VIAVI

OLP-34/-35/-38

SmartPocket™ Optical Power Meters

Operating manual
BN 2302/98.11
2019.12
English

Copyrights

Copyright

Notes:

Changes may be made to specifications, designations and delivery information.

CONTENTS

1 INTRODUCTION

OLP-34/-35/-38 Optical Power Meters

The handheld Optical Power Meters
• BN 2302/01/11
• BN 2302/02/12 and
• BN 2302/03/13
measure power levels on fiber optical systems.

The Test Sets are specially designed for high performance testing of all optical signals and systems, i.e. broadband, PONs, and Gigabit Ethernet.

Battery operation from two AA batteries and the robust, shock-proof design provide long operating time in the field even under tough conditions. AC line operation via a separate AC adapter and the USB interface (only BN 2302/11/12/13) ensure ease of use in the laboratory or production environment.

Common features

All OLP-3x power meters can connect to single-mode and multi-mode fibers with a max. core diameter of 100 μm.

Tests on systems from different manufacturers with different connector types are easy to handle due to the UPP adapter for 1.25 and 2.5 mm ferrules.

A suitable optical source is required for measuring attenuation. The Viavi OLS-3x Optical Light Sources are ideal for this application.

Both modulated and unmodulated light signals can be measured. The average power of modulated light signals is displayed.

Modulated signal mode, which uses different fixed frequencies, can be used to identify fibers in a fiber bundle, for example.

The "Auto-λ" function provided by the OLP-3x Optical Power Meters allows automatic wavelength detection. This application requires a wavelength encoding light source, e.g. one of the Viavi OLS-3x light sources.

Differences between the models

All the power meters are calibrated at 850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm and 1550 nm. The models with InGaAs diode type are also calibrated at 1625 nm. The differences between the devices are the diode types and the maximum permitted power levels:

Model BN...	Diode type	Max. power level	USB interface
2302/01	Germanium	+5 dBm	**8**
2302/11	Germanium	+5 dBm	**4**
2302/02	InGaAs	+10 dBm	**8**
2302/12	InGaAs	+10 dBm	**4**
2302/03	filtered InGaAs	+26 dBm	**8**
2302/13	filtered InGaAs	+26 dBm	**4**

Operating manual update

If the operating instructions about features provided by your device are missing, please visit the Viavi web site to check if additional information is available.

To download the latest operating instructions:

1. Visit the Viavi web site at www.viavisolutions.com/en-us/products/network-test-and-certification.

2. Select your model from the product line or use the search function.

3. Open the download area and download the operating instructions if available.

Symbols used in this operating manual

Various elements are used in this operating manual to draw attention to special meanings or important points in the text.

Symbols and terms used in warnings

The following warnings, symbols and terms are used in this document in compliance with the American National Standard ANSI Z535.6-2011:

CAUTION
Follow the instructions carefully to avoid **damage to or destruction of the instrument.**

⚠ **CAUTION**
Follow the instructions carefully to avoid a low or medium risk of **injury to persons.**

⚠ **WARNING**
Follow the instructions carefully to avoid **severe injury** to persons.

⚠ **DANGER**
Follow the instructions carefully to avoid **death** or **severe injury** to persons.

High Voltage

Follow the instructions carefully to avoid **damage** to the instrument or **severe injury** to persons.

This safety instruction is given if the danger is due to **high voltage**.

Laser

Follow the instructions carefully to avoid **damage** to the instrument or **severe injury** to persons.

This safety instruction is given if the danger is due to **laser radiation**. Information specifying the laser class is also given.

Warning format

All warnings have the following format:

⚠ WARNING
Type and source of danger
Consequences of ignoring the warning
▶ Action needed to avoid danger.

The following character formats are used in this operating manual:

✓	**Requirement** This requirement must be met first; e.g. ✓ The device is switched on.
▶ 1. 2.	**Instruction** Follow the instructions given (the numbers indicate the order in which the instructions should be followed); e.g. ▶ Select mode.
Italics	**Result** Indicates the result of following an instruction; e.g. *The page opens.*
Bold type face	**Pages, controls, and display elements** **Screen pages, controls, and display elements are indicated in bold type.**
Text in blue	**Cross references** Cross references are indicated in blue type. When using the PDF version, just click on the blue text to skip to the cross reference.
[STORE**]**	**Device keys** Device keys are indicated within square brackets.

2 SAFETY INFORMATION

Warning symbols on the device

Warning symbols indicating a potential hazard

▶ A warning symbol on the device indicates a potential hazard. In all cases where the unit is labeled with a warning symbol, the operating manual must be consulted to learn more about the nature of the potential hazard and any actions that have to be taken.

Proper use

This instrument is intended for measurements on optical fiber devices and systems.

▶ Please make sure the instrument is not operated outside the permitted ambient conditions.

▶ Observe the specified measurement range.

▶ Always make sure that the instrument is in proper working order before switching it on.

Laser safety

⚠ WARNING

Dangerous laser radiation

Laser radiation can cause irreparable damage to the eyes and skin.

The maximum permitted power for the OLP-3x means that the optical input signals can reach Hazard Level 4, depending on the device type.
Bear this in mind when using the OLP-3x.

▶ Always be aware of the hazard level of the device to be connected.

▶ Connect all optical fibers before switching on the radiation source.

▶ Switch off the laser source before disconnecting the optical fibers.

▶ Never look directly into the output of a laser source or into an optical fiber connected to it.

▶ Always cover unused ports.

▶ Heed the normal precautions for working with laser radiation and consider local regulations.

Battery operation

⚠ WARNING

Explosion danger

Short-circuiting the batteries can result in overheating, explosion or ignition of the batteries and their surroundings.

▶ Never short-circuit the battery contacts by touching both contacts simultaneously with an electrically conductive object.

▶ Only use AA size dry batteries or rechargeable batteries.

▶ Take care to insert the batteries correctly.

⚠ WARNING

Explosion danger

Dry batteries must not be recharged.

▶ The OLP-3x does not have a recharge function for rechargeable batteries, so there is no danger when using dry batteries.

▶ Read the manual of the external charging device.

Ventilation

CAUTION

Insufficient ventilation

Insufficient ventilation can damage the device or adversely affect its function and safety.

▶ Ensure adequate ventilation when operating the instrument.

3 GETTING STARTED

Unpacking the device

Packing material

We suggest that you keep the original packing material. It is designed for reuse (unless it is damaged during shipping). Using the original packing material ensures that the device is properly protected during shipping.

Checking the package contents

Your device is shipped with the following accessories:
• 2.5 mm universal adapter
• 2 dry batteries AA
• Operating manual
• Belt bag

Checking for shipping damage

After you unpack the device, check to see if it has been damaged during shipping. This is particularly likely if the packaging is visibly damaged. If there is damage, do not attempt to operate the device. Doing so can cause further damage. In case of damage, please contact your local Viavi Sales Company. Addresses can be found at www.viavisolutions.com.

Recovery following storage/shipping

Condensation can occur if a device that is stored or shipped at a low temperature is brought into a warm environment. To prevent damage, wait until no more condensation is visible on the surface of the device before powering it up. Do not operate the instrument until it has reached its specified temperature range and wait until it has cooled down if the instrument was stored at a high temperature (see).

Device overview
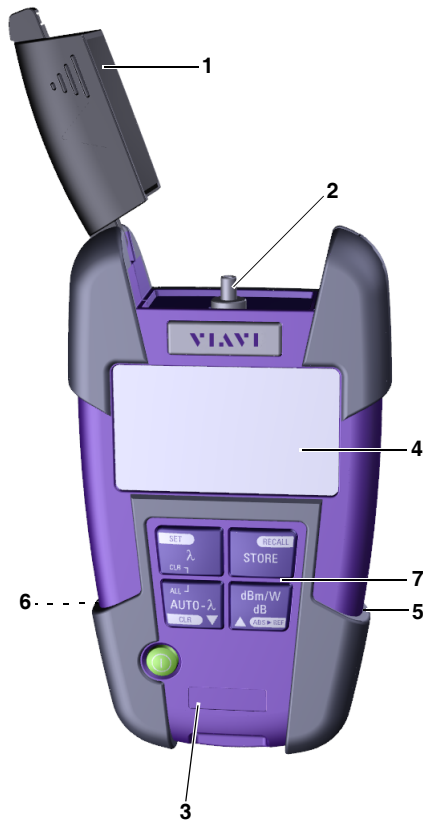
1	Test head cover
2	Port
3	Device label
4	Display
5	External power supply connector
	USB interface (only BN 2302/11/12/13) for power supply and measurement data downloads
6	Battery compartment (on rear of the device)
7	Key pad

Keys

Each key has two functions. Press the key once for the first function. Press and hold the key for more than 2 seconds for the second function of the key.

	First function: Press to switch the device on and off (ECON). **Second function:** Press to switch the device on (PERM).
	First function: Press to select a wavelength out of 5 predefined values. **Second function:** Change the predefined wavelength.
	First function: Enable/Disable automatic wavelength recognition. **Second function:** Clear current memory location.
	First function: Press to store current measurement. **Second function:** Recall the stored measurements.
	First function: Press to toggle level display between: dBm/Watt (absolute mode) dB (relative mode) **Second function:** Set reference level.

Power Supply

The following power sources can be used to operate the OLP-3x:

• Two 1.5 V dry batteries (Mignon AA size, alkaline type recommended)

• Two 1.2 V NiMH rechargeable batteries (Mignon AA size)

• via the AC adapter

• via the USB control interface (only BN 2302/11/12/13)

Battery operation

⚠ WARNING

Dangers in handling batteries

Handling batteries may be dangerous. Please note the following safety instructions.

▶ Please note the battery operation safety information in the section "Battery operation" on page 10.

Replacing the batteries

▶ Do not replace individual batteries. Always change both batteries at the same time.

▶ Always use batteries of the same type; i.e. do not mix rechargeable and non-rechargeable batteries.

Replacing the batteries

The battery compartment is on the back of the device.

1. Pull down the lid to open the battery compartment.

2. Fit new batteries or remove the used batteries and replace them with fresh ones.

Caution: Take care to insert the batteries correctly. The correct polarity is indicated by a diagram inside the battery compartment.

3. Close the battery compartment.

4. Press [�icon] to switch on.

Note: The batteries cannot be recharged with the OLP-3x.

General tips on using batteries

• Always handle batteries with care.

• Do not drop or damage the batteries or expose them to excessively high temperatures.

• Do not store rechargeable batteries for more than one or two days at very high temperatures (e.g. in a vehicle), either separately or fitted in the device.

• Do not leave discharged batteries in the device for a long time if it is not being used.

• Do not store rechargeable batteries for more than 6 months without recharging them at intervals.

• Avoid deep discharging of the batteries as this can cause the cell polarity to reverse and make the battery useless.

Protecting the environment

Please dispose of any unwanted dry batteries and rechargeable batteries carefully. They should also be removed from the instrument if it is to be scrapped. If facilities in your country exist for collecting waste or for recycling, please make use of them rather than throwing the batteries in the normal trash. You will often be able to return used batteries to the place where you purchase new ones. Any dry or rechargeable batteries that you purchased from Viavi can be returned to one of our Service Centers for disposal.

Operation from AC power

To fit one of the mains plug adapters:

▶ See Fig. 1 and follow the instructions which are shown on the packaging of the mains plug adapter.
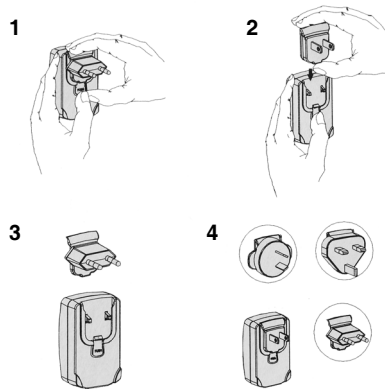
Fig. 1   Fitting the mains plug adapter

To operate the OLP-3x from AC power:

1. Connect the Micro USB connector (only BN 2302/1x) power cord to the OLP-3x.
2. Plug the mains plug adapter into the AC receptacle.

4 OPERATION

Switching the device on/off

The OLP-3x has two operating modes:

• **Permanent ON (PERM):**
  The device is switched on permanently.

• **Automatic OFF (ECON):**
  The device switches off 20 minutes after the last operation. This function is only available when the device is powered from batteries.

To switch the device on:

▶ Press **[☉]** to switch on the device in ECON mode.

▶ Press and hold down **[☉] for more than 2 sec.** to switch on the device in PERM mode.

To switch the device off:

▶ Press **[☉]** to switch off the device.

Display elements

Fig. 2   Measurement display (showing all available elements)

	Battery status Indicates the battery status. If it is not shown, only the AC adapter is active.
PERM **ECON**	**Power mode** **PERM:** Device remains switched on. **ECON:** Device switches off 20 minutes after the last operation.
MEM 018	**Memory location** From 1 to 100
Center of display	Shows the measurement results in dBm, dB or W.
1550 nm	**Wavelength setting** Display of selected wavelength (displayed wavelength depends on settings and model).
Auto-λ	**Signal Modulation** **Auto-λ:** Auto wavelength detection **270 Hz, 1 kHz, 2 kHz**: modulation frequency

Selecting a wavelength

The sensitivity of the photo diode depends on the wavelength. The wavelength setting of the device must match the wavelength of the incoming signal to ensure a correct reading.

To select a wavelength:

▶ Press **[λ]** to select a new wavelength.
The value is shown in the lower right display:
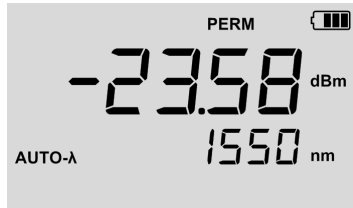
The wavelengths that can be selected by pressing this key are an extract of those contained in the internal wavelength table.
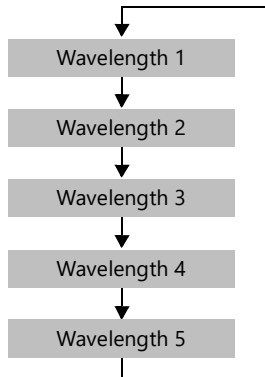

Fig. 3   Wavelength entries

Editing the wavelength table

The wavelength table supports the definition of up to 5 wavelengths.

To edit the wavelenght table:

1. Press **[λ]** to select a wavelength (1 to 5).

2. Press and hold down **[SET] for more than 2 sec.**
   The wavelength table is in the edit mode.

3. Use **[▲▼]** to change the wavelength value.
   - Press once to change one step at a time.
   - Hold down the key to increase the step change rate.

4. Press **[SET]** to save the new wavelength.

Displaying absolute power level

The power level is displayed in dBm or Watts (nW, µW, mW) in absolute power level display mode.

▶ Press **[dBm/W]** to display absolute power level and to toggle between dBm or Watts.

Fig. 4   Displaying absolute power level in dBm.

Display range

Model	dBm	Watt
BN 2302/01/11	-60 to +10 dBm	1 nW to 10mW
BN 2302/02/12	-65 to +13 dBm	1 nW to 20mW
BN 2302/03/13	-50 to +26 dBm	10 nW to 400mW

Displaying relative power level

The actual measured power level relative to a reference value is displayed in relative power display mode.

Setting the reference level

▶ Press and hold down **[ABS->REF] for more than 2 sec.**
The actual power level is set as the new reference level.

Note: The reference level must be stored for each wavelength separately and is saved even when the power is off.

Displaying modulated signals

The OLP-3x automatically detects the modulation frequency of light signals modulated at the fixed frequencies of 270 Hz, 1 kHz and 2 kHz. The detected frequency is shown in the lower center display pane.

Note: The OLP-3x can automatically detect the modulation frequency only if **no** Auto-λ was detected (see).

Enabling Auto-Lambda mode

Auto-λ is a special feature developed by Viavi that allows you to identify wavelengths automatically. To do this, the signal is modulated at a certain frequency (by a light source equipped with Auto-λ such as a Viavi OLS-34/-35), which can be detected by a Viavi OLP-3x.

Wavelengths cannot be reliably detected if:

- the receive level is too low,
- wavelength encoding cannot be detected due to interference
- you are measuring the absolute level of a system that does not have wavelength encoding that matches Viavi power sources.

Note: The Auto-λ function can be disabled in order to prevent an incorrect wavelength detection while measuring "In-Service" systems.

To switch Auto-λ mode on/off:

▶ Press **[AUTO-λ]**.
Auto-λ mode is activated. If Auto-λ mode is activated and an optical source supporting Auto-λ is connected, **AUTO-λ ▶ Detected** *will be displayed.*

Display in Auto-λ mode

When **Auto-λ** mode is activated and different wavelengths are detected, the power levels measured at these wavelengths are displayed individually. The display toggles automatically to the next detected wavelength after a few seconds.

Fig. 5   Display in **Auto**-λ mode showing one detected wavelength and their power levels.

5 MEMORY MANAGEMENT

General information

The OLP-3x allows you to save the measured power level values in a data memory and recall them as required. **Up to 100 results can be stored.**

Note: The results are always stored successively at the last memory location until all 100 locations are assigned. It is not possible to overwrite or re-fill empty memory locations (see Fig. 6).

Data can also be downloaded with the OFS-355 Download Manager (refer to page 27) via the USB interface to the PC for further evaluation (only BN 2302/1x).

MEM 1: assigned ← New storing

MEM 2: assigned ← New storing

MEM 3: deleted — Deleted location will not be re-filled

MEM 4: assigned ← New storing

MEM 5: assigned ← New storing

MEM 6: ← New storing
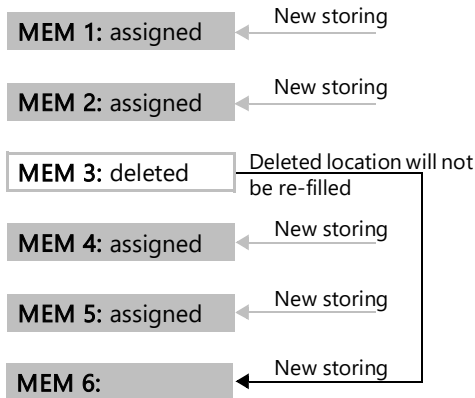
Fig. 6   Storing with the memory locations

Store measurements

To save the current measurement result:

▶ Press **[STORE]** to save the current result.
The result is saved and the related memory location is shown in the upper left corner of the display for a short time, e.g. "MEM 2."

Note: The new results are always appended successively at the last memory location, even if you clear a previously assigned memory location with a lower number.

Recall measurements

To recall stored measurement results:

1. Press **[RECALL]** and hold it for at least 2 seconds.
   The device is in recall mode and the latest stored memory location is shown in the upper left corner of the display.
2. Use **[▲▼]** to browse through the stored memory locations.
3. Press **[RECALL]** again to exit the recall mode.

Delete measurements

To delete a stored measurement result:

✓ The device is in recall mode.
1. Use **[▲▼]** to select the memory location to be deleted.
2. Press and hold down **[CLR]** for more than 2 sec. to switch off the device.
   The selected memory location is deleted and the display shows 4 bars.

Note: It is not possible to select and overwrite empty memory locations.

To delete all stored measurement results:

✓ The device is in recall mode.
1. Press **[CLR]** and **[ALL]** simultaneously and hold them for at least 2 seconds.
   All memory locations are cleared.
2. Press **[RECALL]** again to exit the recall mode.

6 MAINTENANCE

⚠ **WARNING**

Dangerous voltage and invisible laser radiation

**Maintenance or cleaning of the instrument while it is con-
nected or operating may damage the instrument or injure
you.**

▶ Make sure that the instrument is switched off and
disconnected from all power sources and optical radiation
sources before maintenance or cleaning.

Cleaning the test port

It is a good idea to check that the optical connections are clean
and to clean them if necessary before starting measurements.
Even very small dust particles on the end surfaces of the plugs or
in the test adapters can adversely affect the accuracy of the
measurement.

⚠ **WARNING**

Damage to the photo diode

Touching the photo diode could scratch the glass surface.

▶ Be careful when cleaning the photo diode and do not use
any rough cleaning materials.

1. Switch off the device.

2. Remove the test adapter from the optical connection.
The plug end surface is now accessible.

3. OLP-34 (BN 2302/01/11) and OLP-35 (BN 2302/02/12) only:
Wipe off the plug end surface using a cotton bud soaked in
isopropanol. This cleaning method is very effective and leaves
no residues.

4. Blow out the test adapter with clean compressed air (also
available in spray cans, e.g. Anti Dust Spray).

Note: Cover the optical connections with the dust cap
whenever they are not in use. This prevents them from
getting dirty.

Cleaning the instrument

If the device gets dirty through use, you can clean it using a soft cloth moistened with a mild solution of detergent.

CAUTION

Water and cleaning fluids

The instrument may be damaged or destroyed if water or cleaning fluids penetrate it.

▶ Make sure that water or cleaning fluids do not get inside the instrument.

7 OFS-355 DOWNLOAD MANAGER

The OFS-355 is a free download and reporting tool offered by Viavi which allows you to easily transfer stored measurement data to a PC.

Note: You need the OLP-3x devices BN 2302/11/12 or /13 with USB interface for using the OFS-355 Download Manager to transfer stored measurement data.

To download the OFS-355 Download Manager:

1. Go to the Viavi web site: www.viavisolutions.com.
2. Type OFS-355 in the search box.
3. Select OFS-355 from the search results list.
   The OFS-355 information page opens.
4. Select the download tab.
5. Click on the download link to download the software and follow the instructions given.

8 SPECIFICATIONS

OLP-34

Adjustable wavelength range	780 to 1600 nm, in 1 nm increments
Calibrated wavelengths	850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm,1550 nm
Photo diode	Germanium
Fiber type	9/125 to 100/140
Power range	-60 to +5 dBm
Display range	-60 to +10 dBm
Resolution	0.01 dB, 0.001 µW
Max. permitted level	+13 dBm
Intrinsic uncertainty[1]	$\pm$0.2 dB ($\pm$ 5%)
Linearity[2]	$\pm$0.06 dB
Overall measurement uncertainty[2]	
850 nm, 980 nm	$\pm$0.30 dB $\pm$0.8 nW
1300 nm, 1310 nm	$\pm$0.30 dB $\pm$0.3 nW
1490 nm, 1550 nm	$\pm$0.40 dB $\pm$0.2 nW

1) Under reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3K, 45 to 75% relative humidity, 9 to 50 µm test fiber, ceramic end face
2) -47 to +5 dBm from -5 to +45 °C

OLP-35

Adjustable wavelength range	780 to 1650 nm, in 1 nm increments
Calibrated wavelengths	850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm, 1550 nm, 1625 nm
Photo diode	InGaAs
Fiber type	9/125 to 100/140
Power range	-65 to +10 dBm
Display range	-65 to +13 dBm
Resolution	0.01 dB, 0.001 µW
Max. permitted level	+16 dBm
Intrinsic uncertainty[1]	$\pm$0.2 dB ($\pm$5%)
Linearity[2]	$\pm$0.06 dB
Overall measurement uncertainty[2]	
850 nm, 980 nm	$\pm$0.35 dB $\pm$0.8 nW
1300 nm	$\pm$0.30 dB $\pm$0.1 nW
1310 nm, 1550 nm	$\pm$0.25 dB $\pm$0.1 nW
1490 nm, 1625 nm	$\pm$0.35 dB $\pm$0.1 nW

1) Under reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3K, 45 to 75% relative humidity, 9 to 50 µm test fiber, ceramic end face
2) -50 to +5 dBm from -5 to +45 °C

OLP-38

Adjustable wavelength range	780 to 1650 nm, in 1 nm increments
Calibrated wavelengths	850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm, 1550 nm, 1625 nm
Photo diode	filtered InGaAs
Fiber type	9/125 to 100/140
Power/Display range	-50 to +26 dBm
Resolution	0.01 dB, 0.001 µW
Max. permitted level	+27 dBm
Intrinsic uncertainty[1]	±0.5 dB (±12%)
Linearity[2]	±0.06 dB
Overall measurement uncertainty[2]	
850 nm, 980 nm	±0.60 dB ±30 nW
1300 nm, 1310 nm, 1550 nm, 1625 nm	±0.55 dB ±10 nW
1490 nm	±0.65 dB ±10 nW

1) Under reference conditions: -20 dBm (CW), 1310 nm ±1 nm, 23 °C ±3K, 45 to 75% relative humidity, 9 to 50 µm test fiber, ceramic end face
2) -32 to +20 dBm from -5 to +45 °C

General specifications

Wavelength detection[1][2]	Automatic switching and displaying wavelengths
Modulation detection[2]	270 Hz, 1 kHz, 2 kHz
Optical adapter system	Universal push-pull adapter 2.5 mm (1.25 mm optional), suitable for PC and APC systems

1) Only in conjunction with Viavi OLS-3x Optical Light Sources.
2) BN 2302/01/11: for levels > -45 dBm (780 to 1299 nm)
   for levels > -50 dBm (1300 to 1625 nm)
   BN 2302/02/12: for levels > -45 dBm (850 to 1299 nm)
   for levels > -55 dBm (1300 to 1625 nm)
   BN 2302/03/13: for levels > -30 dBm (780 to 1299 nm)
   for levels > -40 dBm (1300 to 1625 nm)

Memory

Memory capacity	100 measurement results
Data readout[1]	via USB interface

1) Only BN 2302/11/12/13

Calibration interval

Recommended calibration interval	3 years

Power supply

Dry batteries	2 x AA, 1.5 V
Rechargeable batteries	NiMH, 2 x AA, 1.2 V
Operating life with dry/rechargeable batteries	typ. 200 h
AC line operation[1]	with separate adapter
Power saving	auto power-off after approx. 20 min (can be disabled)

1) Only BN 2302/11/12/13

EMC and safety

Electromagnetic compatibility (EMC)	EN 61326-1:2006
Device safety	EN 61010-1:2002

Ambient temperature

Normal range of use	
BN 2302/01/02/11/12	-10 to +55 °C
BN 2302/03/13	-10 to +45 °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

Dimensions (H x W x D)	30 x 80 x 150 mm
Weight	200 g

9   ORDERING INFORMATION

Devices

OLP-34

Optical Power Meter

Germanium	**BN 2302/01**
Germanium with USB	**BN 2302/11**

OLP-35

Optical Power Meter

InGaAs	**BN 2302/02**
InGaAs, with USB	**BN 2302/12**

OLP-38

Optical Power Meter, High Power

InGaAs (coated)	**BN 2302/03**
InGaAs (coated), with USB	**BN 2302/13**

Calibration report

OLP-34, OLP-35, OLP-38	BN 2302/90.03

Accessories

Cleaning materials, power supplies

OCK-10 Optical cleaning kit	BN 2229/90.21
Cleaning tape for optical connectors	BN 2229/90.07
Spare optical cleaning tape	BN 2229/90.08
NiMH rechargeable batteries, Mignon AA, 1.2 V (2 batteries required)	BN 2237/90.02
AC adapter SNT-505	BN 2302/90.01
USB connection cable	K807
UPP adapter 1.25 mm	BN 2256/90.03

PRODUCT REGULATORY COMPLIANCE

Viavi Environmental Management Program

Superb performance and high quality have always characterized Viavi datacom and telecom measurement technology products. In this same world-class tradition, Viavi has an established, proactive program of environmental management.

Environmental management is an integral part of Viavi's business philosophy and strategy requiring the development of long-term, productive solutions to problems in the key areas of economics, technology, and ecology.

A systematic environmental management program at Viavi is essential in regard to environmental policy and enhances cooperation between ourselves and our business partners.

The Viavi Environmental Management Program considers:

Product design and manufacture

Environmental restrictions and requirements are taken into account during planning and manufacture of Viavi products. This attention ranges from the raw materials and finished components selected for use and the manufacturing processes employed, through to the use of energy in the factory, and right on up to the final stages in the life of a product, including dismantling.

Hazardous materials

Viavi avoids or uses with care any hazardous or dangerous material in the manufacturing process or the end product. If the use of a dangerous material cannot be avoided, it is identified in product documentation and clearly labeled on the product itself.

Packaging materials

Preference is given to reusable or biodegradable single-substance packaging materials whenever possible.

Environmental management partnerships

Viavi encourages our customers and suppliers who take this responsibility seriously to join Viavi in establishing their own environmental management programs.

EU WEEE and Battery Directives

This product, and the batteries used to power the product, should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations.

Viavi has established a take-back process in compliance with the EU Waste Electrical and Electronic Equipment (WEEE) Directive, 2012/19/EU, and the EU Battery Directive, 2006/66/EC.

Instructions for returning waste equipment and batteries to JDSU can be found in the WEEE section of **Viavi's Standards and Policies web page** (https://www.viavisolutions.com/en-us/corporate/legal/policies-standards#sustain).

If you have questions concerning disposal of your equipment or batteries, contact JDSU's WEEE Program Management team at WEEE.EMEA@ViaviSolutions.com.

EU REACH

Article 33 of EU REACH regulation (EC) No 1907/2006 requires article suppliers to provide information if a listed Substances of Very High Concern (SVHC) is present in an article above a certain threshold.

For information on the presence of REACH SVHCs in Viavi products, see the Hazardous Substance Control section of **Viavi's Standards and Policies web page**.

EU CE Marking Directives (LV, EMC, RoHS, RE)

This product conforms with all applicable CE marking directives. Please see EU Declaration of Conformity for details.

California Proposition 65

California Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted in November 1986 with the aim of protecting individuals in the state of California and the state's drinking water and environment from excessive exposure to chemicals known to the state to cause cancer, birth defects or other reproductive harm. For the Viavi position statement on the use of Proposition 65 chemicals in Viavi products, see the Hazardous Substance Control section of **Viavi's Standards and Policies web page**.

"中国RoHS"

《电子信息产品污染控制管理办法》（信息产业部，第39号）
附录

本附录按照"中国RoHS"的要求说明了有关电子信息产品环保使用期限的情况，并列出了产品中含有的有毒、有害物质的种类和所在部件。本附录适用于产品主体和所有配件。

环保使用期限：

本标识标注于产品主体之上，表明该产品或其配件含有有毒、有害物质（详情见下表）。

其中的数字代表在正常操作条件下至少在产品生产日期之后数年内该产品或其配件内含有的有毒、有害物质不会变异或泄漏。该期限不适用于诸如电池等易耗品。

有关正常操作条件，请参见产品用户手册。

产品生产日期请参见产品的原始校准证书。

有毒、有害物质的类型和所在部件

元器件 (Component)	有毒、有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR^{6+})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
产品主体 (Main Product)						
印刷电路板组件 (PCB Assemblies)	X	O	O	O	O	O
内部配线 (Internal wiring)	O	O	O	O	O	O
显示器 (Display)	O	O	O	O	O	O
键盘 (Keyboard)	O	O	O	O	O	O
塑料外壳零件 (Plastic case parts)	O	O	O	O	O	O
配件 (Accessories)	O	O	O	O	O	O

O：代表该部分中所有均质材料含有的该有毒、有害物质含量低于SJ/T11363-2006标准的限值。
X：代表该部分中所有均质材料含有的该有毒、有害物质含量高于SJ/T11363-2006标准的限值。