

# CMA5 Series

## Fiber Optic Light Sources



**Anritsu** envision:ensure  
ANRITSU CORPORATION

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### ■ General

Thank you for purchasing a CMA5 Series Fiber Optic Light Sources. These lightweight, handheld units are designed for field installation, testing and commissioning of all types of optical fiber systems.

Two models are available:

- 5L83 ---- 850/1300 multi-mode Laser source
- 5L35 ---- 1310/1550 single-mode Laser source

Each model is available with either UPC (PC polish) or APC (Angled PC polish) universal connector port.

CMA5 Series Fiber Optic Light Source offers continuous wave (CW) output and modulated output at 270 Hz, 1 kHz, and 2 kHz for easy fiber identification when used with an Anritsu FI700 Series Fiber Identifier or with either an Anritsu CMA5 or CMA50 Series Power Meter. Select one of the modulated modes for quick cable identification or the continuous mode for taking standard optical loss measurements.

### ■ Features

- Units available in single or dual wavelength models
- Universal optical connector with choice of FC, SC, or ST adapter caps
- Multi-mode and single mode operation
- Accurate and stable
- Modulation capability (CW, 270 Hz, 1 kHz, and 2 kHz)
- Membrane switch overlay
- Visual output indication

### ■ Applications

- Cable and link loss measurement
- Network auditing and maintenance
- Troubleshooting and repair
- Connector and coupling losses
- Bare fiber loss measurement
- Fiber identification

### ■ Precautions

Use care when working with any optical transmission equipment. Avoid looking directly at any optical fibers or optical sources. Refer to your company’s safety procedures when working with optical systems and components. It is important to keep all optical connections and surfaces free from dirt, oils or other contaminants to ensure proper operation. This applies to all connectors that are connected to the unit’s optical port. Scratched or contaminated connectors can reduce system performance. Refer to your company practices for cleaning optical connectors. Always replace the protective dust cap when not in use.

#### Replacing Battery



#### Battery Fluid

When replacing the battery, use the specified battery and insert it with the correct polarity. If the wrong battery is used, or if the battery is inserted with reversed polarity, there is a risk of explosion causing severe injury or death.

DO NOT short the battery terminals and never attempt to disassemble the battery or dispose of it in a fire. If the battery is damaged by any of these actions, the battery fluid may leak. This fluid is poisonous. DO NOT touch the battery fluid, ingest it, or get in your eyes. If it is accidentally ingested, spit it out immediately, rinse your mouth with water and seek medical help. If it enters your eyes accidentally, do not rub your eyes, rinse them with clean running water and seek medical help. If the liquid gets on your skin or clothes, wash it off carefully and thoroughly with clean water.

**Battery Disposal** DO NOT expose batteries to heat or fire. This is dangerous and can result in explosions or fire. Heating batteries may cause them to leak or explode.

#### Electrical Safety:

To reduce risk of equipment damage, injury or death, adhere to the following warnings:

- Use only the optional AC adapter available from Anritsu for use with this product.
- Do not use the CMA5 Series Fiber Optic Light Source or the optional AC adapter if the CMA5 Series Fiber Optic Light Source or the optional AC adapter’s case is cracked or damaged.
- Use the CMA5 Series Fiber Optic Light Sources only with the optional AC adapter available from Anritsu for the CMA5 Series Fiber Optic Light Sources. Anritsu does not guarantee the safety and functionality of other AC adapters.
- The CMA5 Series Fiber Optic Light Sources optional AC adapter is not intended for use in outdoor or wet environments.
- Ensure that the AC input to the optional AC adapter is within the voltage marked on the power supply’s case.
- Do not attempt to service the product in any way other than the routine maintenance as described in this manual.

#### Batteries:

Batteries may contain lead, cadmium, lithium or other toxic substances. Batteries must be disposed of, or recycled, in accordance with their label instructions and local regulations.

#### Crossed-out Wheeled Bin Symbol:

Equipment marked with the Crossed-out Wheeled Bin Symbol complies with council directive 2012/19/EU (the “WEEE Directive”) in European Union.



For Products placed on the EU market after August 13, 2005, please contact your local Anritsu representative at the end of the product’s useful life to arrange disposal in accordance with your initial contract and the local law.

### ■ Laser Safety

**CAUTION:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

#### Laser Class

Anritsu CMA5 series Fiber Optic Light Sources are fully compliant with the CDRH (FDA) Federal Register 21CFR parts 1040.10 and 1040.11 except for deviations pursuant to Laser Notice 50, dated June 24, 2007, and these products are classified as Class 1 Laser Emissions levels according to IEC60825-1: 2007. The Class 1 level is considered to be eye and radiation exposure safe. This compliance is met when the product is used as intended.

#### Location of Hazard symbol and Laser class label

The following labels are located on the front panel or backside.

- Laser class Label:** (See Figure 2)
- Hazard Symbol:** It is located on the front panel that identifies the Class 1 laser port (See Figure 3)



Figure 1 Backside of CMA5 Series Light Source



Figure 2 CMA5 Series Light Source Laser Safety Labels

## Laser Safety Classifications

**Table 1 Laser Safety Classifications Based on IEC 60825-1:2007**

Model Name	Class	Max. Optical Output Power (mW)*	Pulse Width (s)/ Repetition Rate	Emitted Wavelength (nm)	Beam Radiation Angle [deg.]	Laser Aperture
5L83	1	0.66	CW	850	23.0	Figure 3 ①
5L83	1	1.41	CW	1300	23.0	Figure 3 ①
5L35	1	1.41	CW	1310	11.5	Figure 3 ①
5L35	1	1.41	CW	1550	11.5	Figure 3 ①

\*: Indicates the possible optical output power when each and every reasonably foreseeable single-fault condition is included.

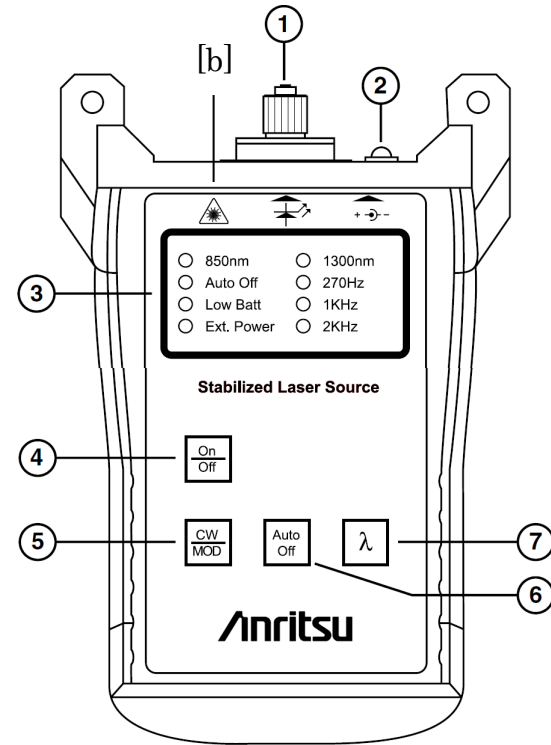
CW: continuous wave

**Table 2 Specifications of Laser Built into CMA5**

Model Name	Max. Optical Output Power (mW)*	Pulse Width (s)/ Repetition Rate	Emitted Wavelength (nm)	Beam Radiation Angle [deg.]
5L83	0.66	CW	850	23.0
5L83	1.41	CW	1300	23.0
5L35	1.41	CW	1310	11.5
5L35	1.41	CW	1550	11.5

\*: Indicates the possible optical output power when each and every reasonably foreseeable single-fault condition is included.

## ■ Operating Controls



**Figure 3 CMA5 Series Light Source Operating Controls**

**NOTE:** All models of the CMA5 Series Light Sources have the similar features and controls. Dual wavelength units have an additional button for wavelength selection.

### 1. Output Connector (Laser Aperture)

The units are equipped with a universal connector. FC, SC, and ST adapter caps are available. Units include one adapter cap.

**CAUTION:** Be sure to use adapter caps specifically made for the CMA5 Series Light Sources only. Light Source adapter caps are marked "LS". Do not use CMA5 Power Meter adapter caps on the Light Sources. Improper attachment of the connector may cause damage to the sleeve.

Change the connector adapter once the optical fiber connector or the conversion adapter has been removed from it. Removing the connector adapter may damage the sleeve while it is still being attached to the optical fiber or the conversion adapter.

### 2. External AC Power Jack

Attach the optional AC Power adapter to this jack.

### 3. Active Wavelength and Mode Indicators

These LEDs indicate the current active wavelength (for dual wavelength units) and the various operating modes.

- **Wavelength Indicator(s)** ---- A green LED illuminates indicating the current wavelength.

**NOTE:** Wavelength values listed will vary with model.

- **Auto Off** ---- This LED is illuminated when the Auto Off function is enabled.
- **Low Batt** ---- The low battery indicator light up red when the battery is running low. Change the battery as soon as possible.
- **Ext. Power** ---- The External Power indicator lights up green when you are operating the unit on the optional external AC adapter.
- **Mode Indicators** ---- These LEDs indicate whether the unit is set to one of the modulation modes (270Hz, 1KHz, or 2KHz). The LED for the selected mode will be illuminated.

### 4. On/Off Key

The unit on by pressing this key.

### 5. CW/MOD Key

Press this key to cycle through the various modulation modes. The corresponding LED will light up (270Hz, 1KHz, or 2KHz). If none of the modulation LEDs are illuminated, the unit is in CW mode.

### 6. Auto Off Key

This key enables the Auto Off function, which will power down the unit when no keys have been pressed for 5 minutes.

### 7. λ(Wavelength) Key

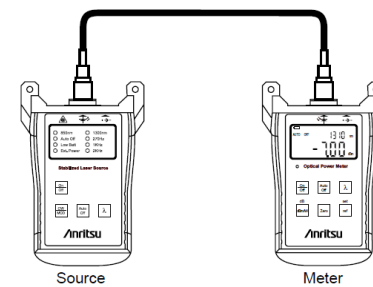
This key toggles the two wavelengths.

## ■ Operation

### Preparing the Unit for Testing

Use the following procedure to assure that the CMA5 Series Light Source is operating properly.

1. Clean all optical ports and connectors according to your company procedures.
2. Connect one end of a patchcord to the CMA5 Series Light Source.
3. Connect the other end of the patchcord to a power meter such as a CMA5 or CMA50 Series Optical Power Meter.
4. Turn on the CMA5 Series Light Source and the power meter. Make sure that both units are set to the same wavelength.



**Figure 4 Checking Output Power**

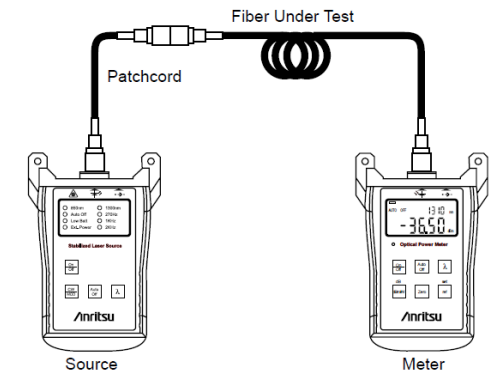
5. The launch output power for all CMA5 Series Laser Light Sources is approximately -7dBm.

### ■ Optical Loss Measurement

1. Use two patchcords and an in-line adapter to connect the CMA5 Series Light Source to a power meter. Attach one patchcord to the CMA5 Series Light Source and the other patchcord to the power meter. Use the in-line adapter to connect the two patchcords.
2. Select the wavelength for testing.
3. Reference the optical power and either record (write down) the reading. If testing at two wavelengths, repeat steps 2 and 3 for the second wavelength.
4. Disconnect the patchcords at the in-line adapter, leaving the in-line adapter attached to the patchcord connected to the CMA5 Light Source. Disconnect the patchcord from the power meter.

**NOTE:** Do not disconnect the end of the patchcord attached to the CMA5 Series Light Source after referencing. The coupled output level of the source may change when the patchcord is reconnected.

5. Reconnect the patchcord attached to the CMA5 Series Light Source to the fiber under test. Connect the power meter to the other end of the fiber under test (See Figure 5).
6. Record the power reading displayed on the power meter. If the power meter being used does not have a store reference feature, subtract the reading from the previously recorded (written down) reference power reading to determine the end-to-end loss.



**Figure 5 Optical Loss Measurement Setup**

## ■ Maintenance

The CMA5 Series Light Sources require no periodic maintenance other than replacing the batteries.

### Battery Replacement

Under normal use one 9 volt alkaline battery will provide a minimum of 16 hours of continuous use.

To replace the battery:

1. Remove the unit from its protective boot by pulling down on the bottom of the boot to release the unit. Then slide the unit out of the boot.
2. Open the battery compartment located on the lower backside of the unit, by pressing down on the arrow on its cover and sliding the cover off the unit.
3. Replace the battery with a fresh 9 volt alkaline battery.
4. Replace the battery compartment cover.
5. Replace the protective boot.

### General Care

To avoid damage to the CMA5 Series Light Sources, do not use cable connectors that are dirty or faulty. A dust cap is provided for the source connector, and should be in place when the unit is not in use to prevent foreign material from entering the port. To clean the source connector, use only a small diameter, non-cotton swab lightly moistened with pure isopropyl alcohol. Be sure to follow your company's procedures if different. Clean the CMA5 Series Light Source's case with a damp cloth. Do not use solvents or abrasives.

## ■ Equipment Certificate

Anritsu Corporation certifies that this equipment was tested before shipment using calibrated measuring instruments with direct traceability to public testing organizations recognized by national research laboratories, including the National Institute of Advanced Industrial Science and Technology, and the National Institute of Information and Communications Technology, and was found to meet the published specifications.

## ■ Anritsu Warranty

Anritsu Corporation provides the following warranty against stoppages arising due to manufacturing error, and against problems with operation occurring even though the procedures outlined in the operation manual were followed.

### Hardware:

Problems occurring within a period of three years from the date of delivery will be corrected by Anritsu Corporation at no cost to the user.

### Software:

Software reported as faulty within a period of three years from the date of delivery will be corrected or replaced by Anritsu Corporation at no cost to the user.

Following correction or replacement the software will remain under warranty for either the remainder of three years from the date of initial delivery, or for a period of 30 days, whichever is shorter.

The hardware and software warranties are not valid under any of the following conditions:

- The fault is outside the scope of the warranty conditions separately described in the operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by the customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by the customer.
- The fault is due to natural disaster, including fire, wind or flood, earthquake, lightning strike, or volcanic ash, etc.
- The fault is due to damage caused by acts of destruction, including civil disturbance, riot, or war, etc.
- The fault is due to explosion, accident, or breakdown of any other machinery, facility, or plant, etc.
- The fault is due to use of non-specified peripheral or applied equipment or parts, or consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation location.
- The fault is due to use in unusual environments<sup>(Note)</sup>.
- The fault is due to activities or ingress of living organisms, such as insects, spiders, fungus, pollen, or seeds.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation shall assume no liability for damage or financial loss of the customer due to the use of or a failure to use this equipment, unless the damage or loss is caused due to Anritsu Corporation's intentional or gross negligence.

### NOTE:

For the purpose of this Warranty, "unusual environments" means use:

- In places of direct sunlight
- In dusty places
- In liquids, such as water, oil, or organic solvents, and medical fluids, or places where these liquids may adhere
- In salty air or in places where chemically active gases (sulfur dioxide, hydrogen sulfide, chlorine, ammonia, nitrogen dioxide, or hydrogen chloride etc.) are present
- In places where high-intensity static electric charges or electromagnetic fields are present
- In places where abnormal power voltages (high or low) or instantaneous power failures occur
- In places where condensation occurs

- In the presence of lubricating oil mists
- In places at an altitude of more than 2,000 m
- In the presence of frequent vibration or mechanical shock, such as in cars, ships, or airplanes

## ■ Anritsu Corporation Contact

In the event that this equipment malfunctions, contact an Anritsu Service and Sales office. Contact information can be found on the other sheets of the printed version of this manual, and is available in a separate file on the PDF version.

## ■ CE Conformity Marking

Anritsu affixes the CE conformity marking on the following product(s) in accordance with the Decision 768/2008/EC to indicate that they conform to the EMC, LVD, and RoHS directive of the European Union (EU).



- Product Model**  
Model: 5L35, 5L83 CMA5 Optical Light Source
- Applied Directive**  
EMC: Directive 2014/30/EU  
RoHS: Directive 2011/65/EU
- Applied Standards**  
EMC: Emission: EN 61326-1: 2013 (Class A)  
Immunity: EN 61326-1: 2013 (Table 2)

### Performance Criteria\*

IEC 61000-4-2 (ESD)	B
IEC 61000-4-3 (EMF)	A
IEC 61000-4-4 (Burst)	B
IEC 61000-4-5 (Surge)	B
IEC 61000-4-6 (CRF)	A
IEC 61000-4-11 (V dip/short)	B, C

### \*: Performance Criteria

- A: The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- B: The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

### Harmonic current emissions:

EN 61000-3-2: 2014 (Class A equipment)  
No limits apply to this equipment with an active input power under 75 W.  
RoHS: Directive 2011/65/EU

If the third digit of the serial number is "7", the product complies with Directive 2011/65/EU as amended by (EU) 2015/863.  
(Pb, Cd, Cr6+, Hg, PBB, PBDE, DEHP, BBP, DBP, DIBP)

If the third digit of the serial number is "6", the product complies with RoHS.



Serial number example

## 4. Contact

- Name: Anritsu GmbH.  
Address, city: Nemetschek Haus, Konrad-Zuse-Platz 1  
81829 München,  
Country: Germany
- Name: ANRITSU EMEA Ltd.  
Address, city: 200 Capability Green, Luton Bedfordshire,  
LU1 3LU  
Country: United Kingdom

## ■ RCM Conformity Marking

Anritsu affixes the RCM mark on the following product(s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

### RCM marking



- Product Model**  
Model: 5L35, 5L83 CMA5 Optical Light Source
- Applied Standards**  
EMC: Emission: EN 61326-1: 2013 (Class A equipment)

## ■ Specifications

Model	CMA5 Optical Light Source	
	5L35	5L83
Constitution		
Main Frame	5L35-YY*1 5L83-YY*1:	
Standard Accessories	Operators Manual, Rubber Protective Cover, 9V Alkaline Battery	
Wavelength	1310/1550 nm ±20 nm	850/1300 nm ±20 nm
Output Power	≥ -7 dBm (Typical @ 25°C)	
Spectrum Width	≤5 nm	
Emitter Type	FP-LD	
Stability (8 hours)	±0.1 dB @ 25°C	
Output Modes	CW (Continuous Wave) 270 Hz, 1 KHz, 2 KHz Modulation (+/-2%)	
Output Connector	Universal Connector port- Available in either UPC (PC polish) or APC (Angled PC polish)	
Adapters Available	FC, ST, and SC	
Power supply	One 9V Alkaline battery	
AC Adapter (Accessory)	Input: 100-240 V, 50-60 Hz*2 Output: 7.5 V	
Battery Life (Alkaline)	16 hours minimum, continuous use	
Auto Shut Off	5 minutes	
Operating Temperature	-10° to 50°C(+14 to +122°F)	
Storage Temperature	-25° to 60°C(-13 to +140°F)	
Relative Humidity	0 to 95% (Non-condensing)	
Dimensions (H×W×T) (D)) (Excluding Rubber Protective Cover)	145 × 75 × 25 mm (5.70" (H) x 2.95" (W) x .98" (D))	
Mass	250 g (0.56 lbs)	
Warranty	3 years	
Laser Safety	Class 1 (IEC60825-1:2007) THIS PRODUCT COMPLES WITH 21CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO.50, DATED JUNE 24,2007	

\*1: Specify one connector adapter for YY. FU=FC/PC, SU=SC/PC, TU=ST/PC, FA=FC/APC, SA=SC/APC (FA=FC/APC and SA=SC/APC cannot be selected for 5L83-YY.)

\*2: Operating voltage: within the range of +10% to -10% from the rated voltage

## ■ Accessories

Model	Description
GN-3HH-CASE	Hard Case (for two CMA5 series)
CMA5-POUCH-A	Carrying Pouch/Shoulder Strap
CMA5-BAT	9V Alkaline Battery
Z1525A	AC Adapter (CMA5)
CMA5-AD-LS-FC	FC Connector Adapter (for Light Source Port)
CMA5-AD-LS-SC	SC Connector Adapter (for Light Source Port)
CMA5-AD-LS-ST	ST Connector Adapter (for Light Source Port)
CMA5-AD-LS-ALL3	Connector Adapter (for Light Source Port, FC, SC and ST)

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243-8555, Japan

