

**LDG M-7700  
External Meter for  
Icom IC-7700**



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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-7700. The M-7700 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-7700 plugs into the external meter jack on the Icom IC-7700 transceiver. The parameter displayed on the M-7700 can be either the same as the parameter displayed on the main IC-7700 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-7700:

1. Configure the IC-7700 for normal operation.
2. Plug the M-7700 into the radio’s meter jack using the included 1/8” stereo 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-7700. 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-7700 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.

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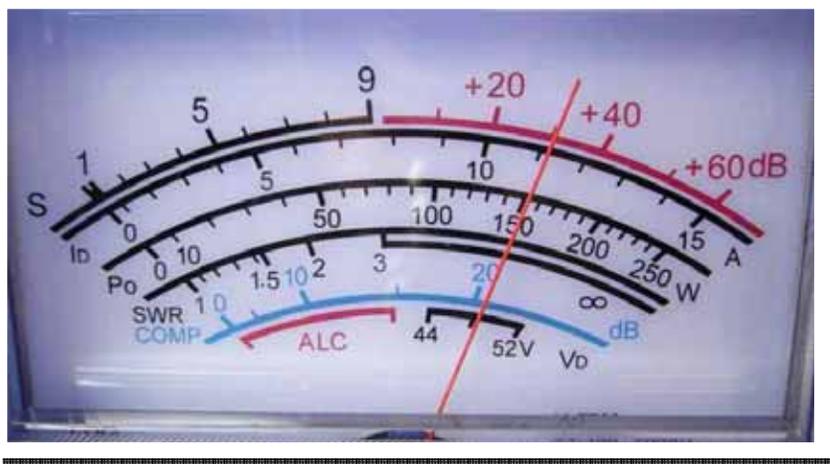
## SPECIFICATIONS

- Giant, 4.75" (diagonal) 500  $\mu$ 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-7700

Your M-7700 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-7700 shows seven calibrated scales:

- **S:** Received signal strength
- **I<sub>D</sub>:** Final Output Transistors Drain Current (Amps)
- **P<sub>O</sub>:** Transmit power output in watts
- **SWR:** Transmit Standing Wave Ratio
- **COMP:** Compression ratio, in dB
- **ALC:** Auto Level Control
- **V<sub>D</sub>:** Final Output Transistors Drain Voltage

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*Back Panel:*

The rear panel of the M-7700 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" stereo plug, the other end of which plugs into the meter jack on the IC-7700. If desired, a standard headphone extension cable may be used to place the M-7700 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.

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## INSTALLATION

The M-7700 is intended for indoor use only; it is not water-resistant. If you use it outdoors, (QSO Party outdoor barbecue, for example) you must protect it from rain.

Place the M-7700 in a convenient location near the IC-7700. The included cable has a three foot reach.

The meter jack on the IC-7700 is located on the rear panel, between the DC Out jack and the External Keypad jack. Plug one end of the included 1/8" stereo cable into the meter jack. Plug the other end of the cable into the jack marked "Radio" on the rear of the M-7700.

If desired, connect a suitable power supply (12VDC @ 250mA) to the DC Power jack on the rear of the M-7700, 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.



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## SETUP

Icom included two menu items in the setup menu system of the IC-7700 transceiver, to allow configuring an external meter such as the M-7700.

### *Initial Calibration*

As shipped from the factory, the M-7700 is calibrated, but may require some adjustment due to shipping or other factors. When the radio is off, the needle on the M-7700 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-7700. 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 **F7 (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. Rotate the main dial knob until **V<sub>D</sub>** is selected. This displays the output drive transistor voltage, which should be constant at 48 volts.

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 100 percent.

Repeatedly press the soft button that is second from the top on the left side of the IC-7700 main screen (**METER**) until something other than **V<sub>D</sub>** is displayed on the built-in “virtual” meter. The M-7700 meter should now be showing near 48V on its **V<sub>D</sub>** scale.

When the **External Meter Output** menu selection is set to **V<sub>D</sub>**, and the internal meter is not displaying **V<sub>D</sub>**, the M-7700 should indicate 48VDC. If not, insert a flat blade screwdriver into the hole in the rear of the M-7700 marked **FS**, and gently rotate the potentiometer until the **V<sub>D</sub>** scale on the M-7700 reads exactly 48V. 48V is the tick mark in the center of the 44 to 52V **V<sub>D</sub>** scale.

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-7700 during operation. There are eight options from which to choose:

<i>External Meter Output Selection</i>	<i>Meaning</i>
<b>AUTO</b>	External meter displays same as internal (“virtual”) meter
<b>S</b>	Displays signal strength on receive only
<b>P<sub>O</sub></b>	Transmit power output (watts)
<b>SWR</b>	Standing wave ratio
<b>ALC</b>	Automatic Level Control
<b>COMP</b>	Voice compression ratio in dB
<b>V<sub>D</sub></b>	Final amplifier transistor drain voltage. Nominally 48VDC
<b>I<sub>D</sub></b>	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.



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## OPERATION

Operation of the M-7700 is completely transparent. Simply operate the transceiver as usual, and the M-7700 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-7700 has a blue backlight that may be turned on or off using the backlight power switch located on the top rear of the M-7700. The brightness of the backlight may be adjusted by inserting a screwdriver into the hole marked **Backlight** on the rear of the M-7700 and turning gently.

## APPLICATION NOTES

### *Base Station Use*

The M-7700 may be placed nearly anywhere on the operating desk. The included 1/8" stereo 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-7700 may be placed farther away from the IC-7700 if desired. A standard 1/8" stereo headphone jack extension cable is all that is required to connect the M-7700 to the external meter jack on the IC-7700.

### *Other Applications*

LDG designed your M-7700 specifically for the Icom IC-7700 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.

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## CARE AND MAINTENANCE

The M-7700 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-7700 can be damaged by temperature extremes, water, impact, or static discharge.

## TECHNICAL SUPPORT

The LDG Customer Support Center staff is ready to answer your product question by telephone and over the Internet. We know that you will enjoy your product even more knowing LDG is ready to answer your questions as the need arises.

Our website links you to the on-line Customer Support Center where you can send us a question, do your own research in the LDG Product Knowledge Books, and read through lists of frequently asked product questions. 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.

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

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## **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**

Any time a product fails after the warranty, LDG wants to help you get it fixed. Send the product to us for repair. We will determine what needs to be done, and, based on your prior instruction, either contact you with an estimate or fix it and contact you with a request to pay any repair charges. Please contact LDG if you have any questions before you send us an out-of-warranty product for repair.

## **RETURNING YOUR PRODUCT FOR SERVICE**

Returning a product to LDG is easy. We do not require a return merchandise authorization. Visit the Customer Support Center 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 than this. The most recent information on returning products for service is found at the LDG Customer Support Center.

Mail your carefully packaged repair with the Repair Form to:

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

