

4109 fusion splicer adopt high-speed image processing technology and special precision positioning technology, automatically finish the whole process of fiber fusion in 8 seconds typically, LCD monitor displays all steps of fiber fusion clear at a glance. Widely used for SM and MM Quartz Fiber with diameter 80-150 $\mu$ m, coating layer diameter 0.1-1.0mm and bare fiber length 16mm more or less. Ideal tools for construction and maintenance of fiber and cable in both field and laboratory applications. Support Chinese, English.

### Features

- \* High-resolution true color 5inch LCD display
- \* The advanced core to core fiber profile alignment system(PAS)
- \* Real time calibrating system ,parameter needn't be adjusted
- \* X/Y axes were displayed meanwhile, Magnification up to 300 times
- \* 8 seconds splicing time, 30 seconds Heat-Shrinking
- \* Battery capacity was display in real time, precisely
- \* Built-in high capacity battery, support 300 times splicing and heating, to meet one days' work
- \* Long Electrode Lifetime, up to 3000 times
- \* The new wind-cover design, enhance the ability to prevent the dust & wind, Max. wind velocity of 15m/s
- \* Three Splicing modes: auto, half-auto, manual
- \* Built-in super high-brightness LED supply convenience for night work
- \* Auto calculate splicing loss
- \* 8000 results Storage
- \* USB data interface
- \* One button operation to finish results download or software update
- \* Close shield splice automatically, Close heater lid heat automatically



### Technical Specifications

Optical Specifications	4109
Fiber Types	Single mode (ITU-T G.652), multimode (ITU-T G.651), dispersion shifted (ITU-T G.653), non-zero dispersion shifted (ITU-T G.655)
Average Splicing Loss	0.02dB with G.652, 0.01dB with G.651 and 0.04dB with G.653 and G.655
Splicing & Heating Time	Typical splicing time:8s, Typical heating time:30s
Return Loss	60dB or greater
Fiber Coating	100 $\mu$ m to 1000 $\mu$ m
Fiber Cladding	80 $\mu$ m to 150 $\mu$ m
Fiber Cleave Length	8~16mm(coating diameter<250 $\mu$ m), 16mm (coating diameter 250~1000 $\mu$ m)
Program	10 units factory setting SM program, 10 units factory setting MM program, and 30 units user setting SM program,30 units user setting MM program
Align Mode	Advanced profile alignment system(PAS)
Storage	8000 results
Data Transmission	USB port
Heater	Auto Heat Mode, the typical heating time is 30 seconds
Heat-Shrinkable Tube	40mm, 60mm and a series of micro Heat-Shrinkable Tubing
Lighting for Construction	Built-in super High-brightness LED supply convenience for night work
Magnifications	Vertical 152times, horizontal 304times

### Main Features:

- 5 inches high Resolution colorful LCD display
- Average splice time: 10 second
- Average tube-heat time: 30 second
- Lithium battery: up to 180 times of continuous splice and heat
- Simultaneous X and Y views with 180 times magnification
- New developed technology providing wind and dust resistance
- Splicing mode: Auto & Manual & Full-Automation
- USB Port
- Storing 6,000 groups of splice results.
- Multipurpose optical fiber fixture (Such as: Rubber-insulated wire, fiber optic patch cord, bare fiber)



### Specifications:

Applicable Fibers	SM, MM, NZ-DS, EDF ,Pigtail, Rubber-insulated wire Series
Average Splice Loss	0.02dB(SM), 0.01dB(MM), 0.04dB(NZDS), 0.04dB(EDF)
Return Loss	≥60dB
Tension Test	2.0N(200gf) (Standard)
Splicing Program	50 groups
Protection Sleeve Length	20mm, 40mm, 60mm
Language	Chinese, English
Environmental Conditions	-10~+50°C(operation temperature), 0~95% RH(humidity), 0~5000m(altitude)
Power Supply	AC adaptor: 100~240V input voltage, 50/60Hz; 12V, 5A output voltage(DC) DC adaptor: 12V voltage 8AH
Weight	6.5kg

### Standard Package

No.	Item	Quantity
1	Machine (4108 )	1
2	Fiber Cleaver(601-1071)	1
3	Fiber Stripper	1
4	AC Adaptor(602-120500D)	1
5	Battery(603-1072)	1
6	Charger(602-126250W)	1
7	Spare Electrodes	1
8	Cooling Tray	1
9	Instruction CD	1
10	Quick Reference Guide	1
11	Rubber-insulated wire stripping pliers	1
12	Rubber-insulated wire cutting fixture	1
13	One fixture which is avoid the fiber in Rubber-insulated wire broken down	1
14	Transit Case with Carrying Strap	1

### Product overview

Obtaining 16 patents of invention and 58 technical innovations, a brand-new product—JW4106S Optical Fiber Fusion Splicer is launched, thanks to 5 years of painstaking research of 28 engineers.

JW4106S implements industrial-grade CPU+FPGA structure of high-performance, completely fresh HD optical fiber microscope, imported high-speed motor and aluminum-magnesium alloy materials extensively. Compared with JW4106, our start product, JW4106S lowers the size by 38%, the weight by 52%, the power consumption by 57%, but improves the speed by 60%, the environment adaptability by 80% and the reliability (MTBF) by 200%. You can get unprecedented fusion splicing experience.



### Main characteristics

- \* 7s fast fusion splicing, 18s highly efficient heating.
- \* 320 times image magnification, 5mm fusion splicing for fibers of ultra-short cutting length
- \* 300 groups of fusion splicing modes, 100 groups of heating modes
- \* 10000 groups of fusion records, 64 images storage
- \* Ceramic presser foot, ceramic V-block, all-in-one fixture
- \* Dual-direction splicing, automatic splicing, intelligent pyrocondensation

USB and SD card interfaces, U-disk automatic software upgrade

Built-in modular lithium battery, supports 220 times of splicing and heating cycles.

### Small and light

Small in size and light in weight, the splicer is easy to carry and can be lift by one hand.

**Water-resistant, dust-resistant and shock-resistant in design** Water-resistant and dust-resistant can meet IP52 requirements.

The all-in-one fixture meet fusion splicing demands of multiple fibers, jumpers and rubber-insulated wires with a cladding diameter of 80~150μ m.

### Graphical interfaces and touch screen

JW4106S uses entirely new GUI graphical interfaces and touch screen in design. Operators can set up the splicer and get to know relevant information of it simply and directly by graphical interfaces.

### Intelligent heat shrinkage

A detection unit is embedded in the heater. The heating function will only be enabled when the thermal shrinkage tube is put in the heater, to avoid misoperation



**Large-capacity pluggable lithium battery**

The built-in pluggable lithium battery with large capacity can answer working demand lasting all day long (typical 220 times of fusion splicing and heating cycles).

**Ceramic V-block and ceramic presser foot**

Ceramic V-block with high precision brings you convenient and accurate placement of optical fibers and makes cleanup easy.

**Multi-functional carrying case**

The multi-functional carrying case is novel in design and light in weight, has built-in compact working bench. Open or close the cover can turn it to a working bench.

## OTDR----3302F

3302F series Optical Time Domain Reflectometer (OTDR) is an intelligent meter of a new generation for the detection of fiber communications systems. With the popularization of optical network construction in cities and countryside, the measurement of optical network becomes short and disperse; 3302F is specially designed for that kind of application. It's economic, having outstanding performance.

3302F 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 and quality assurance; in the other way, the new design makes 3302F more smart and compact and multi-purpose.

Whether you want to detect link layer in the construction and installation of optical network or proceed efficient maintenance and trouble shooting, 3302F can be your best assistant.

### OTDR-3302F

- 7-inch anti-reflection LCD screen
- Integrated design, smart and rugged
- IP65 protection level, outdoor enhanced
- Support multi-language display and input
- PON online test module (1625nm) is optional



- \* Integrated design, smart and rugged
- \* IP65 protection level, outdoor enhanced
- \* 7-inch anti-reflection LCD screen
- \* PON online test module (1625nm) is optional
- \* Support multi-language display and input

- \* FTTX test with PON networks
- \* CATV network testing
- \* Access network testing
- \* LAN network testing
- \* Metro network testing
- \* Up to 45dB Dynamic Range.

Dimension	320×270×150mm 3.5kg (battery included)
Display	7 inch TFT-LCD with LED backlight (touch screen function is optional)
Interface	1×RJ45 port, 3×USB port (USB 2.0, Type A USB×2, Type B USB×1)
Power Supply	10V(dc), 100V(ac) to 240V(ac), 50~60Hz
Battery	7.4V(dc)/4.4Ah lithium battery (with air traffic certification) Operating time: 12 hours, Telcordia GR-196-CORE Charging time: <4 hours (power off)
Power Saving	Backlight off: Disable/1 to 99 minutes Auto shutdown: Disable/1 to 99 minutes
Data Storage	Internal memory: 4GB (about 40,000 groups of curves)
Language	User selectable (English, Simplified Chinese, traditional Chinese, French,

	Korean, Russian, Spanish and Portuguese-contact us for availability of others)
Environmental Conditions	Operating temperature and humidity: -10℃ ~+50℃ , ≤95% (non-condensation) Storage temperature and humidity: -20℃ ~+75℃ , ≤95% (non-condensation) Proof: IP65 (IEC60529)
Accessories	Standard: Main unit, power adapter, Lithium battery, FC adapter, USB cord, User guide, CD disk, carrying case Optional: SC/ST/LC adapter, Bare fiber adapter

Type	Testing Wavelength (MM: ±20nm, SM: ±10nm)	Dynamic Range (dB)	Event Dead-zone (m)	Attenuation Dead-zone (m)
3302F-S1	1310/1550	32/30	1	8/8
3302F-S2	1310/1550	37/35	1	8/8
3302F-S3	1310/1550	42/40	0.8	8/8
3302F-S4	1310/1550	45/42	0.8	8/8
3302F-T1	1310/1490/1550	30/28/28	1.5	8/8/8
3302F-T2	1310/1550/1625	30/28/28	1.5	8/8/8
3302F-T3	1310/1490/1550	37/36/36	0.8	8/8/8
3302F-T4	1310/1550/1625	37/36/36	0.8	8/8/8
SM+MM	850/1300/1310/1550	32/30/28/26		

Pulse Width	Single mode: 5ns, 10ns, 20ns, 50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs, 20μs
Testing Distance	Single mode: 100m, 500m, 2km, 5km, 10km, 20km, 40km, 80km, 120km, 160km, 240km
Sampling Resolution	Minimum 5cm
Sampling Point	Maximum 128,000 points
Linearity	≤0.05dB/dB
scale Indication	X axis: 4m~70m/div, Y axis: Minimum 0.09dB/div
Distance Resolution	0.01m
Distance Accuracy	±(1m+measuring distance×3×10 <sup>-5</sup> +sampling resolution) (excluding IOR uncertainty)
Reflectance Accuracy	Single mode: ±2dB, multi-mode: ±4dB
IOR Setting	1.4000~1.7000, 0.0001 step
Units	Km, miles, feet
OTDR Trace Format	Telcordia universal, SOR, issue 2 (SR-4731) OTDR: User selectable automatic or manual set-up
Testing Modes	Visual fault locator: Visible red light for fiber identification and troubleshooting Light source: Stabilized Light Source (CW, 270Hz, 1kHz, 2kHz output) Field microscope probe
Fiber Event Analysis	-Reflective and non-reflective events: 0.01 to 1.99dB (0.01dB steps)

	-Reflective: 0.01 to 32dB (0.01dB steps) -Fiber end/break: 3 to 20dB (1dB steps)
Other Functions	Real time sweep: 1Hz Averaging modes: Timed (1 to 3600 sec.) Live Fiber detect: Verifies presence communication light in optical fiber Trace overlay and comparison

Wavelength ( $\pm 20\text{nm}$ )	650nm
Power	10mw, CLASS III B
Range	12km
Connector	FC/UPC
Launching Mode	CW/2Hz

Wavelength Range ( $\pm 20\text{nm}$ )	800~1700nm
Calibrated Wavelength	850/1300/1310/1490/1550/1625/1650nm
Test Range	Type A: -65~+5dBm (standard); Type B: -40~+23dBm (optional)
Resolution	0.01dB
Accuracy	$\pm 0.35\text{dB} \pm 1\text{nW}$
Modulation Identification	270/1k/2kHz, Pin <sub>input</sub> $\geq -40\text{dBm}$
Connector	FC/UPC

Working Wavelength ( $\pm 20\text{nm}$ )	1310/1550/1625nm
Output Power	Adjustable -25~0dBm
Accuracy	$\pm 0.5\text{dB}$
Connector	FC/UPC

Adapter	SC-PC-F (For SC/PC adapter) FC-PC-F (For FC/PC adapter) LC-PC-F (For LC/PC adapter) 2.5PC-M (For 2.5mm connector, SC/PC, FC/PC, ST/PC)
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3302 handheld OTDR is a new generation of intelligent optical measuring instrument designed for the optical fiber communication system testing. This product is mainly used to measure the parameters of optical fibers and cables, such as length, loss, and connection quality, etc.; it can realize the accurate positioning of event points and fault points, and can be widely used in the construction, maintenance testing and emergency repair of the optical fiber communication systems as well as the research, production and production measurement of optical fibers and cables and so on.

This product can provide you with the highest performance of solutions for installation and construction of fiber optic network construction and the subsequent fast and efficient maintenance and troubleshooting testing.

- \* Novel and beautiful appearance and structure design;
- \* Special protection design of shell, durable and able to work under bad environment;
- \* Simplest operating interface, shortcut key operation, easy to use;
- \* Dual operation of touch screen and keys;
- \* Short event blind zone, test 5 m fiber jumper easily; Have a multiple kinds of test modes such as automatic test, manual test
- \* and blind zone test, etc..
- \* Light detection and alarm are provided in the line, to avoid signal light from damage the instrument in the tested optical fiber;
- \* Built-in high-power visual red light fault positioning function;
- \* The USB interface functions can quickly realize the file transfer and report form preparation;
- \* The universal light output connector is easy to replace, which is able to realize a variety of interface tests;
- \* Smart battery electric quantity indication and low –voltage alarm function;
- \* 10-hour long time of duration, particularly suitable for the field construction application for a long time;
- \* The multi-wavelength and dynamic range selection can satisfy customer's high higher cost performance demands to the greatest extent;
- \* The highly intelligent analysis software can accurately identify the fault splices, connectors and even macro-bending;
- \* Language: multiple choices of languages, such as Chinese, English, etc, which can be customized according to customer's requirements.



Model	3302A	3302B
Type of optical fiber	Single –mode	
Center wavelength	1310nm/1550nm (±20nm)	
Maximum dynamic range (dB)	36/35	30/28
Event blind zone	1.5m	
Attenuation blind zone	10m	
Display type	3.5inch, color LCD, touch screen operation	
Optical interface	FC/UPC (Interchangeable SC, ST)	
Test range	500m,1km,2km,4km,8km,16km,32km,64km,128km	
Pulse width	10,30,50,100,275,500,1000,5000,10000ns	

Range accuracy	$\pm (1\text{m} + \text{sampling interval} + 0.005\% \times \text{distance})$
Attenuation measurement	$\pm 0.05 \text{ dB/dB}$
Reflection measurement	$\pm 4\text{dB}$
Data storage	$\geq 1000$ test curves
Communication interface	USB
Power supply mode	AC / DC adapter: AC: 100V ~ 240V (1.5A), 50/60Hz DC: 18V to 20V (2A) Internal lithium-ion battery pack: 7.4V, 4400mAh
Battery operation time	$\geq 10$ hours
Operating temperature	$-5^{\circ}\text{C} \sim 50^{\circ}\text{C}$
Storage temperature	$-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$
Relative humidity	0 ~ 95%, no condensation
Weight	2.5kg
Volume	320mm × 220mm × 210mm

MODEL	INCLUDES
3302	Instrument, FC/PC connector, NiMH battery, Trace Manager software CD, Data cable (USB/RS-232), AC adaptor, Soft carrying case, Warranty card, Quick reference guide.

## Handheld Optical Power Meter-----3216 Series

3216 Handheld Optical Power Meter is newly designed fiber optic tester, it aims at fiber network installation, fiber network engineering acceptance and fiber network maintenance. Combined usage with 3116 handheld optical light source, it offers a quick and accurate testing solution on both SM and MM fibers. Compared with usual power meters, the 3216 has more great functions/features of automatic wavelength identification and switching and intelligent backlight control. Also the 3216 features good appearance, good touch feeling and considerate humanity design.

- \* Wave ID—Automatic wavelength identification and switching (when used with 3116 handheld light source)
- \* Frequency ID/Tone detection---Automatic frequency identification
- \* Intelligent backlight control (light intensity can be adjusted properly according to ambient light, which greatly reduced power consumption)
- \* Data storage function, up to 1000 test records
- \* USB communication port for saved testing records download
- \* Reference power level can be set up and stored
- \* User self calibration function
- \* Auto-off function can be activated or deactivated.
- \* AA alkaline and AC adapter for power supply
- \* Low battery indication



Model	3216A	3216C
Calibrated (nm) wavelength	850, 1300, 1310, 1490, 1550, 1625	
Detector type	InGaAs	
Measurement Range (dBm)	-70~+6	-50~+26
Uncertainty (dB)	±0.15 (3.5%)	
linearity (dB)	±0.02	
Display resolution(dB)	0.01	
Wave ID (nm)	1310, 1490, 1550, 1625	
Date storage capacity	1000	
Communication Port	USB	
Optical Connector type	FC, SC, ST interchangeable	
Alkaline battery	3*AA, 1.5V	
Power Supply Adaptor(V)	8.4	
Battery Operating time (h)	200	
Operation Temperature(°C)	-10~+60	
Storage Temperature(°C)	-25~+70	
Outline size (mm) /weight	180*90*45(250g)	

MODEL	INCLUDES
All 3216 Models	3216 Optical Power Meter, 3pcs 1.5V batteries, AC Adaptor, User Manual, Cotton swabs and Soft carrying case.

## Optical Power Meter-----3208 Series

3208 handheld optical power meter is a compact and an easy-to-use testing instrument for optical fiber networks, which can be used for absolute optical power measurements as well as for relative loss measurements in optical fibers. It features ingenious appearance, wide range of power measurement, high accuracy and user self-calibration function with high performance-to-price ratio.

- \*User self calibration function
- \*Comfortable LCD display and optional backlight LCD display supports night operation
- \*Power measurements in dBm or mw and insertion loss in dB
- \*Low battery consumption, more than 240 hours continual operation time for three 1.5V alkaline batteries
- \*10 minutes Auto-off function can be activated or deactivated.
- Maintenance in Telecom
- Maintenance CATV
- Fiber Optic Lab Testing
- Other Fiber Optic Measurements



Type	3208A	3208C
Wavelength(nm)	800~1700nm	
Detector	InGaAs	
Measurement Range (dBm)	-70~+6	-50~+26
Uncertainty	±5%	
Calibrated Wavelength(nm)	850,980,1300,1310,1490,1550	
Resolution(dB)	0.01	
Optical Connector	FC(interchangeable SC,ST) / as well as 2.5mm universal	
Power Supply	Alkaline Battery(3 AA 1.5V batteries)	
Battery Operating Time	240 h with 1.5V Battery(3)	
Operating Temperature(℃)	-10 ~ +60	
Storage Temperature(℃)	-25 ~ +70	
Relative Humidity	0 to 95% (non-condensing)	
Dimension(mm)	240x160x8mm	
Weight(g)	650g	

MODEL	INCLUDES
All 3208 Models	3208 Optical Power Meter, Protective Rubber Boot, 3pcs 1.5V batteries, User Manual, Cotton swabs and Soft carrying case.

3213 Series PON Optical Power Meter target at the FTTx application and maintenance. This power meter is able to simultaneously test and estimate the signals of the voice, data and video. It is an essential and ideal tool for the construction and maintenance of the PON projects.

- \* It can experiment at Voice, data and video signal synchronous measurement and display on BPON/EPON/GPON.
- \* Providing simultaneous measurement for all three wavelengths on the fiber (1490nm, 1550nm, 1310nm).
- \* Used in Burst mode measurement of 1310nm upstream.
- \* Use the software connect with PC, setting the threshold, data transfer, and calibration the wavelength.
- \* USB communication port enables data transfer to a PC. 1000 measurement items can be saved in 3213 PON power meter or computer for data review.
- \* With optical power meter modular, include 850、1300、1310、1490、1550、1625sixs( 3213AP, 3213A without 850nm wavelength ) ; With visual fault locator modular ( 3213and3213AV )
- \* Optical power meter and VFL with one port. ( only 3213A )
- \* Optional Chinese/English display.
- \* Offers up to 10 different threshold sets in total. Three status LEDs represent different optical signal conditions of Pass, Warn and Fail respectively.
- \* 10 minutes Auto-off function can be activated or deactivated
- \* Good key design, high sensitivity, greatly reducing the volume and weight of the tester.
- \* Different models corresponding to different function, according to own use to choose .



PON module:	3213	3213A	3213AV	3213AP
1310 upstream measurement				
Pass Zone(nm)	1260nm～1360nm			
Measurement Range(dBm)	-40dBm～+10dBm			
Output power(max)	15dBm			
Isolation@1490/1550(dB)	>40dB			
Burst mode measurement error	<±0.5dB			
1490 downstream measurement				
Pass Zone(nm)	1470nm～1505nm			
Measurement Range(dBm)	-40dBm～+10dBm			
Output power(max)	15dBm			
Isolation@1310/1550(dB)	>40dB			
1550 downstream measurement				
Pass Zone(nm)	1535nm～1570nm			
Measurement Range(dBm)	-40dBm～+10dBm			
Output power(max)	25dBm			
Isolation@（1310/1490nm）	>40dB			

Measurement Accuracy				
Connatural uncertainty(dB)	±0.5dB			
Linearity(dB)	±0.1dB			
Passing through insertion Loss(dB)	<1.5dB			
General Information				
Detector Type	InGaAs			
Optical Connector	FC/SC/ST Interchangeable/2.5 universal adapter			
Fiber Type	SM 9/125um			
Measurement Unit	dB/dBm/xW			
Resolution (dB)	0.01dB			
Operation Voltage(V)	DC 3.3V～5.5V			
Power Supply	3pc1.5V battery			
Continuously Operation time (h)	PON: 90h	PON: 90h OPM: 100h VFL: 50h	PON: 90h VFL: 50h	PON: 90h OPM: 100h
Operation Temperature(℃)	-10℃～60℃			
Storage temperature(℃)	-25℃～70℃			
Weight(kg)	650g	650g	650g	650g

**Note:** The operation time of the battery are all for the instrument that do not turn on back light, if the back light turn on the operation time will be shorted.

Normal Optical Power Meter	3213 <sup>®</sup>	3213A	3213AP
Measurement Accuracy			
Connatural uncertainty(dB)	None	±0.5dB	
Linearity(dB)		±0.1dB	
Measurement Range(dBm)		-70dBm～+6dBm	
General Information			
Measurement Unit	None	dB/dBm	
Resolution (dB)		0.01dB	
Calibration Wavelength(nm)		1310/ 1490/1550/1625	1310/ 1490/1550/1625
Detector Type		InGaAs	
Optical Connector		FC/SC/ST Interchangeable/2.5 universal adapter	

②: JW3213do not have the OPM module

VFL	3213 <sup>®</sup>	3213A	3213AV
Output power	None	>0.5mW	
Wavelength		650nm	
Optical Connector		FC/SC/ST Interchangeable/2.5 universal adapter	
Fiber Type		SM/MM	

③: 3213 without VFL module.

Model	3213 Series PON Optical Power Meter	
Items	Title	Quantity
1	3213 tester	1unit
2	User Manual	1pc
3	USB	1pc
4	Soft CD	1pc
5	1.5VAA Battery	3pc

3213N PON Optical Power Meter is designed base on 3213 PON power meter. This power meter is able to simultaneously test and estimate the signals of the voice, data and video. It is an essential and ideal tool for the construction and maintenance of the PON projects.

#### Features:

- \* It can experiment at Voice, data and video signal synchronous measurement and display on BPON/EPON/GPON.
- \* Providing simultaneous measurement for all three wavelengths on the fiber (1490nm, 1550nm,1310nm).
- \* Used in Burst mode measurement of 1310nm upstream.
- \* Use the software connect with PC, setting the threshold, data transfer, and calibration the wavelength.
- \* USB communication port enables data transfer to a PC.1000measurement items can be saved in 3213N PON power meter or computer for data review.
- \* Optical power meter and VFL with one port. (only 3213NA)
- \* Optional Chinese/English display.
- \* Offers up to 10 different threshold sets in total,Three status LEDs represent different optical signal conditions of Pass, Warn and Fail respectively.
- \* 10 minutes Auto-off function can be activated or deactivated
- \* Good key design,high sensitivity, greatly reducing the volume and weight of the tester.
- \* Different models corresponding to different function, according to own use to choose .



#### Specifications:

PON module:	3213N	3213NA	3213NAV	3213NAP
1310 upstream measurement				
Pass Zone(nm)	1260nm～1360nm			
Measurement Range(dBm)	-35dBm～+10dBm			
Output power(max)	15dBm			
Isolation@1490/1550(dB)	>40dB			
Burst mode measurement error	<±0.5dB			
1490 downstream measurement				
Pass Zone(nm)	1470nm～1505nm			
Measurement Range(dBm)	-40dBm～+12dBm			
Output power(max)	15dBm			
Isolation@1310/1550(dB)	>40dB			
1550 downstream measurement				
Pass Zone(nm)	1540nm～1560nm			
Measurement Range(dBm)	-40dBm～+25dBm			
Output power(max)	25dBm			
Isolation@（1310/1490nm）	>40dB			
Measurement Accuracy				
Connatural uncertainty(dB)	±0.5dB			

Linearity(dB)	±0.1dB			
Passing through insertion Loss(dB)	<1.5dB			
General Information				
Detector Type	InGaAs			
Optical Connector	FC/SC/ST Interchangeable/2.5 universal adapter			
Fiber Type	SM 9/125um			
Measurement Unit	dB/dBm/xW			
Resolution (dB)	0.01dB			
Operation Voltage(V)	DC 3.3V～5.5V			
Power Supply	3pc1.5V battery			
Continuously Operation time (h)	PON: 90h	PON: 90h OPM: 100h VFL: 50h	PON: 90h VFL: 50h	PON: 90h OPM: 100h
Operation Temperature(℃)	-10℃～60℃			
Storage temperature(℃)	-25℃～70℃			
Weight(kg)	650g	650g	650g	650g

**Note:** The operation time of the battery are all for the instrument that do not turn on back light, if the back light turn on the operation time will be shorted.

#### Normal Optical Power Meter Module:

Normal Optical Power Meter	3213N <sup>®</sup>	3213NA	3213NAP
Measurement Accuracy			
Connatural uncertainty(dB)	None	±0.5dB	
Linearity(dB)		±0.1dB	
Measurement Range(dBm)		-70dBm～+6dBm	
General Information			
Measurement Unit	None	dB/dBm	
Resolution (dB)		0.01dB	
Calibration Wavelength(nm)		1310/ 1490/1550/1625	1310/ 1490/1550/1625
Detector Type		InGaAs	
Optical Connector		FC/SC/ST Interchangeable/2.5 universal adapter	

②: 3213N do not have the OPM module

#### VFL Module:

VFL	3213N <sup>③</sup>	3213NA	3213NAV
Output power	None	>0.5mW	
Wavelength		650nm	
Optical Connector		FC/SC/ST Interchangeable/2.5 universal adapter	
Fiber Type		SM/MM	

③: 3213N without VFL module.

Standard Packages:

Model	3213N Series PON Optical Power Meter	
Items	Title	Quantity
1	3213 tester	1unit
2	User Manual	1pc
3	USB	1pc
4	Soft CD	1pc
5	1.5VAA Battery	3pc

3223 Power meter and VFL integrated in one unit, this tester allows to perform both optical power/loss measurements and Fiber faults tracing visually.

Features

- \* 3223 VFL Power Meter is an ideal tester used in quickly mechanical splicing and FTTx networks.
- \* Optical Port: FC, SC interchangeable supports various optical connectors

Maintenance in Telecom  
 Maintenance CATV  
 Fiber Optic Lab Testing  
 Other Fiber Optic Measurements



Model	3223
Operating wavelength(Power Meter Module)	850/1300/1310/1490/1550/1625
Detector Type	InGaAs
Out put power(VFL module)	1mW or 10mW
Power Measurement Range	-70~+6dBm     /     -50~+26dBm
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	240*160*80mm

MODEL	INCLUDES
All 3223 Models	VFL Power Meter, 3pcs alkaline batteries, User Manual and Soft carrying case.

## Handheld Adjustable Light Source-----3116 Series

3116 Handheld Adjustable Light Source is newly designed fiber optic tester, it aims at fiber network installation, fiber network engineering acceptance and fiber network maintenance. Combined usage with 3216 handheld optical power meter, it offers a quick and accurate testing solution on both SM and MM fibers. The 3116 provides 1 to 4 wavelengths and output power can be adjustable on customer requests. Also the 3116 features good appearance, good touch feeling and considerate humanity design.

- \* Wave ID information can be transmitted when used with 3216 Optical Power Meter.
- \* Tone generation, 270HZ,330HZ,1KHZ,2KHZ
- \* Output power can be adjustable
- \* Output power value is shown on LCD display
- \* Intelligent backlight control (light intensity can be adjusted properly according to ambient light, which greatly reduced power consumption)
- \* AA alkaline and AC adaptor for power supply
- \* Low battery indication



Model	3116
Operating wavelength (nm)	1310/1550;1310/1490/1550/1625 (others specify on requests)
Applicable fiber	SM, MM
Laser type	FP-LD(others specify on requests)
Output Power (dBm)	-5~-12dBm (can be adjustable)
Adjustable step size (dBm)	<0.5
Stability(dB, 30min, 20℃)	0.15
Modulation (Hz)	CW, 270, 330, 1K, 2K
Fiber Port	FC/PC
Alkaline Battery	3*AA, 1.5V
Power Supply Adaptor(V)	8.4
Battery Operating time(h)	45
Operation Temperature(℃)	-10~+60
Storage Temperature(℃)	-25~+70
Outline size (mm) /weight	240*160*80(750g)

MODEL	INCLUDES
All 3116 Models	3116 Optical Light Source, 3pcs 1.5V batteries, AC Adaptor, User Manual and Soft carrying case.

## Optical Light Source-----3109 Series

3109 optical light source can provide 1 to 4 output wavelengths to meet specific requirements, including the 650nm red source and the 1310/1550nm wavelengths for single mode fiber or the 850/1300nm wavelengths for multi mode fiber, as well as other wavelengths according to customer needs. Together with the 3208 optical power meter, it is a perfect solution for the fiber optic network characterization.

### Features

- \* Provides 1~4 output wavelengths which can be optional according to customer's needs
- \* CW, 2Hz modulation output at 650nm, and CW, 270Hz,1KHz,2KHz modulation output at other wavelengths.
- \* High stability of the output power
- \* Stable output wavelength
- \* Backlight LCD display supports night operation
- \* Compact size and decent appearance
- \* Large LCD, easy operation
- \* Alternative 10 minutes Auto-off function conserving battery life



### Specifications

Type	3109			
Wavelengths(nm)	650	1310/1550	850/1300	850/1300/1310/1550
Emitter Type	FP-LD,LED or others please specify			
Typical Output Power (dBm)	0	-7dBm for LD, -20dBm for LED		
Spectral Width(nm)	≤10			
Output Stability	±0.05dB/15mins; ±0.1dB/ 8hours			
Modulation Frequencies	CW,2Hz	CW,270Hz,1KHz,2KHz		
Optical Connector	FC/ universal adaptor	FC/PC		
Power Supply	Alkaline Battery(3 AA 1.5V batteries)			
Battery Operating Time(hour)	45			
Operating Temperature(°C)	-10~+60			
Storage Temperature(°C)	-25~+70			
Dimension(mm)	240x160x80			
Weight (g)	600g			
Recommendation				
3109 Handheld Light Source is designed for optimal use with 3208 Optical Power Meter for measuring optical loss on both single mode and multi mode fiber cable.				

### Standard Packages

MODEL	INCLUDES
All 3109 Models	3109 Optical Light Source, Protective Rubber Boot, 3pcs 1.5V batteries,User Manual, and Soft carrying case.

## Pen-type Visual Fault Locator (VFL)-----3105P

The 3105 Pen type VFL is specially designed for field personnel who need an efficient and economical tool for fiber tracing, fiber routing and continuity checking in optical network. It includes:

Finding the breakpoint, poor connections, bending or cracking in fiber optic cables.

Finding the faults of OTDR dead zone

End-to-end visual fiber identification

### Features

- \* 2.5mm universal connector, for 1.25mm connectors
- FC (Male)-LC (Female) convertor can be provided on requests.
- \* Operates either in CW or Pulsed
- \* Constant output power
- \* Lower Battery warning
- \* Long battery life (up to 60 hours)
- \* Crash-proof and dust-proof design for laser head
- \* Laser case ground design prevents ESD damage
- \* Burning testing to ensure the reliability.
- \* Portable and rugged, easy to use
- \* Guarantee to CE standards include EMC, EMI, ROHS



### Specifications

Type	3105 Pen-type Visual Fault Finder
Central Wavelength	650nm±10nm (635nm can be required on request)
Emitter Type	FP-LD
Output Power	Optional choice for 1mw, 10mw on actual needs
Optical Connector	2.5mm universal connector For 1.25mm connectors, FC (Male)-LC (Female) convertor can be optional on customer requests
Operating Model	Both CW and Pulse available
Pulse Frequency	2~3Hz
Power Supply	2 AA alkaline batteries
Battery Operating Time	650nm@1mw ≥65hour 650nm@10mw≥15hour Test with Panasonic LR6 AA ALKALINE battery
Operating Temperature	-10~45 (°C)
Storage Temperature	-20~60 (°C)
Dimension (mm)	230x50 x50mm
Weight	220g(Without battery)

Remark: Colors can be customized on request when meets certain qty!

### Standard Packages

MODEL	INCLUDES
3105P	Main Unit (Original color), 2pcs Alkaline battery, User Manual, and Soft Carrying case.

## Pen-type Visual Fault Locator (VFL)-----3105A

3105A VFL is specially designed for field personnel who need an efficient and economical tool for fiber tracing, fiber routing and continuity checking in optical network. It includes:

Finding the breakpoint, poor connections, bending or cracking in fiber optic cables.

Finding the faults of OTDR dead zone

End-to-end visual fiber identification

### Features

\* 2.5mm universal connector, for 1.25mm connectors, FC (Male)-LC (Female)

convertor can be provided on requests.

\* Operates either in CW or Pulsed

Constant output power

Lower Battery warning

Long battery life (up to 60 hours)

Crash-proof and dust-proof design for laser head

Laser case ground design prevents ESD damage

Burning testing to ensure the reliability.

Portable and rugged, easy to use



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### Specifications

Type	3105A
Central Wavelength	650nm±10nm (635nm can be required on request)
Emitter Type	FP-LD
Output Power	Optional choice for 1mw, 10mw on actual needs
Optical Connector	2.5mm universal connector For 1.25mm connectors, FC (Male)-LC (Female) convertor can be optional on customer requests
Operating Model	Both CW and Pulse available
Pulse Frequency	2~3Hz
Power Supply	2 AA alkaline batteries
Battery Operating Time	650nm@1mw ≥65hour 650nm@10mw≥15hour Test with Panasonic LR6 AA ALKALINE battery
Operating	10~45 (8C)
Storage	10~50 (8C)
Dimension (mm)	220x50x50mm
Weight	250g(Without battery)

### Standard Packages

MODEL	INCLUDES
3105A	Main Unit (Original color), 2pcs Alkaline battery, User Manual, and Soft Carrying case.

## Economical Visual Fault Locator (VFL) -----3105N

The 3105N Economical VFL is an efficient and low cost basic fiber test tool, it provides a visible way to find fiber faults and identify fibers in an optical network during and after installation. It includes:

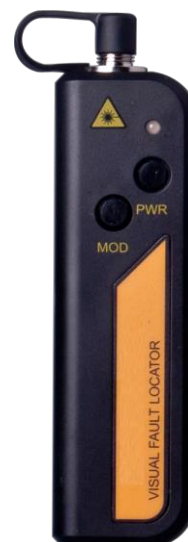
Finding the breakpoint, poor connections, bending or cracking in fiber optic cables.

Finding the faults of OTDR dead zone

End-to-end visual fiber identification

### Features

- \* Constant & stable output power
- \* Special laser driver circuit design, to make sure the laser output power remains a constant power level as long as in an available battery voltage.
- \* Low battery warning, reminds users to change the battery timely.
- \* Long battery life(up to 40 hours with AAA batteries)
- \* Operates either in CW or Pulsed
- \* Pocket size and light weight, easy to use



### Specifications

Type	3105N Economical VFL
Central Wavelength	650nm±10nm
Emitter Type	FP-LD
Output Power	1mw or 10mw
Optical Connector	FC/2.5mm universal connector For 1.25mm connectors, FC (Male)-LC (Female) convertor can be optional on customer requests
Operating Model	Both CW and Pulse(2Hz) available
Power Supply	Two AAA alkaline batteries
Battery Operating Time	40hours Test with Panasonic LR6 AAA ALKALINE battery
Operating Temperature	10~50 (°C)
Storage Temperature	-25~70 (°C)
Dimension (mm)	130*50*30
Weight	137g

### Standard Packages

MODEL	INCLUDES
3105N	3105N VFL, Two AAA batteries, User Manual and Soft Carrying case.

## Optical Multi-meter-----3209 Series

3209 Handheld Optical Multi-meter Integrates the functions of an intelligent optical power meter module and of a highly stable light source module in one unit. It can also provide data storage and upload functions. It is widely used in installation ,measurement and maintenance of DDN, Telecom and CATV networks.

- \* Users could write their own software by the communication protocol provided
- \* Automatic wavelength of light source switching
- \* Frequency identification.
- \* Simple function mode switching
- \* High stability of the output power
- \* Data storage function, up to 1000 test records
- \* USB communication port for saved testing records download
- \* Alkaline Battery and Mini USB Adapter for power supply



Telecom Maintenance

CATV Maintenance

DDN Maintenance

Fiber Optic lab testing

Other Fiber Optic Measurements

Type	3209A	3209C
Optical Power Meter Module		
Detector Type	InGaAs	
Measurement Range(dBm)	-70~+6	-50~+26
Rosolution(dB)	0.01	
Uncertainty	≤±0.25	
linearity (dB)	≤±0.1	
Frequency ID Range (Hz)	< 10K	
Optical Light Source Module		
Wavelengths(nm)	1310/1550(other wavelengths can be optional)	
Typical Ouput Power(dBm)	-5	
Output Stability	≤0.1	
Modulation Frequencies(Hz)	CW,270,1K,2K	
General Specifications of Multi Meter		
Power Supply	3 pcs 1.5V Alkaline Batteries/Mini USB 5V Adapter	
Battery Operating Time(h)	≥50 (Both Power Meter and Light Source are working) ≥200(Only Power Meter is working)	
Auto-off time (min)	10	
Communication Port	Mini USB	
	-10~+60	
	-25~+70	
Dimension(mm)	240X160X80mm	
Weight (g,without batteries)	675g	

MODEL	INCLUDES
3209	Multimeter, Mini USB cable,5V USB Adapter,3pcs 1.5V Alkaline Batteries,CD,User Manual, Cotton swabs and Soft carrying case.

## Optical Fiber Ranger-----JW3304N

JW3304N Optical Fiber Ranger is the most portable test instrument in the industry. It adopts the OTDR technical principles and integrates the powerful analysis software, which enables the JW3304N fiber ranger detect fiber faults location more accurate and easy.

### Main Features

- \* Portable, rugged, lightweight; Easy to use.
- \* More accurate testing results and better repeatability.
- \* Up to 8 fiber faults can be detected in each measurement.
- \* Automatic Pulse Width Control design to ensure a convenient operation.
- \* Easy to identify the faults location.
- \* Built-in visual fault locator (VFL), conveniently to find the faults in dead zone.
- \* Dust, water and shock proof, designed for field use
- \* Long battery life, up to 5000 measurements operation.

### Applications

Testing the distance of the fiber and identify the faults location in the fiber link.

Locates reflective and non-reflective breaks in the fiber network.

Inspection of fiber repair and maintenance.

JW3304N Fiber Ranger is ideal to be used in FTTx network installation and maintenance.



### Specifications

Model		JW3304N
Operating Wavelength		1550nm (1310nm Optional)
Fiber Type		9/125um SM Fiber
Optical Connector Type		FC/PC
Detector Type		InGaAs
Peak Power of laser		≥60mW
Max. Displaying	Reflection Event	60km (≥1dB)
Distance	Non-reflection Event	20km (≥2.5dB)
Measurement Unit		m
Reflection Event Dead Zone		15m
Distance Accuracy (Reflection Event)		± (2m+2*10 <sup>-4</sup> *Distance)
Wavelength of VFL Option		650nm
Output Power of VFL Option		≥1mW
Power Supply		Alkaline Battery (3pcs AA 4.5V Batteries)
Battery Operating Time		≥5000 measurements
Working Temperature		-5~40℃
Storage Temperature		-10~60℃
Humidity		0~85% (Non-condensation)
Size		230*160*80mm
Humidity		-25~+70
Weight (g)		650g

### Standard Packages

MODEL	INCLUDES
JW3304N	JW3304N Fiber Ranger, 3pcs 1.5V batteries, User Manual, Cotton swabs and Soft carrying case.

## Optical Fiber Identifier-----3306B Series

3306B Optical Fiber Identifier can quickly identify the direction of transmitted fiber and display the relative core power without any damages to the bend fiber. When the traffic is present, the intermittently audible tone is activated. The 3306B optical fiber identifier also recognize the modulation like, 270Hz, 1kHz and 2kHz. When they are used to detect the frequency, the continuously audible tone is activated. There are four adapter heads available:  $\varnothing 0.25$ ,  $\varnothing 0.9$ ,  $\varnothing 2.0$  and  $\varnothing 3.0$ . The 3306B optical fiber identifier is powered by a 9V alkaline battery.

### Features

- \* Easy-to-use with "ONE KEY" operation.
- \* Efficiently identifies the traffic direction and frequency tone (270Hz, 1KHz, 2KHz) with audible warning.
- \* Displays the relative core power
- \* More accurate test with Sunshade
- \* Easy-to-replace adaptors
- \* Durable metal housing and quality construction
- \* Lower power indication



### Specifications

Type	3306B	
Identified Wavelength Range	800-1700 nm	
Identified Signal Type	CW, 270Hz $\pm$ 5%, 1kHz $\pm$ 5%, 2kHz $\pm$ 5%	
Detector Type	$\varnothing$ 1mm InGaAs 2pcs	
Adapter Type	$\varnothing$ 0.25 (Applicable for Bare Fiber), $\varnothing$ 0.9 (Applicable for $\varnothing$ 0.9 Cable ), $\varnothing$ 2.0 (Applicable for $\varnothing$ 2.0 Cable ), $\varnothing$ 3.0 (Applicable for $\varnothing$ 3.0 Cable )	
Signal Direction	Left & Right LED	
Single Direction Test Range (dBm, CW/ $\varnothing$ 0.9mm bare fiber)	-46~10(1310nm)	
	-50~10(1550nm)	
Signal Power Test Range (dBm, CW/ $\varnothing$ 0.9mm bare fiber)	-50~+10	
Signal Frequency Display (Hz)	270, 1k, 2k	
Frequency Test Range (dBm, Average Value)	$\varnothing$ 0.9, $\varnothing$ 2.0, $\varnothing$ 3.0	-30~0 (270Hz, 1KHz)
		-25~0 (2KHz)
	$\varnothing$ 0.25	-25~0 (270Hz, 1KHz)
		-20~0 (2KHz)
Insertion Loss(dB, Typical Value)	0.8 (1310nm)	
	2.5 (1550nm)	
Alkaline Battery(V)	9	
Operating Temperature( $^{\circ}$ C)	-10—+60	
Storage Temperature( $^{\circ}$ C)	-25—+70	
Dimension (mm)	250X80X50mm	
Weight (g)	420g	

### Standard Packages

MODEL	INCLUDES
3306B	3306B Optical Fiber Identifier, 4pcs adapter heads, Sunshade, Alkaline battery, User Manual, Cotton Stick and Soft Carrying case.

3306D Optical Fiber Identifier is an important tool for optical maintenance, which is used for nondestructive fiber identification project. Meanwhile it also has Visual Fault Locator module with fault location function. Using the macro bending technology on line for nondestructive testing, 3306D can measure the signal direction and power and avoid misoperation resulting in interrupted lines.

- \* Indicate the signal directions and power in fiber
- \* Indicate the signal presence or absence(Live or dark fiber)
- \* Efficiently identifies the traffic direction and frequency tone (270Hz, 1KHz, 2KHz) with audible warning
- \* Displays the relative core power
- \* Don't need to replace adaptor
- \* Lower power indication
- \* Build in VFL function



Type	3306D
Identified Wavelength Range	750-1700 nm
Insertion Loss	1.0dB
Fiber Type	< 3mm Fiber
Identified Signal Type	270Hz/1KHz/2KHz
Display Type	LED
Detector Type	1mm InGaAs
Minimum detection power	-35dBm(1550nm)
	-30dBm(1310nm)
Center Wavelength	650nm
Output Power	10mW
Alkaline Battery	2*AA
Battery Life	> 60H
Operating Temperature	0~50°C
Storage Temperature	-20~60°C
Weight	350g
Dimension	250*85*50mm

MODEL	INCLUDES
3306D	3306D Optical Fiber Identifier, Alkaline battery, User Manual, Cotton

## Optical Fiber Identifier-----3306C

3306C Optical Fiber Identifier is equipped with the function of low frequency signal detection. It can quickly identify the direction of transmitted fiber and display the relative core power without any damages to the bended fiber. It can be used to detect in anywhere of SM and MM fiber. When the traffic is present, the intermittently audible tone is activated.

The 3306C optical fiber identifier also recognize the modulation like, 270Hz, 1kHz and 2kHz. When they are used to detect the frequency, the continuously audible tone is activated. There are

four adapter heads available: Ø0.25, Ø0.9, Ø2.0 and Ø3.0. The 3306C

optical fiber identifier is powered by a 9V alkaline battery.

### Features

- \* Identify the direction and frequency of the light without stopping operation.
- \* Easy-to-use with “ONE KEY” operation.
- \* Efficiently identifies the traffic direction and frequency tone (270Hz, 1KHz, 2KHz) with audible warning.
- \* Displays the relative core power
- \* Detect low frequency signals of 3306CT.
- \* Easy-to-replace adaptors
- \* Battery indication: change the battery if there is a low battery indication.
- \* Digital tube and LED indicator light.



### Specifications

Type	3306C	
Identified Wavelength Range	800-1700 nm	
Identified Signal Type	CW, 270Hz, 1kHz, 2kHz	
Detector Type	Ø1 InGaAs 2pcs	
Adapter Type	Ø0.25 (Applicable for Bare Fiber), Ø0.9 (Applicable for Ø0.9 Cable )	
	Ø2.0 (Applicable for Ø2.0 Cable ), Ø3.0 (Applicable for Ø3.0 Cable )	
Signal Direction	Left & Right LED	
Single Direction Test Range (dBm, CW/0.9mm bare fiber)	-20~10(1310nm)	
	-30~10(1550nm)	
Signal Power Test Range (dBm, CW/0.9mm bare fiber)	-30~+10dBm	
Signal Frequency Display (Hz)	270, 1k, 2k	
Frequency Test Range (dBm, Average Value)	Ø0.9, Ø2.0, Ø3.0	-30~0 (270Hz, 1KHz)
		-25~0 (2KHz)
	Ø0.25	-25~0 (270Hz, 1KHz)
		-20~0 (2KHz)
Insertion Loss(dB, Typical Value)	0.8 (1310nm)	
	2.5 (1550nm)	
Alkaline Battery(V)	9V	
Operating Temperature(°C)	-0—+50	
Storage Temperature(°C)	-10—+70	

Dimension (mm)	209X33X31	
3306CT		
Signal type	1HZ low frequency signal	
Signal Mode	Mechanical vibration	
Insertion loss	<1 dB(1310)	
Fiber external diameter	Ø0.9, Ø2.0, Ø3.0	

#### Standard Packages

MODEL	INCLUDES
3306C	3306C Optical Fiber Identifier, 4pcs adapter heads, Sunshade, Alkaline battery, User Manual, Cotton Stick and Soft Carrying case.

## Optical Talk Sets-----4103N

4103N Optical Talk Set is an intelligent and efficient instrument that combines in one set the functions of both a digital optical phone and a stabilized light source. It is widely used in operations of installation, optical testing, maintenance and fiber attenuation value testing in data network, CATV and Telecommunication network. The 4103N Talk Set can carry out full-duplex communication with high quality connection and not be affected by distance.

### Features

- \* Full-duplex digital communication with high quality conversation connection and low background noise
- \* Together with Optical Clip-on Coupler, enables on line communications available
- \* Combining functions of both a digital optical phone call and a stabilized light source.
- \* Large LCD display with backlight
- \* Low battery power indication

### Applications

Maintenance in Telecom  
Maintenance CATV  
Fiber Optic Lab Testing  
Other Fiber Optic Measurements



### Specifications

Type	4103N
Wavelength(nm)	1310/1550
Emitter Type	FP-LD
Transmission Distance(KM)	≥100
Dynamic Range(dB)	≥ 33
Output Power(dB)	-5~-7
Modulation(Hz)	CW,270,1K,2K
Output Stability (dB,30min,20 °C )	≤ 0.1
Power Supply	3 pcs 1.5V Alkaline Batteries/8.4V Power Supply Adaptor
Battery Operating Time	5 hours
Optical Connector	FC/PC
Operating Temperature(°C)	-10 ~ +60
Storage Temperature(°C)	-25 ~ +70
Dimension(mm)	298X220X85
Weight(g)	980g
Remark: provides Fiber Optic Clipon Coupler device according to customers needs	

### Standard Packages

MODEL	INCLUDES
4103N	Optical Talk Set (pair), Headset, 3 pcs 1.5V Alkaline Batteries, 8.4V Power Supply Adaptor, User Manual, Cotton swabs and soft carrying case.

3303 handheld optical variable attenuator is used for continuously variable optical signal attenuation. As the attenuator is used in the laser system for the on-line testing, therefore, 3303 can be used in the digital system of communication devices (such as: PHD, SDH) and also in the system of adopting analog modulation (CATV)

### Main Features

- \* stepwise attenuating by circumgyrated dial: attenuating step 0.05dB
- \* Provide with the function of displaying dB and dBm attenuating value
- \* 10 minutes Auto-off function can be activate and deactivate with keypad operation.
- \* After off the instruments, the system will have the memorizing of the attenuating value and the attenuating step, in order to restore the system back to the previous shut down state when open the instruments next time
- \* Portable, rugged, lightweight; Easy to use.

### Applications

Telecom Maintenance  
CATV Maintenance  
Comprehensive cable construction system  
Optical instruments research and development  
Optical communication education and lab testing  
Other optical project

### Specifications

Type	3303S	3303M
Attenuating wavelength Range	1260~1650nm	850~13000nm
Fiber Model	9/125um	62.5/125um (50 Optional)
Optical Connector	FC/PC	
Calibrated wavelengths	1310/1490/1550/1625nm	
Measurement Range	2.5~60dB	
Resolution	0.05dB	
Minimize Insertion Loss	<2.5dB	
Linearity	±0.5dB	
Repeating	±0.2dB	
Attenuating Accuracy	±0.8dB	
Return Loss at Input/ Output	>35dB (typical value40dB)	
Max input	+20dBm	
Displaying type	lattice 128*64 black and white, white back ground light	
Rechargeable batteries	8.4V	
Power supply adaptor	8.4V	
Operation temperature	0~40°C	
Operation Time	40 hours	
Storage temperature	-10~60°C	
humidity	0~85% (non- condensation)	
Dimensions	260X160X110	
Weight	1.2kg	



3226A Power Meter is specially designed for 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 power meter features simple operation, quick response and high measurement accuracy which make it an ideal tester in 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



### Specifications

Model	3226A Optical Power Meter
Wavelength Range	1270 ~ 1610 nm
Number of Channels	18
Wavelength resolution	20nm
Measuring Wavelength (nm)	1270/1290/1310/1330/1350/1370/1390/1410/1430 1450/1470/1490/1510/1530/1550/1570/1590/1610
Dynamic range	+10 to -40dBm
Resolution	0.01dB
Optical interface	FC/PC(FC, LC, ST available)
Operating Temperature	-10 to +60°C
Power supply	Rechargeable Battery/AC power adapter
Time of Operating	10h
Dimension	410cm*210cm*250cm
Weight	2.6kg

### Standard Packages

MODEL	INCLUDES
3226A	3226A, USB cable, AC Adaptor, User Manual, CD, Cotton swabs and Soft carrying case.

## 12 core MPO Power Meter & Light Source---JW3124 & JW3224

MPO Optical Power Meter and MPO Optical Light Source is special for testing MPO fiber. In recent years, as the rapid development of data center and cloud computing, also with rapid growth of multi fibers" (MPO) requirement. However, on the site of measurement process, traditional single channel Optical power meter with complex measurement and low credibility. Based on this, MPO products arises at this moment. The product can test the insertion loss of MPO fibers and polarity with only one key, And the integration of a variety of data storage, threshold analysis, data export and other applications, Compared with the traditional instrument, the test efficiency of is more than 10 times, it is the best choice for field application of MPO room test、 calibration of production line、 Determination of polarity.

### Features

- \* 12 core testing
- \* High precision of colorful LCD display.
- \* Save and upload test results via USB port
- \* 100 records
- \* One key to switch 4 functions (single channel OPM, 12 channels OPM, MPO, Column interface)
- \* Users can customize the threshold
- \* Build in 3500Ma lithium battery, work more than 10 hours.

### Specifications

Model	JW3124 MPO Light Source
Wavelength Range	850nm ,1300nm,1310nm,1550nm
Number of Channels	12
Laser type	FP LD
Frequency	0 Hz    270Hz    1KHz    2KHz
Fiber type	9/125    50/125    62.5/125
Output power	> -10dBm
Stability	±0.2 (15mins )    ±0.5 (8 hours)
Power supply	Rechargeable Battery/AC power adapter
Interface type	SM MM    MPO/PC
Model	JW3224 MPO Power Meter
Detector	InGaAs
Wavelength Range	850nm~1700nm
Calibration wavelength	850/1300/1310/1550
Power Meter Ranger	+3~-50dBm
Scanning	< 0.2S / channel
Resolution	0.01dB
linearity	± 0.2dB

### Standard Ordering information:

SM OLS 12 core 1310nm	1pc
SM OLS 12 core 1550nm	1pc
MM OLS 12 core 850nm	1pc
MM OLS 12 core 1300nm	1pc
MPO Power Meter	1pc

## 5001 Optical Cable Emergency Tool Kits- 18pcs

**5001 Optical Cable Emergency Tool kits** is composed of most of the essential tools, it is suitable for general usage during the fiber installation and maintenance of fiber networks.



No.	Tool Name	Qty	Function
1	Fiber Optic stripper( <b>CFS-2</b> )	1	Peeling the coat of the fiber
2	Assembled sleeve wrench	1	Fixing splice closure/terminal box
3	2M Tape Measures	1	Measuring the length of the fiber cable
4	Utility Knife	1	Accessorial tool for peeling the fiber cables
5	Piano wire clamp	1	Nipping the strengthening core of the fiber cables
6	Cross Fiber reamer	1	Peeling the fiber cables
7	Nipper	1	Entwining the fiber cables
8	Scissors	1	Snipping the fiber of the cable
9	Pliers	1	Snipping the steel wire of the fiber cables
10	Accuate clamp	1	Accessorial tool for the splicing
11	Mini Screwdriver	2	Fixing the screws
12	Inner-hexagonal Wrench	1	Fixing the inner hexagonal screws
13	Adjustable Spanner	1	Accessorial tool for the splicing
14	Assembled Screwdriver	1	Loading and uploading the fiber optic splice closure
15	Alcohol Pump Bottle	1	Cleaning the fiber
16	Mark Pen	1	Marking the fiber
17	Flashlight	1	Lighting at night
18	diagonal cutting pliers	1	Accessorial tool for peeling the fiber cables

### 5003 cable Inspection & maintenance tool kits- 13pcs

5003 cable Inspection & maintenance tool kits composed of 3205 mini power meter, 3304N fiber ranger, fiber cleaver and other optical tool kits. This set of tool kits can test the output power, Identify the long and short distance fault locations, connect the cables and so on. 5003 is mini in size, convenience for carrying, quite popular used in the field of optical cable maintenance.

Standard configuration



No.	Name	Model No	Set	Usage
1	Fiber Ranger	3304N	1	Identify the fault location for the long and short distance
2	Alcohol Bottle	5mL	1	storing alcohol
3	Mechanical splicing		1	For fast splicing of the fiber
3	Optical Fiber Cleaver		1	Cleave the fiber
4	Mini Power Meter	3205	1	Test the output power
5	Hexangular wrench		1	Take apart or assemble the splicing closure
6	CFS—2 Fiber optic stripper		1	Strip the jacket or coated fiber
7	wire-cutter		1	Cut the strengthened cable core
8	Monkey Wrench	8"	1	Take apart or assemble the splicing closure
9	Cutter		1	Strip the fiber (extra refill cutter)
10	Cross Screwdriver		1	Take apart or assemble the splicing closure
11	Straight Screwdriver		1	Take apart or assemble the splicing closure
12	User manual	5003	1	Instruction and maintenance for
13	Carry Case		1	Contain all above tools

### 5001A Compact Field Fiber Fusion Splicing Tool Kit -20pcs



1	Fiber optic stripper CFS-2
2	KEVLAR Scissor KC-1
3	Optic Fiber Jacket Stripper
4	18pcs of mixed screwdrivers
5	Round Cable Cutter
6	Wire Rope Cutter
7	7" Lineman's plier (178mm)
8	6" Needle Node Pliers 135mm
9	6" Side Cut Pliers 130mm
10	6Pcs Electronic Screwdriver Set
11	8" Adjustable wrench
12	Emergency lamp
13	Blow Brush (MS-15C)
14	3.5M Tape Measure(TAJIMA)
15	Precision Nipper
16	Black Marker
17	Utility knife
18	100ml Bottle of Alcohol with locked
19	Carrying Tool Case(385×275×110mm)
20	Cutting pen

### 5002A Deluxe Fiber Optic Cleaning Kits- 8pcs



1	Fiber tool Cassette Cleaner
2	400X Hand Held Fiber Microscope
3	Cleaner Replacement
4	1.25mm Fiber Optic Cleaning Pen
5	2.5mm Fiber Optic Cleaning Pen
6	Carrying Tool Case
7	Connector Cleaner LED inspection flashlight
8	Fiber Connector Cleaner

## 5001B Fiber Fusion Splicing Tool Kit-26pcs



1	Fiber optic kevlar cutter
2	Clauss Fiber Stripper
3	Optical Fiber Jacket Stripper
4	Wire Rope Cutter
5	Round Cable Cutter
6	Carbide fiber pen type cutter
7	6Pcs Electronic Screwdriver Set
8	7" Lineman's plier 178mm
9	6" Needle Node Pliers 135mm
10	6" Side Cut Pliers 130mm
11	8" Adjustable wrench
12	Mini-Hacksaw
13	9Pcs Folding type hex key set (inch)
14	Screwdriver S/D(-)5×100mm
15	Screwdriver S/D(+)#1×100mm
16	Screwdriver S/D(-)6×100mm
17	Screwdriver S/D(+)#2×100mm
18	100ml Bottle of Alcohol
19	Fiber Cleaning Wipes
20	Blow Brush
21	3.5M Tape Measure
22	Precision tweezer
23	Black Marker
24	Carrying Tool Case(430×330×135mm)
25	Security cutter
26	Cotton Swab

### ■ Stanely Round Cable Slitter



- Used for removing the outer sheath(PVC & Plenum types) of fiber optic cable
- Adjustable cutting depth for insulation from .12" (3mm) to 1.38" (35 mm) thick
- Includes spare blade in handle

### ■ Universal Round Cable Slitter



- The original tool for slitting cable insulation from PVC, Teflon & THHN insulations
- Adjustable cutting depth for insulation up to .18" (4.5 mm) thick
- Blade swivels for circular, longitudinal & spiral cuts - great tool for window slits!

### ■ Round Cable Stripper RCS-114| RCS-158



- RCS-114 for smaller diameter cables: 0.178 to 1.14 inches (4.5 - 29 mm)
- RCS-158 for larger diameter cables: 0.75 to 1.58 inches (19 - 40 mm)
- Blade depth can be regulated by simply turning the blade housing
- Spiral cut for end stripping or mid-span stripping

## ■ Longitudinal Cable Sheath Slitter KMS-K



- Tool for safe longitudinal slitting of plastic cable sheaths with different thickness
- Applicable either at the beginning or in the middle of the cable. Additional attachable pieces for slitting optic cables and cables with small diameter available
- Characteristics of the KMS-K
- Attachable piece, grey for cables up to 25 mm

## ■ Longitudinal Cable Sheath Slitter



- Perfect tool for cutting jackets from a variety of fiber optic cable
- V-opening in blade
- Adjustable blades with a screwdriver for various size cables
- Economical tool for multiple cables
- Works with standard 30-10 AWG (0.05-6mm<sup>2</sup>) wire in addition to fiber optic cable

## ■ Longitudinal Cable Slitter



- Professional-grade cable slitter designed for longitudinal, circumferential ringing, and mid-span slitting of corrugated aluminum or copper shield cables, medium-density polyethylene (MDPE), and high-density polyethylene (HDPE) conduits
- Adjustable blade depth allows slitting of coverings of up to 1/4" (6.3mm) thick
- Blade fully retracts inside body for storage
- Cam-adjustable lever allows blade dig-in in mid-span application
- Lever teeth designed for soft and hard jacket/covering applications
- Longitudinal slitting of cable/duct ranging from 1/2" (12.7mm) to larger sizes
- Circumferential slitting of cable/duct ranging from 1-1/2" (38mm) to larger sizes
- Window cutout to access fibers inside duct ranging from 1-1/2" (38mm) to larger sizes

## ■ Across and Longitudinal Fiber Cable Stripper



- It can do both across and lengthwise stripping
- It uses unilateralism ratchet wheel to operate,so that the first-time stripped cable has the symmetry hatches on both sides,as we know,the Side Fiber Cable Ripper must strip twice in the optical cable cut-over with service process,It overtimes this shortage
- It can do one-off strip for the fiber cable Ø10~Ø30mm
- It is portable, compact, easy to operate,timesaving ,the cut-in depth can be accommodated and can strip at any part of the fiber cable

## ■ NTT Optical Connector Cleaner NEOLCEAN-N



- Efficient and easy to use
- Delivers consistently high quality cleaning performance
- Lightweight and safe to use
- Anti-static resin is used
- Part No.: Neoclean-N
- Application Connectors : SC,FC,ST,MU,LC,MPO,MT,MTRJ
- Cleaning time: 500 times
- Size(mm) : W 115 × H 79 × D 32
- Replacement Reel: ATC-NE-NS 10 reels/set

## Fibretool Cassette Cleaner



- Designed so that all operators can consistently achieve high quality cleaning without alcohol or other solvents
- Palm-sized and lightweight. Easy and safe to use whether in the engineering lab, on the production line, or in the field
- Cleaning tape is replaceable and cost effective
- One cleaning tape can be used for over 500 wipes
- Has excellent anti-static properties to avoid reattachment of dust to the ferrule after cleaning
- Connectors Cleaned: SC, SC2, FC, ST, DIN, D4, MU, LC, MT

## Fiber Connector Cleaner CLETOP-S

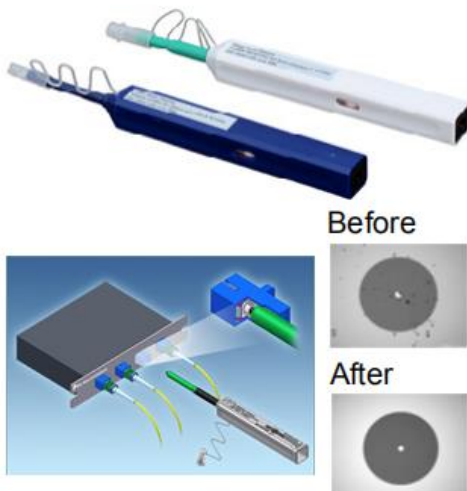


- Easy to replace tape cartridge The tape can be replaced very easily by a "drop-in" cartridge
- One push operation Available for both left hand and right handed operators.

- Anti-static properties Has excellent anti-static properties for static sensitive applications and can avoid reattachment dust to the ferrule after cleaning and it can avoid reattachment of dust after cleaning.

Part #	Description
14110501	Use for SC, SC2, FC, ST, DIN, D4 connectors.
14110700	Replacement cartridge blue(6 pcs/set)
14110601	Use for MU, LC, MT, MPO, MT-RJ without pins,
14110710	Replacement cartridge white(6 pcs/set)

## Ergonomic One-Click Cleaner (SC/ST/FC & LC/MU)



- The One-click Cleaners are dry cloth cleaners specially designed to clean single fiber connectors residing in an adapter, faceplate or bulkhead.
- The dust cap of the cleaner acts as an adapter for cleaning unmated connectors.
- Disposable with 800+ cleanings per unit, Made from antistatic resins
- Easy pushing motion engages connector and initiates cleaner
- Cleaning micro fibers are densely stranded and debris free
- Extendable tip reaches recessed connectors
- Compliant with EU/95/2002/EC Directive(RoHS)

## ■ MTP/MPO™ Bulkhead Cleaner



The MTP I.B.C. (In Bulkhead Cleaner) is the first dry cloth fiber optic cleaner specifically designed to allow you to clean the MPO while inside of a fiber optic adapter, faceplate, or bulkhead. The unique design enables you to clean either male (with pins) or female (with-out pins) MT ferrules.

- Essential Cleaning Tool for Networking Gear
- Cleans the MPO inside of an Adapter, Faceplate, or Bulkhead
- Cleans MT Ferrules With or Without Pins
- 600 Cleanings Per Unit

## ■ Kim Wipes

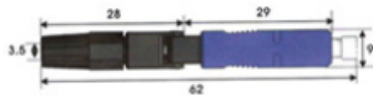
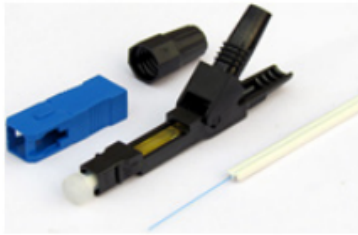


• Lint free cleaning condition is necessary in fiber optic industry. Used with alcohol, this nearly lint free tissue is ideal for fiber and connector end face cleaning. One single box contains 280 lint free tissues

- Kim Wipes 1 box (280PCS/BOX)

# Quick Termination Connectors

## ■ Field Installable Connector- Fast Connector



### Feature:

- Pre-Polished, Field Installable Connectors
- Epoxy-free crimp procedure, No need for curing oven
- Precision mechanical alignment insures low loss
- Easy and quick on-site installation less than 2 minutes

### Specifications:

- Applicable for Ø2mm & Ø3mm fiber cable
- Insertion Loss:  $\leq 0.2\text{dB}$  (MAX 0.5)
- Return Loss:  $\geq 40\text{dB}$
- Part No.: SC/PC
- Tensile strength:  $> 50\text{N}$

### Application

- The SC Field Assembly Optical Connector is pre-polished, pre-assembled, field installable connector that completely eliminate the need for hand polishing in the field.

- Data and Video transmission
- Direct equipment termination
- Fiber to the Subscriber (FTTX)
- Equipment test leads
- Maintenance and replacement requirement