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

Operating Manual
BN 2302/01
BN 2302/02
BN 2302/03
BN 2302/11
BN 2302/12
BN 2302/13

BN 2302/98.11
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English

JDSU
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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 optic 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 JDSU 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.
1 **INTRODUCTION**

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. of the JDSU OLS-3x light sources.

**Differences between the devices**

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:

<table>
<thead>
<tr>
<th>Type</th>
<th>Diode type</th>
<th>Max. power level</th>
<th>USB interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>2302/01</td>
<td>Germanium</td>
<td>+5 dBm</td>
<td>X</td>
</tr>
<tr>
<td>2302/11</td>
<td>Germanium</td>
<td>+5 dBm</td>
<td>✔</td>
</tr>
<tr>
<td>2302/02</td>
<td>InGaAs</td>
<td>+10 dBm</td>
<td>X</td>
</tr>
<tr>
<td>2302/12</td>
<td>InGaAs</td>
<td>+10 dBm</td>
<td>✔</td>
</tr>
<tr>
<td>2302/03</td>
<td>filtered InGaAs</td>
<td>+26 dBm</td>
<td>X</td>
</tr>
<tr>
<td>2302/13</td>
<td>filtered InGaAs</td>
<td>+26 dBm</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Operating manual update**

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

To download the latest operating instructions:
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

The following symbols, warnings and character formats are used in this operating manual:

**CAUTION**
Follow the instructions carefully to avoid damage to the device.

**WARNING**
Follow the instructions carefully to avoid damage to the device or injury to the person.

**DANGER**
Follow the instructions carefully to avoid damage to the device or severe injury to the person.

**High Voltage**
Follow the instructions carefully to avoid damage to the device or severe injury to the person.
This safety instruction is given if the danger is due to high voltage.

**Laser**
Follow the instructions carefully to avoid damage to the device or severe injury to the person.
This safety instruction is given if the danger is due to laser radiation. Information specifying the laser class is also given.

**!**
Very important instruction
Follow this instruction carefully; e.g.
! Make sure you protect yourself and others from exposure to laser light.
### 1 Introduction

| ✓ | Requirement | This requirement must be met first; e.g. ✓ The system is switched on |
|⇒ | Instruction | Follow the instructions given (the numbers indicate the order in which the instructions should be followed); e.g. ⇒ Select mode. |
| Italic | 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**. |
| [Store] | Instrument keys | Instrument keys are indicated within square brackets. |
2 SAFETY INFORMATION

Warning symbols on the unit

Warning symbols indicating 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 action that must be taken.

Proper usage

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

➢ Please make sure the device is not operated outside the permitted ambient conditions.
➢ Observe the specified measurement range.
➢ Always make sure that the device is in proper working order before switching it on.
2 SAFETY INFORMATION

Laser safety

WARNING

Dangerous laser radiation
Laser radiation can cause irreparable damage to the eye 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.
2 SAFETY INFORMATION

Battery operation

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 electrical conducting object.
⚠️ Only use AA size dry batteries or rechargeable batteries.
⚠️ Make sure the batteries are inserted with the correct polarity.

Explosion danger
Dry batteries must not be recharged.

⚠️ The OLP-3x doesn’t 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

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

⚠️ Ensure adequate ventilation when operating the device.
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 level meter is shipped with the following accessories:
• 2.5 mm universal adapter
• 2 dry batteries AA size
• 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 JDSU Sales Company. Addresses can be found at www.jdsu.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 room. To prevent damage, wait until no more condensation is visible on the surface of the device before powering it up. Do not operate the device until it has reached its specified temperature range and wait until it has cooled down if the device was stored at a high temperature (see „Ambient temperature“, page 31).
3 GETTING STARTED

Device overview
## 3 GETTING STARTED

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test head cover</td>
</tr>
<tr>
<td>2</td>
<td>Connector panel</td>
</tr>
<tr>
<td>3</td>
<td>Device label</td>
</tr>
<tr>
<td>4</td>
<td>Display</td>
</tr>
<tr>
<td>5</td>
<td>External power supply connector</td>
</tr>
<tr>
<td>6</td>
<td>Battery compartment (on rear of the device)</td>
</tr>
<tr>
<td>7</td>
<td>Key pad</td>
</tr>
</tbody>
</table>

### 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.

1. **First function:** Press to switch the device on and off (ECON).
   **Second function:** Press to switch the device on (PERM).

2. **First function:** Press to select a wavelength out of 5 predefined wavelengths.
   **Second function:** Change the predefined wavelength.

3. **First function:** Enable/Disable automatic wavelength recognition.
   **Second function:** Clear current memory location.

4. **First function:** Press to store current measurement.
   **Second function:** Recall the stored measurements.

5. **First function:** Press to toggle level display between:
   - dBm/Watt (absolute mode)
   - dB (relative mode)
   **Second function:** Set reference level.
3 GETTING STARTED

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

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

⚠ Please note the battery operation safety information in the chapter „Battery operation“, page 7.

Replacing batteries

⚠ Do not replace individual batteries. Always change all two batteries at the same time.
⚠ Always use two batteries of the same type; i.e. do not mix rechargeable and non-rechargeable batteries.

Replacing batteries

The battery compartment is on the back of the instrument.
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.

NOTICE: 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 [ ] to switch on.

Note: The batteries can not 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 the batteries for more than one or two days at very high temperatures (e.g. in a vehicle), either separately or fitted in the instrument.
- Do not leave discharged batteries in the instrument 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 the batteries as this can cause the cell polarity to reverse and make the battery useless.

Protect 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 such waste or for recycling, please make use of these 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 JDSU can be returned to one of our Service Centers for disposal.
3 GETTING STARTED

Operation from AC power

To fit one of the AC-plug clips:

⇒ See Fig. 1 and follow the instructions which are shown on the packaging of the universal push-pull adapter.

Fig. 1 Fitting the universal push-pull 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 universal push-pull adapter into the line socket.
4 OPERATION

Switching the device on/off

The OLP-3x has two power 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

![Measurement display](image)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery status</td>
<td>Indicates the battery status. If it is not shown, only the AC adapter is active.</td>
</tr>
<tr>
<td>PERM ECON</td>
<td><strong>Power mode</strong>&lt;br&gt;• PERM: Device remains switched on.&lt;br&gt;• ECON: Device switches off 20 minutes after the last operation.</td>
</tr>
<tr>
<td>MEM 088</td>
<td><strong>Memory location</strong>&lt;br&gt;from 1 to 100</td>
</tr>
<tr>
<td>Center of display</td>
<td>Shows the measurement results in dBm, dB or W.</td>
</tr>
<tr>
<td>1550 nm</td>
<td><strong>Wavelength setting</strong>&lt;br&gt;Display of selected wavelength (displayed wavelength depends on settings and model).</td>
</tr>
<tr>
<td>Auto-λ</td>
<td><strong>Signal modulation</strong>&lt;br&gt;• Auto-λ: Auto wavelength detection&lt;br&gt;• 270 Hz, 1 kHz, 2 kHz: modulation frequency</td>
</tr>
</tbody>
</table>
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 \( \lambda \) to select a new wavelength. The value is shown in the lower right display:

![Wavelength display](image)

The wavelengths that can be selected by pressing this key are an extract of those contained in the internal wavelength table.

![Wavelength entries](image)
4  OPERATION

Editing the wavelength table

The wavelength table supports the definition of 5 wavelengths.

To edit the wavelength 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.

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.

Power level ranges

<table>
<thead>
<tr>
<th>Tester</th>
<th>dBm</th>
<th>Watt</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN 2302/01/11</td>
<td>-60 to +10 dBm</td>
<td>1 nW to 10 mW</td>
</tr>
<tr>
<td>BN 2302/02/12</td>
<td>-65 to +10 dBm</td>
<td>1 nW to 10 mW</td>
</tr>
<tr>
<td>BN 2302/03/13</td>
<td>-50 to +26 dBm</td>
<td>10 nW to 400 mW</td>
</tr>
</tbody>
</table>

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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

1. Press and hold down [ABS->REF] for more than 2 sec.
   The actual power level is set as the new reference level.
   \(\text{Note:}\) 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.

\(\text{Note:}\) The OLP-3x can automatically detect the modulation frequency only if \(\text{no Auto-\lambda} \) was detected (see “Enabling Auto-Lambda mode” on page 20).
Enabling Auto-Lambda mode

Auto-λ is a special feature developed by JDSU 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 JDSU OLS-34/-35), which can be detected by a JDSU 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 JDSU 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 a laser source supporting Auto-λ is connected, Auto-λ 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 its 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 26) via the USB interface to the PC for further evaluation (only BN 2302/1x).

![Fig. 6 Storing with the memory locations](image)

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
5 MEMORY MANAGEMENT

Store measurements

To save the current measurement result:
1. 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 [CLR] and hold it for at least 2 seconds.
   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:

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.
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.

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

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and cleaning fluids</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
7 OFS-355
DOWNLOAD MANAGER

The OFS-355 is a free download and reporting tool offered by JDSU 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 JDSU web site: www.jdsu.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

<table>
<thead>
<tr>
<th>Adjustable wavelength range</th>
<th>780 to 1650 nm, in 1 nm steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrated wavelengths</td>
<td>850, 980, 1300 nm,</td>
</tr>
<tr>
<td></td>
<td>1310, 1490, 1550, 1625 nm</td>
</tr>
<tr>
<td>Photo diode</td>
<td>InGaAs, coated</td>
</tr>
<tr>
<td>Fiber type</td>
<td>9/125 to 50/125 µm</td>
</tr>
</tbody>
</table>

**Power range/Display range**

- 960 to 1000 nm and 1250 to 1650 nm: -50 to +26 dBm
- 780 to 960 nm and 1000 to 1250 nm: -50 to +10 dBm

**Resolution**

- 0.1 dB, 0.001 µW

**Max. permitted level**

- 960 to 1000 nm and 1250 to 1650 nm: +27 dBm
- 780 to 960 nm and 1000 to 1250 nm: +13 dBm

**Intrinsic uncertainty**

- ±0.2 dB (±5%)

**Linearity**

- 0.06 dB

**Overall measurement uncertainty**

<table>
<thead>
<tr>
<th>Wavelength</th>
<th>±0.60 dB ± 0.5 nW</th>
</tr>
</thead>
<tbody>
<tr>
<td>850 nm</td>
<td>±0.60 dB ± 30 nW</td>
</tr>
<tr>
<td>980 nm</td>
<td>±0.55 dB ± 10 nW</td>
</tr>
<tr>
<td>1300 nm</td>
<td>±0.55 dB ± 10 nW</td>
</tr>
<tr>
<td>1310 nm, 1550 nm, 1625 nm</td>
<td>±0.65 dB ± 10 nW</td>
</tr>
</tbody>
</table>

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) 960 to 1000 nm and 1250 to 1650 nm: -32 to +20 dBm
- 780 to 960 nm and 1000 to 1250 nm: -45 to +5 dBm

3) -5 to +45 °C

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## OLP-35 Specifications

<table>
<thead>
<tr>
<th>Adjustable wavelength range</th>
<th>780 to 1650 nm, in 1 nm steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrated wavelengths</td>
<td>850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm, 1550 nm, 1625 nm</td>
</tr>
<tr>
<td>Photo diode</td>
<td>InGaAs</td>
</tr>
<tr>
<td>Fiber type</td>
<td>9/125 to 100/140</td>
</tr>
<tr>
<td>Power/Display range</td>
<td>-65 to +10 dBm</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 dB, 0.001 µW</td>
</tr>
<tr>
<td>Max. permitted level</td>
<td>+16 dBm</td>
</tr>
<tr>
<td>Intrinsic uncertainty</td>
<td>± 0.2 dB (±5%)</td>
</tr>
<tr>
<td>Linearity uncertainty</td>
<td>0.06 dB</td>
</tr>
<tr>
<td>Overall measurement uncertainty</td>
<td></td>
</tr>
<tr>
<td>850 nm</td>
<td>± 0.35 dB ± 0.8 nW</td>
</tr>
<tr>
<td>1300, 1310 nm</td>
<td>± 0.30 dB ± 0.1 nW</td>
</tr>
<tr>
<td>1550 nm</td>
<td>± 0.25 dB ± 0.1 nW</td>
</tr>
<tr>
<td>1625 nm</td>
<td>± 0.35 dB ± 0.1 nW</td>
</tr>
</tbody>
</table>

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.
3) From -5 to +45 °C.
## SPECIFICATIONS

### OLP-38

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable wavelength range</td>
<td>780 to 1650 nm, in 1 nm steps</td>
</tr>
<tr>
<td>Calibrated wavelengths</td>
<td>850 nm, 980 nm, 1300 nm, 1310 nm, 1490 nm, 1550 nm, 1625 nm</td>
</tr>
<tr>
<td>Photo diode</td>
<td>filtered InGaAs</td>
</tr>
<tr>
<td>Fiber type</td>
<td>9/125 to 50/125</td>
</tr>
<tr>
<td>Power/Display range</td>
<td>-50 to +26 dBm</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 dB, 0.001 µW</td>
</tr>
<tr>
<td>Max. permitted level</td>
<td>+27 dBm</td>
</tr>
<tr>
<td>Intrinsic uncertainty(^1)</td>
<td>± 0.2 dB (± 5%)</td>
</tr>
<tr>
<td>Linearity(^2)</td>
<td>0.06 dB</td>
</tr>
</tbody>
</table>

\(^1\) 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
\(^3\) From -5 to +45 °C
## General specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength detection</td>
<td>Automatic switching and displaying wavelengths</td>
</tr>
<tr>
<td>Modulation detection</td>
<td>270 Hz, 1 kHz, 2 kHz</td>
</tr>
<tr>
<td>Optical adapter system</td>
<td>Universal push-pull adapter 2.5 mm (1.25 mm optional), suitable for PC and APC systems</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>100 measurement results</td>
</tr>
<tr>
<td>Data readout</td>
<td>via USB interface</td>
</tr>
<tr>
<td>Calibration interval</td>
<td>3 years</td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
</tr>
<tr>
<td>Dry batteries</td>
<td>2 x AA, 1.5 V</td>
</tr>
<tr>
<td>Rechargeable batteries</td>
<td>NiMH, 2 x AA, 1.2 V</td>
</tr>
<tr>
<td>AC line operation</td>
<td>with separate adapter</td>
</tr>
<tr>
<td>Power saving mode</td>
<td>auto power-off after approx. 20 min (can be disabled)</td>
</tr>
</tbody>
</table>

1) Only in conjunction with JDSU OLS-3x Optical Light Sources.
2) BN 2302/01/11: for levels > -45 dBm (780 to 1299 nm), for levels > -80 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).

1) Only BN 2302/11/12/13
### Specifications

#### Electromagnetic compatibility (EMC)
IEC 61326-1:2006

#### Device safety
IEC 61010-1:2002

### Ambient temperature

| Nominal 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/m³ |

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 |

## ORDERING INFORMATION

### Devices

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Calibration Report</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OLP-34</strong></td>
<td>Optical Power Meter</td>
<td>BN 2302/01</td>
</tr>
<tr>
<td></td>
<td>Germanium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Germanium, with USB</td>
<td>BN 2302/11</td>
</tr>
<tr>
<td><strong>OLP-35</strong></td>
<td>Optical Power Meter</td>
<td>BN 2302/02</td>
</tr>
<tr>
<td></td>
<td>InGaAs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>InGaAs, with USB</td>
<td>BN 2302/12</td>
</tr>
<tr>
<td><strong>OLP-38</strong></td>
<td>Optical Power Meter, High Power</td>
<td>BN 2302/03</td>
</tr>
<tr>
<td></td>
<td>InGaAs (coated)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>InGaAs (coated), with USB</td>
<td>BN 2302/13</td>
</tr>
</tbody>
</table>

### Calibration report

<table>
<thead>
<tr>
<th>Report</th>
<th>Calibration Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BN 2302/00.03</td>
</tr>
</tbody>
</table>
9 ORDERING INFORMATION

Accessories

Cleaning materials, power supplies

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCK-10 Optical connector cleaning kit</td>
<td>BN 2229/90.21</td>
</tr>
<tr>
<td>Cleaning tape for optical connectors</td>
<td>BN 2229/90.07</td>
</tr>
<tr>
<td>Spare optical cleaning tape</td>
<td>BN 2229/90.08</td>
</tr>
<tr>
<td>NiMH rechargeable batteries, Mignon AA, 1.2 V</td>
<td>BN 2237/90.02</td>
</tr>
<tr>
<td>(2 batteries required)</td>
<td></td>
</tr>
<tr>
<td>AC adapter SNT-505</td>
<td>BN 2302/90.01</td>
</tr>
<tr>
<td>USB connection cable</td>
<td>K807</td>
</tr>
<tr>
<td>UPP-Adapter 1.25 mm</td>
<td>BN 2256/90.03</td>
</tr>
</tbody>
</table>
9 ORDERING INFORMATION
JDSU Environmental Management Program

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

Environmental management is an integral part of JDSU'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 JDSU is essential in regard to environmental policy and enhances cooperation between ourselves and our business partners.

The JDSU Environmental Management Program considers:

Product design and manufacture
Environmental restrictions and requirements are taken into account during planning and manufacture of JDSU 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
JDSU 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
JDSU encourages our customers and suppliers who take this responsibility seriously to join JDSU in establishing their own environmental management programs.

Recycling used products
This product complies with the European Union Waste Electrical and Electronic Equipment directive (WEEE), 2002/96/EC. This product should not be disposed of as unsorted municipal waste and should be collected separately and disposed according to your national regulations.

In the European Union, all equipment purchased from JDSU after 2005-08-13 can be returned for disposal at the end of its useful life. Measuring systems affected by this can be recognized by the symbol on the right of a crossed-out trash can and a black bar. This symbol can be found either on the device or in the accompanying documents.

Contact your local Technical Assistance Center (TAC) for return and collection services available to you.