

LDG M-7600 External Meter for Icom IC-7600



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INTRODUCTION

LDG pioneered the automatic, wide-range switched-L tuner in 1995. From its laboratories in St. Leonard, Maryland, LDG continues to define the state of the art in this field with innovative automatic tuners and related products for every amateur need.

Congratulations on selecting the LDG Electronics M-7600. The M-7600 provides accurate and precise metering for a wide range of receive and transmit parameters. While many users will choose to display S-meter readings on receive, and Power Output on transmit, several other useful readings are available.

The M-7600 plugs into the external meter jack on the Icom IC-7600 transceiver. The parameter displayed on the M-7600 can be either the same as the parameter displayed on the main IC-7600 virtual meter, or can be independent of what is displayed on the main meter, giving the flexibility to watch two parameters at the same time.

JUMPSTART, OR “REAL HAMS DON’T READ MANUALS!”

Ok, but at least read this one section before operating the M-7600:

1. Configure the IC-7600 for normal operation.
2. Plug the M-7600 into the radio’s meter jack using the included 1/8” mono cable. The meter jack is on the rear of the transceiver, between the DC Out jack and the External Keypad jack.
3. Optionally, connect a 12 volt, 250mA DC power supply to the 2.5x5.5mm coaxial power jack (center positive) on the rear of the M-7600. This only is needed for powering the backlight; the meter will function without 12V.
4. Using the radio’s setup menu, select which parameter to display on the M-7600 under the ACC menu, “External Meter Output” menu.
5. Operate the radio normally; the meter will continuously display the selected value. S-meter function is normally shown on receive, and the selected parameter on transmit.

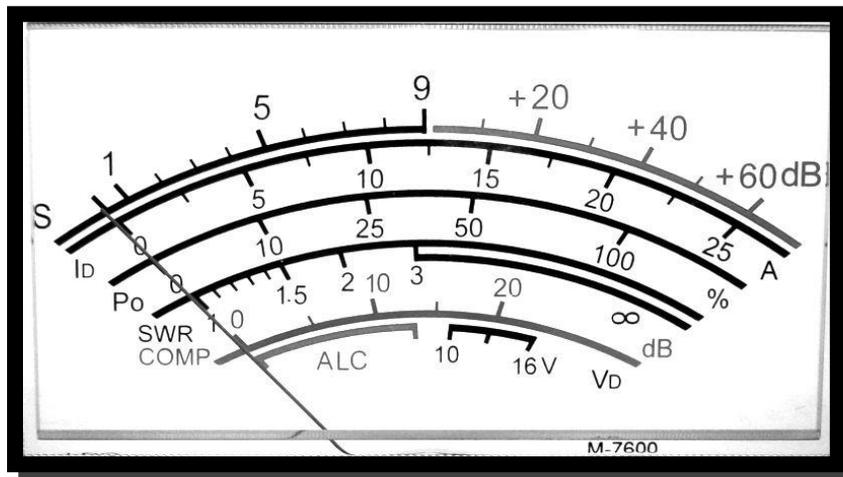
SPECIFICATIONS

- Giant, 4.75" (diagonal) 500 μ A analog meter movement.
- S-meter on receive, Drive current, Drive voltage, Power Output, SWR, Compression level, and ALC on transmit.
- Externally powered cool blue backlighting with adjustable brightness.
- On/Off switch for backlight.
- Dimensions: 5.3 x 4.2 x 4.7 inches.
- Backlight requires 12VDC, 250mA. 2.5 x 5.5mm jack, center positive.

GETTING TO KNOW YOUR M-7600

Your M-7600 is a quality, precision instrument that will give you many years of outstanding service; take a few minutes to get to know it.

Front Panel:



The front panel of the M-7600 shows seven calibrated scales:

- **S:** Received signal strength
- **ID:** Final Output Transistors Drain Current (Amps)
- **Po:** Transmit power output in watts
- **SWR:** Transmit Standing Wave Ratio
- **COMP:** Compression ratio, in dB
- **ALC:** Auto Level Control
- **VD:** Final Output Transistors Drain Voltage

Back Panel:

The rear panel of the M-7600 has two jacks, a rocker switch, and two access holes for adjustments.

The DC Coax jack accepts a 2.5 x 5.5mm coaxial DC power cable, 12V, 250mA, center



positive. External power is only required if use of the internal backlight is desired. The meter functions correctly otherwise without it.

The jack marked “Radio” accepts an 1/8” mono plug, the other end of which plugs into the meter jack on the IC-7600. If desired, a standard headphone extension cable may be used to place the M-7600 farther from the radio.

The rocker switch is used to turn the internal backlight on and off. It may be desirable to turn off the internal backlight when attempting to conserve battery power.

The brightness of the backlight may be adjusted with a small flat blade screwdriver. Carefully insert the screwdriver into the hole labeled “Brightness”, and gently turn the potentiometer left or right until the desired brightness is achieved.

The full-scale reading may be adjusted by turning the potentiometer marked “FS” on the rear of the meter. See the section on Calibration for details.

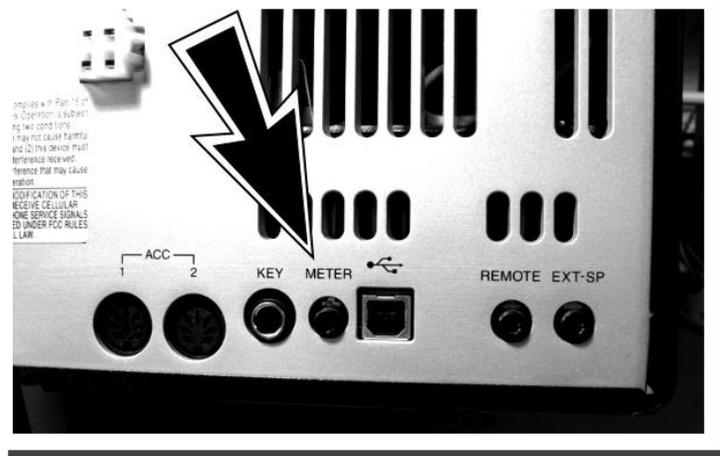
INSTALLATION

The M-7600 is intended for indoor use only; it is not water-resistant. If you use it outdoors, (Hilltopping expedition, for example) you must protect it from rain.

Place the M-7600 in a convenient location near the IC-7600. The included cable has a three foot reach.

The meter jack on the IC-7600 is located on the rear panel, between the Key jack and the USB port. Plug one end of the included 1/8" mono cable into the meter jack. Plug the other end of the cable into the jack marked "Radio" on the rear of the M-7600.

If desired, connect a suitable power supply (12VDC @ 250mA) to the DC Power jack on the rear of the M-7600, using the supplied 2.5 x 5.5mm center-positive power cable. This power connection supplies power to the backlight only. If the backlight feature is not desired, simply leave the DC power unconnected, and the meter will still function normally.



SETUP

Icom included two menu items in the setup menu system of the IC-7600 transceiver, to allow configuring an external meter such as the M-7600.

Initial Calibration

As shipped from the factory, the M-7600 is calibrated, but may require some adjustment due to shipping or other factors. When the radio is off, the needle on the M-7600 should rest at the “1:1” line on the SWR scale. If it does not, insert a flat blade screwdriver into the plastic screw under the meter face on the front panel of the M-7600. Gently turn the screw in either direction until the needle rests on 1:1.

With the radio on, press the **EXIT/SET** button on the front of the transceiver several times to get to the top of the menu system. Next, press the **F6 (SET)** soft button at the bottom of the screen. The main settings screen should now be visible.

Next, press the **F2 (ACC)** soft button. Using the **F1 (down)** and **F2 (up)** soft buttons, scroll down until the **External Meter Output** item is selected. The user has selections of Auto, S, Po, SWR, ALC, COMP, Vd, Id. For the setup, select Auto.

Press the **F1 (down)** button one more time to select **External Meter Level**, and rotate the main dial knob clockwise until the level is at 50 percent.

When the **External Meter Output** menu selection is set to **Auto**, adjust the RF/SQL knob clockwise until the internal meter reads +60 on the S-meter. At this time, the M-7600 meter should also read +60 on the S-meter. If not, insert a flat blade screwdriver into the hole in the rear of the M-7600 marked **FS**, and gently rotate the potentiometer until the **S-meter** scale on the M-7600 reads +60.



The meter is now calibrated, and further calibration should not be necessary.

Meter Parameter Selection

With the transceiver still in the **ACC** menu, on the **External Meter Output** item, rotate the main tuning knob to choose which radio parameter is displayed on the M-7600 during operation. There are eight options from which to choose:

<i>External Meter Output Selection</i>	<i>Meaning</i>
AUTO	External meter displays same as internal (“virtual”) meter
S	Displays signal strength on receive only
P_o	Transmit power output (watts)
SWR	Standing wave ratio
ALC	Automatic Level Control
COMP	Voice compression ratio in dB
V_D	Final amplifier transistor drain voltage. Nominally 13.8VDC
I_D	Final amplifier transistor drain current.

When finished selecting the External Meter Output, press **EXIT/SET** twice to return to normal operation. You may return to this menu at any time to select a different parameter to display, as often as you like.

OPERATION

Operation of the M-7600 is completely transparent. Simply operate the transceiver as usual, and the M-7600 will display the selected parameters during transmit and receive operation. If the display of different parameters is desired, simply repeat the Meter Parameter Selection as required.

The M-7600 has a blue backlight that may be turned on or off using the backlight power switch located on the top rear of the M-7600. The brightness of the backlight may be adjusted by inserting a screwdriver into the hole marked **Brightness** on the rear of the M-7600 and turning gently.

APPLICATION NOTES

Base Station Use

The M-7600 may be placed nearly anywhere on the operating desk. The included 1/8" mono connection cable provides the ability to place the meter up to several feet away from the transceiver. Some obvious choices include on top or beside the radio, or near the station computer.

Remote Use

The M-7600 may be placed farther away from the IC-7600 if desired. A standard 1/8" mono headphone jack extension cable is all that is required to connect the M-7600 to the external meter jack on the IC-7600.

Other Applications

LDG designed your M-7600 specifically for the Icom IC-7600 transceiver, and does not recommend using it in any other application. However, the meter is, in fact, simply a 500 micro-amp meter movement; the calibration potentiometer allows a range of .5 - 2 mA. If you choose to use it in a different application, take care not to exceed the maximum current specification; the meter movement will be damaged or destroyed by current in excess of this specification.

CARE AND MAINTENANCE

The M-7600 tuner is essentially maintenance-free. The outer case may be cleaned as needed with a soft cloth slightly dampened with household cleaning solution. As with any modern electronic device, the M-7600 can be damaged by temperature extremes, water, impact, or static discharge.



TECHNICAL SUPPORT

The LDG customer support staff is ready to answer your product question by telephone and by e-mail. We know that you will enjoy your product even more knowing LDG is ready to answer your questions as the need arises.

LDG regularly updates on-line information so the best on-line support information is available all day and every day.

The LDG website provides links to product manuals, just in case you lose this one! When you are thinking about the purchase of other LDG products our website also has complete product specifications and photographs you can use to help make your purchase decision. Don't forget the links to all of the quality LDG Dealers also ready to help you make that purchase decision.

TWO-YEAR TRANSFERRABLE WARRANTY

Your product is warranted against manufacturer defects in parts and labor for two full years from the date of purchase. This two-year warranty is also transferable. When you sell or give away your LDG product, give the new owner a copy of the original sales receipt and the two-year warranty goes with the new owner.

There is no need to complete a warranty card or to register an LDG product. Your product receipt establishes eligibility for warranty service, so save that receipt. Send your receipt with the product whenever you send your product to LDG for repair. Products sent to LDG without a receipt are considered requests for out-of-warranty repair.

LDG does not warranty against product damage or abuse. This means that a product failure, as determined by LDG, to be caused by the customer or by other natural calamity (e.g. lightning) is not covered under the two-year warranty. Damage can be caused by failure to heed the product's published limitations and specifications or by not following good Amateur practice.

OUT OF WARRANTY SERVICE

If a product fails after the warranty period, LDG wants to help you get it fixed. Send the product to us for repair any time you like. We will determine what needs to be done and based on your instructions, either contact you with an estimate or fix it and contact you with a request to pay any repair charges.

RETURNING YOUR PRODUCT FOR SERVICE

Returning a product to LDG is easy. We do not require a return merchandise authorization, and there is no need to contact LDG to return your product. Visit the LDG web site and download the LDG Product Repair Form. On the Repair Form tell the LDG technicians exactly what happened or didn't happen and why you believe the product needs servicing. The technician attempts to duplicate the problem(s) you had based on how well you describe it so take the time to be accurate and complete.

Ask your shipper for a tracking number or a delivery verification receipt. This way you know the product arrived safely at LDG. Be sure to give us your email address so our shipper can alert you online when your product is en-route back to you. Please be assured that our staff makes every effort to complete repairs ahead of our published wait time. Your patience is appreciated.

Repairs can take six to eight weeks, but are usually faster. The most recent information on returning products for service is found on the LDG website under Support, then Tech Support. Send your carefully packaged unit with the Repair Form to:

LDG Electronics, Inc.
Attn: Repair Department
1445 Parran Rd
St. Leonard, MD 20685

PRODUCT FEEDBACK

We encourage product feedback! Tell us what you really think of your LDG product. In a card, letter, or email (preferred) tell us how you used the product and how well it worked in your application. Send along a photo or even a schematic or drawing to illustrate your narrative. We like to share your comments with our staff, our dealers, and even other customers at the LDG website.

<http://www.ldgelectronics.com/>

