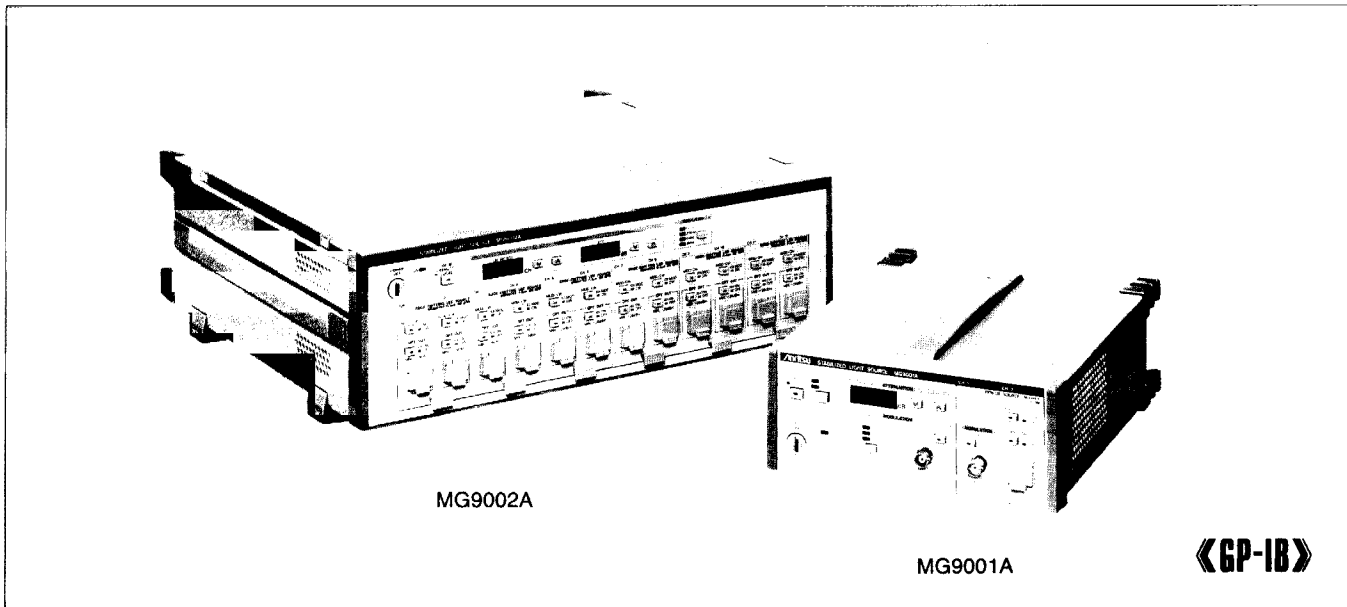


STABILIZED LIGHT SOURCE MG9001A/9002A

0.85/1.3/1.55 μm

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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.

Applications

● Easy combined multi-core fiber cable loss measurement

● 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 cable.

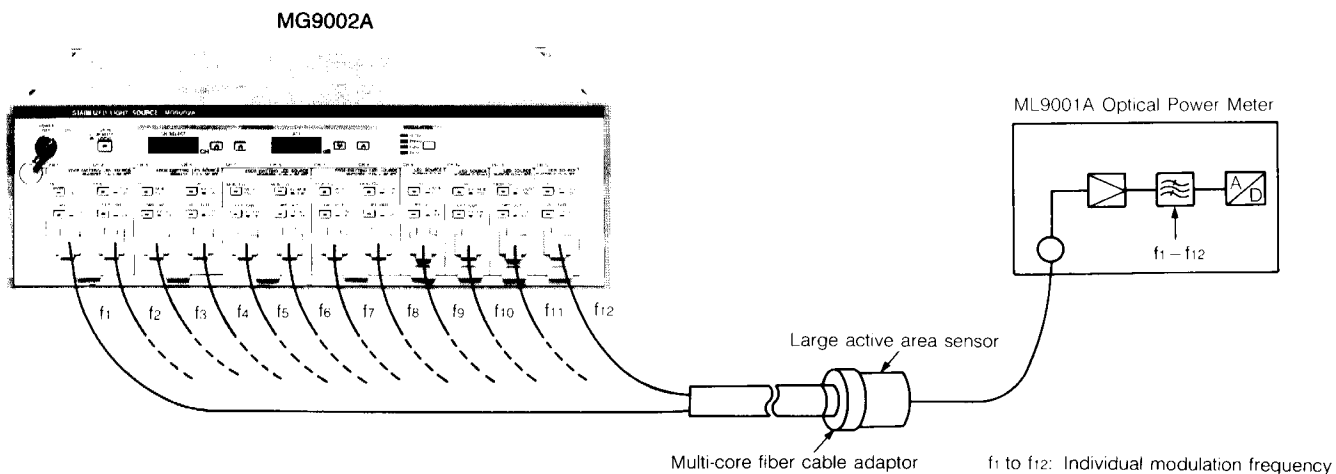
● Various modulation functions

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 MG9002A 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)



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 Hz, 1 kHz, 2 kHz) $\pm 0.1\%$	Simultaneous modulation frequencies: (270 Hz, 1 kHz, 2 kHz) $\pm 0.1\%$ Individual modulation frequencies for each channel: twelve range 170 to 1000 Hz
	Duty factor: 50 $\pm 10\%$ Output synchronized with modulation signal: TTL level (terminated at 10 k Ω), 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
GP-IB	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 $\pm 10\%$, 50/60/400 Hz, ≤ 49 VA (full units)	AC 100 V $\pm 10\%$, 50/60 Hz, ≤ 200 VA (full units)
Dimensions and mass	88H x 213W x 251D mm, <4 kg (without unit)	133H x 426W x 351D mm, <12 kg (without unit)

• 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 dBm	-3 ± 1 dBm	-4 ± 1 dBm	-3 ± 0.5 dBm
Output level stability	Temperature characteristics	≤ 0.2 dB ^{*3}		≤ 0.3 dB ^{*4} ≤ 0.7 dB ^{*5}		≤ 0.3 dB ^{*9} ≤ 0.7 dB ^{*10}	
	Short term stability ^{*12}	≤ 0.02 dB ^{*7}		≤ 0.05 dB ^{*6}		≤ 0.05 dB ^{*11}	
Modulation	Internal digital modulation	Frequencies: (270 Hz, 1 kHz, 2 kHz) $\pm 0.1\%$, individual modulation frequencies for each channel Duty factor: 50 $\pm 10\%$					
	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 ^{*13}	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 ^{*8}	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	74H x 62W x 178D mm, <500 g		74H x 62W x 178D mm, <600 g		74H x 62W x 178D mm, <700 g	74H x 62W x 178D 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, $\pm 1^\circ\text{C}$ change at a temperature between -10° and +50°C, for one hour

*7 CW, $\pm 1^\circ\text{C}$ change at a temperature between -10° and +50°C, for one minute

*8 D4, DIN, DIAMOND and ST connectors are available as options.

For other connectors, please consult your nearest Anritsu representative.

*9 CW, 0° to +40°C, 8 hours, with FC-PC connector

*10 CW, 0° to +40°C, 8 hours, with FC connector

*11 CW, $\pm 1^\circ\text{C}$ change at a temperature between 0° and +40°C, for one hour

*12 15 minutes after optical output ON

*13 MG9002A requires MG0902A to use external analog modulation.

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

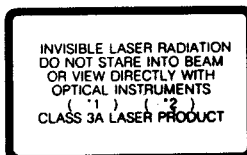
LD light source units which are not given here are Class-1 equipment.

Model number	Wavelength	IEC Pub. 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 ^{*8}	MG0928D/J ^{*8}	
Compatible fiber	GI		GI/SM				SM		
Wavelength (μm)	0.85 ± 0.015 ^{*1}	1.3 ± 0.03 ^{*1}	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 ^{*1}	≤ 130 nm ^{*1}	≤ 20 nm	≤ 25 nm	≤ 20 nm	≤ 25 nm	≤ 20 nm	≤ 25 nm	
Output ^{*2}	GI fiber	-13 ± 1 dBm	-20 ± 1 dBm	≥ -35 dBm			-		
	SM fiber	-	≥ -40 dBm	≥ -50 dBm			≥ -28 dBm	≥ -32 dBm	
Output level stability	Temperature characteristics	≤ 0.2 dB ^{*4}			≤ 0.1 dB ^{*3} ≤ 0.2 dB ^{*7}		≤ 0.2 dB ^{*7} (FC-PC) ≤ 0.5 dB ^{*7} (FC)		
	Short-term stability	≤ 0.02 dB ^{*5}					≤ 0.02 dB ^{*5} (FC-PC) ≤ 0.05 dB ^{*5} (FC)		
Modulation	Internal digital modulation	Frequency: (270 Hz, 1 kHz, 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 ^{*6}	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	74H × 31W × 178D mm, < 400 g				74H × 62W × 178D mm, < 500 g		74H × 62W × 178D mm, < 500 g (MG9027D/9028D) < 600 g (MG9027J/9028J)		

^{*1} 25°C, attenuator 0 dB

^{*2} CW, attenuator 0 dB

^{*3} CW, 10° to 40°C, 8 hours

^{*4} CW, attenuator 0 dB, -10° to +50°C, 8 hours

^{*5} CW, ±1°C change at a temperature between -10°C and +50°C, for one hour

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.

^{*6} D4, DIN, DIAMOND and ST connectors are available as options

For other connectors, please consult your nearest Anritsu representative

^{*7} CW, -10° to +50°C, 8 hours

^{*8} MG0927J and MG0928J are single units with two optical outputs

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	74H × 62W × 178D mm, < 400 g

Light source units selection guide

LED light source units

Fiber	Model	Wavelength	Output power	Number of channels	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) IV -40 dBm (SM)	1	GI/SM fiber loss measurement	
	MG0918A	1.55 μm	IV -23 dBm (GI) IV -43 dBm (SM)	1		
	MG0917B	1.31 μm	IV -35 dBm (GI) IV -50 dBm (SM)	1	Narrow spectrum	GI/SM fiber high-precision loss measurement
	MG0917D	1.31 μm	IV -35 dBm (GI) IV -50 dBm (SM)	2	Narrow spectrum	Low-loss measurement of optical fibers, optical devices, optical connectors, etc.
	MG0918D	1.55 μm	IV -35 dBm (GI) IV -50 dBm (SM)	2	Excellent temperature stability	
SM	MG0927J	1.31 μm	IV -28 dBm	2	Two optical outputs in one unit	Edge-emitting LED use
	MG0928J	1.55 μm	IV -32 dBm	2		SM fiber high-precision loss measurement
	MG0927D	1.31 μm	IV -28 dBm	2	One optical output in one unit	High-loss measurement of optical fibers, optical devices
	MG0928D	1.55 μm	IV -32 dBm	2		

• LD light source units

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

* Switchable light source

Ordering information

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

Model/Order No.	Name	Remarks
MG9001A MG9002A	Main frame Stabilized Light Source Stabilized Light Source	
	Standard accessories (MG9001A)	
J0017	Power Cord, 2.5 m:	1 pc
F0009	Fuse, 1.25 A:	2 pcs
F0039	Fuse, 0.2 A:	1 pc
F0040	Fuse, 0.315 A:	3 pcs
F0043	Fuse, 1 A:	1 pc
F0044	Fuse, 1.6 A:	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:	2 pcs
F0040	Fuse, 0.315 A:	2 pcs
F0043	Fuse, 1 A:	2 pcs
F0045	Fuse, 2 A:	1 pc
F0046	Fuse, 3.15 A:	6 pcs
W0487AE	MG9001A/MG9002A Operation Manual:	1 copy
W0487BE	MG9001A/MG9002A Service Manual:	1 copy
	Plug-in units	
MG0914E	LED Source	0.85 μm , GI
MG0917A	LED Source	1.3 μm , GI
MG0918A	LED Source	1.55 μm , GI/SM
MG0917B	LED Source	1.31 μm , GI/SM
MG0917D	LED Source	1.31 μm , GI/SM
MG0918D	LED Source	1.55 μm , GI/SM
MG0927D	Edge Emitting LED Source	1.3 μm , SM
MG0928D	Edge Emitting LED Source	1.55 μm , SM
MG0927J	Edge Emitting LED Source	1.31 μm , SM
MG0928J	Edge Emitting LED Source	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
MG0930C	LD Source	1.31/1.55 μm , SM
MG0947C	DFB-LD Source	1.31 μm , SM
MG0948C	DFB-LD Source	1.55 μm , SM
MG0902A	Modulation Unit	
	Options	
MG9001A/9002A-02	Top Cover for Stacking	
	Application accessories	
B0283	Blank Panel	
J0200B	Optical Fiber Cord, 2 m	For GI fiber, FC connector
J0439	Optical Fiber Cord, 2 m	For GI fiber, FC-PC connector
J0056B	Optical Fiber Cord, 2 m	For SM fiber, FC connector
J0486	Optical Fiber Cord, 2 m	For SM fiber, FC-PC connector
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