/1550/1650 | 39/38/38 | 0.8 | 4 |
| AE4000G | 1310/1550/1490 | 39/38/38 | 0.8 | 4 |
| AE4000H | 1310/1550/1490/1625 | 39/38/38/38 | 0.8 | 4 |
| AE4000K | 1310/1550/1490/1650 | 39/38/38/38 | 0.8 | 4 |
| AE4000M | 850/1300 | 22/25 | 1.5 | 15 |

## Characteristic

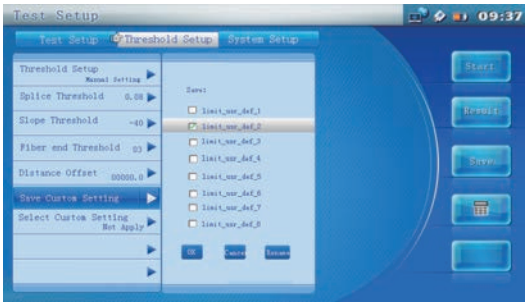
- Minimum Event Dead Zone < 0.8m
  - Capable of finding 2m jumper
- Fast Measurement: Start-up Time < 15s
  - Minimum measurement time is 5s
- Portable handheld design
  - AE4000 offers both touch screen and keyboard operation synchronously which fits in different types of test environment.
  - Fast storage function and one-button operation to save up the test result.
  - Unique feature of Mini menu allows quick and convenient operation of result review.
- **7" TFT Touch Screen**
  - Test result displays intuitively clear
- Modular Design
  - Compatible with OTDR and Ethernet Test
- **Extremely Long Operating Time and Handy Battery Replacement**
  - High capacity of lithium battery

## Key Features

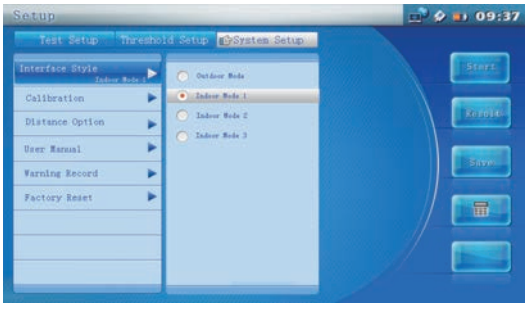

1. Unique keyboard design with Mini menu not only simplifies the operation but also increases the efficiency of test.
2. No extra setup needed and the test result is intuitively clear.
3. Help function answers all frequently asked questions.




Comprehensive auto-mode offers fully intelligent operation of the instrument which automatically setup the measurement parameters, complete fault location and data storage.




Support customized setup which allows the user save different setup of measurement parameters to fit in different test environment.




Multiple interface styles fit in different test environments.

Self diagnosis and self correction

- Self detection and protection of the optical adapter to avoid optical injection
- Self detection of misconnection of optical adapter
- Self calibration and correction of OTDR

## Specification

| | |
|---|---|
| Measurement Time | Customized |
| Distance Accuracy | ± (0.5m + 0.0001 % × Distance + Sampling Resolution) |
| Attenuation Accuracy | ±0.002dB |
| Loss Threshold | 0.001dB |
| Loss Resolution | 0.001dB |
| Distance Resolution | 0.05m |
| Linearity | 0.03dB/dB |
| Sampling Points | 128000 |
| Data Storage | >3000 |
| Display | 7'' TFT Touch Screen |
| Optical Adapter | FC/PC, SC/PC |
| Interface | USB x 2, SD, RJ45 |
| Battery | Lithium Rechargeable Battery, Input < 4hours, Output > 10hours |

| | |
|---|---|
| Power Supply | AC/DC Adapter, Input AC90-240V ±10%, Output 12V |
| Operating Temperature | -10℃ ~ 50℃ |
| Storage Temperature | -40℃ ~ 85℃ |
| Relative Humidity | <80% |
| Weight (Module) | <0.35kg |
| **Accessories** | |
| SC/PCAdapter | 1 |
| AC Adapter | 1 |
| Package Bag | 1 |
| Test Report | 1 |
| Quick Operation Manual | 1 |
| Disc | Workbench PC Management Software and Operation Manual |

# TC700 Series
# Gigabit Ethernet Test Module

TC700 Series


## Description

TC700 Gigabit Ethernet Test Module is a latest model for telecommunication test launched by Deviser. It is designed for Ethernet layout and integration test, which conforms to Ethernet test standards and provides comprehensive Ethernet test functions. TC701 gigabit Ethernet test module is a highly efficient test instrument for the service provider to meet SLA of the users.

## Key Features

**–RFC2544 Test includes**

- Throughput
- Back-to-Back
- Frame Latency
- Frame Loss Rate
- Support standardized and customized RFC2544 frame size

–Y.1564 Test

- Support network configuration test and performance test;
- Identify the key SLA standard such as packet jitter, QoS test result and so on;
- Improve the test speed drastically.

–EtherBERT Test

- Support Ethernet BERT test
- Support warning and error generation

**–Intelligent loopback**

- Support L1/L2/L3/L4 layer loopback test.

–BitGen

- Support up to 10 data streams, every stream configures different parameters (MAC address, VLAN label, MPLS, IPV4, IPV6, UDP/TCP source destination's port, payload and bandwidth).

**–Libpcap**

- Enrich the filter and libpcap functions

–Flow Analysis

- Support error analysis
- Multiple warning indicator (LOS,Link Error)
- Statistics functions (such as multicast, unicast, pause frame)
- Ethernet frame analysis
- Flow analysis on the basis of different filter conditions.

## Specification

| Optical Interface | | | | |
|---|---|---|---|---|
| **2 SFP interface, support 100M and GigE** | | | | |
| Available wavelength | 850nm,1310nm and 1550nm | | | |
| | 100Base-LX | 1000Base-SX | 1000Base-LX | 1000Base-ZX |
| Wavelength (nm) | 1310 | 850 | 1310 | 1550 |
| Tx Level (dBm) | -15 ~ -8 | -9 ~ -3 | -9 ~ -3 | 0 ~ +5 |
| Rx Level Sensitivity (dBm) | -28 | -20 | -22 | -22 |
| Transmission Distance | 15 Km | 550 m | 10 Km | 80 Km |
| Transmission Bit Rate (Gbit/s) | 0.125 | 1.25 | 1.25 | 1.25 |
| Receiving Bit Rate (Gbit/s) | 0.125 | 1.25 | 1.25 | 1.25 |
| Tx Working Wavelength Range (nm) | 1261 ~ 1360 | 830 ~ 860 | 1270 ~ 1360 | 1540 ~ 1570 |
| **Measurement Accuracy** | | | | |
| Frequency (ppm) | ±4.6 | ±4.6 | ±4.6 | ±4.6 |
| Optical Power (dB) | ±2 | ±2 | ±2 | ±2 |
| Jitter Compliance | IEEE802.3 | IEEE802.3 | IEEE802.3 | IEEE802.3 |
| Ethernet Category | IEEE802.3 | IEEE802.3 | IEEE802.3 | IEEE802.3 |
| Connector | LC | LC | LC | LC |
| Transceiver Category | SFP | SFP | SFP | SFP |

| Electric Interface | | | |
|---|---|---|---|
| **2 ports: 10/100/1000 Bas-T full duplexing** | | | |
| Automatic or manual detecting through/crossover cable | | | |
| | 10Base-T | 100Base-T | 1000Base-T |
| Tx Bit Rate | 10Mbit/s | 125Mbit/s | 1Gbit/s |
| Tx Accuracy (ppm) | ±4.6 | ±4.6 | ±4.6 |
| Rx Bit Rate | 10Mbit/s | 125Mbit/s | 1Gbit/s |
| Rx Measure Accuracy (ppm) | ±4.6 | ±4.6 | ±4.6 |
| Duplex Mode | Half duplex and full duplex | Half duplex and full duplex | Full duplex |
| Jitter Compliance | IEEE802.3 | IEEE802.3 | IEEE802.3 |
| Connector | RJ-45 | RJ-45 | RJ-45 |
| Max Distance (m) | 100 | 100 | 100 |

| General Specification | |
|---|---|
| Dimension (H x W x D ) | 252 x 184 x 76 (mm) |
| Weight (with battery) | 0.35kg |
| Operating Temperature | 0℃~50℃ |
| Store Temperature | -40℃~70℃ |
| Relative Humidity | 0% ~ 95% (non-condensation) |
| Working Time | Over 4 hours |
| Charging Time | 5 hours from full discharge to full charge |
| Language | Chinese, English |
| **Test Function** | |
| Y. 1564 | Network configuration and service test on the basis of ITU-T Y.156sam standard, obtain the bidirectional test result by remote loopback and double test equipment mode |
| RFC2544 | Throughput, Back-to-Back, lost rate and latency on the basis of RFC2544 Frame size: defined by RFC, 1-7 sizes configured by the user |
| Stream generation and detection | Generate bit stream and detect Ethernet and IP stream, clarify and count according to different conditions |
| Multi Stream | Generate and monitor upmost 10 data stream on Ethernet and IP network. Kinds of configured data stream analysis, set packet size, MAC source address/destination address, VLAN ID, VLAN priority, IP source address/destination address, UDP source/destination port and payload |
| Passing Mode | Section the data stream between service provider's network and user's equipment |
| BER Test | Supports the BER test of up to 4 layers |
| Pattern (BERT) | PRBS 2E7-1, PRBS 2E9-1, PRBS 2E11-1, PRBS 2E15-1, PRBS 2E20-1, PRBS 2E23-1, PRBS 2E29-1, PRBS 2E31-1, and a pattern defined by the user. Supports reversal pattern |
| Error Test (BERT) | Bit error, mismatch 0, mismatch 1 |
| Frame Statistics and Analysis | overrun/maximum, minimum, undersize, FCS, symbol, alignment, conflict |
| Warning Monitor | LOS, link disconnection |
| VLAN Support | At most two layers VLAN data stream are generated by VLAN ID or VLAN priority on any stackable VLAN layers |
| Service Discontinued Time (SDT) | Includes statistic data, such as the longest discontinued time, shortest discontinued time, last discontinued time, average discontinued time, counting, total discontinued time |
| IPV6 | Supports BERT, RFC2544, data stream generating and detecting, PING, Traceroute |
| **Others** | |
| Optical Power Measurement | Supports optical power test, result displayed by dBm |
| Remote/intelligent Loopback | Supports equipment to find and set loopback mode automatically |
| Double Test Equipment | Supports bidirectional RFC2544 and Y.1564 test |
| Save and Load Configuration | Supports USB device and flash memory to save/load test configuration |
| IP Tool | PING, TRACEROUTE, LIBPCAP |
| Event Record | Supports test result records including date, time, detailed information |
| Report Generation | Generate and output test report on the equipment |
| Remote Control | Supports browser visit/control |

# AE3000 Series
# OTDR
## -New Experience of Stability, Efficiency, Intelligence

AE3000 Series

| Model | Wavelength (nm) | Dynamic Range (dB) | Event DZ (m) | Attenuation DZ (m) |
|---|---|---|---|---|
| AE3000A | 1310/1550 | 32/30 | 2 | <14 |
| AE3000B | 1310/1550 | 34/32 | 1.5 | <10 |
| AE3000C | 1310/1550 | 37/35 | 1 | 4 |
| AE3000D | 1310/1550 | 40/48 | 0.8 | 4 |

### Key Features

**–High Accuracy**

- Minimum Event Dead Zone < 0.8m, capable of finding 2m jumper.

–Fast Operation

- Minimum measurement time can be set to 5s and it only takes 30s to measure a fiber which is 100km long

–Handy Operation

- Result analysis can be completed by one-button operation

**–Cost Effective**

- The lowest price with same dynamic range level among all competitive products

### Interface (RJ45, USB, SD Card)

–RJ45

Remote control and sharing data

–USB

Convenient for data transfer

–SD Card

Save up to 3000 results

**–Optical Adapter**

Easy to replace and clean with lower cost

## Optical Network Test Solution

AE3000 series OTDR is a high performance and multi-purposes portable OTDR. Comparing to the traditional OTDR, AE3000 is designed with new circuit design and exterior design which makes it much lighter of weight and higher performance.

## Parameter Setup

AE3000 offers user friendly interface which is similar to Windows interface style. It is very easy to pick up the way of usage without professional training. AE3000 also offers online helps which answer most of the frequently asked questions.

## Auto Diagnosis and Auto Correction

**–Optical adapter detection and protection**

AE3000 triggers the alarm when light injection has been found at the optical adapter.

**–Optical adapter connection detection**

Warning is provided if optical adapter is stained in order to avoid influencing the test result.

**–Self calibration and correction**

Auto calibration function could self calibrate the instrument after using a certain period of time.

## Specification

| **Parameters** | |
|---|---|
| Distance | 3m ~ 200km |
| Pulse Width | 5ns ~ 20μs |
| Measurement Time | User-defined |
| Distance Uncertainty | ±(0.5m +0.0001% × distance + sampling resolution) |
| Attenuation Accuracy | ±0.005dB |
| Loss Threshold | 0.001dB |
| Loss Resolution | 0.001dB |
| Distance Resolution | 0.05m |
| Linearity | 0.03dB/dB |
| Sampling Points | 128000 |
| Data Storage | >3000 |
| **Others** | |
| Display | 6.4'' TFT LCD |
| Optical Adapter | FC/PC, SC/PC |
| Interface | USB (Principle and subordinate each), SD, RJ45 |
| Battery | Rechargeable Lithium battery, charging < 4 hours, Operation time > 10 hours |
| Power Supply | AC/DC Adapter, Input AC90-240V ±10% Output 12V |
| Operating Temperature | -10℃ ~ 50℃ |
| Storage Temperature | -40℃ ~ 85℃ |
| Relative Humidity | < 80% |
| Weight | < 2kg |
| Dimension | 248 x 201 x 75 (mm) |
| **Accessory** | |
| SC/PC Adapter | 1 |
| AC Adapter | 1 |
| Quick Operating Guide | 1 |
| Package Bag | 1 |
| Disc | Toolbox Software and User Manual |

# AE2300 Series Handheld OTDR

## -High Performance to Price Ratio


### Description

AE2300 Series Handheld OTDR is a high performance, multi-purposes handheld OTDR. The visual fault location (VFL) could assist OTDR locate the fault much quicker. AE2300 is the ideal OTDR solution for both installation and maintenance services.

### Key Features

- **High Accuracy**

  Minimum Dead Zone < 0.8m

- Fast Measurement

  Minimum measurement time could be set to 5 seconds, and within 30 seconds a 100km fiber can be measured.

- Handy Operation

  One-Button operation allows test result analysis completion in one step which detect and display the fault location with corresponding marker. Traditional double markers could indicate the attenuation characteristics.

- **Exquisite Design, Ideal for Fieldwork**

  Vibration proof, dust proof, humidity proof, 4.3'' TFT Touch Screen, long operating hours and high capacity lithium battery make AE2300 ideal for fieldwork.

- **Cost Effective**

  At same dynamic range, AE2300 has the most cost-effective price among all instrument.

- Long Operating Hour

  Operating Hour > 8 hours

| Model | Wavelength (nm) | Dynamic Range (dB) | Event DZ (m) | Attenuation DZ (m) |
|---|---|---|---|---|
| AE2300L | 1310/1550 | 32/30 | 3 | <15 |
| AE2300 | 1310/1550 | 34/32 | 1.5 | <10 |
| AE2300H | 1310/1550 | 36/34 | 1 | <5 |
| AE2300P-1 | 1310/1550/1625 | 38/37/37 | 0.8 | <4 |
| AE2300P-2 | 1310/1550/1650 | 38/37/37 | 0.8 | <4 |
| AE2300P-3 | 1310/1550/1490 | 38/37/37 | 0.8 | <4 |

### Interface (RJ45, USB)

- RJ45

  Remote control and data sharing

- USB

  Data transferring

- **Optical Adapter**

  Easy to replace and clean with lower cost

## Auto Diagnosis and Auto Correction

**–Optical adapter detection and protection**

AE2300 triggers the alarm when light injection has been found at the optical adapter.

**–Optical adapter connection detection**

Warning is provided if optical adapter is stained in order to avoid influencing the test result.

**–Self calibration and correction**

Auto calibration function could self-calibrate the instrument after using a certain period of time.

## Visual Fault Locator(VFL)

High power visual fault locator could be used to locate fiber and find out the break out point within fiber.

## Specification

| **Parameters** | |
|---|---|
| Distance | 3m~200km |
| Pulse Width | 5ns~20μs |
| Measurement Time | User-defined |
| Distance Uncertainty | ±(0.5m +0.0001%×Distance + Sampling Resolution) |
| Attenuation Accuracy | ±0.005dB |
| Loss Threshold | 0.001dB |
| Loss Resolution | 0.001dB |
| Distance Resolution | 0.05m |
| Linearity | 0.03dB/dB |
| Sampling Points | 128000 |
| **General** | |
| Display | 4.3" 16:9 TFT Touch Screen |
| Data Storage | >3000 |
| Optical Adapter | FC/PC, SC/PC |
| Interface | USB, RJ45 |
| Power Supply | AC/DC Adapter, Input AC90-240V ±10%, Output 12V |
| Operating Temperature | -10 ℃ ~ 50 ℃ |
| Storage Temperature | -40 ℃ ~ 85 ℃ |
| Relative Humidity | <80% |
| Weight | <1kg |
| Battery | Lithium Battery; Charging <4 hours, Operating time >8 hours |
| **Accessory** | |
| SC/PC Adapter | 1 |
| AC Adapter | 1 |
| Quick Operating Guide | 1 |
| Package Bag | 1 |
| Disc | Toolbox Software and User Manual |

# AE500
# CWDM Channel Analyzer


## Description

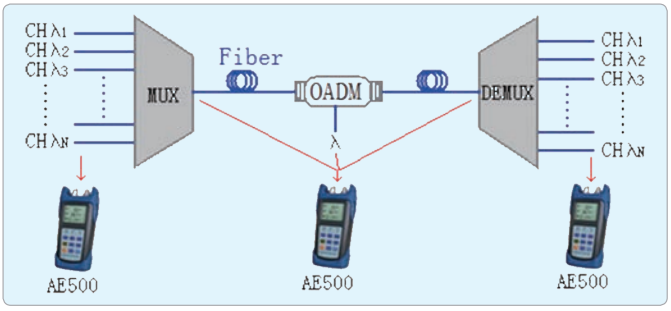
AE500 CWDM Channel Analyzer is a handheld equipment which measures transmitting optical power on CWDM system. With 8 CWDM wavelengths power measurement channels, it measures and displays the power of 8 wavelengths from1270nm to1610nm simultaneously.

AE500 is dexterous, easy to carry, handy operation, large LCD display, and LCD backlight to make the measurement much simpler and quicker.

AE500 is the ideal and cost effective solution for the installation, maintenance and service of CWDM system.

## Key Features

- Handheld CWDM Channel Analyzer with 8 wavelengths from 1270 - 1610nm.
- Dexterous, powered by AA batteries, FC/SC/ST interchangeable connector.
- With general functions such as relative power measurement.
- Store up to 500 groups of data, editable by TOOLBOX management software.
- Visible fault locator module VFL.




## Specification

| Parameter | Index |
|---|---|
| Wavelength | 1270nm-1610nm |
| Channel | 8 |
| Range(dBm) | -60 ~ +12 |
| Unit | dBm/dB |
| Uncertainty(dB) | ±0.5 |
| Measurement Time(s) | 8 |
| Data Storage(group) | 500 |
| Interface | Min-USB |
| Power Supply | 3 x AA batteries |
| Operating Temperature(℃) | -10 ~ +60 |
| Dimension | 185 × 85 × 45 (mm) |
| Weight | 320g (Without Battery) |

# AE600
# CWDM Channel Analyzer

## Description

AE600 CWDM Channel Analyzer is a handheld equipment which measures transmitting optical power on CWDM system. With 16 CWDM wavelengths power measurement channels, it measures and displays the power of 16 wavelengths from 1270nm to1610nm simultaneously.

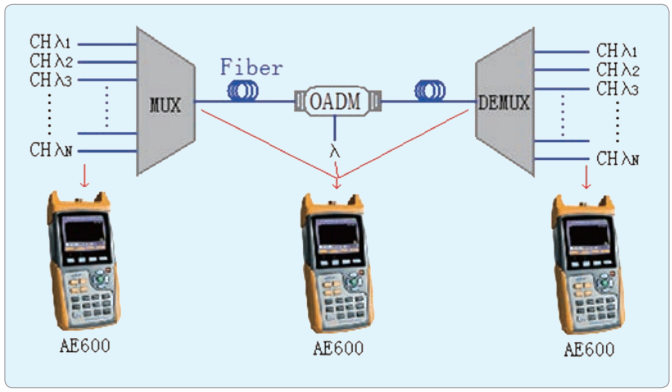
AE600 is easy to carry, handy operation and the measurement results are displayed by list and graph, make the measurement much easier and quicker. It can be widely used for the installation and maintenance of CWDM system.

## Key Features

- Handheld CWDM Channel Analyzer for 16 wavelengths from 1270 - 1610nm
- Powered by 7.4V/2.4AH Lithium battery, long working hours, FC/SC/ST interchangeable connector and the measurement results are displayed by list and graph
- Store up to 500 groups of data, editable by TOOLBOX management software

## Specification

| Parameter | Index |
|---|---|
| Wavelength | 1270nm-1610nm |
| Channel | 16 |
| Range(dBm) | -70 ~ +10 |
| Unit | dBm/dB |
| Uncertainty(dB) | ±0.5 |
| Measurement Time(s) | ≤20 |
| Data Storage(group) | 500 |
| Interface | Min-USB |
| Display | 3.5 inch color LCD |
| Power Supply | 7.4V/2.4AH lithium battery, 15V adaptor, charging time 4 hours |
| Operating Temperature(℃) | 0 ~ +50 |
| Dimension | 222× 110 × 62 (mm) |
| Weight | 320g (Without Battery) |



# AE700
# DWDM Channel Analyzer

## Description

AE700 DWDM Channel Analyzer is a handheld equipment which measures transmitting optical power on DWDM system. With 16 CWDM wavelengths power measurement channels, it measures and displays the power of 8 wavelengths simultaneously which meet the ITU-T standards.

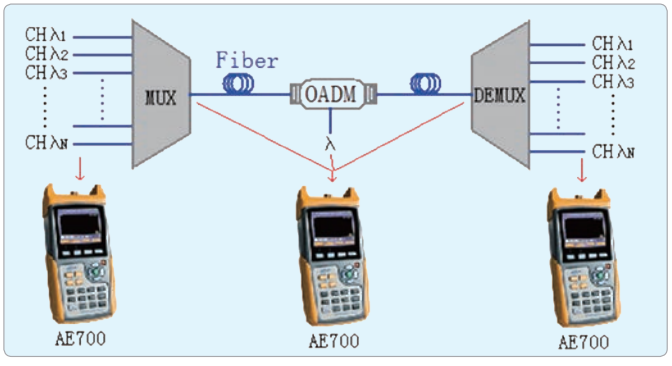
AE700 is easy to carry, handy operation and the measurement results are displayed by list and graph, make the measurement much easier and quicker. It can be widely used for the installation and maintenance of DWDM system.

## Key Features

- Handheld DWDM Channel Analyzer for 8 channels
- Powered by 7.4V/2.4AH Lithium battery, long working time, FC/SC/ST Interchangeable connector
- With general functions such as relative power measurement
- Store up to 500 groups of data, editable by TOOLBOX management software

## Specification

| Parameter | Index |
|---|---|
| Wavelength(nm) | Correspond to ITU-T standard |
| Channel | 8 |
| Range(dBm) | -70 ~ +12 |
| Unit | dBm/dB |
| Uncertainty(dB) | ±0.5 |
| Measurement Time(s) | ≤20 |
| Data Storage(group) | 500 |
| Interface | Min-USB |
| Display | 3.5 inch color LCD |
| Power Supply | 7.4V/2.4AH lithium battery, 15V adaptor, charging time 4 hours |
| Operating Temperature(℃) | 0 ~ +50 |
| Dimension | 222 mm × 110 mm × 62 (mm) |
| Weight | 320g (Without Battery) |



# TC500
# Ethernet Cabling Tester

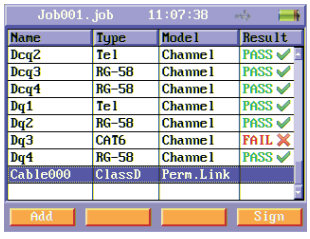
## Overview

Designed for Ethernet systems, TC500 measures the speed and performance on CAT3, CAT5e and CAT6 cables according to ANSI/TIA/EIA-568-B and ISO/IEC 11801 to ensure the cable qualification.

## Key Features

- Contains a main unit and a remote unit.
- Multi connector: one RJ45 connector for UTP/STP data cable testing, one F connector for coax testing, one RJ11 connector for telephone cable testing and two banana jacks for 2-wires testing
- Support International standard ISO/IEC 11801 and American standard TIA/EIA-568-B
- Tone generator.
- Two additional functions: Ping and BER Test
- Store at least 100 results
- Toolbox software to analyze the results on PC

## Applications







## Auto Test Items

- Wire map
- Length
- Propagation delay
- Delay skew
- D. C. loop resistance
- Insertion loss (attenuation)
- NEXT (near-end crosstalk)
- PS NEXT (power-sum NEXT)
- Return loss
- ACR (attenuation to crosstalk ratio at the near end)
- PS ACR (power-sum ACR-N)
- ELFEXT (equal level far-end crosstalk)
- PS ELFEXT (power-sum ELFEXT)

## Manual Test Items

- Single Auto test item
- BER Test, up to 1000BASE-T
- TONE

## Network Test

- Ping

## Specifications

| Items | Range | Resolution | Accuracy |
|---|---|---|---|
| Length | 0 m ~ 176 m (UTP)<br>0 m ~ 200 m (Coax) | 0.1 m | ±1.5 m |
| Propagation Delay | 0 ns ~ 850 ns | 1 ns | ±7 ns |
| Delay Skew | 0 ns ~ 100 ns | 1 ns | ±15 ns |
| DC Resistance | 0 Ω ~ 100 Ω | 1 Ω | ±2 Ω |
| RF Frequency | 1 MHz ~ 250 MHz | NEXT, Return Loss, ELFEXT:<br>1 to 31.25 MHz: 150 kHz<br>31.25 MHz ~ 100 MHz: 250 kHz<br>100 MHz ~ 250 MHz: 500 kHz<br>Insertion Loss: 1 to 250 MHz: 1 MHz | |
| RF Items | NEXT: 0 ~ 70 dB<br>Insertion Loss: 0 ~ 40 dB | 0.1 dB | ±2 dB (Insertion Loss) |

| Other | |
|---|---|
| Testing interface | RJ45; RJ11; F; Banana Jacks |
| Other interface | USB |
| Power Supply | Main unit: 7.4 V / 2.4 AH Lithium battery Remote unit: 7.4 V / 1.1 AH Lithium battery |
| Working Time | 3.5 hours |
| Charging Time | 5 hours |
| Dimension | Main unit: 222 mm x 108 mm x 57 mm;<br>Remote unit: 184 mm x 83 mm x 44 mm |
| Weight | Main unit: 0.8 kg; Remote unit: 0.4 kg |

# EP300
# PON Power Meter


## Overview

The EP300 enables quick testing of all PON signals on the network. It features pass/warning/LED indicators with user-defined thresholds. The test result can be store and analysis by PC software. EP300 is the best choice for your business and maintenance of FTTX.

## Key Features

- Simultaneous measurement of all EPON signal(1310 nm, 1490 nm and 1550 nm) on the fiber.
- Store up to 1800 test results,which are downloadable via USB interface.
- Pass/Warning/Fail LED indicators (12 threshold values).
- Compact, Waterproof & shockproof.

## Specifications

| **Optical Index** | | | | | | |
|---|---|---|---|---|---|---|
| | 1310 | | 1490 | | 1550 | |
| Measurement Range(dBm) | CW | 10 ~ -40 | 10 ~ -40 | | 25 ~ -40 | |
| | BW | 8 ~ -30 | | | | |
| Pass-Through Insert Loss | < 0.4 | | | | | |
| Spectral Passband(nm) | 1260-1360 | | 1480-1500 | | 1540-1560 | |
| Wave Isolation (dB) | 1490 | >50 | 1310 | > 40 | 1310 | > 40 |
| | 1550 | >50 | 1550 | > 40 | 1490 | > 40 |
| ORL (dB) | -55 | | | | | |
| Fiber Type | Single-mode fiber | | | | | |
| Connector Type | FC/PC SC/PC | | | | | |
| **Common Index** | | | | | | |
| Precision | ±0.21 dB @ (22±2.5) ˚C<br>@1300 nm / 1490 nm / 1550 nm | | | | | |
| Power Uncertainty | 0.5 dB | | | | | |
| Unit | dBm; dB; W | | | | | |
| Resolution | 0.1 dB | | | | | |
| Power | 3.6 V battery / 5 V adapter | | | | | |
| Display | LED | | | | | |
| Threshold Sets | 12 configurable threshold sets with toolbox software | | | | | |
| Data Storage | Store up to 1800 test results and built-in USB interface for file transfer and download | | | | | |

# AE100/AE120/AE160
# Mini Optical Power Meter


## Overview

AE Series OPM is an ideal testing instrument for fiber network installation, debugging and maintenance in optical network, CATV and FTTX field. It is a handset with high accuracy, low power consumption and easy to carry. Further more, the large characters displayed on the LCD makes your measurement experience much easier and simpler.

## Key Features

- Pocket size, easy to carry
- Power Efficient: up to 50 hours battery life
- Cost-effective
- Auto shut down and auto calibration
- LCD Backlight

## Specifications

| | AE100 | AE100A | AE100B | AE120 | AE160 |
|---|---|---|---|---|---|
| Accuracy | ±0.23dB(±5%) | | ±0.17dB(±3%) | | |
| Optical Adapter | InGaAsΦ300μm | InGaAs | | InGaAsΦ2000μm | InGaAs |
| Dynamic Range | -70dBm~+6dBm / -43dBm~+25dBm | -43dBm~+25dBm | | | -70dBm~+6dBm |
| Linearity | | | | | |
| Resolution | | | | | |
| Wavelength | | | | | |
| Connector | FC\SC\ST (General) | FC\SC\ST (Adjustable) | | | |
| Battery | Regular AAA Battery | Rechargeable AAA Battery with Charger | | | |
| Operating Temperature | -10℃ ~ +60℃ | | | | |
| Battery Life | >50 Hours (Backlight Off) | | | | |
| Dimension | 119mm × 70mm × 29mm | | | | |
| Weight | 200g | | | | |

# AE200/AE220/AE260
# Optical Power Meter


## Overview

AE Series OPM is an ideal testing instrument for fiber network installation, debugging and maintenance in optical network, CATV and FTTX field. It is a handset with high accuracy, low power consumption and easy to carry. It also supports vision optical source and automatic wavelength and frequency identification.

## Key Features

- Up to 50 hours working time with 3 5AA rechargeable batteries
- VFL
- Auto shutdown and self-calibration function
- USB Interface and toolbox software

## Specifications

| | AE200A | AE200B | AE220 | AE260 |
|---|---|---|---|---|
| Accuracy | ±0.23 dB (±5%) | ±0.17 dB(±3%) | | |
| Optical Detector | InGaAs | | InGaAs Φ2000 μm | InGaAs |
| Dynamic Range | -43 dBm ~ +25 dBm | | | -70 dBm ~ +6 dBm |
| Linearity | 0.07 dB / 10 dB | | | |
| Resolution | 0.01 dBm, mW, μW, nW | | | |
| Wavelength | 850nm, 980nm, 1300nm, 1310nm, 1490nm, 1550nm, 1610nm, | | | |
| 650nm VFL | Power 1 mW(3, 5, 10 mW optional) | | | |
| Connector | FC\SC\ST adjustable | | | |
| Operating Temperature | -10 ℃ ~ +60 ℃ | | | |
| Work Time | >70 Hours (backlight off) | | | |
| Dimension | 185 mm × 85 mm × 45 mm | | | |
| Weight | 320 g (excluding battery) | | | |

# LS200/LS300/LS500 Light Source


## Overview

LS series light source is qualified in optical network, CATV and FTTX maintenance. Together with our optical power meter, it is a perfect solution for fiber optic network applications.

## Key Features

- Multi wavelength output,
- CW mode or modulated mode, 270HZ,330HZ,1KHZ,2KHZ
- Adjustable output power
- 30 hours working time

## Specifications

| Model | |
|---|---|
| LS200A Light source(single wavelength) | 1310, 1490, 1550 nm |
| LS200B Light source(double wavelength) | 1310 / 1550 nm,850 / 1300 nm |
| LS300A Light source(double wavelength) | 1310 / 1550 nm,850 / 1300 nm / visible light source |
| LS300B Light source(triple wavelength) | 1310 / 1550 nm / 1490 nm / visible light source |
| LS500 Light source(Multi wavelength) | 1310 nm / 1550 nm / 1490 nm / 850 nm / 1300 nm / visiable; SM and MM |

## Specifications

| Model | LS200A-A | LS200A-B | LS200B | LS300A | LS300B | LS500 |
|---|---|---|---|---|---|---|
| | Singel Wavelength Light Source | Double Wavelength Light Source | Double Wavelength Light Source | Double Wavelength Light Source | Triple Wavelength Light Source | Multi-Wavelength Light Source |
| Central wavelength | 1310±20nm | 1550±20 nm | 1310&1550±20 nm | 1310 ± 20 / 1550 ± 20 | 1310 ± 20 / 1550 ± 20/10 / 1490 ± 10 | 1310 ± 20 / 1550 ± 20 / 1490 ± 10 / 850 ± 26 / 1300 +50 |
| Laser transmitter | FP-LD | | | FP-LD(Default), DFB | | |
| Output power | +3 ~ -5 dBm Stepping 1dB | | -3 dBm | +3 ~ -5 dBm Stepping 1dB | SM: 1310, 1490, 1550, 1,0 ,-1 | |
| | | | | | MM: 850, 1300, -5,-6,-7 | |
| Fiber | SM | | | SM, MM:62.5/125μm(Default) 50/125μm | | |
| Power stability | ±0.05 dB@20℃ 1h<br>±0.1 dB@20℃ 8h<br>After a 15-minute warm-up | | | ±0.05 dB@20℃ 0.5h<br>±0.08 dB@20℃ 8h<br>After a 15-minute warm-up | | |
| Optical adapter | FC\PC | | | FC\PC( Default ), FC\APC, SC\PC, SC\APC | | |
| Tone generation | 270 Hz, 1 kHz, 2 kHz | | | 270 Hz, 1 kHz, 2 kHz | | |
| Power | 2×1.5V AA batteries or rechargeable Ni-MH batteries | | | 3×1.5V AA batteries or rechargeable Ni-MH batteries | | |
| Battery life | >30 h (Light on，backlight off) | | | >30 h (Light on，backlight off) | | |
| Operating Temperature | -10℃ ~ +60 ℃ | | | -10℃ ~ +60 ℃ | | |
| Dimensions | 119mm×70mm×29mm | | | 185mm×85mm×45mm | | |
| Weight | 200g ( Battery is exclusive ) | | | 320g ( Battery is exclusive ) | | |

# EP700 Series Multi Meter

## Overview

EP700 series integrates the functions of intelligent optical power meter module (AE200 series) and highly stable light source module(LS300) in one unit.

## Key Features

- Integration of optical power meter, light source and visible faulty locator
- FTTX application and PON wavelength
- 30 hours working time

## Specifications

| Model | EP700A | EP700B |
|---|---|---|
| **Power Meter Module** | | |
| Accuracy | ±0.17dB (±3%) | |
| Detector | InGaAs Φ300um(Default), Φ2000um | |
| Input Range | -43 ~ +26 dBm | -70 ~ +6 dBm |
| Resolution | 0.01 dBm, mW, uW, nW | |
| Calibrated Wavelength | 850, 980, 1300, 1310, 1490, 1550, 1610 nm | |
| Connectors | FC\SC\ST | |
| **Light Source Module** | | |
| Central Wavelength | 1310 ± 20 nm<br>1550 ± 20 (Default) /10 nm | 1310 ± 20 nm<br>1550 ± 20 (Default) /10 nm<br>1490 (DFB) ± 10 nm |
| Output Power | -3 dBm | +1 dBm |
| Power Stability | ±0.04dB@20℃ 0.5 h<br>±0.08dB@20℃ 8 h<br>(After a 15-minute warm-up) | |
| Tone generation | 270Hz, 1KHz, 2KHz | |
| Optical Adapter | FC\PC(Default), FC\APC, SC\PC, SC\APC | |
| **General Specifications** | | |
| VFL | 1mW, 5mW, 10mW(Default) | |
| Power Supply | 3×1.5V AA batteries or rechargeable batteries | |
| Working Time | >30 h (Light on, backlight off) | |
| Operating Temperature | -10℃ ~ +60℃ | |
| Storage Temperature | −20˚C ～ +70˚C | |
| Dimensions | 185 × 85 × 45 (mm) | |
| Weight | 320g ( excluding battery ) | |

# E8000A
# Handheld Spectrum Analyzer

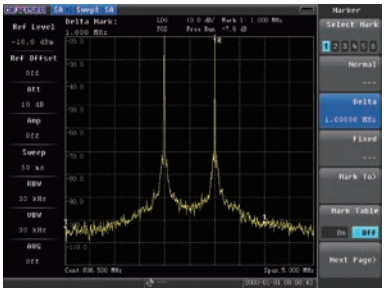
## Overview

E8000A handheld spectrum analyzer is an ideal testing instrument for engineer working at the wireless base station for 2G/3G/4G, WiFi and broadcast installation and maintenance.

E8000A covers frequency range: 9 kHz ~ 3000 MHz and has tracking generator option.

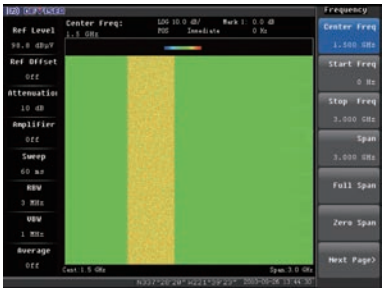
## Large Dynamic Range Spectrum Analysis

E8000A series covers wide frequency range: 9 kHz ~3000 MHz and provide +15 dBm IP3 and lower noise.

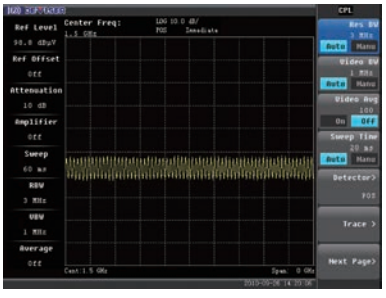


## Interference Signals Analysis

E8000A provides features such as signal strength indication, spectrogram and fluorogram to find out interference signals.

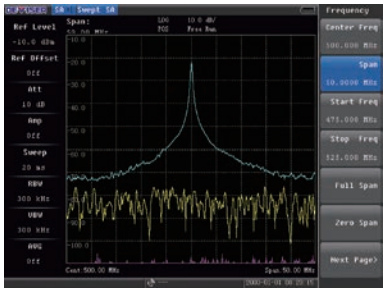


E8000A supports FM/AM demodulation and then distinguishes noise.



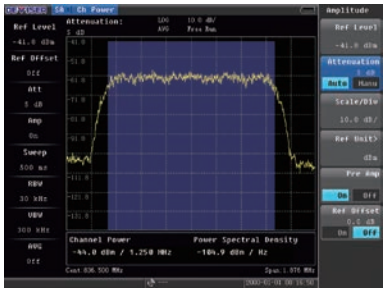
## Fast Sweep Speed

E8000A provides 1 ms minimum sweep time to detect any complex interference signals.



## RF Signals Analysis Function

E8000A provides one-button measurement for channel power, OBW and adjacent channel power.



## GPS Receiver Option

GPS receiver option provides location (longitude, latitude, altitude) and Universal Time (UT) information. For the E8000A series, all measurement results can be saved with location and time information.

## Specifications

| | |
|---|---|
| **Frequency** | |
| Frequency Range | 9 kHz ~ 3000 MHz |
| **Frequency Reference** | |
| Aging | ± 1 ppm per year |
| Stability | ± 1 ppm |
| Temperature Stability | ± 2 ppm (0 to +50ºC) |
| Frequency Resolution | 10 Hz |
| **Marker Count Accuracy (S/N 25 dB, RBW/span 0.01)** | |
| Accuracy | ±2 ppm, ±1 count |
| Counter Resolution | 1 Hz |
| **Frequency Span** | |
| Range | 0 Hz (Zero Span), 1 kHz to 3000 MHz |
| **Sweep and Trigger** | |
| Range | 1 mSec to 250 sec (Span > 1 kHz)<br>20 µSec to 500 sec (Span = 0 Hz) |
| Accuracy | < ± 0.2% |
| Trigger Type | Free run, Single, Video, TV |
| **Resolution Bandwidth** | |
| Range | 1 Hz to 3 MHz in 1-3-10 sequence |
| Bandwidth Accuracy | < ± 10% |
| Selectivity (60 dB/3 dB Bandwidth Ratio) | < 5:1 |
| **Video Bandwidth** | |
| Range | 10 Hz to 1 MHz in 1-3-10 sequence |
| **Stability** | |
| Phase Noise | < -105 dBc/Hz @ 100 kHz offset from CW signal<br>< -95 dBc/Hz @ 10 kHz offset from CW signal<br>< -85 dBc/Hz @ 1 kHz offset from CW signal |
| Amplitude | |
| Measurement Range | Displayed average noise level to furthest safe input level |
| **Input Attenuator** | |
| Range | 0 dB ~ 55 dB |
| Step | 5 dB |
| **Internal Preamplifier** | |
| Frequency Range | 1 MHz to 3000 MHz |
| Gain | 15 dB |
| Max. Safe Input | +30 dBm (peak power/input attenuation >15 dB), 100 VDC |
| **Displayed Average Noise Level (Input Terminated, 0 dB Attenuator, RBW=100 Hz, VBW=3 Hz, Sample Detector)** | |
| Pre-amplifier OFF (Typical) | < -130 dBm 1 MHz ~ 1 GHz<br>< -126 dBm 1 GHz ~ 3 GHz |
| Pre-amplifier ON (Typical) | < -145 dBm 1 MHz ~ 1 GHz<br>< -141 dBm 1 GHz ~ 3 GHz |
| **Spurious Responses** | |
| Second Harmonic | < -70 dBc for -20 dBm signal at input mixer |
| TOI | >+15 dBm (two -20 dBm signals at input mixer with ⩾1 MHz separation and att=0) |
| Residual Responses (Input Terminated and 0 dB Attenuator) | < -85 dBm 1 MHz to 3000 MHz |
| **Display Range** | |
| Log Scale | 0.1 to 1 dB/div in 0.1 dB step 1 to 40 dB/div in 1 dB step |
| Linear Scale | 10 divisions |
| Scale Units | dBm, dBmV, dBµV, mV |
| Marker Readout Resolution | 0.03 dB for log scale<br>0.03% of ref level for linear scale |
| Traces | 6 traces |
| Trace Detector | Sample, Posi-peak, Neg-peak, Normal, Average, R.M.S, Quasi-peak |
| Marker Functions | Peak, Next peak, Marker to center, Marker to ref, etc. |
| Marker Display | Normal, Delta, Fix marker & Frequency counter |
| Reference Level | -130 dBm to +30 dBm |
| Level Accuracy | < ± 1 dB @ +25ºC (Typical) |
| Input/Output | |
| **RF Input** | |
| Input | N connector |
| Input Impedance | 50 Ω |
| USB Port | USB 2.0 port and USB 1.1 port |
| LAN Port | 10 M / 100 M RJ45 |
| **TG Out** | |
| Output | N connector |
| Frequency Range | 10 MHz to 3000 MHz |
| Phase Noise | < -70 dBc/Hz @ 10 kHz |
| Level Range | -30 dBm to 0 dBm |
| Level Resolution | 1 dB |
| Level Accuracy | ± 2 dB |
| Harmonic Distortion | < -20 dBc |
| Non-Harmonic Distortion | < -30 dBc |
| Output Impedance | 50 Ω |
| **Power Specifications** | |
| Battery Type | 11.1V @ 5.2Ah Lithium-Ion |
| Charge Time | < 5 Hours |
| Operating Time | > 3.5 Hours |
| AC Adapter | 19 V DC @ 3.42 A |
| **Other Specifications** | |
| Operating Temperature | -10 ºC to +55 ºC |
| Storage Temperature | -30 ºC to +80 ºC |
| Dimension (W x H x D) | 258 mm x 173 mm x 74 mm |
| Weight (With Battery) | <2.2 kg |
| Display Type | 6.5 inch TFT color LCD |
| Display Resolution | 640 x 480 pixels |
| Language | Chinese, English |

# E7000A/E7100A
# Cable & Antenna Analyzer

- **Cable and Antenna Analyzer**
  E7000A 25 MHz to 4400 MHz
  E7100A 25 MHz to 6000 MHz
- **Spectrum Analyzer Option**
  E7000-SA 100 kHz to 3000 MHz

- High Performance
- Fast Measurement Speed
- Easy to Use
- Cost Effective
- Long Life Lithium Ion Battery inside

## Overview

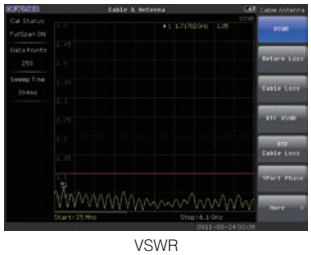
E7000A series cable and antenna analyzer is a perfect instrument for wireless and broadcasting base station. It covers 25 MHz to 6000 MHz frequency span and fits for the wireless communication and broadcasting market.

E7000A series provides 3 GHz spectrum analyzer option. The spectrum analyzer option can be configured as spectrum analyzer, interference analysis, power meter, and field strength meter. With the multi-functional capabilities, it eliminates the need to carry and learn multiple instruments.

### • Return Loss/VSWR

With >42 dB return loss dynamic range, E7000A series verifies the cable and antenna system which conform to performance specifications.

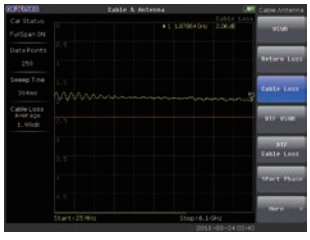
Return loss



VSWR

### • Cable Loss

Cable loss function measures insertion loss within the cable feedline system. The E7000A series automatically calculates the average cable loss.



Cable loss

### • Distance–To–Fault

DTF (distance-to-fault )function troubleshoots systems and locate the problem.

E7000A series displays cable characteristic(VSWR and RETURN LOSS) versus distance. Using the tools, users can monitor small relative changes over time.

DTF – Return Loss

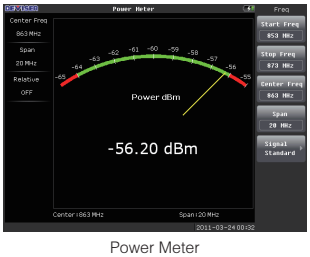
DTF – VSWR

### • 2–ports Transmission Measurements(With E7000–SA Option)

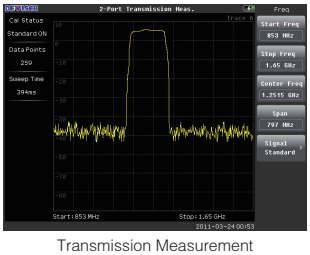
2-ports transmission measurement enables you to measure gain, isolation and insertion loss as well as sector-to-sector isolation verification.

### • USB Power Meter Sensor Option

The power meter sensor option provides RMS measurement for both CW and digital modulated signal. It supports 50M~6GHz frequency range.




Power Meter



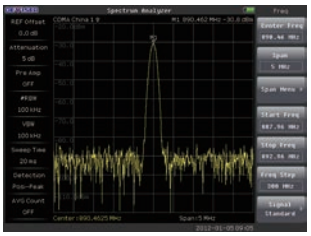
Transmission Measurement

- Spectrum Analyzer Option (E7000–SA)

E7000-SA covers 100k Hz to 3 GHz frequency range.

With this option, E7000A series can provide spectrum analysis, power meter, ACPR, OBW and interference signal analysis functions.

For detail, please refer to the specifications of E8000A spectrum analyzer.



Spectrum analyzer

- GPS Receiver Option

GPS receiver option provides location (longitude, latitude, altitude) and Universal Time (UT) information. For the E7000A series, all measurement results can be saved with location and time information.

## Key Features

- All in one tool

E7000A series is integrated with cable&antenna analyzer and spectrum analyzer. Users can perform measurement for wireless and broadcasting base station installation, maintenance with only one instrument – E7000 series.

- Friendly GUI

Better user interface and easy to use.

- Fast measurement speed

With 1.5ms/point sweep time, it is better for field measurement.

- Large internal memory

With more than 1GB internal memory space, E7000A series can save more 2000 trace files.

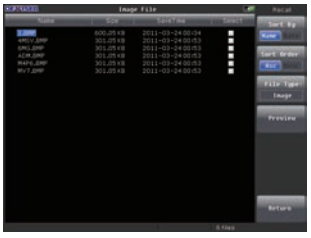
- Flexible calibration mode

E7000A series has 2 calibration modes. Standard OSL(OPEN-SHORT-LOAD) calibration is more accurate. Full span calibration is based on the stand OSL mode. With this mode, users don't need to re-calibrate the E7000 series when change the frequency range.

- Easy data link

E7000A series has one 10M/100M LAN port. It supports standard SCPI program interface which is open to user for developing user defined program.

E7000A series has 2 USB ports. It is easy to import and export files between the instrument and USB disk.



Files

Calibration

## Specifications

| | E7000A | E7100A |
|---|---|---|
| Measurement | VSWR<br>Return Loss<br>Cable Loss<br>Distance-to-Fault (DTF) Return Loss<br>Distance-to-Fault (DTF) VSWR<br>1-Port Phase<br>Smith Chart | |
| Frequency Range | 25 MHz ~ 4400 MHz | 25 MHz ~ 6000 MHz |
| Frequency Resolution | 1 kHz | |
| Frequency Accuracy | ±5 ppm | |
| Output Power Level | 0 dBm typical | |
| Sweep Time | 1.5 ms/point | |
| Data Points | 130,259,517,1033 | |
| **RF Immunity** | | |
| | 0 dBm within ±10 kHz of the carrier frequency<br>+17 dBm @ >1.0 MHz from carrier frequency | |
| Corrected Directivity | >42 dB after OSL calibration<br>>38 dB after full span calibration | |
| **Return Loss** | | |
| Range | 0.00-60.00 dB | |
| Resolution | 0.01 dB | |
| **VSWR** | | |
| Range | 1-65 | |
| Resolution | 0.01 | |
| **Cable Loss** | | |
| Range | 0.00-30.00 dB | |
| Resolution | 0.01 dB | |

| | E7000A | E7100A |
|---|---|---|
| **DTF** | | |
| Return Loss Range | 0.00-60 dB | |
| VSWR Range | 1-65 | |
| Length | 0 to (Data points-1)/(Span×2) × Vp × C<br>Span=frequency range | |
| Resolution (m) | =Vp × C /(Span×2) | |
| RF Output Port | NF Type | |
| Impedance | 50 Ω | |
| Display | 6.5" TFT LCD, 640*480 | |
| Speaker | Internal | |
| Interface | 1 USB2.0, 1 mini USB<br>1 10 M / 100 M LAN port | |
| Storage Space | 1GB memory, >2000 trace files | |
| Operating Temperature | -10 ~ +55℃ | |
| Storage Temperature | -20 ~ +80℃ | |
| Weight | < 2.2 kg | |
| Dimension(L×W×H)( mm) | 258 × 173 ×74 | |
| **Power Supply** | | |
| Battery | 11.1 V, 5.2AH | |
| Continuous Work Time | >4.5 Hours | |
| AC Adapter Output | 15 ~ 19 V DC | |
| AC Adapter Input | 100-240 V AC, 50-60 Hz | |
| Language | English, Chinese | |

# NA7100/NA7300 Vector Network Analyzer

## Overview

NA7300/7100 is mainly applied for Communication, Satellite, Wireless TV & Broadcast and CATV industries.

**1. Application**

- Communication: Antenna, Amplifying Module, Coaxial Cable, Connector and so on
- Satellite TV: Amplifiers, Spliters and so on
- Wireless Broadcasting & TV: Antenna, Transmitter
- CATV: Amplifiers, Spliters and so on
- Other industries: researching and manufacture of crystal, surface acoustic and cable.

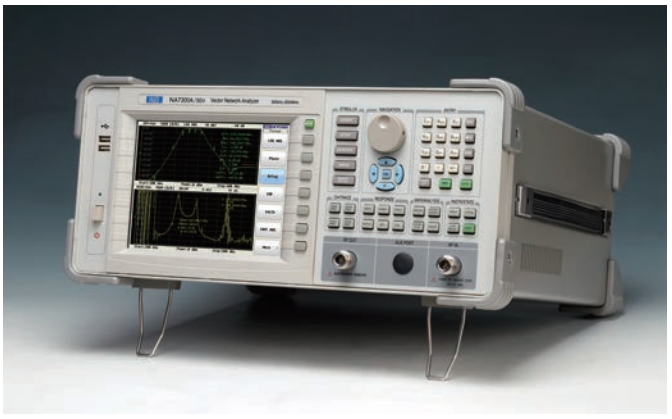
**2. Main Testing Functions**

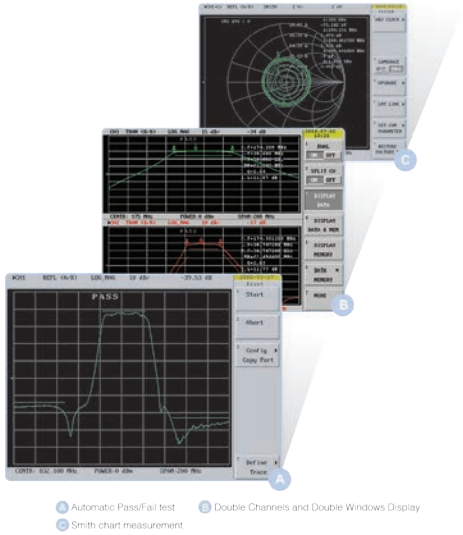
Transmission, Insertion Loss, Gain, Insertion Phase, Isolation, Group Delay, Return Loss, VSWR, Impedance, Center Frequency of Crystal, surface acoustic, 3dB Bandwidth, In-band flatness, Out-band Restrain, Rectangle Coefficient, Q-Value and so on

**3. Model**

NA7300A/NA7100A 50 Ω

NA7300B/NA7100B 75 Ω






## Key Features

- Two channels, Four traces display
- Fast sweep time
- Save/ print/ recall function
- USB, parallel, RS-232 and VGA,LAN interface
- Automatic PASS/FAIL judgement

## Specifications

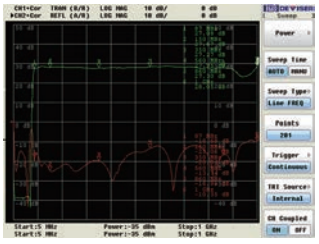
| | NA7300 | NA7100 |
|---|---|---|
| **Source** | | |
| Frequency Range | 300 kHz ~ 3 GHz | 300 kHz ~ 1.3 GHz |
| Frequency stability | ≤±5 ppm | ≤±5 ppm |
| Frequency Resolution | 1 Hz | 1 Hz |
| Phase Noise | ≤ -65 dBc/Hz @10 kHz | ≤-67 dBc/Hz (10 kHz Offset) |
| Output Level Range | -48 dBm ~ +10 dBm | -50 dBm ~ +10 dBm |
| Level Accuracy | ≤±1.5 dB (-45 dBm ~ +5 dBm) | ≤±1.5 dB (25 ℃+5 ℃) |
| Harmonic Rejection | ≥-30 dBc (>1 MHz)<br>≤-25 dBc (≤1 MHz) | ≥-30 dBc(>1 MHz)<br>≤-25 dBc(≤1 MHz) |
| Directivity | ≥50 dB (After Vector calibration) | ≥50 dB (After Vector calibration) |
| VSWR | ≤1.3 | ≤1.3 |
| **Receiver** | | |
| Resolution Bandwidth | 100 Hz ~ 15 kHz | 100 Hz ~ 15 kHz |
| Dynamic Range | ≥100 dB (RBW=1 kHz) | ≥100 dB (RBW=1 kHz) |
| Level Accuracy | ≤±1.5 dB | ≤±1.5 dB |
| Measurement Resolution | 0.01 dB | 0.01 dB |
| Maximum Input Level | + 10 dBm | + 10 dBm |
| VSWR | ≤1.2 | ≤1.2 |
| **Phase** | | |
| Phase Resolution | 0.01 ° | 0.01 ° |
| Phase Stability | 0.5 ° (RBW=1 kHz)<br>1 ° (RBW=3 kHz) | 0.5 ° (RBW=1 kHz)<br>1 ° (RBW=3 kHz) |
| **Display** | | |
| Sweep Time | 150 ms/field ~ 20 s/field (201points) | 150 ms/field ~ 5 s/field (201points) |
| Display | 7.5" Color TFT LCD | 7.5" Color TFT LCD |
| **Measurement** | | |
| Measurement Channels | 2 channels,4 tracks | |
| Measurement Format | A,B,R,A/R,B/R,A/B | |
| Measurement Parameters | Logarithm amplitude, Linearity amplitude, Phase, Group delay, Real part, Imaginary part. VSWR, Smith chart, Pole chart | |
| **Interface** | | |
| Front Panel | Type-N Input and Output port,USB1.1 port | |
| Rear Panel | RS-232, Parallel interface, Standard VGA output and Standard keyboard interface | |
| **Others** | | |
| Power Supply | AC 90 V ~ 250 V / 50 Hz, P≤113 W | |
| Weight | 15 kg | |
| Working Environment: | Temperature: -10 ℃ ~ 40 ℃,Humidity: ≤75% | |
| Store Environment: | -10 ℃ ~ 50 ℃ | |
| Inside Storage | 1 G Byte | |
| Dimension | 400 mm × 220 mm × 470 mm | |

## Application

NA7300/NA7100 is the best combination of high speed, accuracy, productive and low cost. It helps reduce the testing time, increase output, and lower the overall cost of components. The analyzer is qualified in testing typical RF components such as: Filter, Amplifier, Antennas, Cables, Taps, and Splitters.

**Amplifier Measurement**

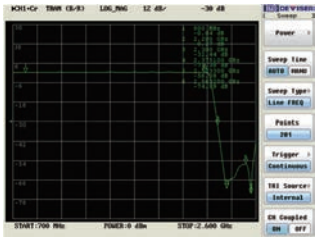
With high precision receiver and accurate signal level from signal source, NA7300/NA7100 can perform qualitative measurement: working frequency range, gain, flatness, AGC feature, return loss and isolation, and gain compression of amplifier. Also, power sweep function can catch 1dB compression point of amplifier. NA7300/NA7100 provides various tests and display modes to support high accuracy testing, especially for reflection strictly requested in bidirectional digital HFC network.



Gain and Reflection loss

**Splitter Measurement**

NA7300/NA7100 can measure transmission and reflection parameter of splitter including insertion loss, flatness, isolation, return loss and so on.

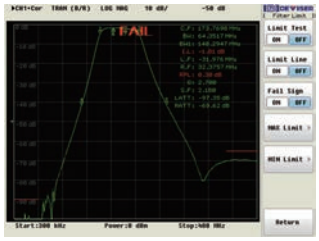


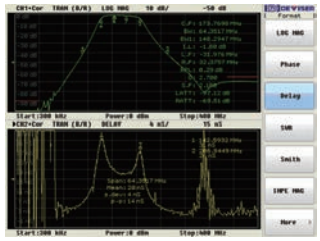
800~2400MHz

Filter Measurement

NA7300/NA7100 can not only test various types of filter transmission and reflection, but also with intelligent analysis module accurately display center frequency, NdB bandwidth, insert loss, Q value and group delay. Also its automatic Pass/Fail function can significantly speed up the test.

The special two windows mode helps users to test filter both in narrowband and wideband and all filter parameters list can be displayed.

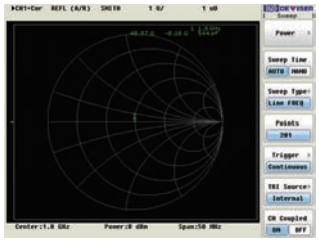




Auto Diagnose Dual Windows

**Antenna Measurement**

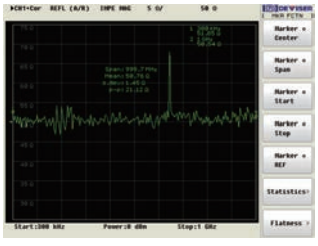
The main function parameters of antenna are gain, input impedance, standing wave ratio, polarization method, and return loss. With NA7300/NA7100 you can easily test medium wave antennas, short wave antennas and the antennas with the frequency under 3000MHz.



Antenna Impedance

**Cable Measurement**

NA7300/NA7100 can get the cable loss and transmission constant through measure the cable's parameters: insertion loss, impedance, return loss, standing wave ratio and so on. And every point measurement speed can be set between 0.3ms~20ms.



Impedance Mis–matching

DEVISER

*your dedicated adviser*

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