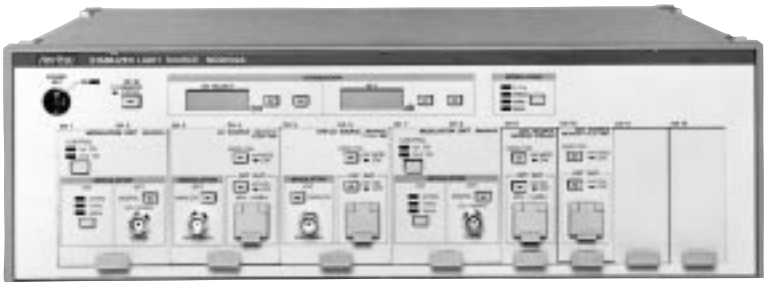
STABILIZED LIGHT SOURCE

MG9001A/9002A

0.85/1.3/1.55 µm

MG9001A



MG9002A

CE GPIB

The MG9001A/9002A can be used as stabilized light sources for different applications by changing the light source units. In particular, they have been designed for a high output stability of 0.02 dB. The MG9001A can hold two LED light source units or one LD light source unit. The MG9002A can hold twelve LED light source units or six LD light source units making it ideal for measurement of loss in multi-core fiber cables. Analog and digital modulation functions are also provided in both models which means that they can be used as E/O converters.

Features

- **Plug-in unit light sources**

Units can be changed according to the application to configure very economical measurement arrangements.

- **Integrated optical power meter**

The MG9001A can be connected to the ML9001A Optical Power Meter to configure a high-performance optical loss test set.

- **Integrated loss measurement in multi-core fiber cables**

Connecting the MG9002A and the ML9001A permits simultaneous loss measurement of twelve cores in multi-core fiber cables.

- **Various modulation functions**

Analog and digital modulation functions enable use of these models as LAN-system measuring instruments and as E/O converters for measuring baseband characteristics. Note that to apply external digital modulation and internal modulation separately to the MG9002A, the MG0902A Modulation Unit must be used.

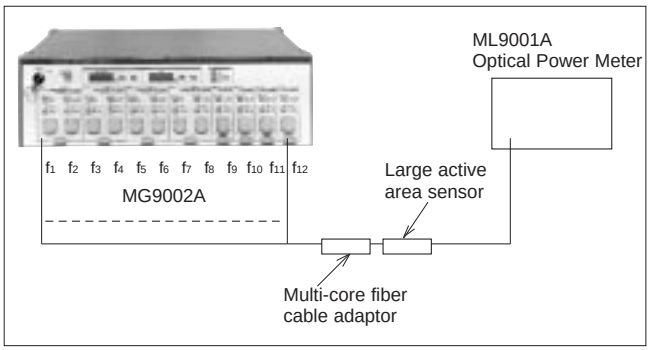
- **Variable optical output level**

The optical output level can be varied in 0.01 dB steps up to 6 dB.

- **Wide operating temperature range** (–10° to 50°C)

Application

Easy combined multi-core fiber cable loss measurement



Note: f_1 to f_{12}: Individual modulation frequency
Connecting the MG9002A to the ML9001A makes loss measurement in multi-core fiber cable easy with a single connection.

Specifications

• Main frames

Model	MG9001A	MG9002A
Number of units that can be installed	LD light source: 1 pc LED light source: 1 to 2 pcs	LD light source: 1 to 6 pcs LED light source: 1 to 12 pcs
Attenuation display	0 to 6 dB, 0.01 dB steps	
Internal modulation	Frequencies: (270 kHz, 1 kHz, 2 kHz) ±0.1%	Simultaneous modulation frequencies: (270 Hz, 1 kHz, 2 kHz) ±0.1% Individual modulation frequencies for each channel: Twelve range 170 to 1000 Hz
	Duty factor: 50 ±10% Output synchronized with modulation signal: TTL level (terminated at 10 kΩ), BNC	
External modulation	Frequency: DC to 30 MHz Input level: 0 to +0.8/+2 to +5 V Impedance: 75 Ω, BNC connector	See MG0902A Modulation Unit specification
GPIB	SH1, AH1, T8, L4, SR0, RL1, PP0, DC1, DT0, C0	
Temperature range	–10° to +50°C (spec. meet), –40° to +70°C (storage)	
Power	AC 100 V $^{+10}_{-15}$%, 50/60/400 Hz, ≤49 VA (full units)	AC 100 V $^{+10}_{-15}$%, 50/60 Hz, ≤200 VA (full units)
Dimensions and mass	213 (W) x 88 (H) x 251 (D) mm, ≤4 kg (without unit)	426 (W) x 133 (H) x 351 (D) mm, ≤12 kg (without unit)
EMC	EN55011: 1991, Group 1, Class A EN50082-1: 1992	
Safety	EN61010-1: 1993 (Installation Category II, Pollution Degree II)	

• LD Light Source Units

Model		MG0934E	MG0937E	MG0937C	MG0938C	MG0930C	MG0947C	MG0948C
Compatible fiber		GI		SM				
Wavelength (μm)		0.85±0.01*1	1.3±0.02*1	1.31±0.02*2	1.55±0.02*2	1.31/1.55 ±0.02*2	1.31±0.01	1.55±0.02
Spectral bandwidth		≤3 nm*2	≤5 nm*2		≤10 nm*2	≤5 nm*2 (at 1.31 μm) ≤10 nm*2 (at 1.55 μm)	≤0.1 nm	
Output	GI fiber	–3 ±1 dBm*2		–				
	SM fiber	–		–3 ± $^{+0.5}_{-1}$ dBm	–3 ±1 dBm	–4 ±1 dBm	–3 ± $^{+0.5}_{-1}$ dBm	–3±1 dBm
Output level stability	Temperature characteristics	≤0.2 dB*3		≤0.3 dB*4, ≤0.7 dB*5			≤0.3 dB*6, ≤0.7 dB*7	
	Short term stability*8	≤0.02 dB*9		≤0.05 dB*10			≤0.05 dB*11	
Modulation	Internal digital modulation	Frequencies: (270 Hz, 1kHz, 2kHz) ±0.1%, individual modulation frequencies for each channel Duty factor: 50±10%						
	External digital modulation	Input Rise/fall time: ≤3 ns (10 to 90%), Level: 0 to +0.8/+2 to +5 V, Connector: BNC, Impedance: 75 Ω, Frequency:100 Hz to 30 MHz Output Rise/fall time: ≤5 ns, Extinction ratio: ≥10 dB (attenuator: 0 dB)						
	External analog modulation*12	Input Level: ≤0 dB, Connector: BNC, Impedance: 50 Ω Frequency: 0.1 to 500 MHz Modulation factor: 50 to 100% (input level: 0 dBm)		Input Level ≤0 dBm, Connector: BNC, Impedance: 50 Ω Frequency: 0.1 to 1000 MHz Modulation factor: 50 to 100% (input level: 0 dBm)				
Attenuation setting range		0 to 6 dB, 0.01 dB steps						
Optical connector*13		FC-type (standard model)		FC-PC-type (standard model)				
Temperature range		–10° to +50°C (spec. meet), –40° to +70°C (storage)					–10° to +40°C (spec. meet) –10° to +70°C (storage)	
Dimensions and mass		62 (W) x 74 (H) x 178 (D) mm, ≤500 g		62 (W) x 74 (H) x 178 (D) mm, ≤600 g		62 (W) x 74 (H) x 178 (D) mm, ≤700 g	62 (W) x 74 (H) x 178 (D) mm, ≤600 g	

*1: CW, 25°C, attenuator 0 dB
*2: CW, attenuator 0 dB
*3: CW, –10° to +50°C, 8 hours
*4: CW, –10° to +50°C, 8 hours, with FC-PC connector
*5: CW, –10° to +50°C, 8 hours, with FC connector
*6: CW, 0° to +40°C, 8 hours, with FC-PC connector
*7: CW, 0° to +40°C, 8 hours, with FC connector
*8: 15 minutes after optical output ON
*9: CW, ±1°C change at a temperature between –10° to +50°C, for one minute
*10: CW, ±1°C change at a temperature between –10° to +50°C, for one hour
*11: CW, ±1°C change at a temperature between 0° and +40°C, for one hour
*12: MG0902A requires MG9002A to use external analog modulation.
*13: D4, DIN, DIAMOND and ST connectors are available as options.
For other connectors, please consult your nearest Anritsu representative.

Note: Above specifications are expressed for the case when 2 m of GI fiber (50/125 μm, NA 0.2) or SM fiber (10/125 μm, NA 0.1) is connected.

• Laser product safety protection

The MG9001A/9002A's LD light source units are laser products and safety protection conforming to optical safety standards IEC Pub. 825 and 21CFR 1040.10 (USA) are incorporated.

• Class-2A or greater power laser products

LD light source units which are not given here are Class-1 equipment.

Model number	Wavelength	IEC Pab. 825		21CFR 1040.10	
		Max. output	Class	Max. output	Class
MG0934E	0.85 μm	2 mW	3A	2 mW	3B
MG0937E	1.3 μm	2 mW	3A	0.1 mW	1

Explanation and warning label example

Maximum power output and wavelength are given for ⁎1 and ⁎2 respectively.

Explanation label (IEC)

Warning label (CFR)

• LED Light Source Units

Model		MG0914E	MG0917A	MG0917B	MG0918B	MG0917D	MG0918D	MG0927D/J⁎1	MG0928D/J⁎1
Compatible fiber		GI	GI/SM					SM	
Wavelength (μm)		0.85±0.015⁎2	1.3±0.03⁎2	1.31±0.01	1.55±0.01	1.31±0.01	1.55±0.01	1.31±0.01	1.55±0.01
Spectral bandwidth		≤50 nm⁎2	≤130 nm⁎2	≤20 nm	≤25 nm	≤20 nm	≤25 nm	≤20 nm	≤25 nm
Output⁎3	GI fiber	–13±1 dBm	–20±1 dBm	≥–35 dBm				–	
	SM fiber	–	≥–40 dBm	≥–50 dBm				≥–28 dBm	≥–32 dBm
Output level	Temperature characteristics	≤0.2 dB⁎4				≤0.1 dB⁎5 ≤0.2 dB⁎6		≤0.2 dB⁎6(FC-PC) ≤0.5 dB⁎6(FC)	
	Short term stability	≤0.02 dB⁎7						≤0.02 dB⁎7(FC-PC) ≤0.05 dB⁎7(FC)	
Modulation	Internal digital modulation	Frequencies: (270 Hz, 1kHz, 2 kHz) ±0.1%, individual modulation frequencies for each channel Duty factor: 50±10%							
	External digital modulation	Input Rise/fall time: ≤3 ns (10 to 90%), Level: 0 to +0.8/+2 to +5 V, Connector: BNC, Impedance: 75 Ω, Frequency: DC to 10 MHz Output Rise/fall time: ≤30 ns						Input Rise/fall time: ≤3 ns (10 to 90%), Level: 0 to +0.8/+2 to +5 V, Connector: BNC, Impedance: 75 Ω, Frequency: DC to 30 MHz Output Rise/fall time: ≤10 ns	
Attenuation setting range		0 to 6 dB, 0.01 dB steps							
Connector⁎8		FC-type (standard model)						FC-PC type (standard model)	
Temperature range		–10° to +50°C (spec.meet), –40° to +70°C (storage)							
Dimensions and mass		31 (W) x 74 (H) x 178 (D) mm, ≤400 g				62 (W) x 74 (H) x 178 (D) mm, ≤500 g		62 (W) x 74 (H) x 178 (D) mm, ≤500 g(MG0927D/0928D) ≤600 g(MG0927J/0928J)	

⁎1: MG0927J and MG0928J are single units with two optical outputs
⁎2: 25°C, attenuator 0 dB
⁎3: CW, attenuator 0 dB
⁎4: CW, attenuator 0 dB, –10° to +50°C, 8 hours
⁎5: CW, 10° to 40°C, 8 hours
⁎6: CW, –10° to +50°C, 8 hours
⁎7: CW, ±1°C change at a temperature between –10° to +50°C, for one hour
⁎8: D4, DIN, DIAMOND and ST connectors are available as options.
For other connectors, please consult your nearest Anritsu representative.

Note: Above specifications are expressed for the case when 2 m of GI fiber (50/125 μm, NA 0.1) is connected.

• Modulation Unit

Model	MG0902A
Modulation	Frequency: DC to 30 MHz Input: 0 to +0.8/+2 to +5 V, 75 Ω, BNC
Temperature range	–10° to +50°C (spec.meet), –40° to +70°C (storage)
Dimensions and mass	62 (W) x 74 (H) x 178 (D) mm, ≤400 g

Light source units selection guide

• LED Light Source Units

Fiber	Model	Wavelength	Output power	Number of channel	Features/Applications	
GI	MG0914E	0.85 μm	–13±1 dBm	1	GI fiber loss measurement	
GI/SM	MG0917A	1.3 μm	–20±1 dBm (GI) ≥–40 dBm (SM)	1	GI/SM fiber loss measurement	
	MG0918B	1.55 μm	≥–35 dBm (GI) ≥–50 dBm (SM)	1		
	MG0917B	1.31 μm	≥–35 dBm (GI) ≥–50 dBm (SM)	1	Narrow spectrum	GI/SM fiber high-precision loss measurement
	MG0917D	1.31 μm	≥–35 dBm (GI) ≥–50 dBm (SM)	2	Narrow spectrum Excellent temperature stability	Low-loss measurement of optical fibers, optical devices, optical connectors, etc.
	MG0918D	1.55 μm	≥–35 dBm (GI) ≥–50 dBm (SM)	2		
SM	MG0927J	1.31 μm	≥–28 dBm	2	Two optical output in one unit	Edge-emitting LED use SM fiber high-precision loss measurement
	MG0928J	1.55 μm	≥–32 dBm	2		
	MG0927D	1.31 μm	≥–28 dBm	2	One optical output in one unit	High-loss measurement of optical fibers, optical devices
	MG0928D	1.55 μm	≥–32 dBm	2		

• LD Light Source Units

Fiber	Model	Wavelength	Output power	Number of channels	Features/Applications
GI	MG0934E	0.85 µm	–3±1 dBm	2	High-loss measurement of optical fibers, optical devices, etc., after installation
	MG0937E	1.3 µm	–3±1 dBm	2	LAN E/O converter
SM	MG0937C	1.31 µm	$-3^{+0.5}_{-1}$ dBm	2	High-loss measurement of optical devices, etc., Transfer characteristics measurement E/O converter
	MG0938C	1.55 µm	–3±1 dBm	2	
	MG0930C*	1.31/1.55 µm	–4±1 dBm	2	
	MG0947C	1.31 µm	$-3^{+0.5}_{-1}$ dBm	2	DFB-LD use Optical spectrum analyzer calibration Loss measurement unaffected by spectral width
	MG0948C	1.55 µm	–3±1 dBm	2	

*: Switchable light source

Ordering information

Please specify model/order number, name and quantity when ordering.

Model/Order No.	Name	
	Main frame	
MG9001A	Stabilized Light Source	
MG9002A	Stabilized Light Source	
	Standard accessories (MG9001A)	
J0017	Power cord, 2.5 m:	1 pc
F0009	Fuse, 1.25 A (T1.25A250V):	2 pcs
F0039	Fuse, 0.2 A (MF51NN250V0.2ADC01):	1 pc
F0040	Fuse, 0.315 A (MF51NN250V0.315ADC01):	3 pcs
F0043	Fuse, 1 A (MF51NN250V1ADC01):	1 pc
F0044	Fuse, 1.6 A (MF51NN250V1.6ADC01):	2 pcs
E0007	Optical output control key:	2 pcs
W0487AE	MG9001A/MG9002A operation manual:	1 copy
W0487BE	MG9001A/MG9002A service manual:	1 copy
	Standard accessories (MG9002A)	
J0017	Power cord, 2.5 m:	1 pc
F0013	Fuse, 5 A (T5A250V):	2 pcs
F0040	Fuse, 0.315 A (MF51NN250V0.315ADC01):	2 pcs
F0043	Fuse, 1 A (MF51NN250V1ADC01):	2 pcs
F0045	Fuse, 2 A (MF51NN250V2ADC01):	1 pc
F0046	Fuse, 3.15 A (MF51NN250V3.15ADC01):	6 pcs
E0007	Optical output control key:	2 pcs
W0487AE	MG9001A/MG9002A operation manual:	1 copy
W0487BE	MG9001A/MG9002A service manual:	1 copy
	Option	
MG900[ ]A-02	Top cover for stacking	
	Plug-in units	
MG0914E	LED Source (0.85 µm, GI)	
MG0917A	LED Source (1.3 µm, GI)	
MG0917B	LED Source (1.31 µm, GI/SM)	
MG0917D	LED Source (1.31 µm, GI/SM)	
MG0918B	LED Source (1.55 µm, GI/SM)	
MG0918D	LED Source (1.55 µm, GI/SM)	
MG0927D	Edge Emitting LED Source (1.3 µm, SM)	
MG0927J	Edge Emitting LED Source (1.31 µm, SM)	
MG0928D	Edge Emitting LED Source (1.55 µm, SM)	
MG0928J	Edge Emitting LED Source (1.55 µm, SM)	
MG0930C	LD Source (1.31/1.55 µm, SM)	
MG0934E	LD Source (0.85 µm, GI)	
MG0937E	LD Source (1.3 µm, GI)	
MG0937C	LD Source (1.31 µm, SM)	
MG0938C	LD Source (1.55 µm, SM)	
MG0947C	DFB-LD Source (1.31 µm, SM)	
MG0948C	DFB-LD Source (1.55 µm, SM)	
MG0902A	Modulation Unit	
	Application accessories	
B0283	Blank panel	
J0200B	FC-FC-2M-GI (FC optical fiber cord, 2 m, GI)	
J0439B	FC·PC-FC·PC-2M-GI (FC·PC optical fiber cord, 2 m, GI)	
J0056B	FC-FC-2M-SM (FC optical fiber cord, 2 m, SM)	
J0635B	FC·PC-FC·PC-2M-SM (FC·PC optical fiber cord, 2 m, SM)	
J0282	Optical fiber cord SGS driver	
MZ8012A	Connector Cleaning Set	
Z0173	MG9001A/MG9002A service kit	
B0340	MG9001A hard carrying case (without casters)	
B0341	MG9002A hard carrying case (with casters)	