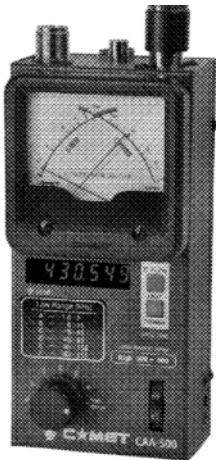


CAA-500

Standing wave Analyzer
1.8 - 500MHz



Instruction Manual

Thank you for your purchasing our product. This product is made under the most stringent quality controls. Should there be any breakage in transit, please do not hesitate to contact the shop from which you purchased this product for instructions on resolution of the problem.

For your safety, please read this manual carefully for instructions on proper handling and operation before using.

◆ Features

- Built-in broadband high-stability transmitter for easy measurement of resonant frequency, SWR, and impedance.
- Cross-needle meter display provides SWR and Impedance information simultaneously.
- 12 hours of continuous use with AA alkaline batteries.
- Hand strap attachment for safety.



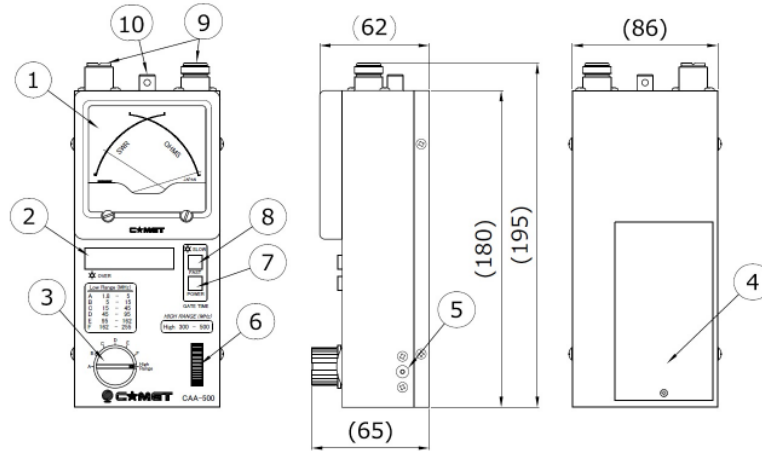
Precautions for operation

- The CAA-500 has its Impedance Bridge just inside the Output Connector. Never apply power from an external transmitter to the CAA-500. Failure to follow this could cause damage to this product.
- The external DC supply voltage must be between 8 to 16 Volts, and the current supplied must be at least 250mA. Never apply DC voltages greater than 16 Volts, nor AC voltage of any kind. Our warranty does not cover damage caused by the use of an improper power source.
- When using AA batteries, the decimal point on the Frequency Counter will blink when the weak batteries are weak. Change batteries as soon as it starts blinking, and change all batteries to improve the battery shelf life.

Remove the batteries when not in use for extended periods of time

(*some rechargeable batteries, which have 1.2V rated voltage, are not appropriate for long-time continuous operation).

◆ Appearance & Components



- ① **Display Meter** The cross meter display indicates SWR and impedance simultaneously.
- ② **Frequency Counter** This 6-digit LED display indicates the frequency to which the CAA-500 is currently set.
- ③ **Freq Range Selector** 6 frequency ranges are provided, yielding coverage of 1.8-500 MHz. Fine tuning is provided by the FREQ knob (see ⑥ below).
- ④ **Battery Case** The battery case accepts six "AA" alkaline batteries to power the CAA-500.
- ⑤ **External Power supply** An external DC power supply (8-16V, 250 mA minimum) may be connected here, if internal batteries are not being used. The center-pin is the positive DC terminal. Be sure to observe the proper polarity.
- ⑥ **FREQ Knob** This knob adjusts the operating frequency of the CAA-500, in conjunction with the Freq Range Selector described in ③ above. Upward rotation of the knob increases the frequency.
- ⑦ **POWER Switch** This is the main Power On/Off switch for the CAA-500. When the power comes on, the power switch and the LED display will become illuminated.
- ⑧ **Gate Time Switch** This switch selects between display resolutions of 1 kHz (FAST) and 100 Hz (SLOW). Above 100 MHz, the left-most digit of the display will not appear, so remember the approximate frequency, or confirm it by temporarily returning to the FAST mode.
- ⑨ **Output Connector** Two output connectors are provided in the CAA-500. When using the "A" through "F" frequency ranges, use the "M" ("UHF" or "SO-239") connector; when using the "High Range" selection (above 255 MHz), use the "N" connector.
- ⑩ **Hand Strap Attachment point** The Hand Strap may be attached here; any suitably-strong strap of at least 1 mm diameter may be utilized.

*Please install the strap with the thickness whose installation string diameter is 1mm or more.

◆ Specifications

Frequency Range	1.8-500MHz , 7 range division
RF power	0 dBm
SWR measurable Range	1.0 ~ ∞
Impedance Range	12.5 ~ 300 Ω
Connector	M-Female (A ~ F Range) , N- Female (High Range)
Power Source	6 AA Alkaline batteries (It stores it in the case in the back of the main body.)
	External D C 8 ~ 16 V
Consumption Current	Less than 180 mA
Dimension	(W) 86 × (H) 180 (195) × (D) 62 (65) [mm]
Weight	Approx.900g (with Dry-cell)
Attachment	Plug DC Cable for External Source

◆ How to use

▼ Preparation

Operation check before using CAA-500.

1. Connect a 50Ω dummy load to the Output Connector (*50Ω dummy load is not included).
2. After turning on the POWER switch, numbers will appear on the display. These numbers indicate the software version. When using AA batteries, be sure that the decimal point on the Frequency Counter does not blink. Change all batteries if it blinks.
3. The display should indicate 1.1 or less SWR, and 50Ω impedance.
4. The CAA-500 is ready to use if the above values are displayed.

▼ SWR Measurement

- Connect the antenna to the CAA-500 output connector, directly or with the shortest coaxial cable possible. Long cables may modify the displayed impedance and SWR.
- Set the Frequency Range Selector to the proper frequency range. Adjust the FREQ knob to the desired frequency.
- The SWR at the selected frequency will be indicated in the SWR scale on the display.

▼ Impedance Measurement

- Connect the antenna to the CAA-500 output connector, directly or with the shortest coaxial cable possible. Long cables may modify the displayed impedance and SWR.
- Set the Frequency Range Selector to the proper frequency range. Adjust the FREQ knob to the desired frequency.
- The impedance at the selected frequency will be indicated in the OHMS scale on the display.

▼ Antenna Resonance Frequency Measurement

- ★ Connect the antenna to the CAA-500 output connector, directly or with the shortest coaxial cable possible. Long cables may modify the displayed impedance and SWR.
- ★ Select the frequency range with Frequency Range Selector. Adjust the FREQ knob to the desired frequency.
- ★ The point where the lowest SWR is indicated is the resonant frequency.

— FAQ —

Q. When connecting the antenna to CAA-500 directly, the resonant frequency does not match, or SWR is high.

A. In some situations of insufficient grounding, particularly when using a vertical antenna without ground radials, erroneous readings may occur, frequently due to common-mode current flowing on the shield of the coaxial cable. Such a condition results in unsatisfactory antenna performance anyway, so take the appropriate steps to resolve the current profile issues in your antenna system.

Q. The displayed impedance is 50 Ohms, but SWR shows a high value.

A. The impedance shown in the meter is the absolute value including the reactance. When the impedance is 50 Ohms on this analyzer, the SWR may not be 1.0. In other words, 1:1 SWR is an ideal condition when the impedance is 50 Ohms, and the SWR is not high because the reactance is almost zero.

Q. What effects may be observed related to cable length and impedance?

A. The CAA-500 is designed to measure the impedance presented to its input connector. If the CAA-500 is connected directly to the antenna feedpoint, it will read the feedpoint impedance accurately. However, if a length of 50-Ohm coaxial cable is connected between the antenna feedpoint and the CAA-500, and the feedpoint impedance is not 50 Ohms, the 50-Ohm cable will act as a "series transformer" and the CAA-500 will only be able to display the impedance at the end of the cable by the CAA-500. Also, if the coaxial cable's impedance is other than 50 Ohms (e.g. 75 Ohms), similar "series transformer" effects will be observed.

The length of the cable of reference data

This situation may be mitigated by using a coaxial cable that is precisely $\frac{1}{2}$ wavelength long at the frequency being used (including the velocity factor of the coaxial cable). The impedance at one end of a half-wavelength cable is repeated at the other end of the cable, making it convenient for measuring purposes. For example, $\frac{1}{2}$ wavelength at 145 MHz is 1034.5 mm (40.73"). For RG-213 or 3D-2V cable with a velocity factor of 67%, the resulting half-wavelength cable (including connector) is $1034.5 \times .67 = 693$ mm ($40.73" \times .67 = 27.29"$). Any integer multiple of $\frac{1}{2}$ wavelength may be used (i.e. $\frac{1}{2}$ wavelength, 1 wavelength, $1\frac{1}{2}$ wavelength, 2 wavelengths, etc.).

Q. Which Antenna connector may I use? Are both active?

A. The frequency range in use determines which output jack is available for measurement purposes; the other output connector is automatically disabled. For the "A" through "F" ranges, the "M" ("UHF" or "SO-239") connector is used, and the "N" connector is disabled. For the "High Range" selection, the "N" connector is automatically selected, and the other connector is disabled.



Precautions During Operation

- **Do not drop the CAA-500 or subject it to a strong shock.**
- **Keep the CAA-500 away from heat and moisture.**
- **Never attempt to perform modification by yourself. Failure to follow this would cause unexpected accidents.**

【After-Sales Service】

- Should you have any technical questions, please ask our Engineering Department
(webmaster2.1@comet-ant.co.jp).
- Please ask the dealer from whom you purchased this product if you need repair service.

Appearance and/or specifications are subject to change without notice or obligation.

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1st Version