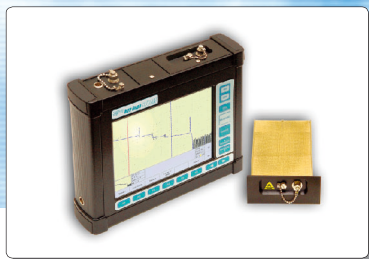
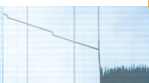




# Catalogue

2005

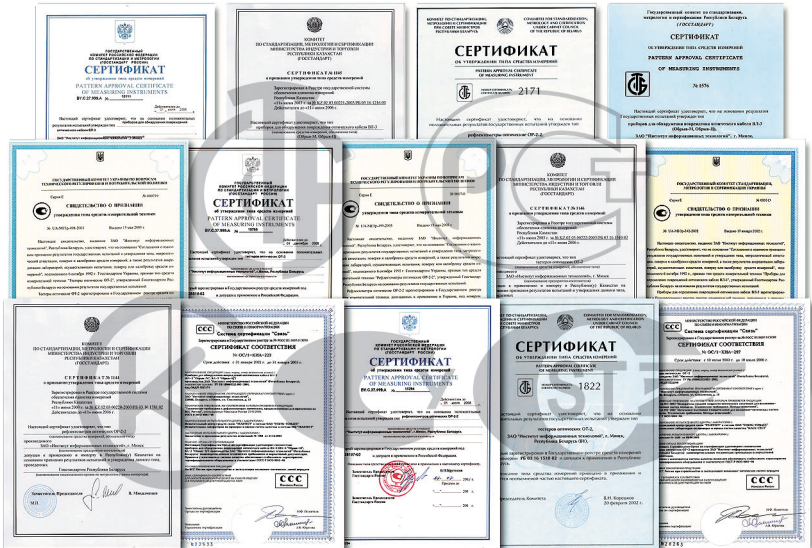
Fiber optics  
EQUIPMENT



- Testing platform
- Measuring devices
- Optical cable testing
- Standard devices
- Monitoring system



ISO'9001



THE INSTITUTE OF INFORMATION TECHNOLOGIES FOCUSES ITS ACTIVITY ON THE DEVELOPMENT AND MANUFACTURE OF TELECOM TEST AND MEASUREMENT EQUIPMENT. WE ARE PROUD TO PRODUCE EQUIPMENT WITH THE IIT TRADEMARK, WHICH POSSESSES HIGH TECHNICAL CHARACTERISTICS, WIDE FUNCTIONAL POSSIBILITIES, RELIABILITY AND EASY HANDLING.

THE IIT PRODUCT FAMILY INCLUDES MORE THAN 15 TYPES OF INSTRUMENTS DESIGNED FOR DIVERSE APPLICATION. OUR COMPANY PRODUCES OPTICAL TESTERS, TALK SETS, OPTICAL REFLECTOMETERS AND FAULT LOCATORS WHICH ARE OF EVERYDAY USE FOR ENTERPRISES INVOLVED IN INSTALLATION AND MAINTENANCE OF FIBER OPTIC LINKS.

WE SUPPLY HIGH-TECH INSTRUMENTS WELL SUITED FOR HIGH-PERFORMANCE TESTING IN THE PROCESS OF OPTICAL CABLE PRODUCTION, SUCH AS THE INSTRUMENT FOR OPTICAL FIBER ELONGATION MEASUREMENT, THE SINGLE-MODE OPTICAL FIBER CHROMATIC DISPERSION MEASUREMENT SET, THE MULTICHANNEL OPTICAL TESTER, THE MULTIMODE OPTICAL FIBER FREQUENCY CHARACTERISTICS TEST SET.

ANOTHER AREA WHICH THE IIT IS FOCUSING ON IS THE DEVELOPMENT AND MANUFACTURE OF UNIQUE STANDARD EQUIPMENT USED FOR VERIFICATION OF MEASUREMENT OPTICAL EQUIPMENT WIDELY APPLIED WHILE SETTING UP LABORATORIES FOR PROVIDING TESTING AND CALIBRATION SERVICES AT ENTERPRISES.

THE HIGH RELIABILITY OF OUR INSTRUMENTS IS PROVIDED BY STRICT QUALITY CONTROL OF THE PRODUCT IN ALL MANUFACTURING STAGES FROM THE INITIAL CONTROL OF ELECTRONIC COMPONENTS TO THE FINAL CONTROL OF THE PRODUCT.

THE INSTITUTE OF INFORMATION TECHNOLOGIES HAS SUCCESSFULLY COMPLETED THE EVALUATION PROCESS OF QUALITY SYSTEM ACCEPTED BY THE NATIONAL AND GERMAN (TGA) CERTIFICATION SYSTEMS. WE RECEIVED CONFORMITY CERTIFICATES ON DESIGNING AND MANUFACTURING MEASUREMENT EQUIPMENT FOR OPTICAL FIBER COMMUNICATIONS ENGINEERING.

THEY CONFIRM THAT OUR PRODUCTS MEET THE INTERNATIONAL STANDARDS ISO-9001 REQUIREMENTS. TO GET TECHNICAL CONSULTATIONS AND COMPLETE INFORMATION SUPPORT – GIVE US A CALL:

OUR TELEPHONE NUMBER IS +375 17 236 5972.

WE ARE EXTREMELY INTERESTED IN A CLOSE COLLABORATION WITH OUR CUSTOMERS. YOUR PROPOSALS ABOUT OUR DEVICES AND THEIR UPGRADING WOULD HELP US IMPROVE OUR EQUIPMENT QUALITY.

TO EXPRESS YOUR OPINION ABOUT OUR MEASUREMENT EQUIPMENT, PLEASE, SEND YOUR MESSAGES, MARKING THE TYPE AND DEVICE NUMBER, ITS OPERATION AND MAINTENANCE TERMS, TO OUR E-MAIL: [INFO@BELIIT.COM](mailto:INFO@BELIIT.COM)

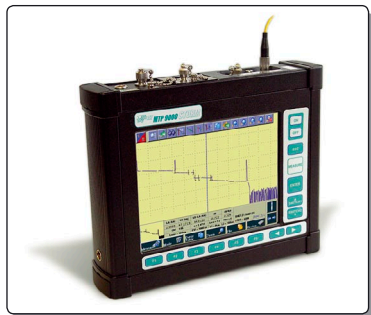
SINCERELY YOURS,

the INSTITUTE OF INFORMATION TECHNOLOGIES

## Mobile Testing Platform MTP 9000

**MOBILE TESTING PLATFORM MTP 9000** BELONGS TO A NEW GENERATION OF MOBILE DEVICES AND IS DESIGNED TO SOLVE ALL MEASUREMENT TASKS WHEN INSTALLING OPTICAL FIBER COMMUNICATION LINKS.

**MTP 9000** IS A UNIVERSAL MEASUREMENT DEVICE CONSISTING OF BASIC OPERATION MODULE WITH A BUILT-IN COLORED DISPLAY AND A WIDE RANGE OF REPLACEMENT MEASUREMENT MODULES.



Convenient design makes possible for the users to purchase various replacement modules when needed and conduct all types of optical cable measurements. Replacement modules are easy to install and replace. This makes it unnecessary to purchase any other new devices and cuts down time input and training expenses.

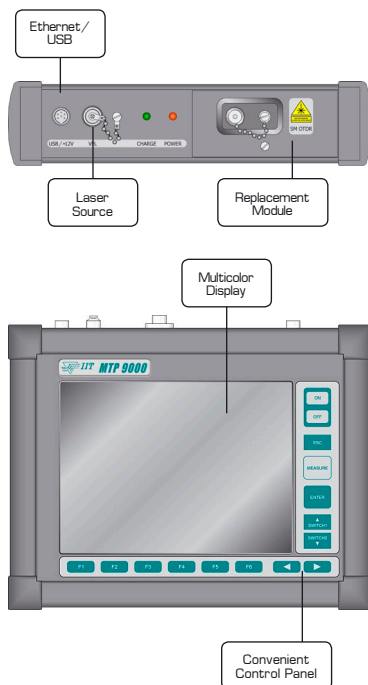
A multicolor display with a TOUCHSCREEN function is used in the platform, installation of an optical power meter (OPM) is provided for and a laser source for the detection of faults in optical fibers (OFL).

### REPLACEMENT MODULES FOR THE TESTING PLATFORM MTP 9000

- optical reflectometer (OTDR)
  - units with standard and high dynamic range are produced
  - automation of the measurement process
  - dead zone when events are located is less than 3.5 meter
  - possibility to initiate measurements by pressing one button
- electric cables reflectometer (TDR)
- optical spectrograph (OSA)
- polar mode dispersion analyzer (PMD)
- chromatic dispersion analyzer (CD)

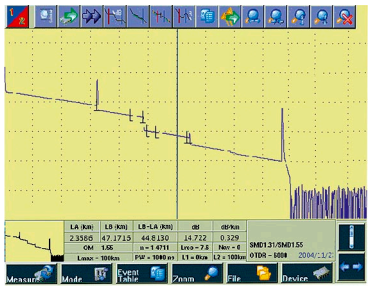
### Service conditions

- ambient air temperature 0 ... +50°C
- relative air humidity no more than 90% at 25°C
- atmospheric pressure from 70 to 106.7 kPa



**REPLACEMENT MEASUREMENT MODULE OF THE OPTICAL REFLECTOMETER CAN FUNCTION IN THE LASER SOURCE MODE.**

**PLATFORM ARRANGEMENT EQUIPPED WITH A POWER METER AND OPTICAL REFLECTOMETER MODULES REPRESENTS AN INDISPENSABLE DEVICE FOR INSTALLATION AND OPERATION OF OPTICAL FIBER COMMUNICATION LINKS.**



#### ADVANTAGES

- software developed on the basis of OC LINUX which considerably increases device reliability
- device operation is done by means of user-friendly interface
- modern SYSTEM-ON-CHIP architecture is used which provides for the realization and integration of modern interfaces
- TOUCHSCREEN function
- possibility to supply the platform with an optical power meter
- possibility to supply the platform with a built-in laser source to detect faults in optical fibers
- built-in USB-port for communication with PC
- possibility of remote operation by means of a built-in ETHERNET-port
- bright multicolor display with high resolution
- compact, light, low power consumption
- strong hermetic case conforming to IP65 standard

## Specifications

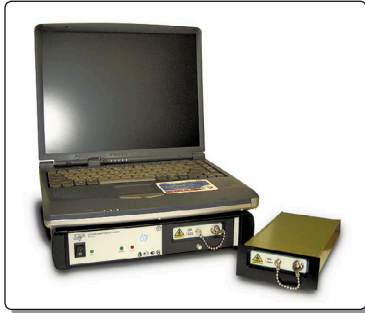
Optical Power Meter							
Wavelength, nm	850			1310, 1550			
Power range, dBm	+3...-60			+3...-65			
Uncertainty, dB	0.33			0.22			
Linearity, dB	0.17			0.11			
Built-in Laser Source							
Output power, mW	> 500						
Optical Reflectometer Replacement Module							
Wavelength, nm	850±20	1300±20	850±20 1300±20	1310±20	1550±20	1310±20 1550±20	
Dynamic range (SNR=1):	- standard, dB	30	29	28.3	36.5	35	36/34.5
	- high, dB	-	-	-	41.5	39.5	41/39
Attenuation/Fault location dead zone	14.5 / 3.5						
Platform General Parameters							
Power supply	battery (not less than 6 hours) / 12 / ~220V						
Dimensions, mm	243 × 195 × 56						
Weight: with battery, kg	2.5						

**MTP 9000 SAVES YOUR TIME INCREASING THE EFFECTIVENESS OF YOUR RESOURCES USE.**

# Optical Time Domain Reflectometer OR-2-2

THE **OR-2-2** IS A **MINI-OTDR** FOR MEASUREMENT OF ATTENUATION IN OPTICAL FIBERS (**OF**) AND THEIR SPLICES, THE **OF** LENGTH AND DISTANCE TO THE POINT OF FAULT.

THE **OR-2-2 OTDR** CONSISTS OF THE MAINFRAME AND OPTICAL PLUG-IN UNITS FOR MEASURING MULTI- AND SINGLE-MODE **OF** AT DIFFERENT WAVELENGTHS.

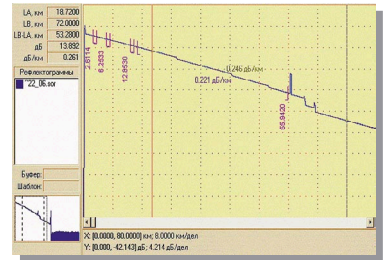


## General characteristics

- the OTDR operating control, data processing and displaying measurement results are done with the help of a PC which could be included into the delivery set
- the software provided allows to determine all the necessary characteristics of the OF, to display and analyze several reflectograms simultaneously, to store and read measurement data, to print it
- "TEMPLATE" mode allows to essentially reduce the time for analysis and OF links certification
- the OTDR allows to store and read the reflectograms in the BELLCORE format
- the OTDR allows to measure electrical cable characteristics with the help of an additional plug-in unit

## ADVANTAGES

- the OTDR can be used both in laboratory and field environment
- the OTDR possesses intuitive measuring and reliable software
- the OTDR provides for the possibility to use wireless communications WI-FI at the customer's request
- the OTDR has a hermetic case conforming to IP65 standard



## Specifications

Fiber type	MM				SM		
	850 ± 20	1300 ± 20	850 ± 20 1300 ± 20	1310 ± 20	1550 ± 20	1310 ± 20 1550 ± 20	
Wavelength, nm	850 ± 20	1300 ± 20	850 ± 20 1300 ± 20	1310 ± 20	1550 ± 20	1310 ± 20 1550 ± 20	
Dynamic range (SNR=1):	- standard, dB - high, dB	30 29	28.3	36.5 41.5	35 39.5	36/34.5 41/39	
Attenuation dead zone*, m				14.5			
Event dead zone*, m				3.5			
Pulsewidth, ns	10... 1000			10... 20000			
Distance range, km	2, 5, 10, 20, 40, 80			2, 5, 10, 20, 40, 80, 120, 160, 240			
Loss resolution, dB				0.001			
Distance uncertainty, m				± (0.3 + sampling resolution + 5 × 10 <sup>-5</sup> × L)			
Attenuation measurement uncertainty, dB/dB				0.05			
Sampling resolution, m	0.5... 6			0.5... 18			
Refractive index range setting				1.0000... 2.0000			
Optical connector type				FC, ST, SC, SMA, D4			
Power supply				rechargeable battery Pb (Lead Acid) / ~220B			
Consumed power, W				6			
Dimensions, mm				293 × 250 × 60			
Weight, kg				4			

\* For reflectance - 40 dB, pulsewidth - 10 ns.

## Service conditions

- ambient air temperature -10...+50°C
- relative air humidity no more than 90% at 25°C
- atmospheric pressure from 70 to 106.7 kPa

Certificates of:

- Belarus
- Russia
- Ukraine
- Kazakhstan
- Uzbekistan



**THE OFL-5 OPTICAL LOCATOR-REFLECTOMETER IS DESIGNED FOR MEASURING ATTENUATION IN OPTICAL FIBERS AND THEIR SPLICES, OPTICAL FIBER LENGTH AND DISTANCE TO ANY SECTION OF IT.**

**THE OFL-5 OPTICAL LOCATOR-REFLECTOMETER CAN BE USED IN INSTALLATION, MAINTENANCE, OPERATION AND REPAIR WORKS ON OPTICAL FIBER LINKS.**

## General characteristics

- two operating modes:
  - locator mode (autonomous)
  - and reflectometer mode (under the control of PC)
- distance to the event or fault location and its type are shown on the built-in graphic display
- automatic storing of backscattered traces in the non-volatile memory
- traces download to a PC in the BELLCORE format



## Locator Mode

- automatic testing of distance to OF event or fault location
- display of all faults in a link
- storage of all measurement results (128 traces)
- possibility to modify refractive index value of the OF

## Reflectometer Mode

- operates as a full-value reflectometer under the control of a PC
- the software allows for the trace of the link under testing to be displayed on the PC and for defining all the needed specifications of the optic fiber link



## ADVANTAGES

- download and full-scale analysis of traces obtained in locator mode
- two control buttons in the locator mode
- quick and precise parameter analysis of the event of a fiber optic link; attenuation measurement and refractive index in the event
- hermetic case conforming to IP65 standard

## Specifications

Fiber type	SM
Wavelength, nm	1550 ± 20
Maximum distance range, km	120
Dynamic range (SNR=1), dB	30
Event dead zone, m	10
Attenuation dead zone, m	35
Distance uncertainty:	± 30
- locator mode, m	
- reflectometer mode, m	± (1+sampling resolution+5×10 <sup>-5</sup> ×L)
Sampling resolution, m	1, 2, 4, 8
Setting of Refractive Index	1.0000...1.9999
Events Location Criteria:	from -64 to -43 depending on distance
- fresnel reflectance (dB)	>2
- event lose (dB)	>5
- threshold of fiber end (dB)	>5
Measurement time	not more than 3 minutes
Continuous operation from the rechargeable built-in batteries	not less than 3 hours
Optical connector type*	FC, SC
Power supply	rechargeable batteries 4 × AA/~220V
Dimensions, mm	226 × 108 × 35
Weight, kg	not more than 10

\* Other optical connector types can be used

## Service conditions

- ambient air temperature –10...+50°C
- relative air humidity no more than 90% at 30°C
- atmospheric pressure from 70 to 106.7 kPa

Certificates of Russia



**OT-2-6 OPTICAL TESTER** IS DESIGNED TO MEASURE OPTICAL POWER AND ATTENUATION IN OPTIC FIBER COMMUNICATION LINKS AND COMPONENTS AS WELL AS TO GENERATE STABILIZED OPTIC POWER.

THE **OT-2-6** COMBINES A LASER SOURCE AND A POWER METER IN A COMPACT CASE WHICH ALLOWS TO MEASURE A NUMBER OF OPTICAL PARAMETERS WITH ONE INSTRUMENT.

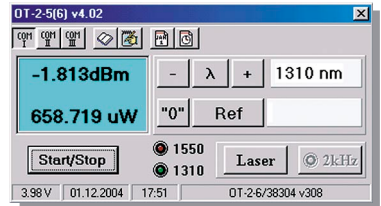


### General characteristics

- storage of measurement results in a non-volatile memory with a time and date registration of measurement (256 memory cells)
- possibility of power meter operation control by a PC
- reading and viewing of measurement data on a PC
- three main wavelengths with calibration 850, 1310 and 1550 nm
- possibility to adjust wavelength value of the measured optical power near the central wavelength over the range of  $\pm 40$  nm with a step 5nm for higher accuracy
- relative levels measurement mode
- two laser source operation modes:
  - continuous
  - pulse mode with a modulation frequency of 2 kHz
- calendar and real time clock
- battery status indicator
- automatic switch-off

### ADVANTAGES

- high technical and metrology characteristics
- simple in use
- convenient to operate in field conditions
- hermetic case conforming to IP65 standard



## Specifications

Laser source						
Fiber type	MM			SM		
Wavelength, nm	850 $\pm$ 30	1300 $\pm$ 30	850 $\pm$ 30 1300 $\pm$ 30	1310 $\pm$ 20	1550 $\pm$ 20	1310 $\pm$ 20 1310 $\pm$ 20
Power, dBm	> -2	> -2	> -3	> -4	> -4	> -5
Stability (15 min), dB	not more than $\pm 0.05$					
Optical connector type*	ST			FC		
Power meter						
Photodiode	InGaAs, 1 mm					
Wavelength, nm	850			1310, 1550		
Power range, dBm	+3...-60			+3...-65		
Uncertainty, dB	0.33			0.22		
Linearity, dB	0.17			0.11		
Resolution, dBm	0.01					
Optical connector type	removable adapter FC, ST, SC					
Power supply	rechargeable batteries 3 x AA/~220V					
Dimensions, mm	173 x 85 x 36					
Weight, kg	0.4					

\* Other optical connector types can be used

### Service conditions

- ambient air temperature  $-10 \dots +50^\circ\text{C}$
- relative air humidity no more than 90% at  $30^\circ\text{C}$
- atmospheric pressure from 70 to 106.7 kPa

Certificates of:

- Belarus
- Russia
- Ukraine
- Kazakhstan





**OT-2-5/LS** IS DESIGNED TO GENERATE STABILIZED OPTICAL POWER IN OPTICAL FIBERS

**OT-2-5/PM** IS DESIGNED TO MEASURE OPTICAL POWER FOR SINGLE- AND MULTI-MODE SYSTEMS. IT EN-  
 ABLES TO MEASURE OPTICAL POWER AND ATTENUATION IN OPTICAL FIBER COMMUNICATION LINKS WITH HIGH  
 ACCURACY.

**Общие характеристики**

- storage of measurement results in a non-volatile memory with a time and date registration of measurement (256 memory cells)
- display of both absolute and relative levels
- relative levels measurement mode
- possibility of power meter operation control by a PC
- reading and viewing of measurement data on a PC
- calendar and real time clock
- LCD contrast adjustment
- battery status indicator
- automatic switch-off

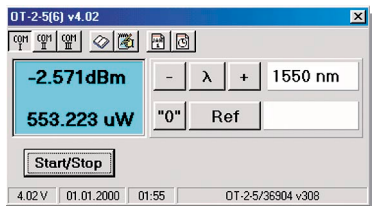


**OT-2-5/PM**  
 Optical power meter

- three main wavelengths with calibration 850, 1310 and 1550 nm
- possibility to adjust wavelength value of the measured optical power near the central wavelength over the range of  $\pm 40$  nm with a step 5 nm for higher accuracy

**OT-2-5/LS**  
 Optical laser Source

- two operation modes:
  - continuous mode
  - pulse mode with a modulation frequency of 2 kHz



**ADVANTAGES**

- high technical and metrology characteristics
- simple in use
- convenient to operate in field conditions
- hermetic compact case conforming to IP65 standard

**Specifications**

Optical Laser Source						
Fiber type	MM		SM			
Wavelength, nm	850 $\pm$ 30	1300 $\pm$ 30	850 $\pm$ 30 1300 $\pm$ 30	1310 $\pm$ 20	1550 $\pm$ 20	1310 $\pm$ 20 1550 $\pm$ 20
Power, dBm	> -2	> -2	> -3	> -4	> -4	> -5
Stability (15 min), dB	not more than $\pm 0.05$					
Optical connector type*	ST			FC		
Optical Power Meter						
Photodiode	InGaAs, 1 mm					
Wavelength, nm	850			1310, 1550		
Power range, dBm	+3...-60			+3...-65		
Uncertainty, dB	0.33			0.22		
Linearity, dB	0.17			0.11		
Resolution, dBm	0.01					
Optical connector type	removable adapter FC, ST, SC					
Power supply	rechargeable batteries 3 x AA / ~220V					
Dimensions, mm	173 x 85 x 36					
Weight, kg	0.4					

\* Other optical connector types can be used

**Service conditions**

- ambient air temperature -10 ... +50°C
- relative air humidity no more than 90% at 25°C
- atmospheric pressure from 70 to 106.7 kPa

Certificates of:

- Belarus
- Russia
- Ukraine
- Kazakhstan



**THE PU-2 TALK SET IS DESIGNED TO PROVIDE COMMUNICATION OVER A SINGLE OPTICAL FIBER.**

**THE PU-2 TALK SET IS INDISPENSABLE IN CONSTRUCTION, INSTALLATION, TESTING AND MAINTENANCE OF OPTICAL FIBER COMMUNICATION LINKS WHEN OPERATORS ARE AT A REMOTE DISTANCE FROM EACH OTHER AND HAVE TO COMMUNICATE EFFICIENTLY AND CONTINUALLY WHEN WORKING WHILE STANDARD TELEPHONE COMMUNICATION MEANS ARE NOT AVAILABLE.**



### General characteristics

- single-mode semi-conductor laser sources and high-sensitivity receivers provide for the maximum distance voice communication links
- sound and light call indicators
- volume control
- ON/OFF and battery status indicators

### ADVANTAGES

- compact, light, economical and reliable
- possibility for PU-2 to work along with the input/output device (clip-on coupler) at the point of fiber bending without breaking it, as well as with non-terminated fiber
- hermetic compact case conforming to IP65 standard

### Shipment set

- two talk sets with two head sets
- two leather carrying and storing cases
- two rechargeable batteries



### Specifications

Fiber type	SM	
Wavelength, nm	1550	1310 / 1550
Optical power level, dBm	> -0.5	
Dynamic range, dB	> 50	> 45
Optical radiation modulation type	pulse-width	
Call function	light and sound indication	
Operation from the rechargeable batteries in the transmission, h	120	
Time from accumulators in a mode transfer / reception, h	40	
Optical connector type*	FC	
Power supply	rechargeable batteries 3 × AA/~220V	
Dimensions, mm	173 × 85 × 36	
Weight, kg	0.4	

\* Other optical connector types can be used

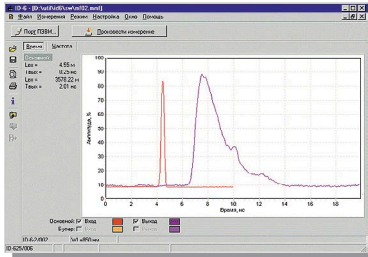
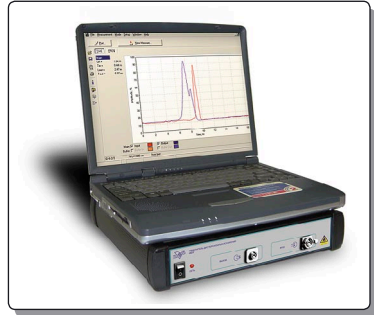
### Service conditions

- ambient air temperature -10 ... +50°C
- relative air humidity no more than 90% at 30°C
- atmospheric pressure from 70 to 106.7 kP

**ID-6 MULTIMODE OPTICAL FIBER FREQUENCY CHARACTERISTICS TEST SET IS DESIGNED FOR MEASURING IMPULSE AND AMPLITUDE-FREQUENCY CHARACTERISTICS OF MULTIMODE OPTICAL FIBERS AND THEIR LENGTHS**

## General characteristics

- impulse method of measurement and frequency spectrum calculation using Fourier-transform techniques
- multimode laser diodes for wavelengths of 850 and 1300 nm used as light sources
- the internal optical sampling converter is used in the device
- the mode scrambler of a definite type can be integrated in the device
- the ID-6 operating control and data processing are done with the help of an IBM PC under Windows 95/98/2000/NT/XP
- software allowing to analyze measurement results in the time domain (representing and storing impulses, their duration and position on the time axis) as well as in the frequency domain (pulse amplitude spectrums, amplitude-frequency characteristics of the fiber under test, optical fiber bandwidth for the level-3 dB)



## ADVANTAGES

- user-friendly software
- little time needed for preparation and taking measurements
- possibility to use wireless communication Wi-Fi at the customer's request
- reliable and simple in use
- hermetic case conforming to IP65 standard
- compact and light

## Specifications

Wavelength, nm	850; 1300
Bandwidth, MHz	0...2500
Pulsewidth in the optical receiver output, ns	not more than 0.4
Length of a measured optical fiber (cable), km	0...12
Maximum attenuation in optical fiber (cable), dB	25
Optical fiber length measurement accuracy, m	0.5
Time resolution, ns	25
Sense points number	200
Power supply, V	~220
Dimensions, mm	293 × 255 × 60
Weight, kg	5

## Service conditions

- ambient air temperature +10 ... +50°C
- relative air humidity no more than 80% at 20°C
- atmospheric pressure from 84 to 106.7 kPa

# Chromatic Dispersion Measurement Set ID-2-2

THE **ID-2-2 CHROMATIC DISPERSION MEASUREMENT SET** IS DESIGNED TO MEASURE CHROMATIC DISPERSION IN SINGLEMODE OPTICAL FIBERS AND IS PRODUCED IN TWO MODIFICATIONS:

- **ID-2-2A** - DESIGNED TO MEASURE INSTALLED OPTICAL CABLES
- **ID-2-2B** - DESIGNED FOR USE IN PLANT AND LABORATORY SETTINGS WHEN THERE IS ACCESS TO BOTH END OF THE MEASURED OPTICAL CABLE



## General characteristics

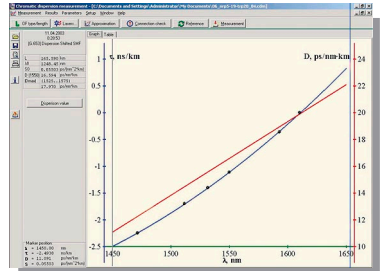
- operation principle is based on the phase-shift method (IEC 60793-1-42, ITU-T G.650)
- to increase the accuracy the reference optical signal is transmitted through a separate optical fiber when taking measurements
- chromatic dispersion is calculated from measurement of laser diodes signals delays
- the approximation formulae used conform to the ITU, IEC standards for various types of optical fibers
- the ID-2-2 operation control, data processing, displaying and storing measurement results are done by a PC under Windows 95/98/NT/XP
- the software allows to calculate with high precision all optical fibers parameters connected with chromatic dispersion:
  - chromatic dispersion factor at any wavelength within the measured wavelength range
  - zero dispersion wavelength
  - chromatic dispersion slope

## ADVANTAGES

- measurement efficiency
- possibility to use WI-FI communication at the customer's request
- possibility to use a transmitting unit as a high-stable laser source with fixed wavelengths

## Device make-up:

- optical transmitter containing stabilized laser diodes designed to generate measuring optical signals in the given wavelength range
- optical receiver designed for receiving and processing optical signals transmitted through tested optical fiber



## Specifications

Modification	ID-2-2A	ID-2-2B
Number of measuring LDs	6	7
Wavelength range, nm	1510 ... 1610	1200 ... 1600
Maximum fiber attenuation, dB	45	20
Optical fiber length, km	25 ... 160	0.5 ... 30
Uncertainty of dispersion coefficient, %	1	
Repeatability of dispersion coefficient, %	0.005	
Uncertainty of zero wavelength, nm	0.5	
Operation from rechargeable batteries in receiver mode	0.11	
Uncertainty of chromatic dispersion slope, %	1.0	
Repeatability of chromatic dispersion slope, %	0.13	
Fiber length uncertainty, m	$0.2 + 5 \times 10^{-5} \times L$	–
Measurement time, s	10	
Optical connector type	FC, SC	
Dimensions, mm (transmitter/receiver)	293 × 255 × 60 / 293 × 255 × 60	
Weight, kg (transmitter/receiver)	4 / 3	

## Service conditions

- ambient air temperature +5 ... +40°C
- relative air humidity no more than 90% at 25°C
- atmospheric pressure from 70 to 106.7 kPa

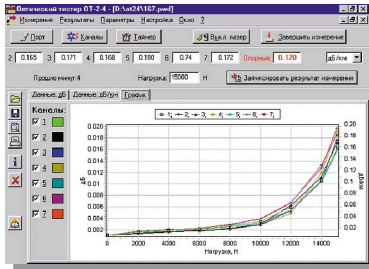
**THE OT-2-4 IS DESIGNED TO MEASURE ATTENUATION CHANGE IN OPTICAL FIBERS AND CABLES, PASSIVE OPTICAL COMPONENTS UNDER MECHANICAL AND TEMPERATURE TESTING.**

**THE OT-2-4 CONSISTS OF TWO MODULES:**

- MULTICHANNEL LASER SOURCE
- MULTICHANNEL POWER METER

## General characteristics

- the usage of an external reference optical channel enables high measurement accuracy and long-term stability of the instrument
- simultaneous measurement of optical power levels in each optical channel (dBm), measurement of attenuation change (dB), calculation of optical fiber attenuation factor change (dB/km)
- Tester operation control, downloading, storing and data processing are done with the help of an IBM PC under Windows 95/98/NT/XP
- Automatic with the help of a timer or manual measurement results recording at any time



## ADVANTAGES

- Possible to take measurements of 17 fibers simultaneously
- High long-time stability
- Possible to store data in Excel format while taking measurements
- Possible to set the modules in different locations while carrying out measurements
- Possible to use wireless communication WI-FI at the customer's request
- Hermetic case conforming to IP65 standard
- Compact and light

## Specifications

Number of measurement channels	17 (7)
Wavelength, nm	1310 ± 20 or 1550 ± 20
Output optical power, dBm	-23
Resolution, dB	0.001
Uncertainty of measurement of attenuation change, dB	<0.01
Attenuation measurement range, dB	0 ... 20
Input power range, dBm	-40 ... -18.5
Uncertainty of optical power measurement, %	<10
Optical source stability, dB:	
-15 min	0.005
-1 h	0.01
-8 h	0.03
Optical connector type	FC
Dimensions, mm	293 × 255 × 60 / 293 × 255 × 60
Weight, kg	5 / 5

## Service conditions

- ambient air temperature +10 ... +30°C
- relative air humidity no more than 80% at 20°C
- atmospheric pressure from 84 to 106.7 kPa

**THE ID-2-3B OPTICAL FIBER ELONGATION MEASUREMENT SET IS DESIGNED TO MEASURE OPTICAL FIBER AND CABLE ELONGATION/STRAIN UNDER MECHANICAL AND TEMPERATURE TESTING.**

**THE ID-2-3B CONSISTS OF TWO MODULES:**

- OPTICAL TRANSMITTER ID-2-3B/I
- OPTICAL RECEIVER ID-2-3B/P

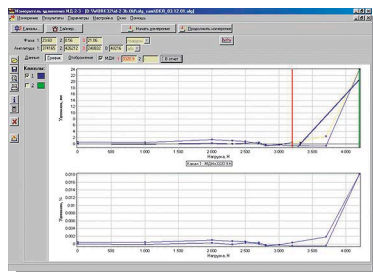


## General characteristics

- three/six measurement and one reference channel
- the phase shift method is used (IEC 60793-1-22, A7 method)
- optical fiber elongation/strain is measured in absolute and relative units (mm, %)
- operation control and processing are done with the help of a PC
- software allows to graphically present changes in the fiber length from the applied tensile force, the time interval, temperature change or elongation of the optical cable
- the changes of the refractive index of the optical fiber during mechanical testing are taken into consideration
- automatic with the help of a timer or manual measurement results recording at any time

## ADVANTAGES

- user-friendly and reliable software
- possible to process measurement results
- possible to store data in Excel format while taking measurements
- high accuracy of optical fiber elongation measurements
- high long-time stability of the device
- possible to set the modules in different locations while carrying out measurements
- possible to use wireless communication WI-FI at the customer's request
- hermetic case conforming to IP65 standard



## Specifications

Number of measurement channels	3 / 6
Wavelength of laser source, nm	1310 ± 20 or 1550 ± 20
Fiber elongation range, m	0 ... 1000
Resolution	0.001 mm; 0.0001 %
Uncertainty, mm	± (0.5 + 0.002 × ΔL)
Drift, mm/hour	< ± 0.5
Maximum attenuation, dB	15
Optical connector type	FC / APC
Power supply, V	110 – 220
Dimensions, mm	293 × 255 × 60 / 293 × 255 × 60
Weight, kg	3 / 3

## Service conditions

- ambient air temperature +10 ... +30°C
- relative air humidity no more than 80% at 20°C
- atmospheric pressure from 84 to 106.7 kPa

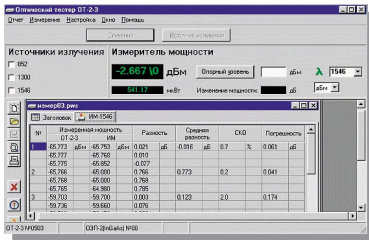
**THE OT-2-3 IS DESIGNED TO MEASURE OPTICAL POWER AND ATTENUATION IN OPTICAL FIBER COMMUNICATION LINKS AND OPTICAL FIBER COMPONENTS WITH HIGH ACCURACY, AS WELL AS TO GENERATE CONTINUOUS OPTICAL POWER.**

**THE OT-2-3 CONSISTS OF:**

- LASER SOURCES MODULE
- BUILT-IN ATTENUATOR
- POWER METER MADE AS A REMOTE MEASUREMENT HEAD

### General characteristics

- a 1mm-InGaAs photodiode is used for optical power measurement
- laser power of the LD is regulated by laser current
- the needed range and measurement accuracy are provided by the automatic switch of the optical receiver gain
- device operation control and data processing are done by a PC under Windows 95/98/2000/NT/XP
- OT-2-3 comes in two modifications:
  - OT-2-3 with optical power measurement range of +3...-80 dBm
  - OT-2-3A with optical power measurement range of +10...-80 dBm



### ADVANTAGES

- possibility to use the device as a standard instrument for verification of optical testers, power meters and laser sources
- user-friendly and reliable software
- possible to use wireless communication WI-FI at the customer's request
- hermetic case conforming to IP65 standard
- compact and light

### Specifications

Laser source		OT-2-3 / OT-2-3A	
Wavelength, nm		850 ± 5	1310 ± 5; 1550 ± 5
Power, dBm		+3	+3/+10
Stability, dB:	-15 min	0.005	0.02
	-1 h		
Power meter		OT-2-3 / OT-2-3A	
Power range, dBm		+3...-70	+3/+10...-80
Uncertainty, %		3 (+3...-60 dBm) 4 (-60...-70 dBm)	3 (+3/+10...-70 dBm) 4 (-70...-80 dBm)
Linearity, %		0.8 (+3...-60 dBm) 1.2 (+3...-70 dBm)	0.8 (+3/+10...-70 dBm) 1.2 (+3/+10...-80 dBm)
Uncertainty in the spectral range 780...1630 nm, %			5
Resolution, dB			0.001
Built-in attenuator range, dB			0...40
Optical connector type			FC
Power supply, V			~220
Dimensions, mm			293 × 255 × 60
Weight, kg			3

### Service conditions

- ambient air temperature +10 ... +30°C
- relative air humidity no more than 80% at 20°C
- atmospheric pressure from 84 to 106.7 kPa

# Optical Generator OG-2-1

**THE OG-2-1 IS A UNIQUE STANDARD INSTRUMENT THAT HAS NO ANALOGUE IN THE WORLD. THE DEVICE IS WIDELY USED IN CONTROL LABORATORIES AND METROLOGY CENTERS.**

**THE OG-2-1 IS DESIGNED FOR OPTICAL REFLECTOMETERS VERIFICATION BY THE EXTERNAL SOURCE METHOD IEC 61746.**

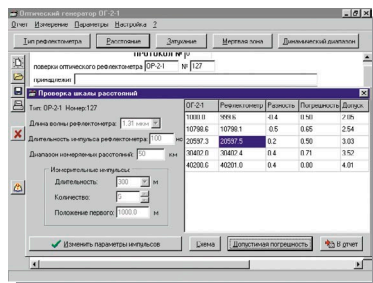


## General characteristics

- possibility to carry out any optical reflectometer verification according to the basic metrology characteristics:
  - distance measurement inaccuracy
  - attenuation measurement inaccuracy
- principle of operation is based on the generation of optical pulses with a given duration and amplitude and delay in response to a pulse, generated by OTDR
- operates in a time intervals reproduction mode and optical signal levels mode
- OG-2-1 pulse amplitude is set by means of a built-in attenuators
- insertion attenuation measurement is done by a high-precision optical receiver
- the OG-2-1 operation control and data processing are done by a PC under Windows 9x/NT/XP

## ADVANTAGES

- possibility to verify reflectometers having various ranges and distance and attenuation measurement inaccuracies
- when using fiber spool, it is possible to verify dead zone length and dynamic range of ODTR of various types



## Specifications

	MM	SM
Fiber type		
Wavelength, nm	850 ± 20 / 1300 ± 20	1310 ± 30 / 1550 ± 30
Test pulsewidth, μs	0.06 ... 50	
Maximum test pulse delay, ms (km)	5 (500)	
Step of test pulse setting, m	6	
Location test pulse setting uncertainty, m	± (0.2 + 1 × 10 <sup>-5</sup> × L)	
Attenuation range, dB	> 40	
Amplitude test pulse setting uncertainty, dB/dB	< 0.02	
Dimensions, mm	308 × 293 × 60	
Weight, kg	3	

## Service conditions

- ambient air temperature +10 ... +30°C
- relative air humidity no more than 80% at 20°C
- atmospheric pressure from 84 to 106.7 kPa



# Fibertest monitoring system of optical fibers FiberTest

**FIBERTEST OPTICAL FIBERS MONITORING SYSTEM IS A COMBINATION OF HARDWARE AND SOFTWARE ALLOWING TO DIAGNOSE FIBER EFFICIENCY.**



## ADVANTAGES

- allows to increase reliability of optical fiber communication links by means of identifying the initial condition and predicting the deterioration of optical fiber;
- allows to cut optical lines operation costs by means of reducing service staff, measurement equipment base, optical fiber communication links control and diagnosis automation along with maintaining the statistics of measurements of optical fiber parameters;
- allows to increase data communications security by means of detecting an unauthorized access to optical fiber communication links;
- architecture transparency (universality, scalability, documentation);
- "client-server" technology which allows the system to operate in real time mode;
- autonomous operation of remote testing modules and their local setup;
- system security (domain organization and authorized access to the resources of the system);
- allows to improve the dynamics and quality of data communications network development by means of making its resources management easier, planning its development and carrying out proof testing.

## FIBERTEST

### functional characteristics

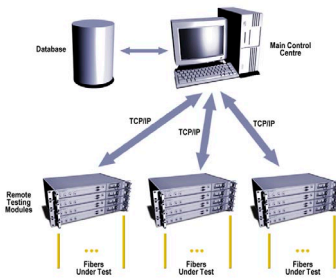
- dark and active fibers monitoring
- automatic and manual mode testing
- remote and local access to the server and RTU
- information display on the electronic topological map
- report submission by service communication channels

### FIBERTEST make-up

- Hardware:
  - Central system server;
  - RTU
- Software:
  - Data Center;
  - RTU Manager;
  - Client

## FIBERTEST benefits

- allows to create a hierarchical structure of the system
- allows to create two-type-architecture systems:
  - distributed (RTU includes PC)
  - arbitral (RTU includes a controller)
- allows to organize system service communication by means of ETHER-NET or SDH (G.703);
- allows to operate the system by a remote client
- allows to add several clients to one subsystem in the observer's mode
- two groups of fault location criteria:
  - deviation of any point of the measured trace from a sample one. Decision threshold is variable
  - deviation of the attenuation value in a line, splices and abnormality of refractive index
- allows to predict possible failures



## Maintenance Characteristics

Possibility to install into 19" platform	+
Chassis size	1U at 16 optical ports
Optical commutator	Built-in
Voltage of station supply, V	24, 48, 60
Communication channel	Ethernet, SDH (G.703)

The Institute of Information Technologies provides adjustment of the system for the needs of a specific user, along with data processing of the installed lines, arranges staff training and assists in maintaining the transmission lines.

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