RL1 Automated Return Loss Meter

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 (850, 1300, 1310, 1490, 1550, 1625, 1650nm) with the option of a dual front panel output.

The RL1 can be paired with up to 16 RD-S Wireless Remote-head Detectors. 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 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
  - USBA-USBB (1.5m)
  - Ethernet cable (1.5m)
  - SD00 detector cap
  - SD01 FC detector adapter
  - FC/APC-FC/APC jumper (3m)
  - FC/APC-FC/UPC jumper (3m)
- RD-S
  - M12 cable (1.5m)
  - SD00 detector cap
- SX1
  - AC power cord
  - Test report

Optimized for Speed and Accuracy

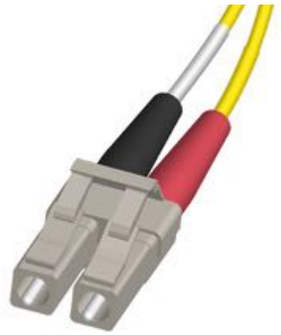
The user can choose between "Fast" and "Standard" modes. Fast mode measures IL/RL in less than 1.5 seconds per wavelength with the same accuracy as other premium test solutions up to 75 dB. Standard mode's accuracy surpasses all other commercially available cable assembly test solutions and can accurately measure RL up to 85 dB.

Self-calibration

The RL1 Automated Return Loss Meter does not need to be sent back to JGR for annual calibration. The self-calibration feature provides step-by-step instructions and generates a calibration report thereby minimizing production down-time and assuring measurement reliability.

Wireless Remote-head Detector

The RD-S Wireless Remote-head Detector is an optional feature of the RL1 which helps optimize expensive facility desk space. It can be wired to the rear panel of the RL1 or operated wirelessly for maximum flexibility.



Duplex Ready

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

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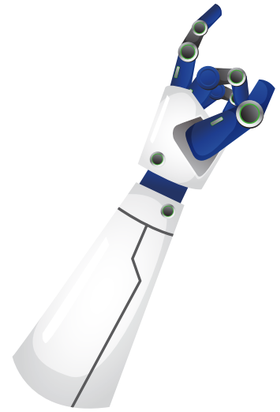
Touchscreen

The large RL1 touchscreen display allows users to clearly see device under test results through colour coded 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.

Automated Measurements Made Easy

The RL1 Automated Return Loss meter has been designed with the future of automated cable assembly testing in mind. Automation is much more obtainable with the new easily interchangeable SD slide detector adapters, RD-S wireless remote-head detectors and the easy to program test plans. 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.

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 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 touchscreen or a barcode reader.

Scan and Test

Barcode scanners can be connected directly to 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 fewer 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 in one centralized location.

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Ordering Scheme & Instructions

1 - Configure RL1 meter

Single-mode version

RL1- □□ - □□□□ -S-09FA □□

LASER 1	
0	No Laser
3	1310 nm

LASER 3	
0	No Laser
5	1550 nm

DETECTOR	
	Front Panel Leave Blank
R	Remote Head

OUTPUT	
01	Unidirectional
2X	Bidirectional

LASER 2	
0	No Laser
4	1490 nm

LASER 4	
0	No Laser
6	1625 nm
7	1650 nm

MOUNT	
	Rubber Leave Blank
F	Folding Feet
E	Rack Ears

Multimode version

RL1- □□ - □□ 00-S- □□ FP □□

OUTPUT	
01	1
02	2

LASER 2	
0	No Laser
3	1300 nm

LASER 1	
0	No Laser
8	850 nm

FIBER TYPE	
50	50/125 µm
62	62.5/125 µm

DETECTOR	
	Front Panel Leave Blank
R	Remote Head

MOUNT	
	Rubber Leave Blank
F	Folding Feet
E	Rack Ears

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

Switch chassis

SX1-1A - □□□ - □□□□ 00B □□

OUTPUT SWITCH	
002	1x2
004	1x4
012	1x12
024	1x24
032	1x32
048	1x48
072	1X72
096	1X96

FIBER TYPE	
09	9/125 µm
50	50/125 µm
62	62.5/125 µm

CONNECTOR TYPE	
FP	FC/UPC
FA	FC/APC

DISPLAY	
	None - Leave Blank
D	5" Touchscreen

MOUNT	
	Rubber Leave Blank*
F	Folding Feet
E	Rack Ears

*Rubber bezel only available in 2U half rack

3 - Add accessories

Additional remote-head detector

RD-S

*each RL1 can pair with up to 16 remote-head detectors at once

Barcode Scanner

USB-BARCODE

Slide detector adapters

More detector adapters available upon request.
See more details on pg 110.

SD □□

TYPE							
00	Cap	14	MU	20	DA113 Barrel	38	MTPO/MPO-16
01	FC	15	E2000	21	BFA3000 Barrel	64	CS
02	ST	16	Universal 2.5.	26	Universal 1.6	67	SN
03	SC	17	MTP/MPO	34	LC Duplex	68	MDC
04	Universal 1.25.	18	LC	35	Optitap		
12	MT	19	MT-RJ	37	MXC		

2U Rack Short ear

2U-RACK-SHORT-EAR

2U Rack Long ear filler plate

2U-RACK-LONG-EAR

2U chassis connector plate

2U-CONNECTOR-PLATE

2U rubber bezels

2U-BEZEL

Flip-out Feet

CHASSIS-FEET

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Optical/Electrical Specifications

Parameter	Specification	
	Single-mode	Multimode
Fiber Type (µm)	9/125	50/125 and/or 62.5/125
Encircled Flux Standard	N/A	IEC 61280-4-1
Operating Wavelengths (nm)	1310 / 1490 / 1550 / 1625 / 1650	850 / 1300
Return Loss Range (dB)	30 to 85	10 to 60
Return Loss Accuracy (dB)	± 1.0 (30 to 70)	± 1.4 (10 to 30)
	± 1.3 (70 to 75)[1]	± 1.9 (30 to 40)
	± 2.9 (75 to 80)[2]	± 2.2 (40 to 43)
	± 3.9 (80 to 85)[2]	± 4.7 (43 to 60)
Detector Type	Wide Area Integrating Sphere	
Insertion Loss Accuracy (dB)	± 0.03 (<5 dB loss)	
	± 0.15 (≥5 dB loss)	
Testing Time (s)		
Standard Mode	<5 per wavelength	
Fast Mode	<1.5 per wavelength	
Cable Assembly Length (m)		
RL mode	<4000[3]	
RL_{total} mode	<4000[4]	N/A
Remote Interface	Ethernet / USB	
Display	5" touch screen	
Input Voltage	100 - 240 V AC, 50 - 60 Hz	
Power Consumption (VA)	60 maximum	

Notes:
[1] *add ±0.4 dB in "Fast Mode".*
[2] *"Standard Mode" only.*
[3] *mandrel free length > 1.7m*
[4] *receive test jumper required for <1.7m cable assemblies*

Mechanical/Environmental Specifications

Parameter	Specification
Unit Dimensions W x H x D (cm)	
RL1 Automated Return Loss Meter	23.5 x 12 x 32.5 (2U half rack)
RD-S Wireless Remote Head	11 x 8 x 8.5
Shipping Box Dimensions W x H x D (cm)	36.5 x 39 x 53
Unit Weight (kg)	8
Total Shipment Weight (kg)	9
Operating Temperature (°C)	0 to 55
Storage Temperature (°C)	-40 to 70
Humidity (Non-condensing)	Maximum 95% RH from 0 to 40 °C

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Optical/Electrical Specifications

Parameter	Specification	
	Single-mode	Multimode
Wavelength Range (nm)	1250 - 1670	840 - 1350
Insertion Loss (dB)[1]	<0.7	
Backreflection (dB)[1]	≤-60	≤-40
PDL (dB)	0.05	N/A
Repeatability (dB)[2]	±0.005	
Crosstalk (maximum) (dB)	< -80	
Maximum Input Power (dBm)	23	
Switch Life	10^8 cycles	
Switching Time (ms)	300	
Remote Interface	Ethernet / USB	
Input Voltage	100 - 240 V AC, 50 - 60 Hz	
Power Consumption (VA)	60 maximum	
Display	Optional 5" touch screen	

Notes:
[1] *Excluding connectors*
[2] *Sequential switching. Add ±0.02 for random*

Mechanical/Environmental Specifications

Parameter	Specification	
	2U half rack	3U full rack
Max Output Channels		
Without Touchscreen	up to 1x36	up to 1x96
With 5" Touchscreen	up to 1x12	up to 1x48
Unit Dimensions W x H x D (cm)	23.5 x 12 x 32.5	44.5 x 13.5 x 45
Shipping Box Dimensions W x H x D (cm)	36.5 x 39 x 53	53 x 32 x 57
Unit Weight (kg)	8	14
Total Shipment Weight (kg)	9	15
Operating Temperature (°C)	0 to 55	
Storage Temperature (°C)	-40 to 70	
Humidity (Non-condensing)	Maximum 95% RH from 0 to 40°C	