

Anritsu

# Optical Handy Power Meter

ML9002A



# Now, an accurate, multifunctional Optical Power Meter with a wide measurement level, comparable to more expensive instruments, has been developed.

The ML9002A is a compact handy optical power meter with a measurement level as wide as other more expensive instruments. Seven optical sensors are available for different wavelengths, measurement levels, and optical input types. Each can be calibrated for three common wavelengths so absolute optical power can be read directly. Each optical sensor can either be incorporated directly in the mainframe or connected using a connecting cord. The ML9002A can be used to check optical disks, optical printers and optical communications systems and can back-up on-site operations as a powerful multifunctional measuring instrument for maintenance.

## Features

### ● Accurate optical power measurement

The power of a narrow beam can be accurately measured even when an adaptor is changed because anti-reflection optical sensor is used.

### ● Long-distance measurement with wide measurement level range

An unprecedented wide measurement level has been achieved in this handy optical power meter. Optical power of  $-70$  to  $+3$  dBm (MA9621A) in the  $1.3 \mu\text{m}$  band and  $-70$  to  $+10$  dBm (MA9423A) in the  $0.85 \mu\text{m}$  band can be measured.

### ● Direct absolute power readings for three wavelengths

Each optical sensor is calibrated at three wavelengths ( $0.633/0.78/0.85 \mu\text{m}$ ,  $0.66/0.78/0.85 \mu\text{m}$  for short wavelengths, and  $0.85/1.3/1.55 \mu\text{m}$  for long wavelengths). The absolute power is indicated automatically just by switching to the measured wavelength.

### ● Flexible measurements

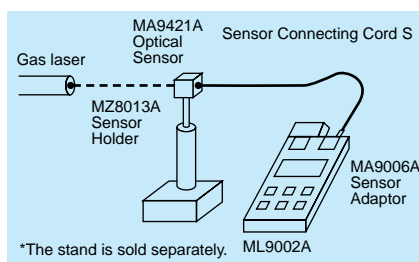
Two types of connections, a plug-in system (sensor incorporated into mainframe), or a cord system (sensor connected using connecting cord), are possible so that measurement capabilities are flexible.

### ● Compatible with various connectors

The ML9002A can be quickly connected to FC, ST, DIN, HMS-10/A, and SC connectors just by replacing the connector adaptor.

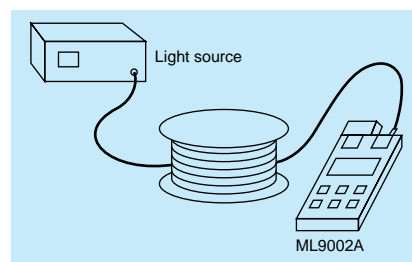
## Applications

### ● Beam travelling through free space



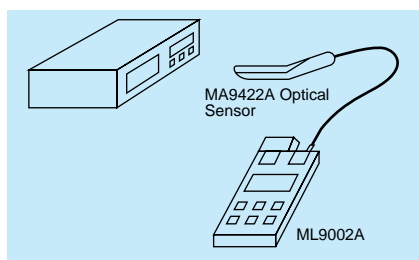
The optical sensors can be used remotely from the mainframe with the MA9006A Sensor Adaptor, MZ8013A Sensor Holder and Sensor Connecting Cord S.

### ● Optical fiber maintenance

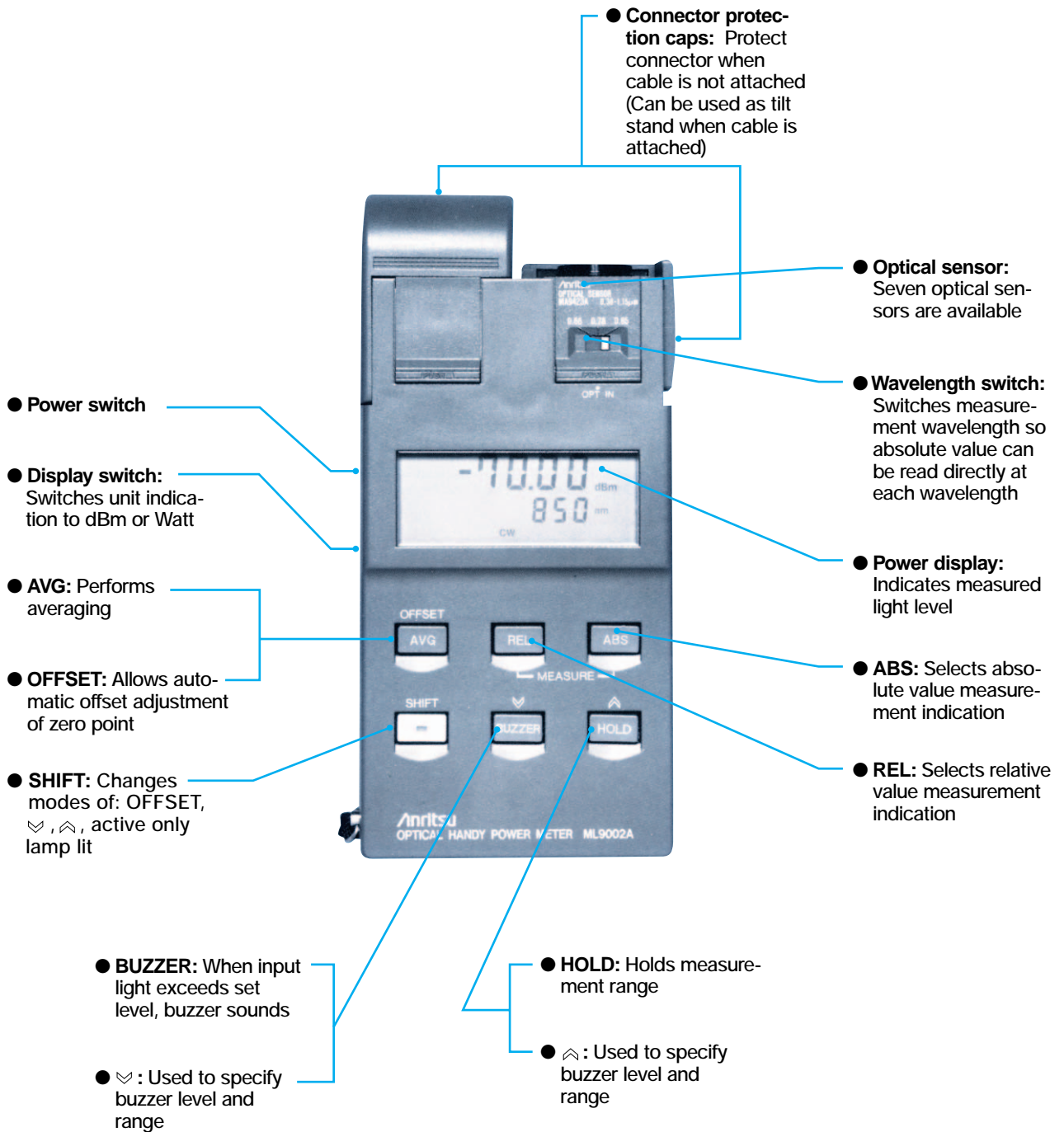


Since each sensor can be housed in the mainframe, the unit is easy to handle and is suitable for maintaining optical fibers, etc.

### ● Thin sensor



The MA9422A Optical Sensor is only 3 mm thick at the tip so it can measure power in confined places.

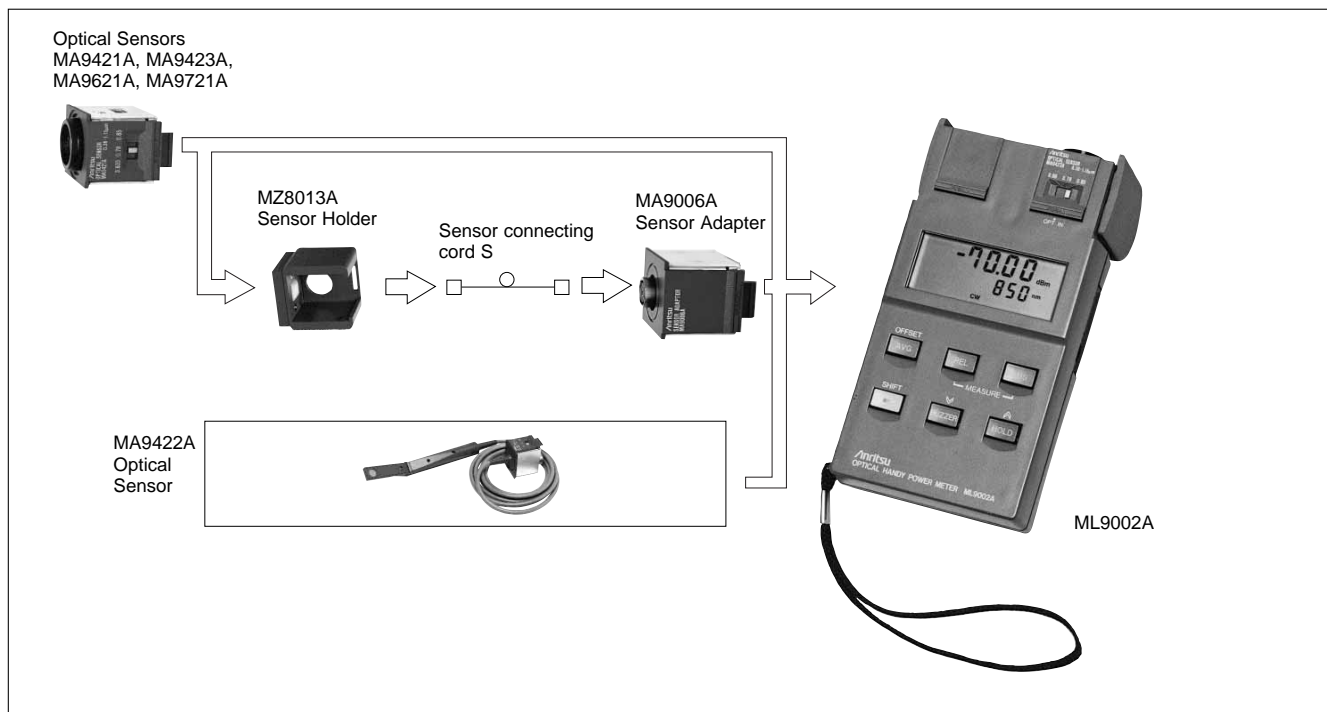


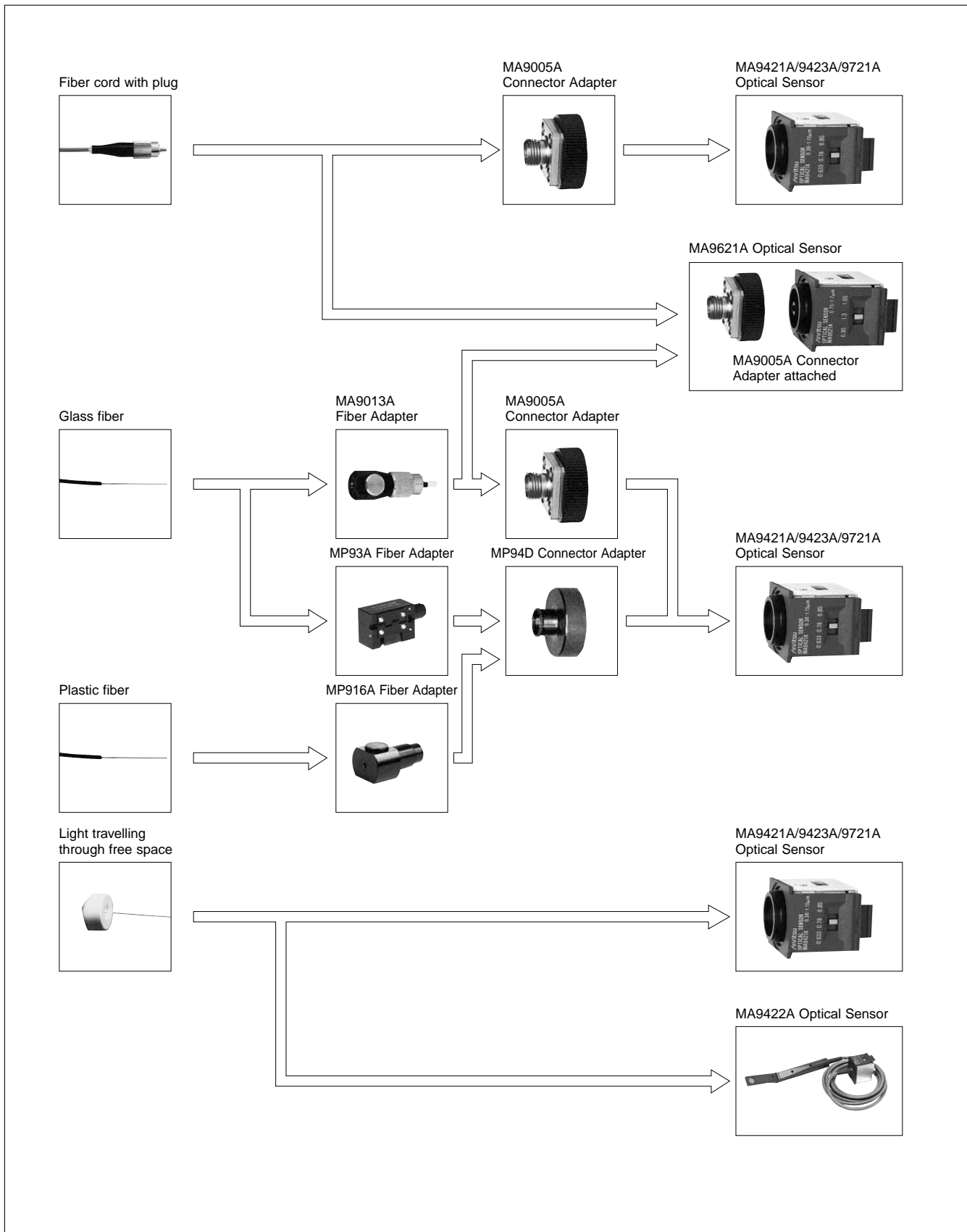
# Specifications

Main frame	Unit display	W, W(REL), dBm, and dB(REL), selectable, 4 digits				
	Recorder output	1 V/full-scale, 0.316 V/-5 dB				
	Averaging	ON/OFF settings				
	Range hold	Range settings				
	Buzzer	1 dB sound threshold level setting				
	Auto power off	After 5 minutes non-use (with internal Ni-Cd battery)				
	Dimensions and mass	90 (W) x 196 (H) x 38 (D) mm, ≤700 g				
Sensors	Model	MA9421A	MA9422A	MA9423A	MA9621A	MA9721A
	Wavelength	0.38 to 1.15 μm			0.75 to 1.7 μm	0.75 to 1.8 μm
	Element	Si photodiode			InGaAs photodiode	Ge photodiode
	Active area diameter	9.5 mm	9 mm	9.5 mm	1 mm	5 mm
	Input	Direct			FC connector adapter*1	Direct
	Measurement range (dBm)	-60 to +20 (at 0.85 μm)	-50 to +20 (at 0.85 μm)	-70 to +10 (at 0.85 μm)	-70 to +3 (at 1.3 μm)	-40 to +10 (at 1.3 μm)
	Dimensions and mass	30 (W) x 30 (H) x 37 (D) mm, ≤100 g	15 (W) x 16 (H) x 140 (D) mm, ≤200 g	30 (W) x 30 (H) x 37 (D) mm, ≤100 g		
Overall	Measurement accuracy	±5% (-10 dBm, CW mode)				±5% (-10 dBm, CW mode)*2
	Calibration wavelength	0.633/0.78/0.85 μm		0.66/0.78/0.85 μm	0.85/1.3/1.55 μm	
	Measurement resolution	W/W(REL): 0.1 to 1%, dBm/dB(REL): 0.01 dB				
	Operating hours	20 hr or more, floating operation possible (on internal Ni-Cd battery)				
	Temperature range	Operating: 0° to +50°C, Storage: -30° to +50°C, Recharging: +10° to +45°C				
	EMC	EN61326: 1997/A2: 2001 (Class A), EN61000-3-2: 2000 (Class A), EN61326: 1997/A2: 2001 (Annex A)				
	LVD	EN61010-1: 2001 (Pollution degree 2)				

\*1: Used for NA ≤0.29, core diameter fiber ≤62.5 μm

\*2: For 1.55 μm wavelength, it is specified at 23° ±5°C





# Ordering Information

Model/Order No.	Name	Remarks
ML9002A	<b>Main frame</b> Optical Handy Power Meter	
MA9421A MA9422A MA9423A MA9621A MA9721A	<b>Optical sensors</b> Optical Sensor Optical Sensor Optical Sensor Optical Sensor (MA9005A Connector Adapter attached) Optical Sensor	0.38 to 1.15 mm, -60 to +20 dBm 0.38 to 1.15 mm, -50 to +20 dBm (Thin sensor) 0.38 to 1.15 mm, -70 to +10 dBm 0.75 to 1.7 mm, -70 to +3 dBm 0.75 to 1.8 mm, -40 to +10 dBm
Z0178	<b>Standard accessories</b> AC adapter: 1 pc Power cord: 1 pc Blank panel: 1 pc	
B0232 W0400CE J0477	ML9002A instruction manual: 1 copy Auto-power-off override plug: 1 pc	
MA9005A* MA9006A MP93A MP94D MA9013A MZ8013A J0056B J0200B J0436 J0438 Z0179 Z0182 B0234	<b>Optional accessories</b> Connector Adapter Sensor Adapter Fiber Adapter Connector Adapter Fiber Adapter Sensor Holder FC-FC-2M-SM, 2 m FC-FC-2M-GI, 2 m Sensor connecting cord S Recorder output cord Carrying case (with shoulder strap) Soft case Battery box	For optical sensor For sensor connecting cord S/T ≤150 μm clad dia., 0.8 to 1.0 mm jacket dia. For MP93A and MP916A 125 mm clad dia., 0.25 to 1 mm jacket dia. For fixing MA9421A/9423A/9621A/9721A FC optical fiber cord, SM fiber FC optical fiber cord, GI fiber For ML9002A sensors

\*: Choose from the options listed in the following table when ordering non-FC optical connector.

## Optical Connector Options Table

Model		Connector option number								
		32	33	37	38	39	40	41	42	43
		MU*1	LC*1	FC	ST	DIN47256	SC	TOCP172*2	HFS-13/A (GI)*2	HMS-10/A (SM)*1
Optical power sensors	MA9421A	√	√	√	√	√	√	√	√	√
	MA9422A	√	√	√	√	√	√	√	√	√
	MA9423A	√	√	√	√	√	√	√	√	√
	MA9621A	√	√	√	√	√	√	√	√	√
	MA9721A	√	√	√	√	√	√	√	√	√

\*1: Ferrule type; PC    \*2: Ferrule type; Flat    No marking: Ferrule type; Flat and PC.



Specifications are subject to change without notice.

### ANRITSU CORPORATION

1800 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan  
Phone: +81-46-223-1111  
Fax: +81-46-296-1264

### • U.S.A.

#### ANRITSU COMPANY

#### TX OFFICE SALES AND SERVICE

1155 East Collins Blvd., Richardson, TX 75081, U.S.A.  
Toll Free: 1-800-ANRITSU (267-4878)  
Phone: +1-972-644-1777  
Fax: +1-972-644-3416

### • Canada

#### ANRITSU ELECTRONICS LTD.

700 Silver Seven Road, Suite 120, Kanata, ON K2V 1C3, Canada  
Phone: +1-613-591-2003  
Fax: +1-613-591-1006

### • Brasil

#### ANRITSU ELETRÔNICA LTDA.

Praca Amadeu Amaral, 27 - 1 andar  
01327-010 - Paraíso, Sao Paulo, Brazil  
Phone: +55-11-3283-2511  
Fax: +55-11-3886940

### • U.K.

#### ANRITSU LTD.

200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.  
Phone: +44-1582-433280  
Fax: +44-1582-731303

### • Germany

#### ANRITSU GmbH

Grafenberger Allee 54-56, 40237 Düsseldorf, Germany  
Phone: +49-211-96855-0  
Fax: +49-211-96855-55

### • France

#### ANRITSU S.A.

9, Avenue du Québec Z.A. de Courtabœuf 91951 Les Ulis Cedex, France  
Phone: +33-1-60-92-15-50  
Fax: +33-1-64-46-10-65

### • Italy

#### ANRITSU S.p.A.

Via Elio Vittorini, 129, 00144 Roma EUR, Italy  
Phone: +39-06-509-9711  
Fax: +39-06-502-2425

### • Sweden

#### ANRITSU AB

Fagelviksvägen 9E S145 84 Stockholm, Sweden  
Phone: +46-853470700  
Fax: +46-853470730

### • Singapore

#### ANRITSU PTE LTD.

10, Hoe Chiang Road #07-01/02, Keppel Towers, Singapore 089315  
Phone: +65-6282-2400  
Fax: +65-6282-2533

### • Hong Kong

#### ANRITSU COMPANY LTD.

Suite 923, 9/F., Chinachem Golden Plaza, 77 Mody Road, Tsimshatsui East, Kowloon, Hong Kong, China  
Phone: +852-2301-4980  
Fax: +852-2301-3545

### • P. R. China

#### ANRITSU COMPANY LTD.

#### Beijing Representative Office

Room 1515, Beijing Fortune Building, No. 5 North Road, the East 3rd Ring Road, Chao-Yang District Beijing 100004, P.R. China  
Phone: +86-10-6590-9230

### • Korea

#### ANRITSU CORPORATION

8F Hyun Juk Bldg. 832-41, Yeoksam-dong, Kangnam-ku, Seoul, 135-080, Korea  
Phone: +82-2-553-6603  
Fax: +82-2-553-6604

### • Australia

#### ANRITSU PTY LTD.

Unit 3/170 Forster Road Mt. Waverley, Victoria, 3149, Australia  
Phone: +61-3-9558-8177  
Fax: +61-3-9558-8255

### • Taiwan

#### ANRITSU COMPANY INC.

7F, No. 316, Sec. 1, NeiHu Rd., Taipei, Taiwan  
Phone: +886-2-8751-1816  
Fax: +886-2-8751-1817

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