OLP-5, OLP-6, OLP-8
Optical Power Meters

BN 2256/01, Series A ...
BN 2256/02, Series G ...
BN 2256/03, Series G ...

Operating Manual

Wandel & Goltermann
Communications Test Solutions

Please direct all enquiries to your local Wandel & Goltermann sales company. The addresses are given at the end of this handbook.

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Contents

1 Description

1.1 Features and applications

1.1.1 Common features

The handheld OLP-5, OLP-6 and OLP-8 Optical Power Meters measure power levels on fiber optical systems. These battery-powered devices are ideal for use in installing and maintaining LAN, TELECOM and CATV systems.

The OLP-5 and OLP-6 power meters can connect to single-mode and multimode fibers with a max. core diameter of 100 µm. The OLP-8 works only with single-mode fibers having a core diameter of 9 µm.

Tests on systems from different manufacturers with different connector types are easy to handle due to the UPP adapter for 2.5 mm ferrules.

To measure attenuation, a suitable optical source is required. The OLS-5 LED Source and the OLS-6 Laser Source from Wandel & Goltermann are ideal for this application.

Both modulated and unmodulated light signals can be measured. For modulated light signals, the average power is displayed for system signals and signals with standard fixed frequencies of 270 Hz, 330 Hz, 1 kHz and 2 kHz.

The modulated signal mode with different fixed frequencies can be used to identify fibers in a fiber bundle, for example.

The clearly arranged membrane keypad enables reliable operation of the microprocessor-controlled device even under tough conditions in the field.

When powered from two standard batteries (AA) or rechargeable NiCd cells, the device has a typical operating life of 130 hours (40 hours with NiCds).

TWINtest

Using a special mode known as “TWINtest”, attenuation measurements are possible at two wavelengths simultaneously. The OLS-5 and OLS-15 sources support this mode.

1.1.2 Differences between the devices

All of the power meters are calibrated at 850 nm, 1300 nm (or 1310 nm) and 1550 nm. The OLP-5 has an additional calibrated wavelength of 820 nm, which makes it ideal for datacom applications. The OLP-6 has additional calibrated wavelengths of 780 nm and 1310 nm. With its wider measurement range from -65 to + 10 dBm, the OLP-6 can also be used in telecom applications. The OLP-8 is ideal for CATV measurements with its input power level range of -50 dBm to +23 dBm (the typical range in CATV systems).

	OLP-5	OLP-6	OLP-8
Dynamic range	-60 to +5 dBm	-65 to +10 dBm	-50 to +23 dBm
Max. level	+10 dBm	+10 dBm	+23 dBm
Wave-lengths	(780)[1], 820, 850, 1300, 1550 nm	780, 850, 1300, 1310, 1550 nm	980, 1310, 1480, 1550 nm
TWINtest possible with	OLS-5 (850/ 1300 nm)	OLS-5, OLS-15	OLS-15 (1310/ 1550 nm)
Auto-λ possible with	OLS-5	OLS-5, OLS-6, OLS-15	OLS-6 (1310/ 1550 nm), OLS-15
Fiber type	MM and SM	MM and SM	SM

1 A-series devices only

Table 1-1 Differences in features

Selectable automatic wavelength detection

If “AU” appears in the display, then automatic wavelength detection is activated. You can also switch off automatic wavelength detection and enter a fixed wavelength. This is useful when it is not possible to reliably detect the wavelength. This can happen for the following reasons:

- The receive level is too low.
- The wavelength encoding cannot be detected due to interference.
- You are measuring the absolute level of a system that does not have wavelength encoding like Wandel & Goltermann’s power sources.

Notes:

2 Safety Information

This device left our factory in perfect working order. Please note the safety information that follows in order to safely operate the device and keep it in good working condition.

Proper usage

Only use the device under the conditions described in this manual and for the purposes for which it was designed. See Sec. 1 and Sec. 6 for more information.

Notice: Non-compliant usage can be hazardous to the user or damage the device itself.

⇒ Please make sure the allowable ambient conditions are not violated!
⇒ Also note the specified measurement range!

Tests prior to power-on

⇒ Before powering up the device, always make sure that it is in proper working order.

See Sec. 3.1 for more information.

Caution

Invisible LED and laser radiation!

This radiation can cause irreparable damage to the retina if you do not exercise caution.

⇒ When the system or test generator is switched on, never look directly into the output or into a connected optical fiber.

⇒ Please heed the normal precautions for working with lasers.

The OLP is designed to measure optical radiation in the wavelength range 780 to 1700 nm. In this range, radiated power levels can occur that fall outside of the non-critical Laser Class 1 and thus represent a hazard to the user.

3 Preparing for Operation

3.1 Unpacking the device

Packing material

We suggest that you keep the original packing material. It is designed for reuse (unless it is damaged in transit). Using the original packing material is your guarantee of protecting the device during transit.

Checking the package contents

Your level meter is shipped with the following accessories:

- 2.5 mm universal adapter (installed on device)
- Belt carrying bag
- Manual

Checking for damages in transit

After you unpack the device, check to see whether it was damaged in transit. This is particularly likely if the packaging is clearly damaged. If there is damage, do not attempt to operate the device. Doing so can cause further damage.

Recovery following storage and transport

Condensation can occur if a device that is stored or transported at a low temperature is brought into a warm room. To avoid damages, wait until

no more condensation is visible on the surface before powering up the device. Do not operate the device until it has reached its guaranteed temperature range (-10 to +55 °C).

The last statement also applies if the device is stored at a high temperature.

3.2 Shock protection

The housing of your OLP is designed for use under tough conditions. It is highly impact-resistant.

The shock protection is designed to allow access to the display and keypad on the front side and the battery compartment on the back side. The device identification and serial number are located on the back side.

3.3 Power supply

The OLP is powered from batteries or NiCd cells:

- Two 1.5 V dry batteries (AA size), operating life typ. 130 hours

– or –

- Two 1.2 V NiCd cells (AA size), operating life typ. 40 hours

Capacity display

After the device is powered up, the remaining battery life or NiCd charge is displayed as a percentage. The display is broken down in steps of 5%.

Due to the differing voltages of the primary cells, the percentage figures are exact only for dry batteries. 100% is displayed with fresh dry batteries installed, while a maximum of approx. 60% is displayed for freshly charged NiCd cells. Be aware of this fact as the battery charge decreases.

Fig. 3-1 Example: “BAT 30” means
- For dry batteries: 30% capacity remaining
- For NiCd cells: approx. 50% capacity remaining

Discharged batteries or NiCd cells

When the batteries or NiCd cells start to run low, the *BAT* indicator appears. From this point on, you have about five hours left to measure if you are using dry batteries.

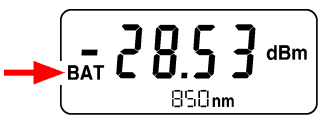

Fig. 3-2 BAT indicator with low batteries

Once this remaining operating life elapses, the display switches off except for the *BAT* indicator. About 15 seconds later, *BAT* disappears as well and the device powers down to prevent the cells from fully discharging.

Fig. 3-3 BAT indicator (15 s) in case of fully discharged batteries

If the batteries are fully discharged, the *BAT* indicator appears briefly when you try to power on the device.

Exchanging the batteries or NiCd cells

You can access the battery compartment even when the shock protector is installed.

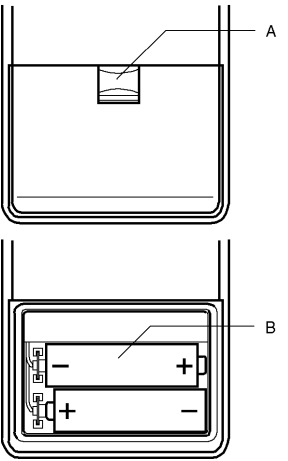

Fig. 3-4 OLP battery compartment, rear of device

Exchange the batteries as follows, Fig. 3-4

1. Place the device on a suitable surface with the rear panel facing upwards.
2. Pull down the slider in the lid of the battery compartment (A) and remove the lid.
   The battery compartment should now be open.
   In series A devices, the battery compartment lid is fastened with a Phillips screw. Use a Phillips screwdriver to open the lid.
3. Remove the discharged batteries (B) and replace them with fresh ones. See the bottom of the battery compartment for the proper polarity.
4. Replace the battery compartment lid, press it into place and slide the slider upwards.
   The device is now operational again.

Operation with NiCd cells

Instead of batteries, you can use two rechargeable 1.5 V NiCd cells (AA size). Fresh NiCd cells provide an operating life of approx. 40 hours. We offer a suitable charger for recharging these cells (order number BN 2029/90.03). For information on using this charger, see the separate charger manual (quick charge, trickle charge).

Notice: Due to natural discharging effects and leakage currents in the device, the NiCd cells will lose all of their charge in about one month even if you never switch on the OLP.

Using new NiCd cells

If the OLP's operating life with freshly charged cells drops well below 40 hours, you need new NiCd cells. Spare NiCd cells are available from Wandel & Goltermann (order number BN 2229/ 90.02).

Protect our environment!

Please do not throw used batteries or NiCd cells into your normal trash since they can contain poisonous heavy metals. Also, if you scrap the device at the end of its normal life, please remove the batteries before doing so. In many countries nowadays, you can dispose of used batteries or NiCd cells at special waste gathering centers.

3.4 Test port

2.5 mm universal adapter

A sort of universal adapter is used to connect the test cable to the OLP. The adapter connects to any cable fitted with a 2.5 mm connector (ferrule), e.g. ST, FC, SC, DIN. The adapter contains a slotted sleeve that holds the ferrule or fiber during measurements. A separating disk in the lower part maintains the fiber at a defined distance from the photodiode during the measurement.

The adapter is normally screwed onto the diode mount. You can remove it without any special tools in order to clean or inspect the photodiode.

Connecting the test cable, Fig. 3-5

To access the test port, open the cover on the front side:

1. Swing open the cover to the left.
   You can now access the test port underneath.
2. Remove the protective cap from the connector (A) on the test cable.
3. Slide the ferrule (B) all the way into the universal adapter (C).
   The test connection is now ready.

Notice: To avoid shifting the position of the fiber with respect to the photodiode (D) during measurements, avoid jerky movements and do not pull on the cable.

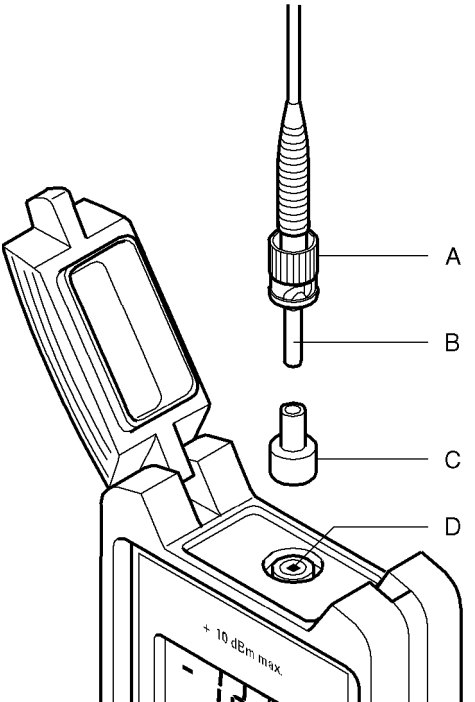

Fig. 3-5 OLP test port with universal adapter

Tip: To avoid soiling or scratching the photodiode, unscrew it only when you need to inspect or clean it. See Sec. 5.

3.5 Powering the device on and off

The OLP has two power-on states:

- Brief operating mode
- Permanent operating mode

When you power up the device, a self-test is executed, indicated by a brief flashing of all display elements and display of the percent battery capacity remaining. Afterwards, the most recent device settings are restored and displayed. Your OLP is now ready to go!

Brief operating mode

⇒ Press the “ON/OFF” key briefly.
The OLP powers on.

Fig. 3-6 The device is ready to operate as soon as a measured value is displayed along with the other indicators.

Power-off

⇒ Press the “ON/OFF” key within 20 minutes of power-on.

– or –

The device automatically switches off 20 minutes after it is powered on.

Permanent operating mode

⇒ Press the “ON/OFF” key for about two seconds.
The OLP powers on.

Fig. 3-7 The device is now ready to go! It is in permanent operating mode, and the “PERM” indicator appears.

Power-off

⇒ Press the “ON/OFF” key.
The OLP powers off.

4 Operation

4.1 Controls and display elements

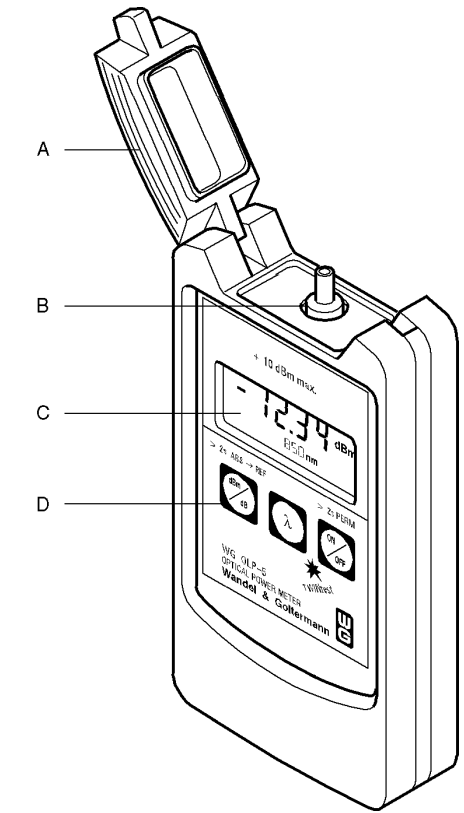

Fig. 4-1 OLP front-panel view with controls and display elements

A	**Protective cover**	
B	**UPP adapter 2.5 mm**	
C	**LC display**, indicators	
	REF	Reference level transfer
	BAT	Batteries discharged
	270 Hz *or* *AU*	Modul. frequency detected. Field stays blank for unmodulated light. AU: Automatic wavelength detection activated.
	-28.53	Current power level
	LO	Too low for power level range
	HI	Too high for power level range
	850 nm	Calibrated wavelength or “TWINtest” mode (OLP-5)
	dBm	Absolute power level unit
	dB	Relative power level unit
	PERM	Permanent operating mode
D	**Keypad**	
		Switches the device on and off • Short keypress: Brief operating mode • Long keypress: Permanent operating mode
		Sets the calibrated wavelength; four (five) possible wavelengths. Additionally from series F on: Activates auto. wavelength detection.
		• Short keypress: Switches between absolute and relative power level display • Long keypress: Stores a reference power level

Table 4-1 OLP elements, see Fig. 4-1

4.2 Connection configuration

How you configure the connection between the OLP and device under test (DUT) depends on the measurement at hand. With optical power measurements, there are two basic tasks:

- System power level measurement
- Attenuation measurement

4.2.1 System power level measurement

In system power level measurements, the absolute power level is measured in dBm. System levels can be measured at the transmitter output Tx or before the receiver input Rx, for example.

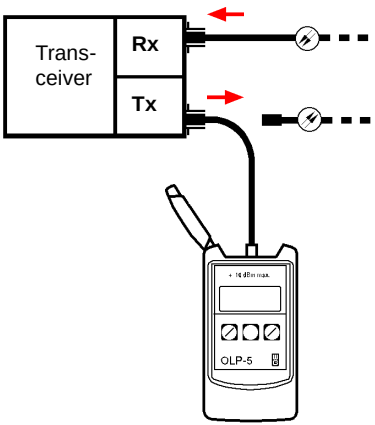

Fig. 4-2 System power level measurement

4.2.2 Attenuation measurement

In attenuation measurements on fiber links or optical components (e.g. connectors), the relative power level is measured in dB at the far end of the DUT. It is first necessary to make a reference measurement with a test source (at the near end). You can use the OLS-5 as your source.

An attenuation measurement breaks down into two steps:

1. Reference power level measurement
2. Relative power level measurement (attenuation)

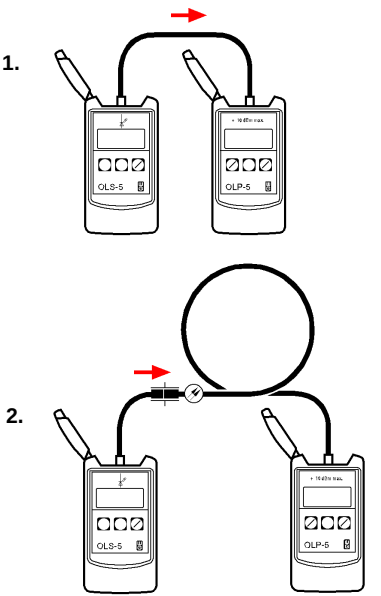

Fig. 4-3 Two-step attenuation measurement

4.3 Setting the wavelength

Set the calibrated wavelength of the OLP to the wavelength of the source signal. You can select from four or five possible wavelengths. The wavelengths provided in the power meters depend on the intended application area:

- OLP-5: 820 / 850 / 1300 / 1550 nm
- OLP-6: 780 / 850 / 1300 / 1310 / 1550 nm
- OLP-8: 950 / 1310 / 1480 / 1550 nm

Note: OLP-5 devices in the A series have the following calibrated wavelengths: 780 / 850 / 1300 / 1550 nm.

Automatic wavelength detection

In addition to fixed settings of the above wavelengths, the devices also have automatic wavelength detection. If this is activated, the “AU” indicator appears in the modulation field. In this mode, **only** TWINtest or Auto-λ signals from the OLS-5, OLS-6 or OLS-15 system level sources are detected. If no suitable signal is present, only dashes appear in the display in the level and wavelength field.

If a specific wavelength is set, automatic wavelength detection is deactivated. (Detection of modulation frequencies of 270 Hz, 330 Hz, 1 kHz and 2 kHz is unaffected by this.)

Set the wavelength as follows

⇒ Press the “λ” key until the desired wavelength or “AU” mode (from series F onwards) is displayed. (Circular function)

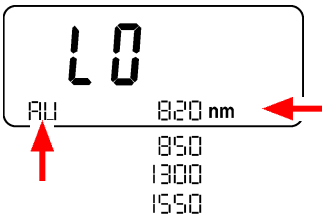

Fig. 4-4 Setting the wavelength, e.g. with the OLP-5; “AU” means automatic wavelength detection is activated

4.4 Power level display in dBm, dB

When the OLP is powered up, the power level present at its test port is displayed immediately. Range selection or dark current calibration is not required.

Absolute power level (dBm)

During system power level measurements and when determining the reference level, absolute display mode is used. The OLP displays the level on a logarithmic scale:

$$ABS[dBm] = 10 \times \log \left| \frac{P[mW]}{1mW} \right|$$

Switch to dBm display as follows

⇒ If you are already in dB display mode, press the “dBm/dB” key. (Toggle function)

Fig. 4-5 Absolute power level display in dBm. Evaluation of unmodulated light (the modulation frequency field is empty)

Absolute power level range

- OLP-5: -60 to +5 dBm
- OLP-6: -65 to +10 dBm
- OLP-8: -50 to +23 dBm

The display resolution is 0.01 dB;
resolution OLP-6 at < -60 dBm: 0.1 dB,
resolution OLP-8 at < -45 dBm: 0.1 dB.

During system power level measurements in dBm display mode, unmodulated light is evaluated. With modulated light sources, the average power level is displayed.

Relative power level (dB)

When the relative power level or attenuation is displayed, the current measured level is shown with respect to a reference level:

$$REL[dB] = ABS[dBm] - REF[dBm]$$

The reference level must be recorded beforehand; see Sec. 4.5.

Switch to dB display as follows

⇒ If you are already in dBm display mode, press the “dBm/dB” key. (Toggle function)

Fig. 4-6 Relative power level display in dB

Display range with a -20 dBm reference level

- OLP-5: -40 to +25 dB
- OLP-6: -45 to +30 dB
- OLP-8: -30 to +43 dB

4.5 Storing a reference level

To make attenuation or comparison measurements in relative level display mode, you need a reference level. You have to measure and save the reference level as an absolute level during a prior step.

Save the reference level as follows

Requirements

✓ The OLP must be connected to the test source via an optical cable, e.g. K 30xx.
✓ Both devices must be powered up and ready to go.
✓ The wavelength must be set.

1. Hold down the “dBm/dB” key until a reference level of *0.00 dB* is displayed.
   REF flashes up briefly to indicate that the reference level was saved.

Fig. 4-7 Storing a reference level

2. To save the reference level at other wavelengths:
   ⇒ Set the new wavelength.
   ⇒ Store the reference level again.

Tip: These reference levels stay in memory even when the device is powered down so you only need to record the reference level once during series of measurements. This also applies to series of measurements at different wavelengths (or with different test sources).

4.6 Measuring modulated light

The OLP detects light signals modulated at standard frequencies of 270 Hz, 330 Hz, 1 kHz and 2 kHz. If one of these frequencies is detected, it appears in the LC display.

Fig. 4-8 Measuring modulated light. An indicator appears in the modulation frequency field.

Using different modulation frequencies, you can detect a particular fiber in a fiber bundle. We recommend one of the following sources as your test stimulus.

Fiber type	Source	Modulation frequencies
Single-mode	OLS-6	270 Hz, 1 kHz, 2 kHz
Multi-mode	OLS-5	1 kHz, 2 kHz

Table 4-2 Suitable power sources

Modulation detection at low levels

At very low input levels, it is sometimes impossible to identify the modulation signal as it becomes unclear or falls into the noise. In this case, no modulation frequency is displayed. Two hyphens appear instead.

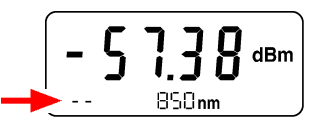

Fig. 4-9 Modulation frequency field for very low levels

The limits for reliable modulation frequency detection depends on the wavelength. They are specified in Sec. 6.1, Sec. 6.2 and Sec. 6.3.

4.7 “TWINtest” mode

In “TWINtest” mode, you can make simultaneous attenuation measurements at the 850 nm and 1300 nm wavelengths with the OLS-5 source or at the 1310 nm and 1550 nm wavelengths with the OLS-15 source. Both sources alternate between the specified wavelengths at 4 second intervals.

TWINtest works as follows

(The instructions below assume you are using the OLP-5 and OLS-5 from Wandel & Goltermann. The procedure is analogous with the other devices named above.)

1. Reference measurement

Requirements:

- ✓ Connect the OLP-5 to the OLS-5 via an optical cable, e.g. K 30xx.
- ✓ Both devices must be powered up and ready to go.
- ✓ The OLS-5 should be in *dUAL* mode.
- ✓ With a device from series F onwards: Automatic wavelength detection must be activated (“AU” indicator in the modulation field).
- ✓ The values measured at 850 nm and 1300 nm are displayed in alternation at 4 s intervals.

⇒ Hold down the “dBm/dB” key until a level of *0.00 dB* is displayed in alternation at 850 nm and 1300 nm. *REF* flashes briefly to confirm that the reference level was saved at 850 nm and 1300 nm.

2. Attenuation measurement

⇒ Insert the DUT between the OLS-5 and OLP-5.
The attenuation values for the DUT at 850 nm and 1300 nm are displayed in alternation at 4 s intervals on the OLP-5.

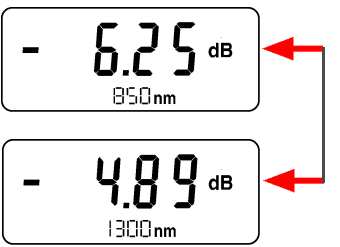

Fig. 4-10 Attenuation display in TWINtest mode

5 Maintenance

5.1 Cleaning the test port

Over time, dust can gather on the photodiode, particularly if you leave the cover open for a while or remove the adapter.

To retain high measurement accuracy, we recommend that you clean the photodiode from time to time.

Notice: Do not touch the photodiode in order to avoid soiling or scratching the glass cover.

1. Pop open the cover on the front of the OLP.
2. Unscrew the adapter by hand.
   You can now access the photodiode.
3. Use a cotton swab dipped in isopropanol to wipe off the photodiode. This is an effective cleaning method that leaves no traces.
4. Blow off the test adapter with pressurized air (e.g. anti-dust spray available in cans).
5. Screw the adapter back on.
6. Pop the cover back on.

Tip: To avoid premature soiling of the assembly, keep the adapter in place and the cover closed when you are not making measurements.

5.2 Service information

When first powered on, the device runs a self-test that checks the program and calibration data memory, among other things. If an error is detected, an error message is displayed at the end of the self-test.

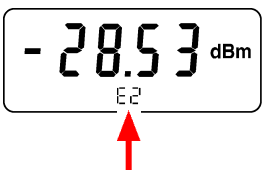

Fig. 5-1 Error message in LC display, e.g. “E2”

Possible error messages

Code	Meaning
E2	An error occurred in the program memory. This can cause malfunctions in keypad operation or cause the device to lock up.
E3	A checksum error occurred in the calibration data memory. The device calibration data are invalid to some extent. Expect decreased measurement accuracy.

1. Acknowledge the error message by pressing any key.
2. Power off the device.
3. Contact your nearest WG Service Center. Addresses are found at the end of this manual.

6 Specifications

The specifications are applicable 30 s after power-on.

6.1 OLP-5

Wavelength

Application range	780 to 1700 nm
Selectable wavelengths	820[1]/850/ 1300/1550 nm

1 A series: 780 nm

Automatic wavelength detection “AU”

In combination with the OLS-5

for wavelengths of	850 nm, 1300 nm
in power level range	
850 nm	-45 to +5 dBm
1300 nm	-50 to +5 dBm

Series F onwards: Automatic wavelength detection can be switched off

Modulation detection

for frequencies	270 Hz, 330 Hz, 1 kHz, 2 kHz
in power level range	
820, 850 nm	-45 to +5 dBm
1300, 1550 nm	-50 to +5 dBm

Sensor

Photodiode	Germanium
Connectable fiber types	9/125 to 100/140 µm

Power level measurement

The optical power of unmodulated light (or the average optical power of modulated light) emanating from a fiber optical cable is measured and displayed.

Display range	-60 to +5 dBm
Max. allowable power level	+10 dBm
Intrinsic meas. error[1]	±0.13 dB (±3%)
Linearity [1] (+5 to -55 dBm)	±0.06 dB

1 Under the following reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3 °C, 45 to 75% rel. humidity

6.2 OLP-6

Wavelength

Application range	780 to 1700 nm
Selectable wavelengths	780/850/1300/ 1310/1550 nm

Automatic wavelength detection “AU”

In combination with the OLS-5, OLS-6, OLS-15

for wavelengths of	780, 850, 1300, 1310, 1550nm
in power level range	
780, 850 nm	-45 to +10 dBm
1300, 1310, 1550 nm	-50 to +10 dBm

Automatic wavelength detection can be switched off

Modulation detection

for frequencies of	270 Hz, 330 Hz, 1 kHz, 2 kHz
in power range	
780, 850 nm	-45 to +10 dBm
1300, 1310, 1550 nm	-50 to +10 dBm

Sensor

Photodiode	Germanium
Connectable fiber types	9/125 to 100/140 µm

Power level measurement

The optical power of unmodulated light (or the average optical power of modulated light) emanating from a fiber optical cable is measured and displayed.

Display range	-65 to +10 dBm
Max. allowable power level	+10 dBm
Intrinsic meas. error [1]	±0.13 dB (±3%)
Linearity [1] (+5 to -55 dBm)	±0.06 dB

1 Under the following reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3 °C, 45 to 75% rel. humidity

6.3 OLP-8

Wavelength

Application range	780 to 1700 nm
Selectable wavelengths	980/1310/ 1480/1550 nm

Automatic wavelength detection “AU”

In combination with the OLS-5, OLS-6, OLS-15.

for wavelengths of	980, 1310, 1480, 1550 nm
in power level range	
980 nm	-30 to +23 dBm
1310, 1480, 1550 nm	-35 to +23 dBm

Automatic wavelength detection can be switched off

Modulation detection

for frequencies of	270 Hz, 330 Hz, 1 kHz, 2 kHz
in power range	
980 nm	-30 to +23 dBm
1310, 1480, 1550 nm	-35 to +23 dBm

Sensor

Photodiode	Germanium
Connectable fiber types	9/125 µm

Power level measurement

The optical power of unmodulated light (or the average optical power of modulated light) emanating from a fiber optical cable is measured and displayed.

Display range	-50 to +23 dBm
Max. allowable power level	+23 dBm
Intrinsic meas. error [1]	±0.13 dB (±3%)
Linearity [1] (+20 to -35 dBm)	±0.06 dB

1 Under the following reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3 °C, 45 to 75% rel. humidity

6.4 Common specifications

LC display

Power level display	4 digits
Absolute power in	dBm
Relative power in	dB
Resolution[1]	0.01 dB

1 OLP-6: 0.1 dB resolution at < -60 dBm
OLP-8: 0.1 dB resolution at < -45 dBm

Reference level

A keypress saves the measured value as the reference level. Separate memory is provided for each wavelength. The stored values are retained even if the device is switched off.

Optical connector

UPP adapter	2.5 mm ferrule
Connector	all connectors with 2.5 mm ferrules, e.g.: DIN, ST, SC, FC, E2000

6.5 General specifications

Power supply

Dry batteries	2 x AA, 1.5 V
NiCd cells	2 x AA, 1.2 V
Operating life [1]	
dry batteries/NiCd cells	typ. 130 h / 40 h

1 Automatic power-off after approx. 20 min. to save battery life (function is disabled in PERM mode).

Electromagnetic compatibility (EMC)	to EN 50 082-1, 1992

Ambient temperature

Nominal range of use	-10 to +55 °C
Storage and transport	-40 to +70 °C

Air humidity

relative humidity up to +30 °C	5 to 95%
absolute humidity, > +30 °C	1 to 29 g/m^3

Occasional condensation is tolerable as a limit condition.

Dimensions and weight

Weight	approx. 180 g
Dimensions (w x h x d)	73 x 140 x 28 mm

Calibration interval

Recommended calibration interval	3 years

7 Ordering Information

OLP-5 Optical Power Meter	**BN 2256/01**
OLP-6 Optical Power Meter	**BN 2256/02**
OLP-8 Optical Power Meter	**BN 2256/03**
Calibration report	BN 2256/90.02

Accessories

Test cable	K3xxx [1]
NiCd cells [2] (AA size)	BN 2229/90.02
External charger	
220 V, European connector	BN 2229/90.03
110 V, US connector	BN 2229/90.09
Cleaning tape for optical connectors	BN 2229/90.07
MK-5 equipment case with room for 2 testers and accessories	BN 2126/90.01

1 See the separate data sheet on “Optical test adapters and adapter cables” for details on test cables and optical couplers.
2 Two required

Notes: