Product Description
The RL1 Automated Return Loss Meter has been precisely designed for the most accurate mandrel-free insertion loss and return loss measurements available in the industry. The RL1 is capable of testing even the most challenging fiber optic cable assemblies and components with smart integrated analysis settings adaptable to user requirements.

It is important for the RL1 to be flexible as applications keep changing with new industry requirements. JGR has designed the RL1 to be chassis modular, allowing for quick pairing to equipment in the XN1 family via USB connection. The RL1 can contain up to 4 built in wavelengths (850nm, 1300nm, 1310nm, 1490nm, 1550nm, 1625nm) with the available option of a 1x2 front panel output.

The RL1 can be paired with up to four RD-S Wireless Remote Head power meters. The re-designed integrating sphere can measure loss on dense 72 channel MTP/MPO and also duplex LC with one connection. The RD-S comes standard with SD Slide Detector adapters allowing for the ultimate in ease-of-use.

Unique to the RL1, the optical meter has been designed with many innovative new smart features that increase production efficiency and improve overall usage.

KEY FEATURES
- Most accurate RL in its class
- Self-Calibration
- Chassis modular
- Wireless integrating sphere detector
- No computer required
- Ready for Production Automation
- Barcode control available
- XN1 Ready

APPLICATIONS
- Testing of IL/RL of fiber optic assemblies
- Single and multi-fiber testing
- SM 1310nm, 1490nm, 1550nm, 1625nm
- MM 850nm, 1300nm
- QA and R&D testing

COMPLIANCE
- Multimode meets IEC 61280-4-1 Encircled Flux standard

IN THE BOX
- RL1 Meter
- AC power cord
- Calibration Certificate
- Hybrid Test Jumper
- Detector Cap
- FC Detector Adapter
- SX1
- AC power cord
- Test Report

Optimized for Speed and Accuracy
The user can choose between “Fast Mode” or “Standard Mode”. Fast Mode will test dual wavelength IL/RL in less than 3 seconds, providing the fastest RL measurements in the industry up to 75dB. Standard Mode will test dual wavelength IL/RL in less than 5 seconds, for the most accurate measurements in the industry up to 85dB.

Self Calibration
The RL1 Automated Return Loss Meter does not need to be sent back to JGR for annual calibration. There is a built in step by step Self-Calibration feature minimizing production downtime and increasing measurement reliability.

Wireless Remote Head
The RD-S remote head included with the RL1 can be wired directly to the rear panel of the RL1, or can operate wirelessly for endless benchtop setup configurations. The wireless capability maximizes expensive facility desk space.

Duplex Ready
The RL1 is available with dual outputs allowing for duplex assembly testing without the need for an additional switch. The new integrating sphere in the RD-S remote head can measure IL on a duplex LC connector in one connection for simple automated testing. If duplex polarity is a concern, a second remote head can be paired to identify duplex polarity.
**Touchscreen**

The large RL1 touchscreen display allows users to clearly see device under test results through colour coded on screen pass/fail results. With the RL1 touchscreen, operators can load pre-defined custom test plans for automated testing, or they can manually perform specific individual measurements.

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>RL</th>
<th>RL2</th>
<th>RL3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1350</td>
<td>0.13</td>
<td>65.3</td>
<td>65.3</td>
</tr>
<tr>
<td>1490</td>
<td>0.14</td>
<td>65.4</td>
<td>65.4</td>
</tr>
<tr>
<td>1550</td>
<td>0.15</td>
<td>64.7</td>
<td>65.5</td>
</tr>
<tr>
<td>1625</td>
<td>0.2</td>
<td>63.2</td>
<td>62.2</td>
</tr>
</tbody>
</table>

**Automated Measurements Made Easy**

The RL1 Automated Return Loss meter has been designed with the future of automated cable assembly testing in mind. From the new easily interchangeable SD Slide Detector adapters, a wireless remote head, to test plans effortlessly loaded through a scanner. The testing stage can now be automated using ethernet to synchronize automated mechanical movements with remote measurements.

**Chassis Modular**

The RL1 can be connected directly to an additional SX1 switch for multi-fiber testing. The RL1 takes full control of the switch, automating measurements while storing all references and results. If desired, a second SX1 switch can be connected to measure insertion loss, return loss, and verify mapping of multi-fiber connectors or complex assemblies.

**Scan and Test**

Barcode scanners can be connected directly into the RL1 allowing operators to save results to a central database along with any other data contained in the barcode. Barcodes can also be used to quickly load test plans or provide custom field information. Using a barcode scanner will eliminate the need for manual user input resulting in less errors and faster production.

**XN1 Ready**

All RL1’s in a facility can communicate directly to the XN1 server which can be installed on any computer or server connected on the same Network as the RL1. The XN1 server can manage all test equipment, test plans, test results, labels and allow communication from one piece of JGR test equipment to another. This creates an ecosystem of test equipment and information under one centralized location.

**No Computer Required**

The RL1 is self-sufficient and does not require a PC for automated measurements. Manufacturing facilities are often fighting to keep up with the ever changing lifecycles of Windows Operating systems or troubleshooting incompatible Linux systems; this is no longer an issue with the RL1. Multiple units can be connected to a local area network to save results to a local database. One central server can maintain all test plan information as well as test results for multiple production lines. Test plans can be loaded into the unit using the front panel touch screen or a barcode reader.
**Ordering Scheme & Instructions**

1 - Configure RL1 meter

**Single-mode version**

**RL1-**

**Laser 1**
- No Laser
- 633 nm

**Laser 2**
- No Laser
- 450 nm

**Laser 3**
- 633 nm

**Laser 4**
- No Laser
- 660 nm

**Measurement**
- IL & RL - Leave Blank
- IL only

**2 - Configure SX1 Switch** *if no switch needed, skip ahead*

**Switch Chassis**

**SX1-1A -**

**Output Switch**
- 00B

**Connector Type**
- FC/UPC

**Multimode version**

**RL1-**

**Laser 1**
- No Laser
- 850 nm

**Laser 2**
- No Laser
- 1300 nm

**Laser 3**
- 850 nm

**Laser 4**
- No Laser
- 1310 nm

**Measurement**
- IL & RL - Leave Blank

3 - Add accessories

**Additional Remote Head**

**RD-S**

*each RL1 can pair with up to 4 Remote Heads at once*

**Slide Detector adapters**

More detectors available upon request. See more details on pg 90.

**Barcode scanner**

**USB-BARCODE**

**Rackmount kit**

**2U-RACK-KIT**
### Optical/Electrical Specification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Single-mode</th>
<th>Multimode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Type (μm)</td>
<td>9/125</td>
<td>50/125 and/or 62.5/125</td>
</tr>
<tr>
<td>Encircled Flux Standard</td>
<td>N/A</td>
<td>IEC 61280-1-4</td>
</tr>
<tr>
<td>Operating Wavelengths (nm)</td>
<td>1310 / 1490 / 1550 / 1625 / 1650</td>
<td>850 / 1300</td>
</tr>
<tr>
<td>Return Loss Range (db)</td>
<td>±1.0 (30 to 70)</td>
<td>±1.4 (10 to 30)</td>
</tr>
<tr>
<td>Return Loss Accuracy (db)</td>
<td>±1.3 (70 to 75)</td>
<td>±1.9 (30 to 40)</td>
</tr>
<tr>
<td>Detector Type</td>
<td>Wide Area Integrating Sphere Wireless Remote Head</td>
<td></td>
</tr>
<tr>
<td>Insertion Loss Accuracy (db)</td>
<td>±0.05 (&lt;5 dB Loss)</td>
<td>±0.15 (&gt;5 dB Loss)</td>
</tr>
<tr>
<td>Remote Interface</td>
<td>USB / Ethernet</td>
<td></td>
</tr>
<tr>
<td>Cable Assembly Length (m)</td>
<td>0.7 to 3000</td>
<td>N/A</td>
</tr>
<tr>
<td>Connector A &gt; 60dB RL</td>
<td>1.7 to 3000</td>
<td>1.7 to 5000</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>100 - 240 V AC, 50 - 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Power Consumption (VA)</td>
<td>60 maximum</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>5” touch screen</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. only ±0.4 dB in “Fast Mode”.
2. “Standard Mode” only.

### Mechanical/Environmental Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Dimensions W x H x D (cm)</td>
<td>23.5 x 12 x 32.5 (2U half rack)</td>
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<tr>
<td>RL1 Automated Return Loss Meter</td>
<td>N/A</td>
</tr>
<tr>
<td>RD-S Wireless Remote Head</td>
<td>11 x 9.2 x 8.6</td>
</tr>
<tr>
<td>Shipping Box Dimensions W x H x D (cm)</td>
<td>36.5 x 39 x 53</td>
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<tr>
<td>Unit Weight (kg)</td>
<td>8</td>
</tr>
<tr>
<td>Total Shipment Weight (kg)</td>
<td>9</td>
</tr>
<tr>
<td>Operating Temperature (°C)</td>
<td>0 to 55</td>
</tr>
</tbody>
</table>

Notes:
1. excluding Connectors