



WWW.GRANDWAY.COM.CN

# FIBER OPTIC TESTING INSTRUMENT CATALOG

2018~2019



## Company Profile

### About Grandway

**Shanghai Grandway Telecom Tech. Co., Ltd.**, registered in 1994, is a shareholding company, who is professionally engaged in the integration and service of deployment and detection of optical communication network. Grandway owns two factories, who manufacture Fiber Optic Testing Instruments and FTTH ODN/Cabling Management. And Grandway is the exclusive distributor of Fujikura Ltd. in China. Its address is: 6F, Xin'an Building, No.99, Tianzhou Road, Caohejing Hi-Tech Park, Shanghai, 200233, China.



Reception



Technical Service Center



Office

**Shanghai Guangjia Instruments Co., Ltd.**, registered in 2007, a subsidiary of Shanghai Grandway Telecom Tech. Co., Ltd., is a factory, engaging in R&D and manufacturing fiber optic testing instruments, including OTDR, Optical Power Meter, Optical Laser Source, Optical Multimeter, PON Power Meter, MPO Power Meter & Laser Source, Visual Fault Locator, Optical Fiber Identifier, Optical Talk Set, Insertion/Return Loss Tester, Optical Variable Attenuator, Fiber Ranger, etc. Its address is: No. 78, North Huting Road, Songjiang District, Shanghai City, China.



Reception



R&D



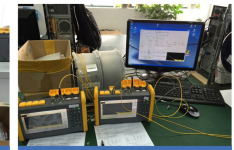
Power Meter Production



Power Meter Production



OTDR Production



OTDR Production

**Shanghai Fujikura Grandway Co., Ltd.**, registered in 2008, a joint venture of Fujikura Ltd. and Shanghai Grandway Telecom Tech. Co., Ltd., is a factory, engaging in designing and manufacturing ODF, Optical Cross-connect Cabinet, Optical Distribution Box, Optical Splitter Box, PLC Splitter, Fiber Optic Patchcord and Pigtail, MPO/MTP Patchcord, etc. Its address is: No. 13, Lane 80, Beiyang Road, Songjiang District, Shanghai City, China.



Reception



Cabinet and ODF Production



PLC Splitter Production



PLC Splitter Production

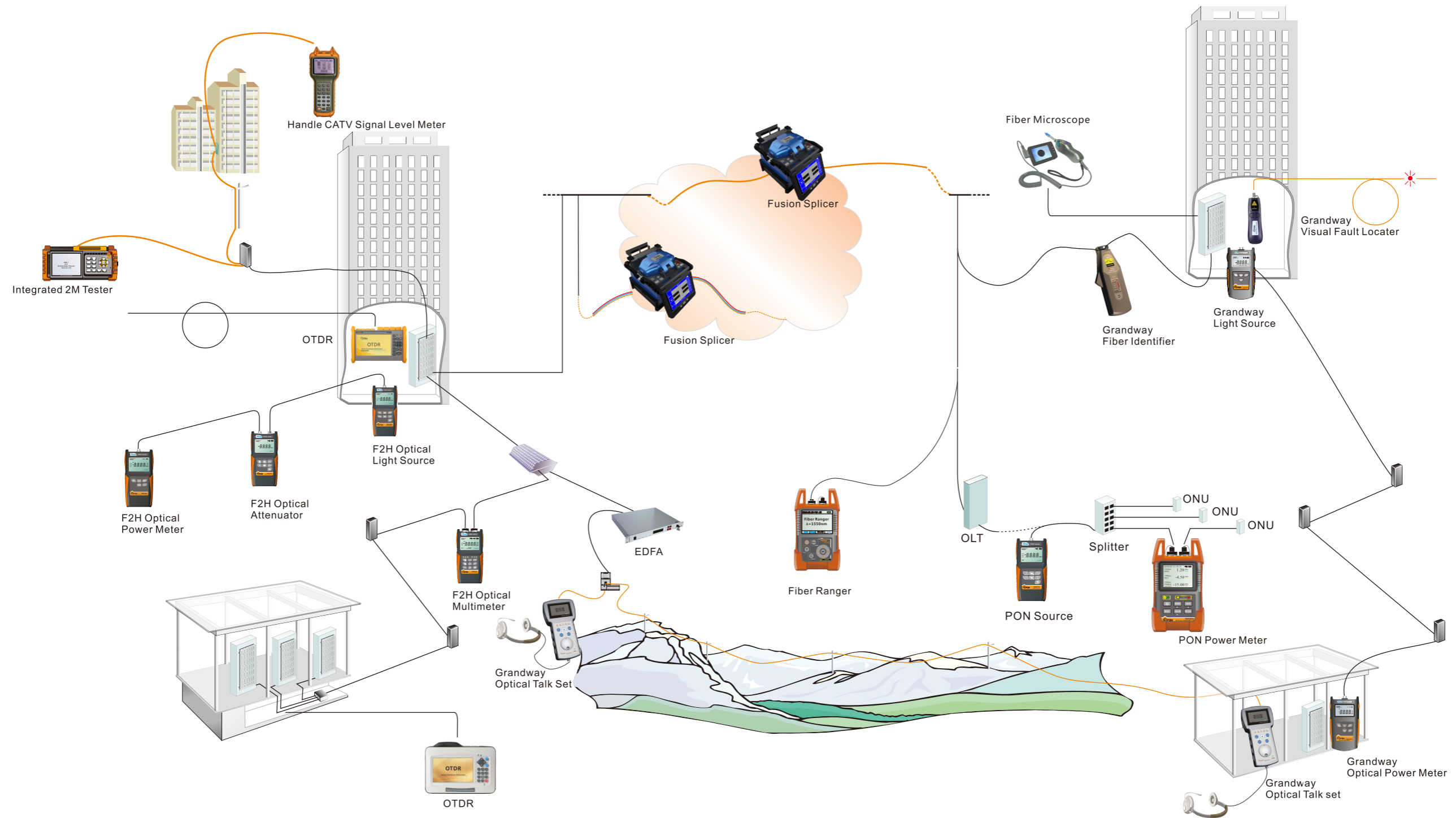
### Grandway's Partners



# Content

|  |    |
|--|----|
| GS-40 Optical Fiber Fusion Splicer.....                    | 1  |
| GS-60 Optical Fiber Fusion Splicer.....                    | 3  |
| F2H FHO8000 OTDR.....                                      | 5  |
| FHO5000 Series OTDR.....                                   | 8  |
| FHO3000 Series OTDR.....                                   | 13 |
| FHO-LCB Launch Cable Box.....                              | 16 |
| F2H-LFC Launch Cable Box.....                              | 16 |
| FHA3304 Fiber Ranger.....                                  | 17 |
| FHP12 Series Pen Type Optical Power Meter.....             | 18 |
| FHP1 Series Mini Optical Power Meter.....                  | 19 |
| FHP2 Series Optical Power Meter.....                       | 20 |
| FVH2A02 Optical power meter with visual fault locator..... | 21 |
| FHP2P01 PON Optical Power Meter.....                       | 22 |
| FHP2G10 10GEPON Down-Stream Power Meter.....               | 23 |
| FHP3P01 PON Optical power meter.....                       | 24 |
| FMP-11 MPO Power meter.....                                | 25 |
| FCA-18 CWDM power meter.....                               | 26 |
| VLS8 Series pen type visual fault locator.....             | 27 |
| FHS1 Series Laser Source.....                              | 28 |
| FHS2 Series Laser Source.....                              | 29 |
| FHS3111 Light Source.....                                  | 30 |
| FBS8001 Bench top fiber optical laser source.....          | 31 |
| FBP7001 Bench top fiber optical power meter.....           | 32 |
| FHM2 Series Optical Multimeter.....                        | 33 |
| OFI-3 Fiber Identifier.....                                | 35 |
| OFS-1 &OFF-1 Optical fiber finder.....                     | 36 |
| OTS-4 Optical talk set.....                                | 37 |
| FHA2 Series Optical Attenuator.....                        | 38 |
| GW6700 Optical Cable Identifier.....                       | 39 |
| FIM-4 Fiber Microscope.....                                | 40 |
| FIM-5 Fiber Microscope.....                                | 41 |
| FIM-6 Fiber Microscope.....                                | 42 |
| FIM-7 Fiber Microscope.....                                | 43 |
| FIM-8 Fiber Optic Inspection Microscope kit.....           | 45 |
| FIM-9 Series Handheld Fiber Optic Microscope.....          | 45 |
| FIM-12 Bench-top Fiber Microscope.....                     | 46 |
| FIM-17 Fiber Microscope.....                               | 48 |
| FOH-8 PON Terminal Tester.....                             | 50 |
| TLP-3C 2M Transmission Analyzer.....                       | 52 |
| GD300DQ TV Signal Level Meter.....                         | 54 |
| CL1400 Pipeline and Cable Locator.....                     | 56 |
| FFA2U 2UYtterbium Erbium Fiber Amplifier.....              | 58 |
| FCAA-100 Cable&Antenna analyzer.....                       | 59 |
| FET-100 Gigabit Ethernet Tester.....                       | 61 |
| FXGT-200 10GEthernet tester.....                           | 62 |

# FTTx Optical Testing Solution



## GS-40 Optical Fiber Fusion Splicer

### Description

Grandway GS-40 optical fiber fusion splicer is designed with high-speed image processing technology and special precision-positioning technology. It will automatically finish the whole fiber fusion process in 9 seconds by fast mode, and splice loss is lower than 0.2dB for single mode fiber. 3.5-inch LCD, dual CMOS monitors, X and Y axis separately display or simultaneously display, thus different fusion stages can be showed clearly. It is compatible with ITU-T SM/MM/DS/NZDS/ED fiber, and is equipped with 4-in-1 holders and SOC adapter.



| Part Number | Description                  |
|-------------|------------------------------|
| GS-40       | Optical Fiber Fusion Splicer |

### Features

- Auto checks fiber end-face, calibrate position of splicing, calculate splicing loss and temperature and pressure compensation so on.
- Between X/Y single screen and X&Y easily switch.
- Auto splice, auto arc optimization, auto heating.
- 3 hours fast charge.
- Ready-package battery with electric quantity indicator, convenient carrying and change.
- Built-in counter to warn replace electrode
- Compact and convenient: 1.5kg with battery.
- Four motors, special precision-positioning technology.
- Splice loss: SMF/BIF: $\leq 0.02\text{dB}(\text{typ.})$ ; MMF: $\leq 0.01\text{dB}(\text{typ.})$ ; DSF/NZDSF/EDF: $\leq 0.04\text{dB}(\text{typ.})$ .
- High precision 4-in-1 holder (250 $\mu\text{m}$ /900 $\mu\text{m}$ /patch cord/FTTx indoor fiber etc), SOC holder.

## Specification

| Model                  | GS-40  |
|------------------------|--|
| Fiber Type             | SMF(ITU-T G.652), MMF(ITU-T G.651), DSF(ITU-T G.653)   |
| Splice Loss            | SMF/BIF $\leq 0.02\text{dB}(\text{typ.})$ / MMF $\leq 0.01\text{dB}(\text{typ.})$ / DSF/NZDSF/EDF $\leq 0.04\text{dB}(\text{typ.})$  |
| Alignment              | 4 motors cladding alignment  |
| Display                | 3.5 inch Color LCD, X/Y / X / Y, Auto turn-over  |
| Fiber Material         | SiO <sub>2</sub>   |
| Fiber Count            | Single   |
| Cladding Diameter      | 80 - 150 $\mu\text{m}$   |
| Coating Diameter       | 100 - 1000 $\mu\text{m}$   |
| Fiber Cleave Length    | 8 - 16mm (Coating diameter: 0 - 250 $\mu\text{m}$ ); 16mm (Coating diameter)   |
| Sleeve Length          | $\leq 60\text{mm}$   |
| Splice Mode            | Arcing / 60 modes  |
| Splice Loss Evaluation | Yes  |
| Fiber Check            | Fiber cleaving angle / axis offset / loss / fiber alignment / focus etc.   |
| Memory Space           | 5,000 splices / 100 screenshots  |
| Tension Test           | 2N   |
| Electrode Life         | 5000 arcs  |
| V-groove               | White LED  |
| Return Loss            | $> 60\text{dB}$  |
| Splice Time            | $\leq 9$ seconds   |
| Boot Time              | 5 seconds  |
| Heating                | Auto heating / 36 seconds (Typical, 0 - 240s adjustable) / 20 modes  |
| Battery                | 150+ (splice + heating) circles  |
| Imaging System         | Dual CMOS cameras, 200x zoom   |
| Power Saving           | Auto screen / power off (Adjustable)   |
| Power Supply           | 4400mAh Lithium Battery  |
| Connectivity           | USB  |
| Dimension              | 125 $\times$ 125 $\times$ 135mm(L $\times$ W $\times$ H)(without rubber boot)  |
| Weight                 | 1.2kg (without battery) / 1.5kg (with battery)   |
| Working Condition      | -25 $^{\circ}\text{C}$ - 50 $^{\circ}\text{C}$ / -30 $^{\circ}\text{C}$ - 70 $^{\circ}\text{C}$ (Working / Storage),<br>Humidity: 0 - 90%(Non-Condensing)<br>Altitude: 0 - 5000m, Wind Speed $\leq 15\text{m/s}$ |

\* Specifications subject to change without notice

## Standard Package

Fusion Splicer, Cleaver, Lithium Battery, Cooling rack, 4-in-1 Fiber holder(one pair), USB data cable, Adapter, Carrying Case, User Manual(CD) , Warranty card, Calibration Certificate, Alcohol pot, Miller stripper.

## Option Items

Rubber Protection, SCP/SOC Splicing Holder, Spare Electrode(one pair), Electrodes Cleaner, Cutting Blades, Thermal Stripper, Kevlar Scissors, Car Charger, Protection Clamp, Nipper (Plastic), Cotton Swab, Lamp, etc.

## GS-60 Optical Fiber Fusion Splicer

### Description

Grandway GS-60 optical fiber fusion splicer adopts high-speed image processing technology and 6-motor precision positioning technology, which can enable the fiber to be quickly and automatically welded and has high quality welding effect. The 3.5-inch LCD and dual CMOS monitor work well together. The X axis and Y axis can be displayed simultaneously or separately. The stages of fiber fusion are obvious. GS-60 is suitable for construction, maintenance and repair of backbone cables, supporting multi-mode optical fiber (MMF/G.651), single-mode fiber (SMF/G.652), dispersion-shifted fiber (DSF/G.653) and non-zero dispersion-shifted fiber (NZ-DSF/G.655), bend-insensitive fiber (Fibers such as BIF/G.657) and Erbium-doped fiber (EDF).

GS-60 also has the characteristics of small size, light weight, AC and DC power supply and can be used outdoors for a long time operation, suitable for a variety of occasions. It is especially applicable to the engineering and maintenance of optical fiber and cable and the teaching research of scientific research institutes in telecommunication fields such as telecommunications, broadcasting and television, railways, electricity, and the military.



| Part Number | Description                  |
|-------------|------------------------------|
| GS-60       | Optical Fiber Fusion Splicer |

### Features

- Compact and convenient: only 1.7kg with battery.
- 6 Motor Accurate Fiber Alignment Technology, ensures high quality and stable welding index.
- Suitable for multimode fiber (MMF/G.651), single-mode fiber (SMF/G.652), dispersion-shifted fiber (DSF/G.653), non-zero dispersion-shifted fiber (NZ-DSF/G.655), Bend-insensitive fiber (BIF/G.657) and Erbium-doped fiber (EDF) etc.
- Multi-in-one clamping device is suitable for splicing bare fibers, pigtails, drop cables, patchcord and other types of fibers.
- Automatically detect fiber endfaces, calibrate welding locations, estimate splice loss, and temperature and pressure compensation modes.
- With automatic welding function.
- With automatic heating function
- Easy switching between X/Y single screen and X+Y dual screen, clear fiber core display
- With DC output function for other external devices
- Built-in lighting for dark environment and night operation
- Windproof, dustproof, waterproof, shockproof design adapts to outdoor harsh environments

## Specification

| Model               | GS-60  |
|---------------------|--|
| Fiber Type          | SMF (G.652), MMF (G.651), DSF (G.653), NZ-DSF (G.655), BIF (G.657), EDF  |
| Splice Loss         | MMF $\leq 0.01\text{dB}$ (Typical); SMF/BIF $\leq 0.02\text{dB}$ (Typical); DSF/NZDSF/EDF $\leq 0.04\text{dB}$ (Typical) |
| Protection Sleeve   | 40mm - 60mm  |
| Splicing Principle  | Arc  |
| Alignment           | 6 motors core alignment  |
| Splice Control      | Auto and manual splicing   |
| Arc Optimization    | Yes  |
| Display Mode        | X, Y, X+Y  |
| User Interface      | Graphical interface, multiple language support   |
| Splice Result       | Auto splice result (Loss) calculation and display  |
| Data                | 5000 splice records (CSV format), 100 screenshots  |
| Data Port           | USB, driver-free   |
| Fiber Diameter      | Cladding: 80~150 $\mu\text{m}$ , coating: 100~1000 $\mu\text{m}$   |
| Cleave Length       | $\leq 16\text{mm}$   |
| Return Loss         | $> 60\text{dB}$  |
| Splice Time         | $\leq 9\text{s}$   |
| Heating Time        | $\leq 25\text{s}$ , adjustable   |
| Zoom                | 200x (X or Y)  |
| Electrode Life      | $\geq 5000$ splices  |
| Tension Test        | $\geq 2\text{N}$   |
| Start-up Time       | 5s   |
| Power Supply        | 220V $\pm 10\%$ , 50Hz; Rechargeable lithium battery   |
| Battery Life        | $\geq 200$ splicing and heating  |
| Charging Time       | $\leq 4$ hours   |
| Size                | 125x125x135mm (L x W x H)  |
| Weight              | 1.7Kg (with battery)   |
| Work Temperature    | -20 $^{\circ}\text{C}$ ~+55 $^{\circ}\text{C}$   |
| Storage Temperature | -40 $^{\circ}\text{C}$ ~+70 $^{\circ}\text{C}$   |
| Humidity            | $\leq 95\%$ (non-condensing)   |
| Altitude            | 0 m~5000 m   |
| Wind Speed          | $\leq 15$ m/s  |

\* Specifications subject to change without notice

## Standard Package

Splicer unit x 1, Fiber holder x 1 (pair), Lithium battery x 1, Power adapter x 1, Fiber cleaver x 1, Cooling tray x 1, USB cable x 1, Carry case x 1, Quick Reference, Alcohol pot, Miller stripper.

## Option Items

Rubber Protection, SCP/SOC Splicing Holder, Spare Electrode(one pair), Electrodes Cleaner, Cutting Blades, Thermal Stripper, Kevlar Scissors, Car Charger, Protection Clamp, Nipper (Plastic), Cotton Swab, Lamp, etc.



### F2H FHO8000 OTDR

#### Description

FHO8000 series Optical Time Domain Reflectometer (OTDR) is the latest generation of intelligent meter for the detection of fiber communications networks after FHO5000 series. With the popularity of FTTH and increasing demand for operation/maintenance of metropolitan area networks and backbone networks, also with the large bonus brought by global 5G construction, the demand for fiber optic testing will usher in a new climax. Therefore, the introduction of FHO8000 will sufficiently meet customer's various application in these work situations.

FHO8000 adopts a modular design structure. Technicians can plug in or pull out appropriate test modules as required by themselves. In addition, it is equipped with an 8-inch touch screen while the keyboard operation is kept, users can easily operate the OTDR. A total of up to 10,200 mAh lithium battery packs can ensure continuous operation for more than 10 hours.

In addition, FHO8000 supports Fiber Link Measurement (FLM) test. It uses multiple pulse width acquisitions and advanced algorithms to quickly characterize the fiber under test and display the optical events applying intuitive symbols. This feature eliminates event interpretation and provides greater analysis confidence to the user, regardless of OTDR skill set.

FHO8000 is manufactured with patience and carefulness, following the national standards to combine the rich experience and modern technology, subject to stringent mechanical, electronic and optical testing.

Whether you want to detect link layer in the construction and installation of optical network or proceed efficient maintenance and trouble shooting in dark or live fiber, FHO8000 can be your best assistant.



| Part Number | Description |
|-------------|-------------|
| FHO8000     | OTDR        |

#### Features

- Modular design permit to change the test module on site
- Multiple dynamic ranges and wavelength combinations are available
- VFL, OPM, WiFi and FLM function are standard configuration
- 8-inch anti-reflection capacitive touch screen
- Automatic LCD brightness according to the environment brightness
- Equipped with two lithium batteries
- Support multi-language display and input
- Support remote control via LAN or WLAN
- Linux operation system
- Software/Firmware upgrade by Ethernet or USB disk

## OTDR Module Information

| Model         | Test Wavelength (nm) | Dynamic Range (dB) | Event/Attenuation Dead Zone (m) |
|---------------|----------------------|--------------------|---------------------------------|
| FHO8000-M22   | 850/1300             | 20/22              | 1.5/4                           |
| FHO8000-M26   | 850/1300             | 22/26              | 1.5/4                           |
| FHO8000-MD22  | 850/1300             | 20/22              | 1.5/4                           |
|               | 1310/1550            | 40/38              | 0.8/4                           |
| FHO8000-MD26  | 850/1300             | 22/26              | 1.5/4                           |
|               | 1310/1550            | 40/38              | 0.8/4                           |
| FHO8000-D40   | 1310/1550            | 40/38              | 0.8/4                           |
| FHO8000-D45   | 1310/1550            | 45/43              | 0.8/4                           |
| FHO8000-D50   | 1310/1550            | 50/48              | 0.8/4                           |
| FHO8000-T40F  | 1310/1550/1625       | 40/38/38           | 0.8/4                           |
| FHO8000-T45F  | 1310/1550/1625       | 45/43/43           | 0.8/4                           |
| FHO8000-TC40F | 1310/1550/1650       | 40/38/37           | 0.8/4                           |
| FHO8000-TC45F | 1310/1550/1650       | 45/43/41           | 0.8/4                           |
| FHO8000-S38F  | 1625                 | 38                 | 0.8/4                           |
| FHO8000-S43F  | 1625                 | 43                 | 0.8/4                           |
| FHO8000-SC37F | 1650                 | 37                 | 0.8/4                           |
| FHO8000-SC41F | 1650                 | 41                 | 0.8/4                           |

## Specification

## General

|               |   |
|---------------|---|
| Display       | 8 inch TFT-LCD (anti-reflection touch screen, 1024×600)                             |
| Battery       | 7.6V/5100mAh lithium battery ×2<br>Continuously test (with high backlight): >10 hrs |
| Power Supply  | 12V/4A DC, 100~240V AC, 50~60Hz   |
| Data Storage  | 16GB internal memory, about 160,000 groups of curve                                 |
| Interface     | 3×USB port (USB Type A×2, USB Type C×1)<br>1000M Ethernet RJ-45                     |
| Working Temp. | -20℃~+50℃   |
| Storage Temp. | -40℃~+70℃   |
| Humidity      | ≤95% (non-condensation)   |
| Dimension     | 286×190×80mm / 2.3kg (battery included)   |

## Test parameter

|                      |   |
|----------------------|---|
| Pulse Width          | 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs                      |
| Testing Distance     | 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 160km, 240km, 300km                        |
| Sampling Resolution  | Minimum 0.05m   |
| Sampling Point       | Maximum 256,000 pts   |
| Linearity            | ≤0.05dB/dB  |
| Loss Threshold       | 0.01dB  |
| Loss Resolution      | 0.001dB   |
| Distance Resolution  | 0.01m   |
| Distance Accuracy    | ±(1m+measuring distance×3×10 <sup>-5</sup> +sampling resolution)<br>(excluding IOR uncertainty) |
| Refractivity Setting | 1.2000~1.6000, 0.0001 step  |

### VFL Function

|                    |                   |
|--------------------|-------------------|
| <b>Wavelength</b>  | 650nm             |
| <b>Power</b>       | 10mW, CLASS III B |
| <b>Range</b>       | 12km              |
| <b>Connector</b>   | Universal         |
| <b>Launch Mode</b> | CW/2Hz            |

### OPM Function

|                         |                                     |
|-------------------------|-------------------------------------|
| <b>Wavelength Range</b> | 800~1700nm                          |
| <b>Calibrated</b>       | 850/1300/1310/1490/1550/1625/1650nm |
| <b>Wavelength</b>       | Type A: -70~+10dBm                  |
| <b>Test Range</b>       | Type B: -50~+23dBm                  |
| <b>Resolution</b>       | 0.01dB                              |
| <b>Accuracy</b>         | ±0.35dB±1nW                         |
| <b>Connector</b>        | Universal                           |

### Optional Function

Stable laser source, Fiber microscope, GPS, NB-IOT, 3G/4G

## FHO5000 Series OTDR

### Description

FHO5000 series OTDR is specially designed for tough outdoor jobs. IP65 protection level, lightweight, easy operation, low-reflection LCD and more than 12 hours working period make it perfect in field testing. Meanwhile, optional PCB board with water-proof coating helps FHO5000 series OTDR get better protection performance.

### Features

- Integrated design, smart and rugged
- IP65 protection level, outdoor enhanced
- 7-inch anti-reflection LCD screen
- PON online test module (1625/1650nm) is optional
- MMF test module (850/1300nm) is optional
- Support multi-language display and input
- Support remote control via LAN
- FLM—More intelligent algorithms to characterize the optical fiber line

### Main functions

#### FLM (fiber link measurement)

**FLM Test (Fiber Link Measurement), also known as "Optical Eye", uses multiple pulse width acquisitions and advanced algorithms to quickly characterize the fiber under test and display the optical events applying intuitive symbols.**

#### Multi-mode OTDR

Besides standard single-mode (1310/1550nm), FHO5000 series OTDR supports multi-mode (850/1300nm) test mode for option to analyze the multi-mode fiber network.

#### VFL (visual fault locator)

The VFL, available as an standard module in FHO5000 series OTDR, offers built-in 650nm visual fault location on a FC/UPC connector.

#### PON ONLINE TEST

FHO5000 series OTDR uses 1625/1650nm wavelength to scan and analyze the access point, and proceed online testing with optical filter and will not disturb the service.



| Part Number | Description |
|-------------|-------------|
| FHO5000     | OTDR        |

### Applications

- FTTX PON network testing
- CATV network testing
- Access network testing
- LAN network testing
- Metro network testing
- Lab and Factory testing
- Live fiber troubleshooting

#### OPM ( power meter)

FHO5000 series OTDR comes with optional built-in power meters that let technicians easily verify the presence of a signal.

#### LS (laser source)

FHO5000 series OTDR comes with optional built-in laser source through OTDR1 Port that let technicians easily verify the total loss of the local network with a power meter.

#### FM (fiber microscope)

The optional fiber inspection probe facilitates the Inspect before the connection. FHO5000 series OTDR offers this capability through a USB port connection, which allows quick and easy inspection of connector end faces for contamination and also enables it capture and store the image.

### Specification

| General                         |   |
|---------------------------------|---|
| <b>Dimension</b>                | 253×168×73.6mm<br>1.5kg(battery included)   |
| <b>Display</b>                  | 7-inch TFT-LCD with LED backlight (touch screen function is optional)   |
| <b>Interface</b>                | 1×RJ45 port, 3×USB port(USB2.0, Type A USB×2, Type B USB×1)   |
| <b>Power Supply</b>             | 10V(dc), 100V(ac) to 240V(ac), 50~60Hz  |
| <b>Battery</b>                  | 7.4V(dc)/4.4Ah lithium battery (with air traffic certification)<br>Operating Time: 12 hours①, Telcordia GR-196-CORE<br>Charging time: <4 hours (power off)                                    |
| <b>Power Saving</b>             | Backlight off: Disable/1 to 99minutes<br>Auto shutdown: Disable/1 to 99minutes  |
| <b>DataStorage</b>              | Internal memory: 16GB (about 160,000 groups of curves)  |
| <b>Language</b>                 | User selectable (English, Simplified Chinese, Traditional Chinese, French, Korean, Russian, Spanish and Portuguese -contact us for availability of others)                                    |
| <b>Environmental Conditions</b> | Operating temperature and humidity: -10℃~+50℃, ≤95% (non-condensation)<br>Storage temperature and humidity: -20℃~+75℃, ≤95% (non-condensation)<br>Proof: IP65(IEC 60529)                      |
| <b>Accessories</b>              | Standard: Main unit, power adapter, Lithium battery, FC adapter, USB cord, User guide, CD disk, carrying case<br>Optional: SC/UPC adapter, ST/UPC adapter, LC/UPC adapter, Bare fiber adapter |

### Technical parameter

| Type②         | Testing wavelength<br>(MM:±20nm, SM:±10nm) | Dynamic range(dB)③ | Event/Attenuation<br>dead-zone(m)④ |
|---------------|--|--------------------|------------------------------------|
| FHO5000-M21   | 850/1300                                   | 19/21              | 1.5/8                              |
| FHO5000-MD21  | 850/1300<br>1310/1550                      | 19/21<br>35/33     | 1.5/8<br>1.5/8                     |
| FHO5000-MD22  | 850/1300<br>1310/1550                      | 19/21<br>40/38     | 1.5/8<br>1.75/11                   |
| FHO5000-D26   | 1310/1550                                  | 26/24              | 1.5/8                              |
| FHO5000-D35   | 1310/1550                                  | 35/33              | 1.5/8                              |
| FHO5000-D40   | 1310/1550                                  | 40/38              | 1.75/11                            |
| FHO5000-D43   | 1310/1550                                  | 43/41              | 2/14                               |
| FHO5000-D45   | 1310/1550                                  | 45/43              | 2/14                               |
| FHO5000-T40F  | 1310/1550/1625                             | 40/38/38           | 1.75/11                            |
| FHO5000-T43F  | 1310/1550/1625                             | 43/41/41           | 2/14                               |
| FHO5000-TC35F | 1310/1550/1650                             | 35/33/31           | 1.5/8                              |
| FHO5000-TP35  | 1310/1490/1550                             | 35/33/33           | 1.5/8                              |
| FHO5000-P26   | 1650                                       | 26                 | 1.5/8                              |
| FHO5000-P38   | 1650                                       | 38                 | 1.5/8                              |

| Test parameter              |  |
|-----------------------------|--|
| <b>Pulse Width</b>          | Single mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs<br>Multi mode: 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs   |
| <b>Distance Range</b>       | Single mode: 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 160km, 240km<br>Multi mode: 500m, 2km, 5km, 10km, 20km, 40km   |
| <b>Sampling Resolution</b>  | Minimum 5cm  |
| <b>Sampling Point</b>       | Maximum 128,000 points   |
| <b>Linearity</b>            | ≤0.05dB/dB   |
| <b>Scale Indication</b>     | X axis: 4m~70m/div, Y axis: Minimum 0.09dB/div   |
| <b>Distance Resolution</b>  | 0.01m  |
| <b>Distance Accuracy</b>    | $\pm(1m + \text{measuring distance} \times 3 \times 10^{-5} + \text{sampling resolution})$ (excluding IOR uncertainty)   |
| <b>Reflectance Accuracy</b> | Single mode: ±2dB, multi mode: ±4dB  |
| <b>IOR Setting</b>          | 1.4000~1.7000, 0.0001 step   |
| <b>Units</b>                | km, miles, feet  |
| <b>OTDR Trace Format</b>    | Telcordia universal, SOR, issue 2 (SR-4731)<br>OTDR: User selectable automatic or manual set-up  |
| <b>Testing Modes</b>        | Visual fault locator: Visible red light for fiber identification and troubleshooting<br>Light source: Stabilized Light Source (CW, 270Hz, 1kHz, 2kHz output)<br>Field microscope probe   |
| <b>Fiber Event Analysis</b> | Auto or manual operation, displayed in table format<br>User defined PASS/FAIL thresholds:<br>-Reflective and non-reflective events: 0.01 to 1.99dB (0.01dB steps)<br>-Reflective: 0.01 to 32dB (0.01dB steps)<br>-Fiber end/break: 3 to 20dB (1dB steps) |
| <b>Other Functions</b>      | Real time sweep: 1Hz<br>Averaging modes: Timed (1 to 3600 sec.)<br>Live Fiber detection: Verifies presence communication light in optical fiber<br>Trace overlay and comparison  |

| VFL Module (Visual Fault Locator, as standard function) |                   |
|---|-------------------|
| <b>Wavelength(±20nm)</b>                                | 650nm             |
| <b>Power</b>  | 10mW, CLASS III B |
| <b>Range</b>  | 12km              |
| <b>Connector</b>  | FC/UPC            |
| <b>Launching Mode</b>                                   | CW/2Hz            |

| PM Module (Power Meter, as optional function) |   |
|---|---|
| <b>Wavelength Range</b>                       | 800~1700nm  |
| <b>Calibrated Wavelength(±10nm)</b>           | 850/1300/1310/1490/1550/1625/1650nm                       |
| <b>Test Range</b>                             | TypeA: -65~+5dBm (standard); TypeB: -40~+23dBm (optional) |
| <b>Resolution</b>                             | 0.01dB  |
| <b>Accuracy</b>                               | ±0.35dB±1nW   |
| <b>Modulation identification</b>              | 270/1k/2k Hz, $P_{\text{input}} \geq -40\text{dBm}$       |
| <b>Connector</b>                              | FC/UPC  |

### LS Module (Laser Source, as optional function)

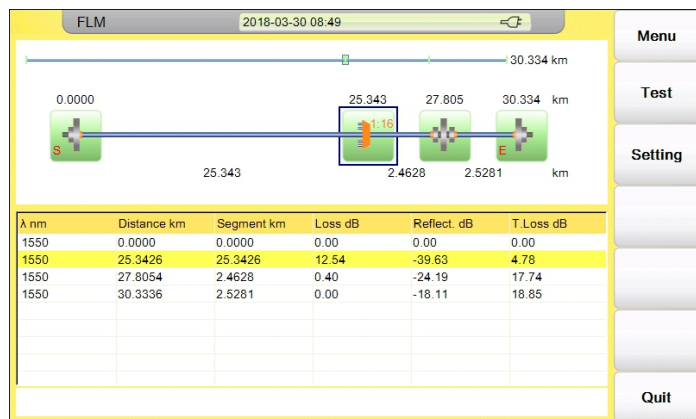
|                                  |                                    |
|----------------------------------|------------------------------------|
| <b>Working wavelength(±10nm)</b> | 1310/1550/1625/1650nm <sup>Ⓢ</sup> |
| <b>Output power</b>              | Adjustable -25 ~ 0dBm              |
| <b>Accuracy</b>                  | ±0.5dB                             |
| <b>Connector</b>                 | FC/UPC                             |

### FM Module (Fiber Microscope, as optional function)

|                                  |  |
|----------------------------------|--|
| <b>Magnification</b>             | 400X   |
| <b>Resolution</b>                | 1.0μm  |
| <b>View of Field</b>             | 0.40×0.31mm  |
| <b>Storage/working Condition</b> | -18℃~35℃   |
| <b>Dimension</b>                 | 235×95×30mm  |
| <b>Sensor</b>                    | 1/3 inch 2 million of pixel  |
| <b>Weight</b>                    | 150g   |
| <b>USB</b>                       | 1.1/2.0  |
| <b>Adapter<sup>Ⓢ</sup></b>       | Standard: SC-PC-F (For SC/PC adapter); FC-PC-F (For FC/PC adapter)<br>LC-PC-F (For LC/PC adapter);<br>2.5PC-M (For 2.5mm connector, SC/PC, FC/PC, ST/PC) |

### FLM Module (Fiber Link Measurement, as optional function)

- More intelligent OTDR testing
- Multiple pulse width acquisitions
- Advanced algorithms
- Iconic display of events on the line



**Notes**

- ① Typical, backlight off, sweeping halted at 25°C, 12 hours typical continuous testing.
- ② Model T40F/T43F/TC35F and P26/P38 are integrated with optical filter, which allow them to test PON network online (by using 1625/1650nm wavelength) and will not interrupt the fiber signal.
- ③ Dynamic range is measured with maximum pulse width, averaging time is 3 minutes, SNR=1; The level difference between the RMS noise level and the level where near end back-scattering occurs.
- ④ Event dead zone is measured with pulse width of 3ns; attenuation dead zone is measured with pulse width of 5ns.
- ⑤ 1310/1550/1650nm laser source uses OTDR1 port, and 1625nm or 850/1300nm uses OTDR2 port.
- ⑥ For more adapters, please contact us.

**Ordering Information**

**FHO5000-XX-XX-XX-XX-XX-XX-XX-XX**

|  |   |
|--|---|
| <p><b>Model</b></p> <p><b>M</b> 850/1300nm</p> <p><b>MD</b> 850/1300/1310/1550nm</p> <p><b>D</b> 1310/1550nm</p> <p><b>T</b> 1310/1550/1625nm</p> <p><b>TC</b> 1310/1550/1650nm</p> <p><b>TP</b> 1310/1490/1550nm</p> <p><b>P</b> 1650nm</p> <p><b>Dynamic Range</b></p> <p><b>21</b> 19/21dB for Model M or<br/>19/21/35/33dB for Model MD</p> <p><b>22</b> 19/21/40/38dB for Model MD</p> <p><b>26</b> 26/24dB for Model D</p> <p><b>35</b> 35/33dB for Model D or<br/>35/33/33 for Model TP</p> <p><b>40</b> 40/38dB for Model D</p> <p><b>43</b> 43/41dB for Model D</p> <p><b>45</b> 45/43dB for Model D</p> <p><b>35F</b> 35/33/31dB for Model TC with filter</p> <p><b>40F</b> 40/38/38dB for Model T with filter</p> <p><b>43F</b> 43/41/41dB for Model T with filter</p> <p><b>P26</b> 26dB for Model P with filter</p> <p><b>P38</b> 38dB for Model P with filter</p> <p><b>Laser Source</b></p> <p><b>/</b> Without laser source</p> <p><b>LS</b> With laser source</p> | <p><b>Connector</b></p> <p><b>/</b> FC/UPC(default)</p> <p><b>SC</b> SC/UPC</p> <p><b>ST</b> ST/UPC</p> <p><b>Fiber Link Measurement</b></p> <p><b>/</b> Without fiber link measurement</p> <p><b>FLM</b> With fiber link measurement</p> <p><b>Fiber Microscope</b></p> <p><b>/</b> Without fiber microscope</p> <p><b>FM</b> With fiber microscope</p> <p><b>Touch Screen</b></p> <p><b>/</b> Without touchscreen</p> <p><b>TS</b> With touchscreen</p> <p><b>Power Meter</b></p> <p><b>/</b> Without power meter</p> <p><b>PMA</b> With power meter TYPE A</p> <p><b>PMB</b> With power meter TYPE B</p> |
|--|---|

**Optional Item**





### FHO3000 Series OTDR

#### Description

With its lightweight design and user friendly dimension, FHO3000 series OTDR is perfect for the outside plant environment and can be easily operated with one hand. FHO3000 series OTDR ensures accurate and complete fiber evaluation while the testing requires only one key to start, allowing anyone to proceed error-free testing. Its ease of use, low price, high resolution and compact size make it be a qualified tester in installation, operation and maintenance of optical networks, and also save you a lot of money and time.



| Part Number | Description |
|-------------|-------------|
| FHO3000     | OTDR        |

#### Features

- Hand-held and portable
- High cost performance
- 5-inch HD touch screen
- Simple interface and one-button testing
- Long working hours
- Support multi-languages
- FLM—More intelligent algorithms to characterize the optical fiber line

#### Applications

- CATV network testing
- Access network testing
- LAN/WAN network testing
- Metro network testing
- Lab and Factory testing
- Real-time troubleshooting

#### Specification

| General             |   |
|---------------------|---|
| <b>Display</b>      | 5 inch TFT-LCD (touch screen )  |
| <b>Battery</b>      | 7.4V/3300mAh lithium battery (with air traffic certification)<br>Continuously test: 6 hours (back light off)③<br>Charging time: 3.5 hours |
| <b>Data Storage</b> | 80,000 groups of curves   |
| <b>Interface</b>    | 3×USB port (USB A Type×2, Micro-USB×1)  |
| <b>Working Temp</b> | -10°C~+50°C   |
| <b>Storage Temp</b> | -20°C~+70°C   |
| <b>Humidity</b>     | ≤95% (non-condensation)   |
| <b>Dimension</b>    | 195×141×44mm / 0.9kg (battery included)   |
| <b>Accessories</b>  | Main unit, 12V power adapter, Lithium battery, FC adapter, USB cord, User guide, CD disk, carrying case, wrist belt                       |

## Technical parameter

| Type        | Testing wavelength | Dynamic range | Event/Attenuation dead-zone |
|-------------|--------------------|---------------|-----------------------------|
| FHO3000-D26 | 1310/1550nm        | 26/24dB       | 1/6m                        |
| FHO3000-D30 | 1310/1550nm        | 30/28dB       | 1/6m                        |
| FHO3000-D32 | 1310/1550nm        | 32/30dB       | 1/6m                        |
| FHO3000-D35 | 1310/1550nm        | 35/33dB       | 1/6m                        |

## Technical parameter

|                             |  |
|-----------------------------|--|
| <b>Pulse Width</b>          | 3ns, 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs (20μs only for D35) |
| <b>Testing Distance</b>     | 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 160km, 240km                              |
| <b>Sampling Resolution</b>  | Minimum 5cm  |
| <b>Sampling Point</b>       | Maximum 128,000 points   |
| <b>Linearity</b>            | ≤0.05dB/dB   |
| <b>Scale Indication</b>     | X axis: 4~70m/div, Y axis: 0.09~5dB/div  |
| <b>Loss Threshold</b>       | 0.01dB   |
| <b>Loss Resolution</b>      | 0.001dB  |
| <b>Distance Resolution</b>  | 0.01m  |
| <b>Distance Accuracy</b>    | ±(1m+measuring distance×3×10 <sup>-5</sup> +sampling resolution) (excluding IOR uncertainty)   |
| <b>Refractivity Setting</b> | 1.2000~1.5999, 0.0001 step   |

## VFL Module(Optional)

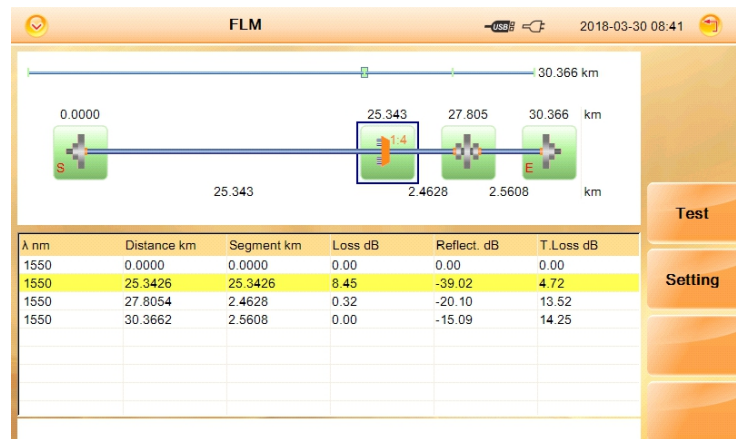
|                       |                  |
|-----------------------|------------------|
| <b>Wavelength</b>     | 650nm            |
| <b>Power</b>          | 10mw, CLASSIII B |
| <b>Range</b>          | 12km             |
| <b>Connector</b>      | FC/UPC           |
| <b>Launching Mode</b> | CW/2Hz           |

## OPM Module(Optional)

|                                  |                                     |
|----------------------------------|-------------------------------------|
| <b>Wavelength Range</b>          | 800~1700nm                          |
| <b>Calibrated Wavelength</b>     | 850/1300/1310/1490/1550/1625/1650nm |
| <b>Test Range</b>                | -60~+5dBm                           |
| <b>Resolution</b>                | 0.01dB                              |
| <b>Accuracy</b>                  | ±0.35dB±1nW                         |
| <b>Modulation Identification</b> | 270/1k/2k Hz, Pi≥-40dBm             |
| <b>Connector</b>                 | FC/UPC                              |

### FLM Module (Fiber Link Measurement, as optional function)

- More intelligent OTDR testing**
- Multiple pulse width acquisitions**
- Advanced algorithms**
- Iconic display of events on the line**



### Notes

- ① Dynamic range is measured with maximum pulse width, averaging time is 3 minutes, SNR=1; The level difference between the RMS noise level and the level where near end back-scattering occurs.
- ② Event dead zone is measured with pulse width of 3ns; attenuation dead zone is measured with pulse width of 5ns.
- ③ Typical, back light off, sweeping halted at 25°C, 6 hours typical continuous testing.

### Ordering Information

**FHO3000-XX-XX-XX-XX-XX**

#### Dynamic Range

- D26** 26dB
- D30** 30dB
- D32** 32dB
- D35** 35dB

#### Visual Fault Locator

- /** Without Visual Fault Locator
- VFL** With Visual Fault Locator

#### Connector

- /** FC/UPC(default)
- SC** SC/UPC
- ST** ST/UPC

#### Fiber Link Measurement

- /** Without fiber link measurement
- FLM** With fiber link measurement

#### Power Meter

- /** Without power meter
- PM** With power meter

## FHO-LCB Launch Cable Box

### Description

Grandway provides high performance Launch Cable Box with interchangeable SC/FC/ST adapters in UPC or APC polishing end face. It is used to aid in the testing of fiber optic cable when using an OTDR. The OTDR Launch Cable Box is used with Optical Time Domain Reflectometers (OTDRs) to help minimize the effects of the OTDR's launch pulse on measurement uncertainty. Specially designed for Grandway's FHO5000 Series OTDR, Launch Cable Box can be fixed on the rear of FHO5000 Series OTDR by screws as standard accessories in the package.



### Features

- Compact, easy to carry
- Case can house up to 1,000 meters of fiber
- Attachable with FHO5000 Series OTDR

### Applications

- Training and calibration
- Installation and testing by OTDR

### Specification

|                       |                                   |
|-----------------------|-----------------------------------|
| Fiber Type            | SM G.652D                         |
| Adapter Type          | interchangeable FC/SC/ST adapters |
| Polishing Type        | APC/UPC selectable                |
| Color                 | black                             |
| Dimension             | 20.6(L) x 12.2(W) x 2.3(H)cm      |
| Weight                | 1kg                               |
| Operating Temperature | -40~+55°C                         |

| Part Number | Description      |
|-------------|------------------|
| FHO-LCB     | Launch Cable Box |

### Ordering Information

| FHO-LCB-XX-XX-XX-XX |                          |
|---------------------|--------------------------|
| <b>Cable Length</b> | <b>Fiber Type</b>        |
| <b>500</b> 500m     | <b>7A1</b> SM G.657A1    |
| <b>1000</b> 1000m   | <b>2D</b> SM G.652D      |
|                     | <b>OM1</b> MM 62.5/125um |
|                     | <b>OM2</b> MM 50/125um   |
| <b>Adapter 1</b>    | <b>Adapter 2</b>         |
| <b>SC</b> SC/UPC    | <b>SC</b> SC/UPC         |
| <b>AS</b> SC/APC    | <b>AS</b> SC/APC         |
| <b>FC</b> FC/UPC    | <b>FC</b> FC/UPC         |
| <b>AF</b> FC/APC    | <b>AF</b> FC/APC         |

## F2H-LFC Launch Fiber Cable

### Specification

|                       |                                      |
|-----------------------|--------------------------------------|
| Fiber Type            | G.657A/G.652D (MM can be customized) |
| Typical Loss          | <0.5dB @ 1310nm for 1,000 meters     |
| Connector Type        | FC/SC/LC selectable                  |
| Polishing Type        | APC/UPC selectable                   |
| Box Material          | SR Polypropylene                     |
| Color                 | yellow                               |
| Dimension             | 23.8(L) x 14.1(W) x 6.7(H)cm         |
| Weight                | 0.75kg / 0.35kg (without fiber)      |
| Operating Temperature | -40~+55°C                            |



| Part Number | Description        |
|-------------|--------------------|
| F2H-LFC     | Launch Fiber Cable |

### FHA3304 Fiber Ranger

#### Description

FHA3304 Fiber Ranger is newly designed fiber optic tester, it aims at fiber fiber network installation, fiber network engineering acceptance and fiber network maintenance. It can detect fiber fault location more accurate and quick, and designed for field use. FHA3304 fiber ranger is an economical tester instead of OTDR in the test and maintenance of fiber network.

#### Features

- Easy to identify the faults location
- Analysis reflection events and attenuation events automatically
- Build-in visual fault locator function
- Automatic Pulse Width Control design to ensure a convenient operation.
- Up to 2500 measurement results can be stored in the unit.



| Part Number | Description  |
|-------------|--------------|
| FHA3304     | Fiber Ranger |

#### Specification

| Model                                       | FHA3304                               |
|---|---------------------------------------|
| Operating Wavelength                        | 1550 ± 20                             |
| Fiber Type                                  | 9/125 um                              |
| Optical Connector Type                      | FC/PC                                 |
| Detector Type                               | InGaAs APD                            |
| Pulse Width                                 | Auto adjustment                       |
| Max.Distance(km)①                           | 60                                    |
| Distance Accuracy②<br>(Reflection Event)(m) | ±(3m + 2*10 <sup>-4</sup> * distance) |
| Ref lection Event Dead Zone(m)③             | 15m                                   |
| Power Supply                                | AA,3pcs                               |
| Battery Operating Time                      | > 2500                                |
| Auto Power-off time (min)④                  | 10                                    |
| VFL output power(mW)                        | > 1 mW                                |
| Data Storage Capacity⑤                      | 2000                                  |
| Working Temperature(°C)                     | -5 ~ 40                               |
| Storage Temperature(°C)                     | -10 ~ 70                              |
| Dimensions(mm)                              | 175*90*44.5                           |
| Weight(g)⑥                                  | 278                                   |

#### NOTES:

- ① The max test distance 60km means JW3304A can detect the reflection events , which loss is >1dB in 60km of dynamic range; The detect distance of non-reflection event is 40km(> 1dB).
- ② Distance accuracy depends on the length of measured distance length, if measured distance is 30km, the accuracy is ±(3m + 2\*10<sup>-4</sup> \* 30\*10<sup>-3</sup>)= ±9m.
- ③ Reflection Event Dead Zone means that the minimum dead zone of reflection event under the minimum pulse width.
- ④ Auto power-off time is 10 minutes. If turn on fiber ranger and no operation in 10 minutes, the unit will turn off automatically. If turn on 30s later and no operation, the back light will be off, then press any key, back light will be on again.
- ⑤ Fiber ranger can save up to 2000 measurement results in the unit; The data that save in the unit is shows by the mode of date&No, user will know the test time clearly when they check the data,.
- ⑥ The bare unit weight without battery, according to customers require different customized wavelength , the unit weight may vary slightly.

## FHP12 Series Mini Optical Power Meter

### Description

FHP12 Series Mini Optical Power Meter has compact structure and stable performance and ensures high measuring precision of 850nm, 1300nm, 1310nm, 1490nm, 1550nm and 1625nm wavelengths. Used together with Optical Laser Source, it could accurately measure the loss of fiber, cable and other passive optical devices.

### Features

- Imported sensor
- 2.5mm universal interface(support FC/SC/ST connectors)
- Low power consumption, continuous work more than 80 hours
- Linear optical power and logarithmic power display
- Automatic measuring range adjust and power remains indication
- Relative value measurement function
- Compact and portable design



| Part Number | Description  |
|-------------|--|
| FHP12-A     | Mini optical power meter, calibration wavelength: 850/1300/1310/1550/1490/1625nm, +10~-70dBm @1550nm |
| FHP12-B     | Mini optical power meter, calibration wavelength: 850/1300/1310/1550/1490/1625nm, +26~-50dBm @1550nm |

### Specification

| Type                     | FHP12-A   | FHP12-B            |
|--------------------------|---|--------------------|
| Display Range            | +10~-70dBm @1550nm                              | +26~-50dBm @1550nm |
| Resolution               | 0.01  |                    |
| Calibrated Wavelength    | 850/1300/1310/1550/1490/1625                    |                    |
| Sensor Type              | InGaAs  |                    |
| Accuracy                 | 0.35dB ±1nW                                     | 0.35dB ±10nW       |
| Working Wavelength       | 800~1700  |                    |
| Continuous Working Hours | About 80 hours(stand-by time : About 1600hours) |                    |
| Power Source             | 2*AAA dry batteries                             |                    |
| Working Temp.            | -10°C~+50°C ; <90%RH                            |                    |
| Storage Temp.            | -20°C~+70°C ; <90%RH                            |                    |
| Dimension                | L120mm×W33mm×H30mm / About70g                   |                    |

#### Standard Accessories

2\*AAA batteries, carrying bag, user manual

#### Optional Accessories

Male FC to female LC adapter for LC connector (model: HD078)

### FHP1 Series Mini Optical Power Meter

#### Description

Grandway provides high precise mini power meter. FHP1 Series Mini Optical Power Meter are designed for use with an optical source for performing optical loss measurements on fiber optic cables. FHP1 series is designed for the low budget. It can meet the basic demand in real testing. With the smaller weight, it is easier to take in real testing.

#### Features

- Integrated with high performance optical detector
- Mini size, light weight, great portability
- Lower power consumption
- Easy to use
- Integrated with auto-power-off, low power indication and measurement interchanging functions
- Lower cost



| Part Number | Description  |
|-------------|--|
| FHP1A02     | Optical power meter, 850/1300/1310/1490/1550 /1625/1650nm, FC/PC and SC/PC (interchangeable), -60 to +3dBm |



| Part Number | Description   |
|-------------|---|
| FHP1B02     | Optical power meter, 850/1300/1310/1490/1550/ 1625/1650nm, FC/PC and SC/PC (interchangeable), -40 to +23dBm |

#### Specification

| FHS1 series Mini Optical Power Meter |                                   |            |
|--------------------------------------|-----------------------------------|------------|
|                                      | FHP-1A02                          | FHP-1B02   |
| Calibrated Wavelength (nm)           | 850/1300/1310/1490/1550/1625/1650 |            |
| Emitter Type                         | InGaAs                            |            |
| Connector                            | FC/PC and SC/PC(interchangeable)  |            |
| Accuracy                             | ±0.35db±10nW                      |            |
| Resolution                           | 0.01db                            |            |
| Linearity                            | ±5%                               |            |
| Auto Power-off                       | Yes                               |            |
| Back-light                           | Yes                               |            |
| Reference Value                      | Yes                               |            |
| Measuring Range(dbm)                 | -60 to +3                         | -40 to +23 |
| USB Interface                        | N/A                               |            |
| Data Storage                         | N/A                               |            |
| Wavelength Recognition               | N/A                               |            |
| Tone Detection(Hz)                   | N/A                               |            |
| Operating Temperature                | -10to+50°C                        |            |
| Storage Temperatue                   | -20to+70°C                        |            |
| Power Supply                         | 4*AAA batteries                   |            |
| Dimension(mm)                        | 115L*62W*30H                      |            |
| Net Weight                           | 140g                              |            |

#### Standard Accessories

FC/PC adapter, SC/PC adapter, 4\*AAA batteries, test report, carrying bag, user manual

#### Optional Accessories

interchangeable ST adapter (model: N000500);  
male FC to female LC adapter for LC connector (model: HD078)

## FHP2 Series Optical Power Meter

### Description

FHP2 Series Optical Power Meter is the advanced version of OPM series. It is more functional and intelligent.

Under the situation of laboratory, LANs, WANs and CATV as well as long distance optical network, Optical Power Meters, together with Grandway's Stabilized Optical Laser Sources, can be used to identify optical fiber, measure optical attenuation, verify continuity, and evaluate fiber link transmission quality.

### Features

- Integrated with high performance optical detector
- Auto-wavelength Recognition:  
The FHS2D02 and FHS2D03 units can transmit with a wavelength identification digital encrypted protocol, enabling the FHP2 Series Power Meter to automatically use the proper calibration parameters. This feature reduces the need for communication between the two technicians and decreases the potential error.
- LCD backlight for easy operation in dark environments
- Referencing function:  
Signal encrypting can also give the receiving end information on the power to be used as reference, helping ensure efficient referencing, even when the two units are far apart.
- Memory capacity of 1000 data items, enables data transfer to PC
- USB connection
- More connectors are optional and interchangeable to the user
- Two powering systems: Internal rechargeable batteries or USB cable
- Wide dynamic range and high power measurement capability
- High accuracy and stability
- Auto-off function

### Specification

#### FHP2 series laser source

|                           | FHP2A04                                     | FHP2B04                                      |
|---------------------------|---|--|
| Calibrated Wavelength(nm) | 850/1300/1310/1490/1550/1625                |  |
| Working wavelength(nm)    | 800~1700nm                                  |  |
| Detection range           | -70~+10dBm @1550                            | -50~+26dBm @1550                             |
| Detector Type             | InGaAs                                      |  |
| Connector                 | FC/PC and SC/PC (interchangeable)           |  |
| Accuracy                  | ±5%±1nW                                     | ±5%±10nW                                     |
| Resolution                | 0.01dB@-60 to +10dBm<br>0.1dB@-70 to -60dBm | 0.01dB@-40 to +26dBm;<br>0.1dB@-50 to -40dBm |
| Linearity                 | ±5%   |  |
| Auto Power-off            | Yes   |  |
| Back-light                | Yes   |  |
| Reference Value           | Yes   |  |
| Measuring Range(dBm)      | -70 to +10                                  | -50 to +26                                   |
| USB Interface             | Yes   |  |
| Data Storage              | Yes   |  |
| Wavelength Recognize      | Yes   |  |
| Tone Detection(Hz)        | 270,1K,2K                                   |  |
| Operating Temperature     | -10to+50°C                                  |  |
| Storage Temperature       | -20to+70°C                                  |  |
| Power Supply              | 2pcs*Ni-MH AA(2500mAh);USB cable            |  |
| Dimension(mm)             | 160L*76W*45H                                |  |
| Net Weight                | 270g  |  |

#### Standard Accessories

FC/PC adapter, SC/PC adapter, 2\*AA rechargeable batteries, USB cable, test report, carrying bag, CD software, user manual

#### Optional Accessories

interchangeable ST adapter (model: N000500);  
male FC to female LC adapter for LC connector (model: HD078)



| Part Number | Description  |
|-------------|--|
| FHP2A04     | Optical power meter, 850/1300/1310/1490/1550/1625nm, FC/PC connector, -70 to +10dBm, with USB, data storage and wavelength recognition functions |



| Part Number | Description  |
|-------------|--|
| FHP2B04     | Optical power meter, 850/1300/1310/1490/1550/1625nm, FC/PC connector, -50 to +26dBm, with USB, data storage and wavelength recognition functions |



### FVH-2A02 VFL+Power Meter

#### Description

FVH-2A02 hand-held VFL+Power meter is used to test all types of long-distance and short-range optical communication line installation and maintenance, it not only has all the features of the general optical power meter, but also integrated red light function, single port design to support both OPM and VFL. More convenient for users.

#### Features

- Power meter and VFL integrated in one unit, this tester allows to perform both optical power/loss measurements and Fiber faults tracing visually.
- Single optical connector port design to greatly minimize the operation. Users no need to change the ports between OPM and VFL. Operation becomes quick and easy.
- Optical Power Meter is an ideal tester used in quickly mechanical splicing and FTTx networks.
- Optical Port: FC, SC, ST interchangeable supports various optical connectors.



| Part Number | Description      |
|-------------|------------------|
| FVH-2A02    | VFL+ Power Meter |

#### Specification

| Model  | FVH-2A02                                |
|--|---|
| Operating wavelength   | 1490,1550nm                             |
| Detector Type  | InGaAs                                  |
| Power Measurement Range  | -60~+3dBm                               |
| Uncertainty  | ±0.5dB                                  |
| Resolution   | 0.01                                    |
| Operation temperature  | -10~+60 °C                              |
| Storage Temperature  | -25~+70°C                               |
| Auto-off function  | Yes, Auto-off after 10minutes idle time |
| Battery Life @ OPM   | 180 hours                               |
| Battery Life @ VFL   | 60 hours                                |
| Power Supply   | 3pcs AA Batteries                       |
| Weight   | 700g (including batteries)              |
| Size   | 192*102*50                              |
| <b>Standard Packages</b>   |   |
| VFL Power Meter, 3pcs alkaline batteries, User Manual, Cotton swabs and Soft carrying case |   |

## FHP2P01 PON Optical Power Meter

### Description

FHP2P01 PON Optical Power Meter is a small size, low loss and good quality handheld meter. It is designed for the testing, installation and maintenance of FTTX PON network, which can be used for APON, BPON, EPON and GPON network. FHP2P01 PON Optical Power Meter has two output ports for ONU and OLT/Video, which supports CW/burst upstream detection at 1310nm and downstream signal at 1490/1550nm. It can directly show the status of pass, warning or failure by threshold testing. FHP2P01 is an ideal tool for PON installation and maintenance.

### Features

- Handheld, easy-to-carry and use
- P/F testing and normal testing mode
- Two testing ports with "ONU" & "OLT/Video"
- Support 1310nm upstream CW/burst signal and 1490nm/1550nm downstream signal
- Design for networks of APON, BPON, EPON and GPON
- Threshold programmable
- Huge data storage capability
- 900 test results for storage
- Optional SC/APC adapters



| Part Number | Description             |
|-------------|-------------------------|
| FHP2P01     | PON Optical Power Meter |

### Specification

|                       |                                       |            |            |            |
|-----------------------|---------------------------------------|------------|------------|------------|
| Calibrated Wavelength | 1310nm (Burst)                        | 1310nm(CW) | 1490 nm    | 1550 nm    |
| Linearity(dB)         | ± 0.2@1550 ≥ -40dBm                   |            |            |            |
| Isolation Rate(dB)    | >40@1490nm                            | >40@1310nm | >40@1310nm | >40@1310nm |
|                       | >40@1550nm                            | >30@1550nm | >30@1490nm | >30@1490nm |
| Measuring Range (dBm) | -30~+16                               | -40~+16    | -50~+16    | -50~+16    |
| Insertion Loss(dB)    | 1.5                                   |            |            |            |
| Broadband             | 1260~1360                             | 1480~1500  | 1539~1565  |            |
| Accuracy              | 0.5db±1nW @ 1550 nm                   |            |            |            |
| Threshold             | 10 groups(configured via PC-software) |            |            |            |
| Data Storage          | 900                                   |            |            |            |
| Accessories Adaptors  | SC/PC(standard)                       |            |            |            |
| Operating Temperature | -10+50°C                              |            |            |            |
| Relative Humidity     | 0%~95%,non-condensing                 |            |            |            |
| Communication port    | USB port                              |            |            |            |
| Power supply          | 2pcs*Ni-MH AA; USB cable              |            |            |            |
| Dimension             | 160mm*76mm*45mm                       |            |            |            |
| Weight                | About 400g                            |            |            |            |

#### Standard Accessories

2\*SC/PC adapters, 2\*FC/PC adapters, 3\*ceramic sleeves, 2\*AA rechargeable batteries, USB cable, test report, carrying bag, CD software, user manual

#### Optional Accessories

2\*ST/PC adapters

### FHP2G10 10GEPON Down-Stream Power Meter

#### Description

FHP2G10 mainly used in FTTH fiber access network installation and test maintenance. It not only has the functions of the general optical power meter, but also has the down-stream 1577nm and 1490nm wavelength demultiplexing power measurement functions designed specifically for 10GEPON/XGPON, and displays the respective power values of the two wavelengths in the same screen, so that the dimensioning personnel It can truly grasp the power value of a single wavelength optical signal on the line, and can accurately determine whether the optical power value meets the standard.

#### Features

- Equipped with high performance imported light detector
- 850/1270/1300/1310/1490/1550/1577/1625nm 8-wavelength power measurement
- 10GEPON downlink 1490nm and 1577nm sub-wave measurement, with the screen display
- 10GEPON downlink 1490nm and 1577nm threshold setting, Display result as FAIL/WARNING/PASS
- Equip with 10mW VFL, universal connector
- With automatic range conversion, low battery display and automatic shutdown
- 999 groups data storage, with USB ports and PC software



| Part Number | Description                     |
|-------------|---------------------------------|
| FHP2G10     | 10GEPON Down-Stream Power Meter |

#### Specification

| Model                 | FHP2G10                                  |
|-----------------------|--|
| Connector Type        | SC/UPC(OPM port);2.5 Universal(VFL Port) |
| Calibrated Wavelength | 850/1270/1300/1310/1490/1550/1577/1625nm |
| Test Range            | -40~+10dBm                               |
| Test Accuracy         | ±0.2dB                                   |
| Display Resoultion    | 0.01                                     |
| Insolation            | 1490nm>35dB; 1577nm>35dB                 |
| VFL                   | 650nm ± 10nm; 10mW; CW / 2Hz             |
| Data Storage          | 999                                      |
| Data Transfer         | USB                                      |
| Power Supply          | 2 of AA Battery                          |
| Working Temp          | -10°C~+50°C                              |
| Storage Temp          | -20°C~+70°C                              |
| Dimension             | 160L×76W×45H(mm)                         |
| Weight                | 300g                                     |

## FHP3P01 PON Optical Power Meter

### Description

As the industry's advanced PON-specific power meter, FHP3P01 PON Power Meter is the flagship of Grandway's line of testing instruments specifically intended for FTTH and FTTP systems. It is the ideal tool for FTTH/FTTP service activation and troubleshooting.

### Features

- Hand-held and battery operated
- TFT LCD Display with high resolution
- Filtered measurements with distinct power display
- Simultaneous measurement and display power level of 1310,1490,1550nm WL
- Pass/fail function available. Up to 10 user defined threshold
- Ability to upgrade software through USB interface
- 1000 sets data storage
- Software to generate Test Report



| Part Number | Description             |
|-------------|-------------------------|
| FHP3P01     | PON Optical Power Meter |

### Specification

|   |   |                         |                         |
|---|---|-------------------------|-------------------------|
| Measurement Range (Continuous Datastream)       | 1310nm<br>-40dBm~+10dBm                   | 1490nm<br>-40dBm~+10dBm | 1550nm<br>-40dBm~+20dBm |
| Burst Measurement Range (1310nm Bursted Signal) | -30dBm~+10dBm                             |                         |                         |
| Spectral Passband                               | 1310nm<br>1260nm~1360nm                   | 1490nm<br>1480nm~1550nm | 1550nm<br>1539~1565nm   |
| Insertion Loss                                  | 1.5dB                                     |                         |                         |
| Accuracy  | ±0.5dB                                    |                         |                         |
| Linearity                                       | ±0.2dB                                    |                         |                         |
| Data Storage                                    | 1,000 sets                                |                         |                         |
| Display   | 2.8 inch TFT LCD                          |                         |                         |
| Refresh Rate of Display                         | 2.5Hz                                     |                         |                         |
| Threshold                                       | 10sets (configured via PC-based software) |                         |                         |
| Auto Power-off                                  | Yes                                       |                         |                         |
| Number of Ports                                 | 2 (1 for ONU, 1 for OLT & video)          |                         |                         |
| Operating Temperature                           | -10 to +50°C                              |                         |                         |
| Relative Humidity                               | 0%~95%, non-condensing                    |                         |                         |
| Power Supply                                    | 1.2V*4pcs Ni-MH AA; 12V AC/DC Adapter     |                         |                         |
| Battery Life                                    | >20 hours                                 |                         |                         |
| Dimension                                       | 190mm*105mm*55mm(L*W*H)                   |                         |                         |
| Net Weight                                      | 700g                                      |                         |                         |

#### Standard Accessories

2\*FC/PC adapters, 2\*SC/PC adapters, 3\*ceramic sleeves, 4\*AA rechargeable batteries, AC/DC adapter, USB cable, test report, carrying bag, CD software, user manual

#### Optional Accessories

interchangeable ST adapter (model: N000500);  
male FC to female LC adapter for LC connector (model: HD078)

#### Customization

2\*FC/APC adapters, 2\*SC/APC adapters

### FMP-10 MPO Power Meter & FMS-10 MPO Laser Source

#### Description

FMP-10 MPO Power Meter & FMS-10 MPO Laser Source are high cost performance testers to test MPO connectors and patchcords and display all the test results Intuitively on the TFT LCD. They can perform polarity test and frequency identification.

#### Features

- Test all the fibers in MPO connector
- Polarity test
- Display all the optical power on the screen
- Recognize 270Hz, 1000Hz and 2000Hz frequencies

#### Application

- Data center
- MPO patchcord manufacturing
- Research organization and laboratory



| Part Number | Description      |
|-------------|------------------|
| FMP-10      | MPO Power Meter  |
| FMS-10      | MPO Laser Source |

#### Specification

##### FMS-10 MPO Laser Source

|                           |                              |
|---------------------------|------------------------------|
| Optical Interface         | 12 fibers female MPO adaptor |
| Working Wavelength        | 850nm±30nm                   |
| Emitter Type              | VCSEL                        |
| Channel                   | 12                           |
| Power                     | ≥-2dBm                       |
| Stability                 | ≥-0.1dB@1h                   |
| USB Interface             | yes                          |
| Wavelength Identification | reserved                     |
| Frequency                 | CW, 270Hz, 1kHz, 2kHz        |

##### FMP-10 MPO Power Meter

|                                |                                      |
|--------------------------------|--------------------------------------|
| Optical Interface              | 12 fibers female MPO adaptor         |
| Detector Type                  | InGaAs                               |
| Calibrated Wavelength          | 850nm, 1300nm, 1310nm, 1550nm        |
| Channel                        | 12                                   |
| Measuring Range                | -60~+3dBm                            |
| Resolution                     | ±0.01dB                              |
| Stability                      | ±0.5dB                               |
| Max. Input Power               | +13dBm                               |
| Unit                           | dBm/dB (REF)                         |
| Threshold Setting              | 4 wavelengths                        |
| REF Setting                    | 4 wavelengths                        |
| USB Interface                  | yes                                  |
| Data Storage                   | 300 groups of 12 fibers test results |
| Auto Wavelength Identification | yes                                  |
| Polarity Test                  | yes, according to TIA-568-C.0        |
| Frequency Identification       | 270Hz, 1kHz, 2kHz                    |

##### Parameters

|                       |  |
|-----------------------|--|
| Display               | TFT LCD                                    |
| Auto Power-off        | 10 minutes interval                        |
| Power Supply          | rechargeable NiMH batteries, AC/DC adaptor |
| Battery Working Time  | continuous testing ≥10 hours               |
| Operating Temperature | 0 to +50°C                                 |
| Relative Humidity     | 0~95% (non-condensing)                     |
| Dimension             | 190L*105W*55H mm                           |
| Net Weight            | 700g                                       |

##### Standard Accessories

MPO master cord, battery, AC/DC adapter, test report, carrying bag, user manual

## FCA-18 CWDM Power Meter

### Description

FCA-18 CWDM Power Meter is specially designed for CWDM system, covering wavelength from 1270~1610nm. It measures and monitors optical power and attenuation value of 18 channels from wavelength 1270nm to 1610nm wavelength.

All calibrated wavelengths will be tested simultaneously and all test results will show in the LCD screen.

This CWDM power meter features simple operation, quick response and high measurement accuracy which make it an ideal tester in CWDM system installation and maintenance.



### Features

- Simultaneously test and show 18 wavelengths
- Friendly interface and easy operation
- Save and upload test results via USB port
- 1000 records
- Columnar graphics or list mode to show test data
- Color TFT-LCD display, high resolution 320\*240
- Built-in clock and can edit test fiber number
- Quick start operation, requiring no warm-up time
- Light weight

### Specification

| Model                     | FCA-18  |
|---------------------------|---|
| Number of Channels        | 18  |
| Wavelength resolution     | 20  |
| Dynamic range (dBm)       | +5~-40  |
| Uncertainty(dB)           | ±0.5  |
| Resolution(dB)            | 0.01  |
| Measuring Wavelength (nm) | 1270/1290/1310/1330/1350/1370/1390/1410/1430/1450/1470/<br>1490/1510/1530/1550/1570/1590/1610 |
| Date Storage Capacity     | 1000  |
| Communication Port        | USB   |
| Optical interface         | FC\PC(SC available)   |
| Operating Temperature(°C) | -10~+50   |
| Storage Temperature(°C)   | -25~+70   |
| Time of Auto-off(min)     | 10  |
| Power supply              | Rechargeable Battery/AC power adapter   |
| Power adapter(V)          | DC 12V/2A   |
| Dimension(mm)             | 220 x 110 x 70  |
| Time of Operating(h)      | >10   |
| Weight(g)                 | <850  |

#### Standard Packages

CWDM Power Meter, 12V Power Supply Unit, User Manual, Cotton Swabs, Carry Bag, CD, USB

| Part Number | Description      |
|-------------|------------------|
| FCA-18      | CWDM Power Meter |

### VLS-8 Series Mini Visual Laser Source

#### Description

VLS-8 Series Mini Visual Laser Source totally complies with the human engineering. It's small in size, easy to operate, portable and integrated with a launching indicator. A Visual Laser Source is usually used to inspect the damaged or broken point of a optical fiber, cable, patchcord and etc. If the inspected fiber does have a defect, user could find the visual laser at the broken or damaged point. VLS-8 Series Mini Visual Laser Source is suitable for both single mode and multimode fibers. The performance of the visual laser source will act a little different on different fiber coat and color.



| Part Number | Description   |
|-------------|---|
| VLS-8-1     | Visual laser source, output power 1mW, about 5km      |
| VLS-8-10    | Visual laser source, output power ≥10mW, about 12km   |
| VLS-8-15    | Visual laser source, output power ≥15mW, about 14km   |
| VLS-8-30    | V visual laser source, output power ≥30mW, about 15km |

#### Features

- Totally comply with the human engineering design. Small, portable and durable
- Standard multi-adaptor can be applied to connect with almost any adaptor type. Also provides interchangeable fiber adaptors of several common types
- Higher output laser power, Max 15km detecting range
- Integrated with continuous wave and 2Hz modulated wave output function

#### Specification

| Technical parameter   |  |              |              |             |
|-----------------------|--|--------------|--------------|-------------|
| Model                 | VLS-8-1                                  | VLS-8-10     | VLS-8-15     | VLS-8-30    |
| Laser launcher level① | CLASS IIIA                               | CLASS IIIB   | CLASS IIIB   | CLASS IIIB  |
| Output power②         | ≥1mW                                     | ≥10mW        | ≥15mW        | ≥30mW       |
| Detecting range③      | about5km                                 | about12km    | about14km    | about15km   |
| Battery life④         | about23hours                             | about12hours | about10hours | about6hours |
| Laser launcher type   | LD                                       |              |              |             |
| Optical connector     | universal 2.5mm adapter (FC/SC/ST)       |              |              |             |
| Output wavelength     | 650nm                                    |              |              |             |
| Modulation frequency  | CW / 2Hz                                 |              |              |             |
| Power                 | 2*AAA dry batteries                      |              |              |             |
| Working temperature   | 0°C~+40°C ; <90%RH                       |              |              |             |
| Storage temperature   | -20°C~+70°C ; <90%RH                     |              |              |             |
| Accessories           | 2*AAA battery, user manual, packing case |              |              |             |
| Dimension & Size      | L120mm×W33mm×H30mm / about 67.8g         |              |              |             |

| Standard Accessories   |  |
|--|--|
| 2*AAA batteries, carrying bag, user manual                   |  |
| Optional Accessories   |  |
| Male FC to female LC adapter for LC connector (model: HD078) |  |

- Note: ① It is strictly prohibited to direct the human eye and please take precautions to avoid static electricity releasing
- ② The output power is figured out by testing multiple mode optical fiber in 23°C±3°C
- ③ The testing range will be different in different fibers
- ④ The battery life is figured out by testing two new AAA battery in 23°C±3°C. The battery life will be a little different by using different AAA battery.

## FHS1 Series Laser Source

### Description

Grandway provides high precise mini type laser source. The FHS1 series laser source offers excellent stability and portability for accurate fiber optic testing.

Single output port provides stable laser power at dual wavelengths. The compact unit operates in either continuous wave (CW) mode or modulated mode. A low battery indicator reminds the user of replacing the battery

### Features

- Both single mode and multi-mode laser are available
- Single output interface
- Durable and portable
- Auto power-off function
- Integrated with continuous wave output function, 270Hz, 1kHz and 2kHz are available



| Part Number | Description   |
|-------------|---|
| FHS1D02     | Optical laser source, 1310/1550nm, FC/PC connector, -5dBm |



| Part Number | Description  |
|-------------|--|
| FHS1D03     | Optical laser source, 850/1300nm, FC/PC connector, -5dBm |

### Specification

#### FHS1D series laser source

|                       | FHS-1D02  | FHS-1D03         |
|-----------------------|---|------------------|
| Output Wavelength     | 1310nm&1550nm   | 850nm&1300nm     |
| Emitter Type          | LD  |                  |
| Connector             | FC/PC   |                  |
| Output Stability      | Short Term(15minutes):<0.1dB<br>Long Term(5Hours or above):<0.2dB |                  |
| Central Wavelength    | 1310±20nm&1550±20nm   | 850±10nm&1300±20 |
| Spectral Width        | 5nm   |                  |
| Output Frequency(Hz)  | 270,1K,2K   |                  |
| Output Power          | -5dBm   |                  |
| Accuracy              | ±1dB  |                  |
| Auto Power-off        | Yes   |                  |
| Back-light            | Yes   |                  |
| Operating Temperature | -10to+50°C  |                  |
| Storage Temperature   | -20to+70°C  |                  |
| Power Supply          | 4*AAA batteries;5v AC/DC Adaptor                                  |                  |
| Dimension(mm)         | 115L*65W*30H  |                  |
| Net Weight            | 140g  |                  |

#### Standard accessories

FC/PC adapter, 4\*AAA batteries, carrying bag, user manual, test report

#### Optional Accessories:

Male FC to female LC adapter for LC connector (model: HD078)

#### Customization

SC/ST adapter, APC laser launcher



### FHS2 Series Laser Source

#### Description

Grandway provides high precision laser source. The FHS2 series laser source offers excellent stability and portability for accurate fiber optic testing. Dual-wavelength, triple-wavelength and quad-wavelength laser sources are available. If user tests a fiber with both FHS2 series laser source and FHP2 series power meter, the TWIN function can be booted. With this function, the power meter can automatically detect the wavelength FHS2 series laser source launched.

#### Features

- Both single mode and multiple mode laser are available
- Single output interface
- Durable and portable
- Auto power-off function
- TWIN function is available
- Integrated with continuous wave output function, 270Hz, 1kHz and 2kHz are available



| Part Number | Description  |
|-------------|--|
| FHS2D02     | optical laser source, 1310/1550nm, FC/PC connector, -8~-2dBm |

#### Specification

| FHS2D series laser source |  |          |
|---------------------------|--|----------|
|                           | FHS2D02  | FHS2D02F |
| Output wavelength(nm)     | 1310&1550  |          |
| Emitter type              | LD   |          |
| Output stability          | Short term(15min):<±0.05dB@1310,1550nm;±0.1dB@850&1300<br>Long term(8hours):<±0.1dB@1310,1550nm±0.2dB@850&1300 |          |
| Central wavelength        | 1310±20nm&1550±20nm  |          |
| Spectral width            | 5nm  |          |
| Output frequency(Hz)      | 270.1k.2k  |          |
| Output power              | -5dBm  |          |
| Adjustable range          | ±3dB,0.1dB/step  | N/A      |
| Auto power-off            | Yes  |          |
| Back-light                | Yes  |          |
| Operating temperature     | -10to+50°C   |          |
| Storage temperature       | -20to+70°C   |          |
| Power supply              | 2pcs*Ni-MHAA(2500mAh)  |          |
| Dimension(mm)             | 160L*76W*45H   |          |
| Net weight                | 270g   |          |

#### Standard accessories

FC/PC adapter, SC/PC adapter, 3\*ceramic sleeves, 2\*AA rechargeable batteries, AC/DC charger, carrying bag, user manual, test report

#### Optional Accessories:

ST adapter (model: N000500); Male FC to female LC adapter for LC connector (model: HD078)

#### Customization:

APC laser launcher



| Part Number | Description   |
|-------------|---|
| FHS2D02F    | optical laser source, 1310/1550nm, FC/PC connector, -5dBm, fixed output power |



| Part Number | Description   |
|-------------|---|
| FHS2D03     | optical laser source, 850/1300nm, FC/PC connector, -8~-2dBm |



| Part Number | Description  |
|-------------|--|
| FHS2D03F    | optical laser source, 850/1300nm, FC/PC connector, -5dBm, fixed output power |

## FHS3111 Light Source

### Description

This is our new-type light source. It provides single to quad-wavelength output including 650nm visible light source and 850/1300nm wavelength for multi-mode fiber or 1310/1550nm dual-wavelength for single mode fiber. Together with new-type power meter, they combine the accurate test solution for the optical fiber networks.

### Features

- Portable size and easy operation
- Large LCD screen
- Auto shut down function
- High stable single or quad-wavelength output at CW or modulated mode
- Low power self-inspecting function



| Part Number | Description  |
|-------------|--------------|
| FHS3111     | Light Source |

### Specification

| Type  | FHS3111                                       |           |
|---|---|-----------|
| Wavelength(nm)  | 1310/1490/1550                                | 1310/1550 |
| Emitter Type  | FP-LD   |           |
| Output Power(dBm)   | 1310/1490/1550(-6~-7dBm)                      |           |
| Modulation  | CW / 2Hz (650) / 270Hz,1KHz,2KHz (1310, 1550) |           |
| Fiber Type  | SM, MM  |           |
| Connector   | FC  |           |
| Power Supply  | AA 1.5V(3pcs batteries),9V AC Adapter         |           |
| Operating Temperature(°C)   | -10~+60                                       |           |
| Storage Temperature(°C)   | -25~+70                                       |           |
| Battery Life(h)   | 45  |           |
| Dimension(mm)   | 185x84x48                                     |           |
| Weight(g)   | 180   |           |
| <b>Standard Packages</b>  |   |           |
| Main unit, Operation Manual, Cleaning Swabs, Power Supply Adapter |   |           |

### FBS8001 Bench top fiber optical laser source

#### Description

FBS8001 desktop stable laser source through the automatic power control (APC) unique technology and automatic temperature control (ATC) technology, high stability output power and wavelength stability, can satisfy the multiple needs of customers, can achieve single wavelength output. It is an ideal instrument for scientific research and production under the condition of large variation range of attenuation and required stable power and wavelength. It is widely used in optical communications, optical transmission, optical fiber sensing and other fields of scientific research, production and engineering.



#### Features

- Stable output power is high: up to 0.005dB
- The output power can be adjusted separately
- The wavelength stability
- The high precision APC and ATC circuit
- LCD status shows all parameters
- CWDM or DWDM or any other optional wavelength
- There are 1 ~ 4 wavelengths and up to 4 output ports available
- Provide two kinds of internal and external modulation mode

| Part Number | Description                          |
|-------------|--------------------------------------|
| FBS8001     | Bench top fiber optical laser source |

#### Specification

|                                    |  |
|------------------------------------|--|
| Specifications                     | Desktop stability of light source  |
| Maximum output (mW)                | 10   |
| Operating wavelength (nm)          | 1310nm,1550nm or customized  |
| Output power stability (dB) (10mW) | ±0.005(15min/10mW,25°C)only 1310/1550nm<br>±0.025(8Hour/10mW,25°C)only 1310/1550nm |
| Laser type                         | DFB or customized  |
| Output return loss (dB)            | >45dB  |
| TEC stability (°C)                 | ±0.1   |
| TEC working range (°C)             | 20~30  |
| Light source interface             | FC/APC(FC/PC optional)   |
| Adjust the interval (°C)           | Temperature(°C) Coarse 0.1, fine 0.01<br>Power(mW) Coarse 0.2, fine 0.02           |
| Power                              | AC 90~260  |
| Operating temperature (°C)         | 0~50   |
| Storage temperature (°C)           | -40~80   |
| Weight (kg)                        | <4   |
| Dimensions (mm)                    | 235×380×145  |

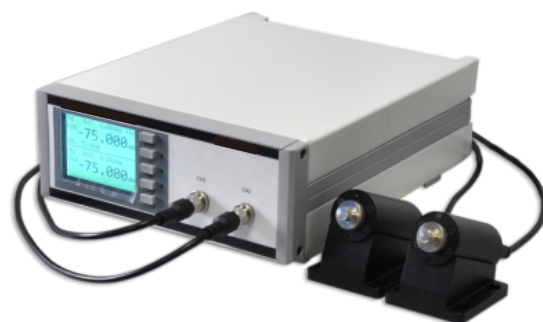
#### NOTES:

- 1) The above technical indicators only for 10mW, 1310nm, 1550nm single-mode wavelength
- 2) Customizable 2mW, 5mW, or other output power of light sources; Customizable DFB \ FP \ LED \ VCSEL and other types of lasers; Customizable different wavelength laser light source;
- 3) Detailed indicators of custom light sources, please consult our business staff or technical staff.

## FBP7001 Bench top fiber optical power meter

### Description

FBP7001 optical power meter is a new generation of desktop optical power meter developed by Grandway Company based on the latest market application and combined with years of research and design experience of optical power meter. In addition to providing superior dynamic range and linearity specifications, the GW8101 is also equipped with a wealth of menu design features such as threshold setting, alarm configuration, split ratio, PDL, uniformity, additional loss and other functions, removable external optical power Meters probe to meet the majority of optical device manufacturers, research institutes, universities applications.



| Part Number | Description                         |
|-------------|-------------------------------------|
| FBP7001     | Bench top fiber optical power meter |

### Features

- Optical power meter can be configured as external probe or panel installation
- Intelligent alarm and threshold configuration
- buzzer alarm and font color alarm settings
- PDL function test function
- Split ratio, additional loss, uniformity test function
- Chinese and English configuration function
- Provide RS232 communication function, realize unattended power monitoring, automatically store data

### Specification

|                                   |   |
|-----------------------------------|---|
| TSpecifications                   | Double light power meter                    |
| Wavelength range (nm)             | 850~1700                                    |
| Probe type                        | InGaAs                                      |
| Detector size                     | Φ2.0mm                                      |
| Measuring range (dBm)             | +5 ~ -75                                    |
| Linearity                         | ±0.04dB (+5~-50dBm)<br>±0.08dB (-50~-60dBm) |
| Uncertainty                       | ±3%   |
| Relative port to port uncertainty | 0.04 dB                                     |
| Measurement Unit                  | dBm/W                                       |
| Display resolution                | 0.1/0.01/0.001 dB                           |
| Working temperature (°C)          | -5 ~ +40                                    |
| Storage temperature (°C)          | -25 ~ +70                                   |
| Working power (V)                 | AC90 ~ 260 ( 50Hz )                         |
| Weight (kg)                       | < 5   |
| Dimensions (mm)                   | 235×300×96                                  |

#### NOTES:

- 1) Optical power meter can use InGaAs\Si\Ge as detector, and its wavelength range is different. If users want to test other wavelengths, they can refer to the corresponding products of this series.
- 2) The high speed optical power meter uses a large diameter 2mm detector. If the user has the requirements for the detector area, can refer to the other products of this series or contact our company.
- 3) The linearity index is measured at 20~25 °C at room temperature and the average time is set to 100mS.
- 4) The channel uncertainty is the maximum deviation of the optical signal input range at +5~-60dBm and the repeated test of two channels at room temperature of 20~25°C.

## FHM2 Series Optical Multimeter

### Description

FHM2 series optical multimeter integrates a stable laser source and a precise optical power meter.

The laser source launches the laser whose wavelengths are 1310/1490/1550nm or 1310/1550nm (according to different models). The optical power meter can recognize the wavelength automatically. With the assorted software, user can generate a report or manage the test report easily.

### Features

- Three output wavelength at one output interface
- Both continuous wave and modulated wave are available, the frequency of modulated signal is 270Hz, 1kHz, 2kHz
- Back light display
- Integrated with charging circuit
- Data storage up to 999 test results
- USB interface for connecting PC with assorted software
- Automatic shutdown in low power status



| Part Number | Description   |
|-------------|---|
| FHM2A01     | Dual wavelength optical multimeter, calibration wavelength: 850/1300/1310/1490/1550/1625nm, launch wavelength: 1310/1550nm, measure range:-70 to +10dBm |



| Part Number | Description  |
|-------------|--|
| FHM2B01     | Dual wavelength optical multimeter, calibration wavelength: 850/1300/1310/1490/1550/1625nm, launch wavelength:1310/1550nm, measure range:-50 to +26dBm |

### Specification

#### FHM2x01 dual wavelength multimeter

|                                | FHM2A01                               | FHM2B01    |
|--------------------------------|---------------------------------------|------------|
| <b>Power meter parameters</b>  |                                       |            |
| Calibration wavelength(nm)     | 850/1300/1310/1490/1550/1625          |            |
| Connector                      | interchangeable FC/SC (ST optional)   |            |
| Data storage(items)            | 999                                   |            |
| Ref.Value                      | Yes                                   |            |
| Display Units                  | dB/dBm/mW/uW                          |            |
| Display precision(dB)          | 0.01                                  |            |
| Accuracy                       | ±5%±1nW                               |            |
| Wavelength Recognition         | 1310/1550/(input power≥-40dBm)        |            |
| Tone Detection                 | 270Hz/1KHz/2KHz(input power≥-40dBm)   |            |
| Measuring Range(dBm)           | -70 to +10                            | -50 to +26 |
| <b>Laser source parameters</b> |                                       |            |
| Output Wavelength(nm)          | 1310/1550                             |            |
| Connector                      | fixed FC/PC                           |            |
| Modulation Frequency           | 270/1K/2K Hz                          |            |
| Output Power                   | -5dBm±0.5dB                           |            |
| Stability Long-term(8h)        | ±0.1dB@1310/1550nm                    |            |
| Stability Short-term(15min)    | ±0.05dB@1310/1550nm                   |            |
| Wavelength Recognizing Code    | Yes                                   |            |
| Auto Power off                 | √                                     |            |
| <b>General parameters</b>      |                                       |            |
| Power Supply                   | 2pcs *NiHM 1.2V,2000mAh;AC/DC Adaptor |            |
| PC Interface                   | USB                                   |            |
| Battery Life                   | >100Hours(laser off)                  |            |
| Storage Temperature            | -20°C~+70°C                           |            |
| Operating Temperature          | -10°C~+50°C                           |            |
| Relative Humidity              | <90%(Non-condensing)                  |            |
| Dimension(mm)                  | 168L×76W×45H                          |            |
| Weight(g)                      | 260                                   |            |

#### Standard Accessories

FC adapter, SC adapter, 2\*rechargeable batteries, AC/DC adapter, USB cable, carrying bag, CD disk, user manual, test report

#### Optional Accessories

ST adapter (model: N000500)

## Specification

### FHM2x02 multimeter

|                                | FHM2A02   | FHM2B02    |
|--------------------------------|---|------------|
| <b>Power meter parameters</b>  |   |            |
| Calibration Wavelength(nm)     | 850/1300/1310/1490/1550/1625                      |            |
| Connector                      | interchangeable FC/SC (ST optional)               |            |
| Data Storage (items)           | 999   |            |
| Ref.Value                      | Yes   |            |
| Display Units                  | dB/dBm/mW/uW                                      |            |
| Display Precision(dB)          | 0.01  |            |
| Accuracy                       | ±5%±1nW   |            |
| Wavelength Recognition         | 1310/1490/1550/(input power≥-40dBm)               |            |
| Tone Detection                 | 270Hz/1KHz/2KHz(input power≥-40dBm )              |            |
| Measuring Range(dBm)           | -70 to +10  | -50 to +26 |
| <b>Laser source parameters</b> |   |            |
| Output Wavelength(nm)          | 1310/1490/1550                                    |            |
| Connector                      | fixed FC/PC (interchangeable FC/SC/ST customized) |            |
| Modulation Frequency           | 270/1K/2K Hz                                      |            |
| Output Power                   | -5dBm±0.5dB                                       |            |
| Stability Long-term(8h)        | ±0.1dB@1310/1550nm;±0.2dB@1490nm                  |            |
| Stability Short-term(15min)    | ±0.05dB@1310/1550nm;±0.1dB@1490nm                 |            |
| Wavelength Recognizing Code    | Yes   |            |
| Auto Power off                 | √   |            |
| <b>General parameters</b>      |   |            |
| Power Supply                   | 2pcs *NiHM 1.2V,2000mAh;AC/DC Adaptor             |            |
| PC interface                   | USB   |            |
| Battery Life                   | >100Hours(laser off)                              |            |
| Storage Temperature            | -20°C~+70°C                                       |            |
| Operating Temperature          | -10°C~+50°C                                       |            |
| Relative Humidity              | <90%(Non-condensing)                              |            |
| Dimension(mm)                  | 168L×76W×45H                                      |            |
| Weight(Gram)                   | 260   |            |

### Standard Accessories

FC adapter, SC adapter, 2\*rechargeable batteries, AC/DC adaptor, 3\*ceramic sleeves, USB cable, carrying bag, CD disk, user manual, test report

### Optional Accessories

ST adapter (model: N000500), 1.25mm PD adapter, 2.5mm PD adapter

### Customization

APC



### Part Number Description

**FHM2A02** Triple wavelength optical multimeter, detect wavelength: .850/1300/1310/1490/1550/1625nm, launch wavelength: 1310/1490/1550nm, measure range: -70 to +10dBm



### Part Number Description

**FHM2B02** Triple wavelength optical multimeter, detect wavelength: .850/1300/1310/1490/1550/1625nm, launch wavelength: 1310/1490/1550nm, measure range: -50 to +26dBm

### OFI-3 Optical Fiber Identifier

#### Description

OFI-3 Optical Fiber Identifier is a low cost, portable instrument designed to detect optical signals without disrupting traffic. Based on non-destructive macrobending technology, the OFI-3 doesn't disrupt traffic, damage or overstress the fiber, enabling efficient, accurate and reliable data acquisition. During maintenance, installations, rerouting or restorations, it's often necessary to isolate a specific fiber, By simply clamping the OFI-3 onto a fiber, the OFI-3 will indicate if there is a signal, a modulated signal, or traffic and show signal direction.



| Part Number | Description              |
|-------------|--------------------------|
| OFI-3       | Optical Fiber Identifier |

#### Features

- "One button meter", convenient and easy to use
- Detect a variety of optical tones, 270Hz, 1kHz and 2kHz
- Powered by 2 units of 1.5V AA alkaline batteries
- RB0.25mm, RB0.9mm, RB3.0mm plungers available
- Transmission direction indication
- Intensity display of optical signal
- Low battery indication
- Buzz indication function

#### Specification

|                               |  |
|-------------------------------|--|
| Recognizable Wavelength Range | 900 to 1650nm  |
| Recognizable Signal Type      | CW, 2kHz, 1kHz, 270Hz ± 5%   |
| Detector Type                 | InGaAs 2pcs  |
| Clamp Type                    | H0.9/0.25 for bare fibers; H3.0 for jacketed fiber   |
| Sensitivity @1310nm           | +11dB to -20 dBm (Continuous Wave); +11dB to -10 dBm (Modulated Signal)                      |
| Sensitivity @1550nm           | +11dB to -30 dBm (Continuous Wave); +11dB to -18dBm (Modulated Signal)                       |
| LED Indicator                 | Signal traffic; signal frequency (2kHz/1kHz/270Hz); signal intensity (5 grades); low battery |
| Operating Temperature         | -10 to +50°C   |
| Storage Temperature           | -20 to +70°C   |
| Power Supply                  | 1.5V AA batteries * 2pcs   |
| Dimension (mm)                | 202L * 62W * 36H   |
| Weight (g)                    | 300  |

#### Standard accessories

2\*batteries, 3\*adapter heads (RB0.25mm, RB0.9mm and RB3.0mm), carrying bag, user manual, test report

#### Optional accessories

sun shield, RB2.0mm adapter head

## OFS-1 & OFF-1 Optical Fiber Finder

### Description

OFS-1 & OFF-1 Optical Fiber Finder consists of OFS-1 Tone Generator and OFF-1 Live Fiber Identifier. In the ODF and cabinet of the machine room, all the fibers are messy because of non-standard cabling or labeling. It is hard to find the right patchcord in such situation. OFS-1 & OFF-1 Optical Fiber Finder can help find the cable and patchcord without interrupting online service.



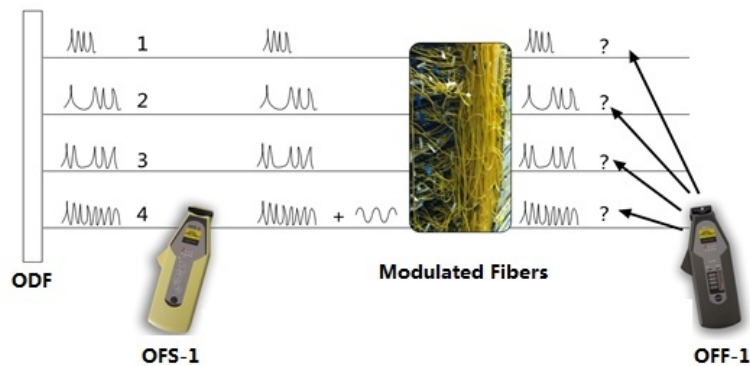
| Part Number   | Description          |
|---------------|----------------------|
| OFS-1 & OFF-1 | Optical Fiber Finder |

### Features

- Find the optical fiber without service interruption
- <1dB insertion loss, no influence to optical signal transmission in the fiber
- Auto identify the testing signal and indicate the result by LED indication and the sound of beep
- Clear LED indication
- Bluetooth function for wireless remote control

### Applications

- Central office
- ODF and cabinet



### Specification

#### OFS-1 Tone Generator

|                           |                                 |
|---------------------------|---------------------------------|
| Frequency                 | 1Hz low frequency               |
| Insertion Loss            | <1dB@1310nm                     |
| Applicable Fiber Type     | G.652D, G.655, G.657A1, G.657A2 |
| Applicable Fiber Diameter | 0.9/1.6/2/3mm                   |

#### OFF-1 Live Fiber Identifier

|  |   |
|--|---|
| Wavelength                               | 900~1650nm                                    |
| Recognizable Signal Type                 | CW, 270Hz±5%, 1kHz±5%, 2kHz±5%, 1Hz           |
| Adapter Head                             | RB0.25, RB0.9, RB2.0, RB3.0                   |
| Sensitivity                              | minimum -50dBm                                |
| Sensitivity without Adapter Loss @1310nm | RB0.25: -20dBm, RB0.9: -20dBm, RB3.0: -20dBm  |
| Sensitivity without Adapter Loss @1550nm | RB0.25: -30dBm, RB0.9: -30dBm, RB3.0: -30dBm  |
| Measuring Range                          | 1310nm: +10dBm~ -20dBm; 1550nm: +10dBm~-30dBm |

#### Parameter

|                       |  |
|-----------------------|--|
| Power Supply          | 2*AA dry batteries (continuous working time: 38 hours) |
| Operating Temperature | -10 to +50°C   |
| Storage Temperature   | -20 to +70°C   |
| Dimension             | 202L*62W*38H mm  |
| Net Weight            | 300g   |

#### Standard Accessories

OFS-1 Tone Generator, OFF-1 Live Fiber Identifier, 4\*batteries, adapter heads (RB0.25mm, RB0.9mm RB2.0mm and RB3.0mm), test report, carrying bag, user manual



### OTS-4 Optical Talk Set

#### Description

Two pairs of OTS-4 Optical Talk Sets support Tri-party communication via Clip-on coupler device. The high dynamic range ensures the quality of voice and long distance transmission. The dynamic range of OTS-4 is 50dB at 1550nm for long distance communication. Hands-free (HF) speaker provides users with convenient operation.

Why should we use the optical talk set? In some remote areas, the mobile phone may be out of service and tow operators, who are laying down a optical cable for optical network, have to have a conversation, in these situations, the talk set is essential. With the talk set the two operators can have a conversation via a intact optical fiber. It is easy and reliable.



| Part Number | Description  |
|-------------|--|
| OTS-4       | Optical talk set, A:1310nm,B:1550nm (unit A works at 1310nm, unit B works at 1550nm), FC/PC connector,50dB |

#### Features

- Power-saving design, long-time operation
- Articulate voice, low background noise
- Judgmental calling function
- 32 steps volume control
- Low-power alarm
- Maximum dynamic range 50dB@1550nm for long distance communication
- Able to be used as a steady laser source

#### Specification

|                          |  |
|--------------------------|--|
| Wavelength               | A:1310nm,B:1550nm (unit A works at 1310nm, unit B works at 1550nm) |
| Telecommunication System | Full duplex communication  |
| Fiber Type               | SM & MM (the dynamic range will shrink 20dB for MM fiber)          |
| Spectral Width           | <15nm  |
| Adaptor Type             | FC/PC  |
| Dynamic Range            | 50dB   |
| Output Power             | -3dBm  |
| Power Supply             | Replaceable build-in Ni-MH Battery & .AC/DC adaptor                |
| Operating Hours          | 40 hours (standard)  |
| Tri-party Communication  | √  |
| Hands-free Speaker       | YES  |
| Dimension                | 220L*110W*45H  |
| Operating Temperature    | -10~+50°C  |
| Storage Temperature      | -20~+70°C  |
| Operating Humidity       | <90%(Non-condensing)   |
| Net Weight               | 550g (including battery)   |

#### Standard accessories

main units (unit A and unit B), 2\*headphones, 12\*AA rechargeable batteries, 2\*carrying bags, 2\*AC/DC charger, 2\*user manuals, test report

#### Optional accessories

Clip-on coupler, tri-party communication line

#### Customization

SC/PC adaptor, ST/PC adaptor

## FHA2 Series Optical Attenuator

### Description

Grandway provides high precise digital optical attenuator. The FHA2 digital variable optical attenuator is a compact, portable instrument widely used in fiber link certification and routine maintenance as well as in lab environment.



#### Part Number Description

**FHA2S01** Digital variable optical attenuator, 0~80dB, 1310nm/1550nm



#### Part Number Description

**FHA2S02** Digital variable optical attenuator, 0~60dB, 1310nm/1550nm

### Features

- Low insertion loss, wide attenuation range
- Two attenuation steps are available: 1dB, 0.05dB
- Reference function
- Presetting values to save frequently used values
- Suitable for the testing project of optical transmission system
- Able to be applied in test lab & other fiber optical works



### Specification

|                        | FHA2S01   | FHA2S02       |
|------------------------|---|---------------|
| Attenuation Range      | 3~80dB  | 3~60dB        |
| Fiber Type             | SMF 9/125μm   |               |
| Attenuation mode       | Single-directional  |               |
| Calibrated Wavelengths | 1310nm/1550nm   |               |
| Linearity              | ≤0.3dB  |               |
| Accuracy               | 0.2dB@0~30dB  | 0.2dB@0~20dB  |
|                        | 1.0dB@30~60dB   | 0.5dB@20~50dB |
|                        | 2.0dB@60~80dB   | 1.0dB@50~60dB |
| Insertion Loss         | <3dB  |               |
| Return Loss            | >50dB(PC type connector)  |               |
| Max Input Power        | +24dBm  |               |
| Power Supply           | 1.2V Ni-MH Battery *2pcs  |               |
| Connector              | Interchangeable FC/PC, SC/PC connectors. (FC/APC, SC/APC are available at time of ordering) |               |
| Operating Temperature  | -10°C to +50°C  |               |
| Storage Temperature    | -20°C to +60°C  |               |
| Relative Humidity      | 0%~95%(non-condensing)  |               |
| Dimension(mm)          | 160L*76W*45H(mm)  |               |
| Net Weight             | 360g(Battery included)  |               |

#### Standard Accessories

2\*FC/PC adapters, 2\*SC/PC adapters, 2\*rechargeable batteries, AC/DC adapter, 3\*ceramic sleeves, carrying bag, user manual, test report

#### Optional Accessories

2\*ST adapters (model: N000500);  
male FC to female LC adapter for LC connector (model: HD078)

### GW6700 Optical Cable Identifier

#### Description

GW6700 Optical Cable Identifier can accurately identify the specific cable from a bunch of aerial, duct, or direct buried cables by connecting it to one fiber with FC/APC connector in the cable and knocking the cables.

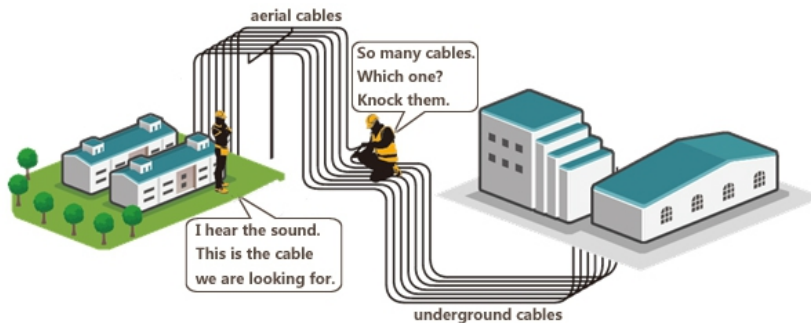
When knocking the specific cable, GW6700 Optical Cable Identifier will transform mechanical vibration to video and sound signal, which will help find the target cable. It could display the distance from the knocking point to the testing point. .



#### Features

- No need to cut the cable, easy and quick
- High SNR
- Low power consumption
- High dynamic range, up to 80km
- Various communication and storage interfaces, sable system

| Part Number | Description              |
|-------------|--------------------------|
| GW6700      | Optical Cable Identifier |



#### Specification

##### FMS-10 MPO Laser Source

| Model                 | GW6700A   | GW6700B | GW6700C |
|-----------------------|---|---------|---------|
| Fiber Number          | single fiber  |         |         |
| Wavelength            | 1310 or 1550nm  |         |         |
| Min. Output Power     | -15dBm  | -3dBm   | +9dBm   |
| Max. Distance         | 20km  | 50km    | 80km    |
| SNR                   | >40dB   |         |         |
| VFL Distance          | 10km  |         |         |
| Fiber Type            | SM  |         |         |
| Optical Connector     | FC/APC  |         |         |
| Display               | 5.6 inch touch screen   |         |         |
| Input Mode            | TIF touch screen + button   |         |         |
| Output Mode           | video: active display of real-time waveform<br>audio: dual channel audio output |         |         |
| Power Supply          | DC12V/5A  |         |         |
| Lithium Battery       | 7.4V, 7.5Ah, continuous working time ≥30h                                       |         |         |
| Power                 | ≤4.5w   |         |         |
| Dimension             | 255H*155W*72L mm  |         |         |
| Net Weight            | 1.5kg (including battery)   |         |         |
| Operating Temperature | 0 to +50°C  |         |         |
| Storage Temperature   | -20 to +70°C  |         |         |

##### Standard Accessories

AC/DC adapter, headphone, adapter, patchcord, coupler, test report, carrying bag, user manual

## FIM-4 Fiber Microscope Probe

### Description

FIM-4 Fiber Microscope Probe features with USB function to connect the laptop or PC directly, which includes image sensor inside the probe to have real-time inspection, no need for any additional power cord and driver. It can also be equipped with EFD3.3.0 Data Software to have end face verified based on different IEC/IPC internal criteria or customize. All spots, scratches, defects, etc. around end face can be easily figured out, measured and counted with pdf or excel report file generated. It's most applied in fiber operator and research institution.



| Part Number | Description            |
|-------------|------------------------|
| FIM-4       | Fiber microscope probe |

### Features

- Zoomable lens
- High alignment accuracy
- 400X magnification
- Print report
- Adapters for different kinds of terminal

### Specification

| Items                       | Value                            |
|-----------------------------|----------------------------------|
| Magnification               | 400X                             |
| Resolution                  | 1.0 $\mu$ m                      |
| Field of View               | 0.40*0.31mm                      |
| Working/Storage Temperature | -18 $^{\circ}$ C-35 $^{\circ}$ C |
| Dimension                   | 235*95*30mm                      |
| Sensor                      | 1/3 decimetre, 2 million pixels  |
| Weight                      | 0.15kg                           |
| USB Interface               | 1.1/2.0                          |

#### Standard Accessories

| Name  | Quantity |
|---|----------|
| FIM-4 Fiber Microscope Probe                                  | 1pc      |
| Adapter SC-PC-F (for SC/PC adaptor)                           | 1pc      |
| Adapter FC-PC-F (for FC/PC adaptor)                           | 1pc      |
| Adapter LC-PC-F (for LC/PC adaptor)                           | 1pc      |
| Adapter 2.5mm-Male (for 2.5mm connector, SC/PC, FC/PC, ST/PC) | 1pc      |

### FIM-5 Fiber Microscope

#### Description

FIM-5 Fiber Microscope is used to inspect end-face of fiber optic connectors. It magnifies 125um fibers 400 times, enlarging picture through a video signal to the display where the status of fiber end-face is showed clearly.

Not only portable and easily in-hand, FIM-5 Fiber Microscope is also multi-functional. It can detect simplex and duplex fiber ends located in both male and female connectors. Also, working stably is it's another feature. It eliminates the need to find solutions for hard-to-reach areas inspection, which can detect connectors even installed on the backside of patch panels or inside hardware devices, providing you a completely convenience for checking .

#### Features

##### Fiber Microscope Probe:

- Consistent alignment, simple to operate
- Unidirectional focusing, quick and accurate imaging.
- 400X magnification, clear image Display
- Small, light, and portable
- Changeable high capacity batteries
- Photo, video and record tested fiber
- Brightness and Contrast adjustable

#### Specification

| Fiber Microscope Probe                              |                          |
|---|--------------------------|
| Magnification                                       | 400X                     |
| Resolution  | <1μm                     |
| View of Field                                       | X: 0.3165<br>Y: 0.285    |
| Focus Direction                                     | unidirectional           |
| Focus Speed   | 2~6S                     |
| Alignment   | >98%                     |
| Output Port   | Dual pins AV port        |
| Weight  | 110g                     |
| Dimension   | 180L*22W*56H (mm)        |
| Display   |                          |
| Screen Dimension                                    | 2.7 inch / 960*240       |
| Enlarged Size                                       | 22mm                     |
| Picture   | Single-framed 640x480JPG |
| Timer   | 5/15/30mins selections   |
| Batteries   | Li-ion1800mAh            |
| Languages   | English/Chinese/Russian  |
| TF Storage  | Support 32G              |
| Input/Output Port                                   | AV /USB2.0               |
| Weight  | 85g                      |
| Dimension   | 78L*22W*56H (mm)         |
| Standard Accessories                                |                          |
| Name  | Quantity                 |
| Fiber microscope probe                              | 1pc                      |
| 2.7 inch display                                    | 1pc                      |
| SC-PC-F (For SC/PC adaptor)                         | 1pc                      |
| FC-PC-F (For FC/PC adaptor)                         | 1pc                      |
| LC-PC-F (For LC/PC adaptor)                         | 1pc                      |
| 2.5PC-M (For 2.5mm connectors, SC/PC, FC/PC, ST/PC) | 1pc                      |
| Li-ion batteries                                    | 2pcs                     |
| Charger   | 1pc                      |
| USB cable   | 1pc                      |
| Earphone cable                                      | 1pc                      |
| 8G TF Reader  | 1pc                      |
| Soft case   | 1pc                      |



| Part Number | Description      |
|-------------|------------------|
| FIM-5       | Fiber microscope |

## FIM-6 Fiber Microscope

### Features

- Include Pass/Fail software according to IEC 61300-3-35
- Portable and one handed operation
- Several tips available (Both female and male tips)
- Electric power by USB
- Save tested analysis report on PC by USB device
- Control the display size
- Anti-slip Grip design and Easy Focus
- Complied with RoHS
- CE/FCC approved



| Part Number | Description      |
|-------------|------------------|
| FIM-6       | Fiber Microscope |

### Application

- Inspect fiber optic connectors directly or connectors in adapters

### Specification

|                                     |                                |
|-------------------------------------|--------------------------------|
| Magnification                       | 260~400X (digital)             |
| Filed of Vision                     | 400um x 300um                  |
| Focus                               | manual, maximum 2mm in and out |
| Focus Direction                     | unidirectional                 |
| CCD                                 | 1/4" CMOS                      |
| Power Supply                        | computer USB electric power    |
| Software                            | for Windows 8, 7 and XP        |
| USB                                 | 2.0                            |
| Weight                              | 150g                           |
| Dimension for Handset (without Tip) | 185mm (L) x 24mm (T)           |

#### Standard Accessories

| Name                             | Quantity |
|----------------------------------|----------|
| Handset, including USB           | 1pc      |
| Tip for SC/PC and FC/PC adapters | 1pc      |
| Tip for LC/PC adapter            | 1pc      |
| Software                         | 1pc      |
| Manual                           | 1pc      |

### FIM-7 Fiber Microscope

#### Features

- WiFi and USB connection to Smartphone and PC
- Android App and iOS (Apple) App both
- Pass/Fail Analysis to IEC 61300-3-35
- Several tips available (Both female and male tips)
- External Interface: mini 5-pin type
- Save inspected images and reports
- Real-time report in field through smartphone
- Built-in rechargeable battery
- No need exterior Wireless AP or Module
- Anti-slip Grip design and Easy Focus
- Complied with RoHS
- CE/FCC approved



| Part Number | Description      |
|-------------|------------------|
| FIM-7       | Fiber Microscope |

#### Application

- Inspect fiber optic connectors directly or connectors in adapters

#### Specification

|                                     |  |                                      |
|-------------------------------------|--|--------------------------------------|
| Magnification                       | 260~400X   |                                      |
| Filed of Vision                     | 400um x 300um                                    |                                      |
| Focus                               | manual, maximum 2mm in and out                   |                                      |
| WiFi                                | 2.4GHz WiFi IEEE 802.11b/g/n                     |                                      |
| Power of Charger                    | 110/220V@50/60Hz Charger or USB Cable with PC    |                                      |
| Battery                             | 3.7V 1300mA Rechargeable Lithium Polymer Battery |                                      |
| Battery Running Time                | about 4 hours (continuous usage)                 |                                      |
| USB Cable                           | mini 5-pin to USB 2.0 for Windows XP, WIN7/8     |                                      |
| Software                            | For PC   | Pass/Fail Analysis to IEC 61300-3-35 |
|                                     | For Smartphone                                   | Android App and iOS (Apple) App      |
| Weight                              | 170g   |                                      |
| Dimension for Handset (without Tip) | 185mm (L) x 24mm (T)                             |                                      |

#### Standard Accessories

| Name  | Quantity |
|---|----------|
| Handset, including WiFi                               | 1pc      |
| AC battery charger, including USB to mini 5-pin cable | 1pc      |
| Tip for SC/PC and FC/PC adapters                      | 1pc      |
| Tip for LC/PC adapter                                 | 1pc      |
| Software  | 1pc      |
| Manual  | 1pc      |

## Optional Tips for FIM-6 and FIM-7 Fiber Microscope

| Item | Name                          | Function   |
|------|-------------------------------|--|
| 1    | ST/PC Female Tip              | For ST/PC adapter                                  |
| 2    | E2000/PC Female Tip           | For E2000/PC adapter                               |
| 3    | MPO/MTP/PC Female Tip         | For MPO/PC & MTP/PC adapters                       |
| 4    | SMA/PC Female Tip             | For SMA/PC adapter                                 |
| 5    | LX.5/PC Female Tip            | For LX.5/PC adapter                                |
| 6    | LEMO/PC Female Tip            | For LEMO/PC adapter                                |
| 7    | SC/APC Female Tip             | For SC/APC adapter                                 |
| 8    | FC/APC Female Tip             | For FC/APC adapter                                 |
| 9    | LC/APC Female Tip             | For LC/APC adapter                                 |
| 10   | E2000/APC Female Tip          | For E2000/APC adapter                              |
| 11   | MPO/MTP/APC Female Tip        | For MPO/APC & MTP/APC adapters                     |
| 12   | LX.5/APC Female Tip           | For LX.5/APC adapter                               |
| 13   | 2.5mm/PC Male Tip             | For 2.5mm connectors, SC/PC, FC/PC, ST/PC, etc.    |
| 14   | 1.25mm/PC Male Tip            | For 1.25mm connectors, LC/PC, MU/PC                |
| 15   | MPO/MTP/PC Male Tip           | For MPO/PC & MTP/PC connectors                     |
| 16   | 3.2mm/PC Male Tip             | For SMA/PC connector                               |
| 17   | LEMO/PC Male Tip              | For LEMO/PC connector                              |
| 18   | 2.5mm/APC Male Tip            | For 2.5mm connectors, SC/APC, FC/APC, ST/APC, etc. |
| 19   | 1.25mm/APC Male Tip           | For 1.25mm connectors, LC/APC, MU/APC              |
| 20   | MPO/MTP/APC Male Tip          | For MPO/APC & MTP/APC connectors                   |
| 21   | SC/PC Female Long Tip         | For SC/PC adapter                                  |
| 22   | LC/PC Female Long Tip         | For LC/PC adapter                                  |
| 23   | SC/APC Female Long Tip        | For SC/APC adapter                                 |
| 24   | LC/APC Female Long Tip        | For LC/APC adapter                                 |
| 25   | Angled SC/PC Female Long Tip  | For SC/PC adapter                                  |
| 26   | Angled LC/PC Female Long Tip  | For LC/PC adapter                                  |
| 27   | Angled SC/APC Female Long Tip | For SC/APC adapter                                 |



### FIM-8 Fiber Optic Inspection Microscope Kit

#### Description

FIM-8 Fiber Optic Inspection Microscope Kit is a precision illuminated zoom microscope with 160-200x magnification power. Focus can be adjusted by turning the wheel and the rotatable bulb which can pinpoint the light on the object.

#### Features

- ON/OFF switch, bulb rotation knob
- 3 built-in magnification 160X, 180X and 200X
- Focus wheel, designed with film control dial to hold focus
- Universal 2.5mm adaptor is suitable for SC, FC and ST connector ferrules,
- universal 1.25mm adaptor for LC and MU connector ferrules, and 3.17mm adaptor for SMA905 connector ferrule

#### Specification

| Parameters            | Specifications            |
|-----------------------|---------------------------|
| Optical Magnification | 200X                      |
| Power Source          | 2 "AA" alkaline batteries |
| Light Source          | 2w bubble/100 hours       |
| Weight                | 0.35kg                    |
| Dimensions            | 150(L)×45(W)×20(H)mm      |



| Part Number | Description                           |
|-------------|---------------------------------------|
| FIM-8       | Fiber Optic Inspection Microscope Kit |

#### Ordering Information

| Part Number     | Description  |
|-----------------|--|
| FIM-8 (N000527) | Fiber Optic Inspection Microscope Kit, with 2.5mm adapter for 2.5mm ferrule (ST/SC/FC) |
| FIM-8-AD-1      | adapter for 1.25mm ferrule (LC/MU)   |
| FIM-8-AD-2      | adapter for 2.5mm ferrule (ST/SC/FC)   |
| FIM-8-AD-3      | adapter for 3.17mm ferrule (SMA905)  |

### FIM-9 Series Handheld Fiber Optic Microscope

#### Description

FIM-9 Series Handheld Fiber Optic Microscopes utilize a white light LED for coaxial illumination. Light is introduced into the optical path (axis) so that it comes out the tip of the objective lens and strikes the ferrule perpendicular to the end face. This method of illumination produces a high level of resolution, providing excellent detail of scratches and contamination.

#### Features

- Safety filter for eye protection
- Anti-slip design, rugged body with rubber grips
- Various screw-on connector adaptors available
- Coaxial illumination of connector end face illumination

#### Specification

| Parameters            | Specifications  |
|-----------------------|---|
| Model                 | FIM-9-200 FIM-9-400   |
| Optical Magnification | 200X 400X   |
| Power Requirements    | 3 "AAA" alkaline batteries  |
| Light Source          | White LED, rated for 10,000 hours                                     |
| Controls              | Momentary on/off switch for light source and fine-focus control wheel |
| Laser Safety Filter   | Built-in IR filter  |
| Adapter Interface     | Interchangeable for 2.5mm and 1.25mm ferrule connectors               |
| Weight                | 0.6kg   |
| Dimensions            | 225mm/8.76" (L)×32mm/1.25" (diameter)                                 |



| Part Number | Description                     |
|-------------|---------------------------------|
| FIM-9       | Handheld Fiber Optic Microscope |

## FIM-12 Bench-top Fiber Microscope

FIM-12 Bench-top Fiber Microscope specializes in the fiber end face inspection with diameter of 1.25mm and 2.5mm for patch cord. Finished, semi-finished, PC and APC connectors can be tested. It has two types: 200X and 400X magnification, with resolution of 0.75um and 0.5um respectively.

### Features

- HD 8/10.4 inch LED display for distinct and clear image shown.
- Smooth focus control, simple operation, stable testing results.
- Contamination and scratches can be clearly checked and resolution reaches 0.5um.
- X/Y axis adjustment for both horizontal and vertical control, broaden the view of field and stabilize image always in center.
- Average light spot in display gets feature of same resolution between fiber core and ceramic end face with little testing errors.
- Optional USB digital function to connect PC and software for end face data analysis based on IEC standard criteria.



| Part Number | Description                |
|-------------|----------------------------|
| FIM-12      | Bench-top Fiber Microscope |

### Specification

|                               |   |
|-------------------------------|---|
| Magnification/Resolution      | 400X/0.5um or 200X/0.75um   |
| X/Y Adjustment                | X-axis: 4mm<br>Y-axis: 3.5mm  |
| Light Source/Service Life     | Coaxial Blue LED/50,000 hours above   |
| LED Display Size              | 16.5*21 (8 inch)<br>26*22(10.4 inch)  |
| LED Display Image Size        | 200X: 40mm<br>400X: 80mm  |
| USB Digital Function          | An USB Digital function can be optionally equipped with the FIM-12 to connect the PC directly, no need for additional power cord. The enlarge image can be directly viewed and check at Windows System. The USB connector supports 1.0/ 2.0 version.  |
| Pass/Fail Software (optional) | 1. Verification of Fiber end face quality, pass or fail judgment based on standard IEC/IPC criteria or customize.<br>2. Excel or PDF Report file generated to have scratch, spot, etc., defects measured and counted around the fiber end face.<br>3. Analyze Support in image, video and real-time inspection. |

### Ordering Information

| <b>Standard Accessories</b>                                   |                 |
|---|-----------------|
| <b>Name</b>   | <b>Quantity</b> |
| FIM-12-4 (400X) or FIM-12-2 (200X) Bench-top Fiber Microscope | 1pc             |
| 8/10.4 inch LED display                                       | 1pc             |
| 1.25mm tip for 1.25mm connectors, LC/PC, MU/PC                | 1pc             |
| 2.5mm tip for 2.5mm connectors, SC/PC, FC/PC, ST/PC           | 1pc             |
| 12V Power Cord (BNC output)                                   | 1pc             |
| 5-pin aviation connector/BNC Connector                        | 1pc             |
| <b>Optional Accessories</b>                                   |                 |
| <b>Name</b>   | <b>Quantity</b> |
| USB Function  | 1pc             |
| Pass/Fail Software  | 1pc             |

### Optional Tips for FIM-12 Fiber Microscope

| <b>Name</b>   | <b>Quantity</b> |
|---|-----------------|
| LC-PC-M (For LC/PC connector)                           | 1pc             |
| MU-PC-M (For MU/PC connector)                           | 1pc             |
| SC-APC-M (For SC/APC connector)                         | 1pc             |
| FC-APC-M (For FC/APC connector)                         | 1pc             |
| LC-APC-M (For LC/APC connector)                         | 1pc             |
| 2.5M-APC (For 2.5mm connectors, SC/APC, FC/APC, ST/APC) | 1pc             |
| 1.25APC-M ((For 1.25mm connectors, LC/APC, MU/APC)      | 1pc             |

## FIM-17 Fiber Microscope

### Features

- WiFi connection to Smartphone and USB connection to Smartphone and PC
- Android App and iOS (Apple) App both
- Pass/Fail Analysis to IEC 61300-3-35
- Several tips available (Both female and male tips)
- External Interface: micro USB
- Save inspected images and reports
- Real-time report in field through smartphone
- Built-in rechargeable battery
- No need exterior Wireless AP or Module
- Ergonomics design and Easy Focus
- Emergency lamp and power indicator light available



| Part Number | Description      |
|-------------|------------------|
| FIM-17      | Fiber Microscope |

### Specification

| Items                          | Value                                    |
|--------------------------------|--|
| Magnification                  | 400X                                     |
| Resolution                     | <1.0μm                                   |
| Field of View                  | X: 0.3487mm Y: 0.2632mm                  |
| Laser Source                   | Blue LED                                 |
| Focus Method                   | Unidirectional manual                    |
| Focus Time                     | 1~5 seconds                              |
| Snapshot Button                | yes                                      |
| WiFi and USB Switch Button     | yes                                      |
| Communication Port             | Micro USB                                |
| Connection Standard            | WiFi 802.11 and USB2.0                   |
| Wireless Frequency             | 2.4GHz                                   |
| Wireless Transmission Distance | 20m                                      |
| Smartphone Compatibility       | Android 4.4 and above; IOS 8.0 and above |
| Voltage                        | 5V                                       |
| Battery                        | 3100mHA Lithium battery                  |
| Charging Time                  | ≤5h                                      |
| Testing Time                   | ≥5h                                      |
| Dimension                      | 19*5*3cm                                 |
| Weight                         | 0.175kg                                  |
| Working Temperature            | -10°C~50°C                               |
| Storage Temperature            | -20°C~60°C                               |
| Humidity                       | <90% (non-condensing)                    |

### Standard Accessories

| Name  | Quantity |
|---|----------|
| FIM-17 Fiber Microscope                           | 1pc      |
| Adapter SC-PC-F (for SC/PC adaptor and connector) | 1pc      |
| Adapter FC-PC-F (for FC/PC adaptor and connector) | 1pc      |
| Adapter LC-PC-F (for LC/PC adaptor and connector) | 1pc      |
| USB cable   | 1pc      |

Note: Pass/Fail software is optional.

### Optional Accessories for FIM-1, FIM-4, FIM-5 and FIM-17

| Name   | Quantity |
|--|----------|
| USB function related   | 1pc      |
| ST-PC-F (For ST/PC adaptor)  | 1pc      |
| MU-PC-F (For MU/PC adaptor)  | 1pc      |
| E2000-PC-F (For E2000/PC adaptor)  | 1pc      |
| MT-PC-F (For MTRJ/PC adaptor)  | 1pc      |
| 1.25PC-M (For 1.25mm connectors, LC/PC, MU/PC)                           | 1pc      |
| SMA-M (For SMA/PC connector)   | 1pc      |
| FC-APC-F (For FC/APC adaptor)  | 1pc      |
| SC-APC-F (For SC/APC adaptor)  | 1pc      |
| LC-APC-F ((For LC/APC adaptor)   | 1pc      |
| E2000-APC-F ((For E2000/APC adaptor)                                     | 1pc      |
| 2.5APC-M (For 2.5mm connectors, SC/APC, FC/APC, ST/APC)                  | 1pc      |
| MPO-PC-F (For MPO/PC adaptor);   | 1set     |
| MPO-APC-F (For MPO/APC adaptor)  |          |
| Tip60 (60 degree base for special tips)                                  | 1pc      |
| FC-PC-60F (For FC/PC adaptor at 60 degree testing)                       | 1pc      |
| SC-PC-60F (For SC/PC adaptor at 60 degree testing)                       | 1pc      |
| LC-PC-60F (For LC/PC adaptor at 60 degree testing)                       | 1pc      |
| LC-APC-60F (For LC/APC adaptor at 60 degree testing)                     | 1pc      |
| SC-APC-60F (For SC/APC adaptor at 60 degree testing)                     | 1pc      |
| 1.25APC-M ( (For 1.25mm connectors, LC/APC, MU/APC at 60 degree testing) | 1pc      |



**Part Number** Description  
SC-PC-F For SC/PC adapter



**Part Number** Description  
FC-PC-F For FC/PC adapter



**Part Number** Description  
LC-PC-F For LC/PC adapter



**Part Number** Description  
2.5PC-M For 2.5mm connectors, SC/PC, FC/PC, ST/PC



**Part Number** Description  
ST-PC-F For ST/PC adapter



**Part Number** Description  
MU-PC-F For MU/PC adapter



**Part Number** Description  
E2000-PC-F For E2000/PC adapter



**Part Number** Description  
MPO-PC-F For MPO/PC adapter



**Part Number** Description  
1.25PC-M For 1.25mm connectors, LC/PC, MU/PC



**Part Number** Description  
E2000-APC-F For E2000/APC adapter



**Part Number** Description  
SC-APC-F For SC/APC adapter



**Part Number** Description  
LC-APC-F For LC/APC adapter

## FOH-8 PON Terminal Tester

### Description

With the constant and rapid development of broadband internet, users' demands of internet shows a trend of rapid growth. Because of the development of the businesses, including online game, IPTV, video on demand (VOD), P2P, etc., there is higher requirement for the broadband accessed into the internet. With extremely high stability and reliability, optical fiber communication becomes the optimal communication mode bearing and meeting social demands.

With the popularization of FTTH, the input for maintaining the vast network is higher and higher. The state of the last one kilometer is the most difficult part in the network to maintain, because that it's hard for the maintenance personnel to enter home to conduct test and routing inspection. In order to solve the problem of optical fiber last-kilometer test, FOH-8 handheld PON Terminal Tester (which is called PTT for short) is the new type of tester launched by Grandway for FTTH business and maintenance. Under the condition of no maintenance, personnel entering the user's home and only by being accessed into the back end of optical distribution box, the equipment can test the 4 states of the terminal and optical fiber line, helping the maintenance personnel know the state of OLT and ONT rapidly and conveniently. It is the ideal tool in the communication equipment to check the customer resources.



| Part Number | Description         |
|-------------|---------------------|
| FOH-8       | PON Terminal Tester |

### Functions

To check the 4 states of OLT and ONT terminal

#### 1. OLT NO SIGNAL

Showing that there is no signal at OLT terminal.

#### 2. NO CONNECTION

Showing that the user's optical fiber hasn't been accessed into the optical modem, the resources of that line may be unoccupied resources.

#### 3. NO POWER

Showing that the user's optical fiber has been connected with the optical modem, but there is no power supplied on the optical modem, or the modem is offline.

#### 4. SUCCESSFUL

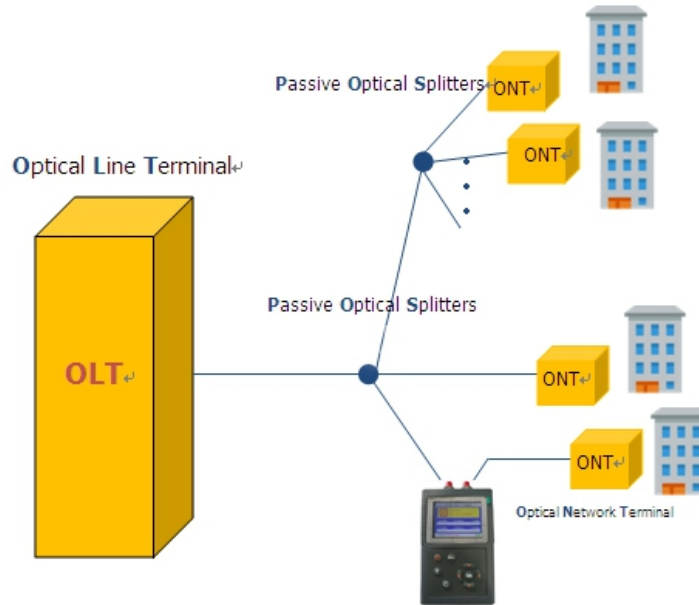
Showing that the user's line in normal use state.

### Features

- No need of entering home, making the test convenient and rapid.
- Compact design, which is easy to carry.
- Intelligent design, which can display the corresponding terminal state without setting.
- Display of test result is more visual, which is easy to understand.
- Test content conforms to the requirements of engineering application more.
- Power supply is 4\*AAA 1.5V battery, which is energy-saving and convenient.

### Explanation of line connection at the instrument port

FOH-8 PON terminal tester is the instrument to test PON network terminal line (which is the optical line from the optical distribution box to the user's home) and the use condition of ONT, and the test schematic diagram is as follow:



### Specification

|                               |                    |
|-------------------------------|--------------------|
| Product model                 | FOH-8              |
| Optical port                  | SC                 |
| Types of test terminal states | 4 types            |
| Power supply mode             | 4*AAA 1.5V Battery |
| Working time                  | > 50h              |
| Working temperature           | -10°C ~ 60°C       |
| Storage temperature           | -40°C ~ 70°C       |

### Remark:

1. OLT: Optical Line Terminal, which is used to connect the terminal equipment of the optical fiber trunk.
2. ONU: Optical Network Unit
3. ONT: Optical Network Terminal

## TLP-3C 2M Transmission Analyzer

### Description

TLP-3C 2M Transmission Analyzer is a multi-functional and full-featured digital transmission system test device, designed for the installation test, engineering check and acceptance, daily maintenance of digital networks, mainly performing channel test, alarm analysis, fault finding and signaling analysis. In addition, this instrument further provides various protocol converters with one-way and bi-directional bit error test function. These capabilities make it ideal for field use.

### Basic Functions

#### 1) 2M testing

75Ω and 120Ω line interfaces  
 HDB3 and AMI line codes  
 Out-of-service 2Mb/s, N×64kb/s BER testing  
 "PCM simulator" mode testing  
 Frame data control and monitoring  
 Timelot activity monitoring, FAS, N-FAS, TS16MFO analysis  
 Built-in 64kb/s tone channel listen capability  
 CAS and CCS signaling generation and monitoring  
 Round trip delay measurement  
 APS delay measurement  
 Extensive error and alarm generation  
 VF tone generation and measurement  
 Level measurement  
 Pulse mask measurement  
 Jitter measurements to ITU-T standard O.172  
 Frequency and offset measurement  
 Clock slip measurement  
 Up to ±999ppm transmit clock deviation  
 Clock source: Internal, Interface or External 2M clock/signal  
 Real-time transmit circuit open/short indication

#### 2) Datacom testing

Datacom (V.24, V.35, V.36, X.21, RS-449, RS-485, EIA-530 and EIA-530A) interfaces BER Testing  
 ASYNC BER testing with baud rate 300b/s~38.4Kb/s  
 SYNC BER testing with data rate 300b/s~8Mb/s  
 DTE or DCE emulation  
 SYNC clock source and sense selection  
 Frequency measurement

### Features

- Handheld design and easy-to-use
- Full-featured measurements to 2M, Datacom
- High resolution backlight large LCD screen, with adjustable contrast
- Smart navigation mode and multi-language displays
- Extensive error and alarm generation, detection and indication
- Histograms analysis of alarm and error events



| Part Number | Description              |
|-------------|--------------------------|
| TLP-3C      | 2M Transmission Analyzer |

#### 3) G.703 CO testing

G.703 CO 64kb/s BER testing  
 Octet timing control and monitoring  
 Frequency and offset measurement  
 Clock source: Internal, Interface selectable

#### 4) Protocol converter testing

2M-Datcom SYNC 64k or N×64kb/s BER testing  
 2M-G.703 CO SYNC 64kb/s BER testing  
 Frequency and offset measurement  
 Handshaking signals monitoring  
 2M frame data and alarm monitoring

#### 5) Other functions

Real-time clock  
 Test pattern: PRBS, Fixed Code and 16-BIT User Word  
 Error injection: Single and Fixed Rate  
 Manual and auto-timer measurement  
 ITU-T G.821, G.826, and M.2100 performance analysis

- Up to 99 days continuance test performance
- Save/Recall of up to 7 user-defined setups and 70 sets of results
- Up to 6 hours operation from a single battery charge
- Built-in Li rechargeable battery and smart charger circuit
- Can be charged with automobile cigarette lighter battery adapter
- Ungradable software via an integrated RS232C interface
- Test results uploaded, conserved and printed by PC Manager software



### Specification

| Item   | Description   |   |
|--|---|---|
| 2M   | Internal Clock  | 2048kb/s ±10ppm   |
|  | Frequency Deviation   | ±999ppm   |
|  | Line Interface  | 75Ω (Unbalanced), 120Ω (Balanced); High Input Impedance >2KW  |
|  | Line Code   | HDB3, AMI   |
|  | Framing   | Unframed, PCM30, PCM30CRC, PCM31, PCM31CRC  |
|  | Receive Sensitivity   | > -43dB   |
|  | Tx Clock Source   | Internal, Interface and External 2MHz clock or signal   |
|  | Pulse Mask Measurement  | Comply with G.703   |
|  | Jitter Measurement  | Comply with O.172   |
|  | Frequency Measurement   | Accuracy: ±1Hz  |
|  | Offset Measurement  | Accuracy: ±1ppm<br>Range: -999ppm~+999ppm   |
|  | VF Injection  | Frequency: 200MHz~3400MHz, Step: 10Hz   |
|  |   | Level: -60dBm~+3dBm   |
|  | VF Measurement  | Frequency: 200MHz~3400MHz   |
| Accuracy: ±1Hz   |   |   |
| Level range: -60dBm~+3.14dBm   |   |   |
| -60dBm~-21dBm, accuracy: ±2.87dBm<br>-20dBm~+3.14dBm, accuracy: ±0.21dBm |   |   |
| Delay Measurement  | Accuracy: ±1us  |   |
| G.703 CO   | Line Rate   | 64kb/s ±1000ppm   |
|  | Line Interface  | 120Ω, Balanced  |
|  | Line Code   | AMI   |
| Datacom  | Line Interfaces   | V.24, V.35, V.36, X.21, RS-449, RS-485, EIA-530, EIA-530A   |
|  | Data Rate   | ASYN C300, 600bit/s, 1.2, 2.4, 4.8, 7.2, 9.6, 19.2, 38.4kb/s<br>SYNC C300, 600bit/s, 1.2, 2.4, 4.8, 7.2, 9.6, 19.2, 38.4kb/s<br>N×64kb/s (N=1~32), 4M, 8Mkb/s |
| Test Patterns  | PRBS  | 2 <sup>23</sup> -1, 2 <sup>20</sup> -1, 2 <sup>15</sup> -1, 2 <sup>11</sup> -1, 2 <sup>9</sup> -1, 2 <sup>6</sup> -1  |
|  | Fixed Code  | 1111, 0000, 1010  |
|  | 16-BIT  | User Programmable Word  |
| LED Alarm Indicators   | Signal Loss, AIS, Frame Loss, MFrame Loss, Pattern Loss, Remote Alarm, Error, Clock Slip.   |   |
| Error Injection  | Type: BIT, FAS, CRC4, CODE, E-BIT   |   |
|  | Single, Fixed Rate: 10 <sup>-2</sup> , 10 <sup>-3</sup> , 10 <sup>-4</sup> , 10 <sup>-5</sup> , 10 <sup>-6</sup> , 10 <sup>-7</sup> |   |
| Performance Analysis   | ITU-T G.821, G.826 and M.2100   |   |
| Display  | 320×240 pixel backlit monochromatic LCD   |   |
| Serial Port  | RS-232C   |   |
| Rechargeable Batteries   | 5×1.2V AA NiMH batteries, continuous working for 6 hours  |   |
| Recharge Time  | Approx. 2 hours   |   |
| AC Power Adapter   | Input: 100V~240VAC, 50/60Hz Output: 12VDC/1.5A  |   |
| TestManager Pro  | WIN98/ME/NT/2000/XP   |   |
| Dimensions   | L×W×H 200mm×160mm×45mm  |   |
| Operating Temperature  | 0°C~50°C  |   |
| Storage Temperature  | -20°C~+70°C   |   |
| Humidity   | 5%~95% non-condensing   |   |

### Standard Accessories

| Standard Items                        | Quantity | Standard Items            | Quantity |
|---------------------------------------|----------|---------------------------|----------|
| TLP-3C 2M Transmission Analyzer       | 1pc      | Simulation software       | 1pc      |
| 75Ω BNC/L9 E1 test cable              | 2pcs     | Carrying case             | 1pc      |
| BNC/BNC cable                         | 1pc      | User' s manual            | 1pc      |
| RS232 serial upgrading cable          | 1pc      | Warranty card             | 1pc      |
| DATA converting line (36PIN to 44PIN) | 1pc      | Certificate of conformity | 1pc      |
| X.21 testing line                     | 1pc      | V.35 testing line         | 1pc      |
| V2.4 testing line                     | 1pc      | V.11 testing line         | 1pc      |
|                                       |          | AC adapter                | 1pc      |

### Optional Accessories

| Optional Items   | Quantity | Optional Items    | Quantity |
|------------------|----------|-------------------|----------|
| 120 testing line | 2pcs     | 64K testing lines | 1pc      |

## GD300DQ TV Signal Level Meter

### Description

GD300DQ TV Signal Level Meter is designed to provide features which are most widely used and favored by professionals in CATV industry at the least cost. It can be used to measure accurately the analogue channels, digital channels efficiently and effectively with high accuracy rate. Mainly it supports C/N, level, channel power measurement, voltmeter function, spectrum analysis and so on. Overall, its functions are easy to use and can be used in a wide range of applications.



| Part Number | Description           |
|-------------|-----------------------|
| GD300DQ     | TV Signal Level Meter |

### Features

- Compact design
- Accurate QAM testing: digital average power, MER, BER
- Support multiple DVB mode: 16QAM, 32AM, 64QAM, 128QAM, 256QAM
- Single channel/Frequency simulated power levels testing.
- Video and audio signal power levels testing
- V/A testing. Show the frequency of video and audio. Field intensity and power level difference simultaneously.
- C/N testing. Slope testing.
- QAM View includes BER, MER, and constellation

### Applications

- Cable modem analysis using zero span mode provides accurate, in-service power and C/N measurements.
- QAM view option provides complete analysis of digital TV and forward cable modem signals.
- Find ingress fast with field view option. Cable technicians working in the field can see the reverse path at the headend.
- Full, in-service, proof-of-performance analyzer.
- Fast, sensitive spectrum analyzer.
- Digital QAM carrier demodulation includes 16, 32, 64, 128 and 256 QAM constellation display with zoom, average digital power level, bit error rate (BER), and 22 to 39dB modulation error rate (MER).

### Specification

#### Technical parameters

| Channel/Frequency index            |                         | Digital channel                 |                             |
|------------------------------------|-------------------------|---------------------------------|-----------------------------|
| Frequency range                    | 5MHz-862MHz             | Modulation mode                 | Comply with DVB-C/ITU J83-A |
| Precision                          | 50ppm                   | QAM mode                        | 16/32/64/128/256 QAM        |
| Resolution                         | 10KHz                   | Symbol rate                     | 1MS/S-7MS/S                 |
| Measurement band width             | 280KHz                  | Band width                      | Set by user                 |
| Frequency step                     | 50KHz,100KHz,500KHz     | MER                             | 22-39dB                     |
| <b>Channel type</b>                |                         | Precision                       | ±2dB                        |
| Analog TV                          | TV                      | BER                             | 1E-4-1E-9                   |
| Digital TV                         | 16/32/64/128/256 QAM    | <b>Carrier-noise ratio(C/N)</b> |                             |
| Frequency/channel                  | SIGL                    | Signal input range              | > 70dBuV                    |
| <b>Analog power level testing</b>  |                         | Measuring range                 | 20dB-50dB                   |
| Measuring range                    | 25dBuV-120dBuV          | Precision                       | ±2dBuV                      |
| Precision                          | ±1.5dB                  | Resolution                      | 0.5dB                       |
| Resolution                         | 0.1dB                   | <b>Spectrum analysis</b>        |                             |
| Detection method                   | Peak value detection    | Frequency Range                 | 5MHz-862MHz                 |
| Input impedance                    | 75Ω                     | Resolution                      | 100KHz                      |
| <b>Digital power level testing</b> |                         | Precision                       | 50ppm                       |
| Measuring range                    | 25dBuV-110dBuV          | Power levels range              | 20dBV-120dBV                |
| Precision                          | ±1.5dB                  | Power levels resolution         | 0.1dB                       |
| Resolution                         | 0.1dB                   | Power level precision           | ±1.5dB                      |
| Detection method                   | Average value detection | Dynamic range                   | 60dB                        |
| Input impedance                    | 75Ω                     | Input impedance                 | 75Ω                         |
| <b>Voltage testing</b>             |                         | RBW                             | 300KHz                      |
| Input range                        | 0-80V(AC/DC)            | Testing band width              | 6,12,62MHz,All range scan   |
| Precision                          | ±2V                     | <b>Slope testing</b>            |                             |
| Resolution                         | 0.1V                    | Number of channels              | 5                           |
|                                    |                         | Resolution                      | ±0.1dB                      |

#### General parameters

|                     |  |
|---------------------|--|
| Audio output        | Built-in speaker                                       |
| Power supply        | Li-ion battery(3.7V,2000mAh),5V AC/DC Adaptor/Charger  |
| Charging time       | Less than 5 hours ( can work about 8 hours)            |
| Dimension           | 223*110*47(mm)   |
| Net weight          | 0.43kg   |
| Working temperature | -10°C-50°C   |
| Stand accessories   | Carrying Bag,AC/DC Adaptor,Battery,Software,USB cable. |

#### Standard accessories

Carrying Bag,AC/DC Adaptor,Battery,Software

## CL1400 Pipeline and Cable Locator

### Description

CL1400 Pipeline and Cable Locator consists of a Transmitter, a Receiver and Accessories, used in the underground pipeline & cable route accurate locating, the burial depth measuring, long distance tracing, and insulation fault point detecting. We adopted multicoil electromagnetism technology in CL1400 Pipeline and Cable Locator, enhanced the precision of the pipeline and cable location and the burial depth, and the goal pipeline identification capability. It could accurately carry on tracing and location to the goal pipeline and cable in the crowded pipelines and cables. CL1400 Pipeline and Cable Locator is widely used in the telecommunication, mobile, electric power, water supply, natural gas, physical prospecting, petrochemical and city construction, etc.



### Functions

- Detect the route of underground pipeline and cable
- Measure the burial depth of underground pipeline and cable
- Detect and locate the insulation fault point of the underground pipeline and cable
- Identify the goal pipeline and cable under multiple underground pipelines and cables situation

| Part Number | Description                |
|-------------|----------------------------|
| CL1400      | Pipeline and Cable Locator |

### Features

1. Adopt the advanced signal processing technology and the latest integrated circuit to achieve outstanding test performance.
2. The detecting signal transmission method includes:
  - (1) Injection method: with injected the spot on the pipeline to detect the route and the burial depth, this method measuring accuracy is high, and good anti-jamming ability.
  - (2) Clamping method: used in a pipeline with the exposed section and easy to clamp.
  - (3) Induction method: used in a pipeline without injection point or without exposed section.
3. Many kinds of detecting frequency: 480Hz, 7.7KHz, 31KHz and 61KHz, which are four kinds of active frequency and 50Hz of passive frequency using in electric cable; The user may carry on the choice according to the different environment (need special detecting frequency please indicate specially in order contract).
4. Enhancement test efficiency by different localization pattern and function:
  - (1) peak value pattern: Determines the position through the maximum route signal.
  - (2) valley value pattern: Determines the position through the minimum route signal
  - (3) route direction detection: Direct-viewing, instructs the route rapidly the direction.
  - (4) insulation fault finding (FF): Detect and locate the insulate fault point of pipeline and cable.
  - (5) Stethoscope: find loading signal on the pipeline through stethoscope from the multitudinous pipelines.
5. Auxiliary functions:
  - (1) Automatic control receive gain: The automatic control receiver gain can keep the receiver to be at the optimized status and avoid manual operation.
  - (2) Sound function: The receiver reflects the detecting signal intuitively through the tonality changing.
  - (3) Check the detecting condition: When the transmitter in injection mode, first test the insulation resistance and the residual voltage of pipeline, then load the signal to a pipeline. When the value of the insulation resistance too small (almost in short-circuits) the transmitter will withdraw automatic from this mode, when the residual voltage is so large the transmitter will warn, the operator must stop to load signal and shut off the transmitter.
  - (4) Battery value testing: Real-time detection of battery, when the voltage lower than the protect value, the transmitter will warn and automatic shut-down.
  - (5) Power save: The machine will be off to save the power if the transmitter is not be operated after booting in 30 second, and if the receiver is not be operated after booting and no other keystrokes about 10 minutes.

### Specification

#### Transmitter

|                                       |  |
|---------------------------------------|--|
| Signal Frequency for Injection Method | 480Hz, 7.7KHz, 31KHz, 61KHz                            |
| Signal Frequency for Induction Method | 31KHz, 61KHz   |
| Signal Frequency for Clamping Method  | 31KHz  |
| Signal Frequency for Fault Finding    | 480Hz  |
| Output Voltage                        | 0-400Vp-p adjust according to the insulation condition |
| Output Wave Shape                     | sine wave  |
| Power Supply                          | 11.1VDC 4.4AH Li-battery                               |
| Maximum Output Power                  | 10W  |

#### Receiver

|   |   |
|---|---|
| Power Loss  | <1W   |
| Power Supply  | 11.1VDC 1.8AH Li-battery                    |
| Max. Burial Depth for Detecting   | 4.5 meters (normal condition)               |
| Tolerance of burial Depth for Detecting   | ±0.05H ±5cm ( "H" is pipeline burial depth) |
| Tolerance of Route for Detecting  | ≤5cm  |
| The Effective Length under Detecting Pipeline Route and Depth with Injection Method | ≥10Km (normal condition)                    |
| The Effective Length under Detecting Pipeline Route and Depth with Induction method | ≥3Km (normal condition)                     |
| The Effective Length under Detecting Pipeline Route and Depth with Clamping method  | ≥6Km (normal condition)                     |
| Insulated Fault Detecting   | ≥2 MΩ                                       |

#### Environmental

|                       |             |
|-----------------------|-------------|
| Operating Temperature | -20°C~+50°C |
| Storage Temperature   | -40°C~+70°C |
| Relative Humidity     | 10%~90%     |
| Atmospheric Pressure  | 86~106KPa   |
| Environmental Noise   | ≤60dB       |

#### Weight and Dimension

| Name                          | Weight (Kg) | External Dimensions (mm) |
|-------------------------------|-------------|--------------------------|
| Transmitter                   | 3.4         | 348×239×175              |
| Receiver                      | 2.6         | 648×260×130              |
| Entire Machine (Gross Weight) | 14          | 790×250×420              |

#### Optional Accessories

| Name                 | Weight (Kg) | External Dimensions (mm) |
|----------------------|-------------|--------------------------|
| Fault Finding Holder | 1.5         | 525×672×25               |

Remark: Normal condition means that without insulation fault and other interference in the measuring range as detecting the pipeline.

### Accessories

| Item | Name               | Quantity |
|------|--------------------|----------|
| 1    | Transmitter        | 1pc      |
| 2    | Receiver           | 1pc      |
| 3    | Carrying case      | 1pc      |
| 4    | User manual        | 1pc      |
| 5    | Charger            | 2pcs     |
| 6    | Earthing stick     | 1pc      |
| 7    | Signal output line | 1pc      |
| 8    | Inductive clamp    | 1pc      |
| 9    | Stethoscope        | 1pc      |
| 10   | Certificate        | 1pc      |

### Ordering Information

| Model   | Name                       | Description  |
|---------|----------------------------|--|
| CL1400  | Pipeline and Cable Locator | With inductive clamp and stethoscope                       |
| CL1400A | Pipeline and Cable Locator | With inductive clamp, stethoscope and Fault Finding Holder |
| CL1400B | Pipeline and Cable Locator | With inductive clamp, stethoscope and GPS                  |

## FFA2U Ytterbium Erbium Fiber Amplifier Products

### Description

- 19" 2U standard aluminum rack, easy to heat
- 320 \* 240 large-size TFT true color display: the page displays rich information, parameter operation more intuitive
- Can be customized 8/16/32/64 port output to meet different needs



2U Front panel

### Specification

- 1+1 backup pluggable power supply
- One-click pull, support plug with electric
- Power for the gold finger connection, docking reliable, pull resistance small
- Fan online replacement, automatic temperature control speed
- SNMP standard network management, each must bring, no need to increase



2U back view

#### THE SECTION DESCRIBES THE DETAILS

Modular structure design.  
High-reliability high-power laser core module.  
Easy to function expansion and maintenance, plug and play.



##### A-FULL DIGITAL CONTROL TECHNOLOGY

Fourth-generation hardware architecture built on a 32-bit ARM processor. Full digital control technology. Software adjustment by device parameters, no manual adjustment device, to ensure product consistency. Computation speed, numerical control precision.



##### C-ADOPT EFFICIENT DC-DC REGULATION MODE

All of the power drive units adopt efficient DC-DC regulation mode. Efficiency is better than 95%. Greatly reducing ineffective power consumption. Reduce the equipment cooling load. Increase machine reliability.



##### B-TRUE COLOR DISPLAY

Adopt 320 \* 240 TFT true color display. Page display information rich, more intuitive parameter operation. Reducing the user switching directory cumbersome.

#### THE SECTION DESCRIBES THE DETAILS

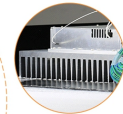
##### 05 HOT-SWAPPABLE POWER SUPPLY

Connect the connecting finger bus connector to the host slot. One-click pull structure is reasonable. Reliable docking, plug resistance is small



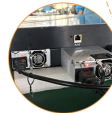
##### 01 CELLULAR INLET

Compact and practical structure into the wind smooth. Effectively filter dust



##### 02 COOLING CHANNELS

Cooling ventilation 6063 aluminum Laser core module full contact with the heat sink, good heat dissipation



##### 04 POWER SUPPLY WITH COOLING FAN

1 + 1 redundant power supply. Power output 300W. Can be charged plug. At the same time increase anti-thunder unit to ensure the core module work



##### 03 INTELLIGENT COOLING FAN

Standard cooling air duct design. Automatic temperature control fan speed. Protect the temperature inside the machine, while effectively reducing the noise output. Can be charged replacement

### FCAA-100 Cable&Antenna analyzer

#### Description

FCAA-100 cable & antenna analyzer can test Return Loss and VSWR of load' frequency. Also can get Return Loss, VSWR of DTF (distance-to-fault) and Cable Loss. Users can be easy to know the connection of cable & antenna system is reliable whether or not. FCAA-100 series with frequency range 25MHz - 4GHz and 60dB dynamic range can suitable for 2G/3G/4G/WiMAX system etc. FCAA-100 series are the necessary measuring instrument for the new generation of wireless network development, upgrade and maintenance.



| Part Number | Description            |
|-------------|------------------------|
| FCAA-100    | Cable&Antenna analyzer |

#### Features

- Frequency range: 25MHz to 4GHz; suitable for 2G/3G/4G/WiMAX system etc.
- Dynamic Rang up to 60dB
- Intelligent limit /marker /curve calculations
- More than 8 hours long battery life
- 7 inch color LCD touch screen
- Optimized batch file management: edit/delete/filter
- Excellent Man-Machine interface for easy operation

#### Specification

|                                     |  |
|-------------------------------------|--|
| <b>Model</b>                        | <b>FCAA-100</b>  |
| Frequency Range                     | 25MHz - 4000MHz  |
| Frequency Resolution                | 100kHz   |
| Frequency Accuracy                  | +/-25ppm   |
| Output Power                        | 0dBm(typ.)   |
| Measurement Speed                   | 3.5ms/point  |
| Data Points                         | 137, 251, 551, 1103  |
| <b>Anti-jamming Capability</b>      |  |
| Frequency                           | -5dBm  |
| Channel                             | +17dBm   |
| Directivity                         | 42dB (after calibration)   |
| <b>Return Loss</b>                  |  |
| Return Loss Range                   | 0 - 60 dB  |
| Return Loss Resolution              | 0.01dB   |
| <b>VSWR</b>                         |  |
| VSWR Range                          | 1 - 65   |
| VSWR Resolution                     | 0.01   |
| <b>Cable Loss</b>                   |  |
| Cable Loss Range                    | 0 - 30dB   |
| Cable Loss Resolution               | 0.01dB   |
| <b>Distance-to-Fault</b>            |  |
| Distance-to-Fault Return loss Range | 0 - 60 dB  |
| Distance-to-Fault SWR Range         | 1 - 65dB   |
| Measuring Length                    | 1500m  |
| Resolution Ratio                    | Where Vp is the cable's relative propagation velocity.<br>where F2 is the stop frequency and F1 is start frequency |
| Data Points                         | 137, 251, 551, 1103  |

## General information

|                        |   |
|------------------------|---|
| Connector Type         | N - Type female   |
| Input Impedance        | 50 Ohm  |
| Display                | 7 inch resistor touch screen, resolution 800×480                        |
| Data Interface         | One USB Host Port One USB Device Port<br>One 10M/100M Adaptive LAN Port |
| Memory Space           | >2000 traces  |
| Internal Battery       | 11.1V 7800mAh Rechargeable Lithium Battery                              |
| External Adapter       | 110 - 240V, 50 - 60Hz, AC input; 16V, 3.75A, DC output                  |
| Operating Temp. Range  | -10°C - +50°C   |
| Storage Temp. Range    | -40°C - +70°C   |
| Humidity               | 0 - 85% (Non-Condensing)  |
| Weight                 | 2.5kg (Suttle)  |
| Dimensions (L x W x H) | 290×175×75mm  |

### Standard Packages

GWCAA-100 Host, Lithium Battery, AC Adapter, CD(PC Software, User Manual), Carrying Case, T-type Calibration Kits, Quick Reference, Warranty card

### Optional

TPM Module (Optional)--RF Terminal Power Meter  
SPM Module(Optional)--In Line Digital Frequency Spectrum Power Meter



### FET-100 Gigabit Ethernet Tester

#### Description

FET-100 is a handheld 10M/100M/1000M gigabit Ethernet tester, used for the Ethernet installation, operation and maintenance services.

The FET-100 design in a small and portable device which provides packet capture, network monitoring, network performance testing, data generation, test leads and error test functions in an organic whole unit. It is widely used in network layer 1/2/3 BER test and RFC - 2544 test. FET-100 help maintenance people to quickly locate fault and analysis network.



| Part Number | Description             |
|-------------|-------------------------|
| FET-100     | Gigabit Ethernet Tester |

#### Features

- Electrical port and optical ports with rate at 10/100/1000Mbps
- Smart and durable, field application ready
- 5 inch LCD color touch screen, smart navigation menu
- Results can be shown graphically and numerically
- RFC2544 auto test, quickly find the fault
- Full Y.1564 test
- LED indicator light, on-screen display and ICON
- Large capacity memory to save settings and test results
- Embedded software to easy upgrade

#### Specification

| Model                 | FET-100   |
|-----------------------|---|
| Testing port          | Dual-RJ45 port:10/100/1000 BASE-T<br>Dual-SFP port: 1000BASE-SX/LX/ZX |
| Standard              | IEEE 802.3 ,RFC1242,RFC2544,Y.1564                                    |
| Connector             | RJ-45/USB   |
| LED indicator         | POWER,PORT1LINK/ACT,PORT2 LINK/ACT,ALARM                              |
| Display               | 800×480 color LCD touch screen  |
| Battery               | Lithium battery / AC adapter  |
| Power Supply          | 4 hours continuous operation  |
| Operating temperature | 0°C~50°C  |
| Relative humidity     | 0 to 95% (non-condensing)   |
| Weight                | 800g  |
|                       | 233×110×64mm  |

## FXGT-200 10GEthernet tester

### Description

FXGT-200 Ethernet tester provides a complete test for next generation Ethernet solution. There are many different test modules, which can help to verify the performance of their Ethernet.

FXGT-200 has two 10/100/1000Mb/s electrical interfaces, two 100/1000MSFP optical interfaces and two 10Gbps SFP+. It can generate and analyze the test traffic streams, and provide the result. FXGT-200 provides install, maintain services and activate new profession service. FXGT-200 can provide a variety of test functions, which can help user to control and know the quality of Ethernet. We believe that the FXGT-200 will be the comprehensive and simple Ethernet and advanced IP connectivity test suites for the field technicians.



| Part Number | Description        |
|-------------|--------------------|
| FXGT-200    | 10GEthernet tester |

### Features

- Smart and durable, field application ready
- 7 inch HD color touch screen, sun readable
- User-friendly user interface
- PC remote control
- Test profiles and data management, USB/FTP transfer
- Comprehensive testing for Ethernet testing
- Lithium battery up to 4 hours continuous testing

### Specification

|                                   |   |                                   |                                   |
|-----------------------------------|---|-----------------------------------|-----------------------------------|
| Optical Interface                 | Two GigE Ports  |                                   |                                   |
|                                   | 1000Base-SX   | 1000Base-LX                       | 1000Base-ZX                       |
| Wavelength(nm)                    | 850   | 1310                              | 1550                              |
| Laser/Connector/Transceivers type | VCSEL/LC/SFP  | 1000Base-ZX                       | DFB/LC/SFP                        |
| Electrical Interfaces             | Two Ports:10/100BaseT Half/Full Duplex and 1000BaseT Full Duplex, Choose straight or crossover cables |                                   |                                   |
|                                   | 10BaseT   | 100BaseT                          | 1000BaseT                         |
| Connector                         | RJ-45   | RJ-45                             | RJ-45                             |
| SFP+ Optical Interface (10G)      | Two 10GigE Ports<br>10GBase-SR/SW   | Two 10GigE Ports<br>10GBase-LR/LW | Two 10GigE Ports<br>10GBase-ER/EW |
| Wavelength (nm)                   | 850   | 1310                              | 1550                              |
| Laser/Connector/Transceivers type | VCSEL/LC/SFP+   | DFB/LC/SFP+                       | CML/LC/SFP+                       |

### General information

|              |   |
|--------------|---|
| Display      | 7 inch color TFT touch screen (Resolution 960×480)                              |
| Data storage | 8GB   |
| Interface    | USB 2.0 port, RJ-45 LAN   |
| Battery      | Rechargeable Lithium battery, 4 hours continuous operation                      |
| Power Supply | AC/DC Adapter;<br>Input 100 to 240V AC, 50/60Hz, 2A(Max.);<br>Output 24V DC 90W |
| Dimension    | 282×186×75mm  |
| Weight       | 2.9Kg   |

#### Standard Packages

Battery, AC adapter, Software CD, Carrying case, Warranty card, User Manual

#### Optional

CAT6 RJ-45 Gigabit Ethernet Cable

LC-LC Duplex Patchcord

10G SFP+ Optical Module(Wavelength/Transmission Distance:850nm/550m,1310nm/10km,1550nm/40km)

1.25G SFP Optical Module(Wavelength/Transmission Distance:850nm/550m,1310nm/10km)

OAM Test Function Module

Grandway's Certificates



CE-EMC



CE-LVD



FCC



RoHS



ISO 9001



ISO 14001



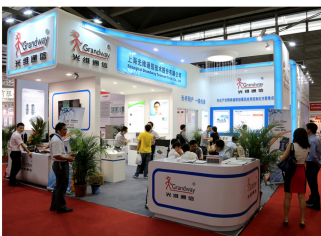
OHSAS 18001



TLC

Grandway's Exhibitions

Shanghai Grandway Telecom Tech. Co., Ltd. attends various communication exhibitions both at home and abroad. Exhibitions include CCBN in Beijing, China, CIOE in Shenzhen, China, OFC in USA, ECOC in Europe, Expo Comm in Argentina, GITEX in UAE, Convergence in India, Netcom in Brazil, SVIAZ/EXPO COMM in Russia, CeBIT in Australia, CommunicAsia in Singapore, ICT in Indonesia, etc.



CIOE in China



CommunicAsia in Singapore



OFC in USA



GITEX in UAE



ECOC in Europe



Netcom in Brazil



Convergence in India



SVIAZ/EXPO COMM in Russia



Please visit our website:  
[www.grandway.com.cn](http://www.grandway.com.cn)

**Ваш поставщик:**  
ООО "КОМПАНИЯ ОПТУЛС"  
Москва, ул.Иловайская, д.3  
Тел.: +7 (495) 646-00-96  
[sale@opttools.ru](mailto:sale@opttools.ru)  
[www.opttools.ru](http://www.opttools.ru)

**Sh. Grandway Telecom Tech. Co., Ltd.**  
Grandway Customer Service  
6F, Xin'an building No. 99 Tianzhou Road  
Shanghai, 200233 P.R. China

Tel: +86-21-54451260/61/62/63  
Fax: +86-21-54451266  
E-mail: [overseas@grandway.com.cn](mailto:overseas@grandway.com.cn)  
Website: [www.grandway.com.cn](http://www.grandway.com.cn)

**Note: Specifications Subject to change without notice.**