



Return Loss Meter

RLM-100



Product Overview

Santec's RLM Return Loss Meter incorporates 20 years of customer feedback from being industry leaders in the cable assembly testing market. It is the next generation of IL/RL meters. Improvements on key hardware components make it twice as fast as other premium testing solutions with the same accuracy. A new patented calibration method allows you to perform a user self-calibration and measure single-mode RL up to 85 dB with increased accuracy. Additional improvements such as the front panel touchscreen and easy to use software are ideal for production environments and labs.

The redesigned integrating sphere detector can measure loss on dense 72-channel MTP/MPO and duplex LC connectors with a single connection. The patented SD Slide Detector Adapters allow for the ultimate in ease-of-use.

Features

- Most accurate in its class
- Self-calibration
- Chassis modular
- Wireless integrating sphere detector
- No computer required
- Ready for production automation
- Bar code control available
- XNS ready



Applications

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



Compliance

- IEC 61300-3-4
- Multimode meets IEC 61280-4-1 Encircled Flux standard
- IEC 61300-3-6

Optimized for Speed and Accuracy



You can now 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. Pair with the OSX Optical Switch to test multifiber assemblies. IL/RL of a 12 fiber devices at 2 wavelengths takes only 30 seconds. Standard mode’s accuracy surpasses all other commercially available test solutions and can accurately measure RL up to 85 dB.

Self-calibration

The RLM does not need to be sent back to Santec for annual calibration. The self-calibration feature provides you with step-by-step instructions and generates a calibration report thereby minimizing production down-time and assuring measurement reliability.



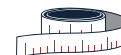
Polarity Testing



The new RD-P Remote-head Polarity Detector integrates with the RLM and OSX Optical Switch to measure polarity of multifiber assemblies such as MPO, duplex LC, CS, SN, etc. Go straight from polarity to IL/RL without disconnecting your device. Compared to the old method of using two switches, the RD-P saves on time, cost and improves IL/RL accuracy.

No Minimum Length

In a single SM acquisition, you can measure RLTotal which is the sum of reflections from the connectors and the fiber. RLTotal has no minimum length and is ideal for “mandrel-free” testing of short assemblies.



Multimode



The MM RLM is conditioned to meet the IEC 61280-4-1 Encircled Flux standard while other launch conditions are available upon request. Although the telecom industry has mostly moved over to 50 um, there are still some 62.5 um applications. The dual core option lets you keep the ability to test both core sizes without purchasing an additional meter.

Measurements Made Easy

For quick benchtop testing, the RLM's large front panel touch screen is convenient and easy to use. The free Cable Assembly Software has been specifically designed for production environments with a simple UI and streamlined test flow. Results get automatically sent to a centralized database. A barcode scanner can be directly connected to the RLM to run test plans without a PC at the station. If you want to write your own software, the RLM is programmable via USB and Ethernet with SCPI commands.



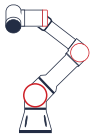
ERP or MES Integration



The Expandable Network Server (XNS) is a database which stores test plans, results etc. and is the backbone behind Santec's easy-to-use Cable Assembly software. Our API makes ERP or MES integration simple where results can be retrieved with a single API call. You can also set up push notifications so that test results are instantly synchronized as they are completed.

Integrating Sphere Detector

The RLM comes standard with an integrating sphere detector. It is manufactured as a single piece which gives it the best performance for testing multifiber cables such as MTP/MPO and duplex LC. The patented SD Slide Detector Adapters are another innovation designed to facilitate high throughput testing. The optional RD-S Wireless Remote-head Integrating Sphere Detector adds extra flexibility.



Built for Automation

The RLM has been designed with the future of automated cable assembly testing in mind. Automation is much more obtainable with the easily interchangeable SD Slide Detector Adapters, RD-S and RD-P remote-head detectors as well as easy to program test plans. Synchronize automated mechanical movements with remote measurements through Ethernet control.

Duplex Ready

The RLM is available with dual outputs allowing for faster duplex assembly testing without the need of an additional switch. The new integrating sphere detector can measure IL on a duplex LC connector in a single connection for simple automated testing.



Chassis Modular



An OSX Optical Switch can be directly connected to the RLM for multifiber testing. The RLM takes full control of the switch, automating measurements while storing all references and results. If desired, a second OSX switch can be connected for more advanced configurations. The RLM and OSX bezels are designed so the units can safely stack on top of each other and minimizes system footprint.

RLM 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	850 / 1300
Source Type	FP Laser	LEDs/FP Laser ¹
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) ²	± 1.9 (30 to 40)
	± 2.9 (75 to 80) ³	± 2.2 (40 to 43)
	± 3.9 (80 to 85) ³	± 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 (sec)		
Standard Mode	<5 per wavelength	
Fast Mode	<1.5 per wavelength	
Cable Assembly Length (m)		
RL mode	<4000 ⁴	<500 ⁴
RL _{total} mode	<4000 ⁵	N/A
Remote Interface	Ethernet / USB	
Display	5" touch screen	
Input Voltage	100 - 240 V AC, 50 - 60 Hz	
Power Consumption (VA)	80 maximum	

Notes:

¹ LED for IL measurement, Fabry-Perot (FP) Laser for RL measurement.

² add ±0.4 dB in "Fast Mode".

³ "Standard Mode" only.

⁴ mandrel free length > 1.7 m

⁵ receive test jumper required for <1.7 m cable assemblies

Mechanical / Environmental Specifications

Parameter	Specification
Unit Dimensions W x H x D (cm)	
RLM Return Loss Meter	23.5 x 12 x 32.5 (2U half rack)
RD-S Wireless Remote-head Integrating Sphere Detector	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

Ordering Scheme & Instructions

1. Configure Return Loss Meter

Single-mode Version

RLM-100- - -S-09- -



OUTPUT	
01	1
02	2

SOURCES	
3500	1310/1550 nm
3560	1310/1550/1625 nm
3456	1310/1490/1550/1625 nm

CONNECTORS	
FA	FC/APC
SA	SC/APC
EA	E2000/APC

DETECTOR	
	Front Panel Leave Blank
R	Remote Head

Multimode Version

RLM-100- - -S-50- -



OUTPUT	
01	Single
02	Dual
2D	Dual Core (50 & 62.5 μm)

SOURCES	
8300	850/1300 nm
8000	850 nm
3000	1300 nm

CONNECTORS	
FP	FC/UPC
SP	SC/UPC

DETECTOR	
	Front Panel Leave Blank
R	Remote Head

2. Configure Switch (if no switch needed, skip ahead)

Switch Chassis

OSX-100-1A- - - -00B-



OUTPUTS	
002	1x2
004	1x4
012	1x12
024	1x24
032	1x32
048	1x48
072	1x72
144	1x144
288	1x288

CONNECTORS	
FA	FC/APC
FP	FC/UPC
SA	SC/APC
SP	SC/UPC

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

DISPLAY	
	None (leave blank)
D	5" touchscreen

3. Add Polarity Testing *(if polarity is not needed, skip ahead)*

Remote-head Polarity Detector

RD-P-100

Or

Polarity Tester

PTM-100--MA

CHANNELS	
012	12 Channels
024	24 Channels
036	32 Channels
048	48 Channels
072	72 Channels
144	144 Channels
288	288 Channels

4. Add Accessories

Slide Detector Adapters

SD -



TYPE							
CAP	Cap	DSN	Duplex SN	BRF-BARREL	Barrel for SD-BRF	MT	MT
FC	FC	MPO	Universal MPO	FH-60	Fujikura FJ-60	MDC	MDC
SC	SC	U12	Universal 1.25 mm	FHM-12	Sumitomo FHM-12	MDCMT	MDC MT
LC	LC	U25	Universal 2.5 mm	SLED-BARREL	Barrel for SD-SLED-x	MPO-MICRO	Microlatch MPO
DLC	Duplex LC	BSF	Bare single fiber	ST	ST		
TLC	Tri-LC	BFA-BARREL	Barrel for SD-BRF	E2000	E2000		
DCS	Duplex CS	BRF	Bare ribbon fiber	MTRJ	MT-RJ		

**many more detector adapters available upon request.*

RD-S-RLM-100

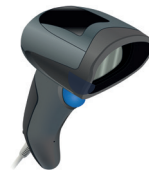
Additional Wireless Remote-head
Integrating Sphere Detector



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

USB-Barcode

Barcode Scanner



Additional Mounts

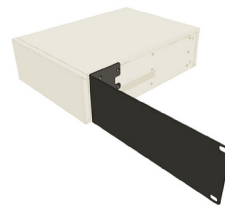
2U-Rack-Short-Ear

2U Rack Short Ear



2U-Rack-Long-Ear

2U Rack Long Ear Filler Plate



2U-Connector-Plate

2U Chassis Connector Plate



2U-Bezel

2U Rubber Bezels





In the Box

RLM-100 - Return Loss Meter (single-mode version)

- Detector cap (SD-CAP)
- FC detector adapter (SD-FC) **front panel detector configuration only*
- FC/APC to FC/APC 3 m test jumper
- FC/APC to FC/UPC 3 m test jumper
- USB A to USB B cable (1.5 m)
- Ethernet cable (1.5 m)

RLM-100 - Return Loss Meter (multimode version)

- Detector cap (SD-CAP)
- FC detector adapter (SD-FC) **front panel detector configuration only*
- FC/UPC to FC/UPC 3 m test jumper
- FC/UPC to FC/APC 3 m test jumper
- USB A to USB B cable (1.5 m)
- Ethernet cable (1.5 m)

RD-S-RLM-100 - Wireless Remote-head Integrating Sphere Detector (optional)

- Detector cap (SD-CAP)
- FC detector adapter (SD-FC)
- M12 cable (1.5 m)



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