

**LDG FTL-Meter  
External Meter for  
Yaesu FT-857  
and FT-897**



**LDG Electronics**

1445 Parran Road  
St. Leonard MD 20685  
Phone: 410-586-2177  
Fax: 410-586-8475  
[ldg@ldgelectronics.com](mailto:ldg@ldgelectronics.com)  
[www.ldgelectronics.com](http://www.ldgelectronics.com)

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# Table Of Contents

<b>Introduction</b>	<b>3</b>
<b>Jumpstart, or “Real hams don’t read manuals!”</b>	<b>3</b>
<b>Specifications</b>	<b>4</b>
<b>Getting to know your FTL-Meter</b>	<b>4</b>
<i>Front Panel:</i>	<b>4</b>
<i>Back Panel:</i>	<b>5</b>
<b>Installation</b>	<b>6</b>
<i>FT-857 Installation:</i>	<b>6</b>
<i>FT-897 Installation:</i>	<b>7</b>
<b>Setup</b>	<b>7</b>
<i>Initial Calibration</i>	<b>7</b>
<i>Receive Parameter Selection</i>	<b>8</b>
<i>Transmit Parameter Selection</i>	<b>9</b>
<i>Finish Setup</i>	<b>9</b>
<b>Operation</b>	<b>10</b>
<b>Application Notes</b>	<b>10</b>
<i>Base Station Use</i>	<b>10</b>
<i>Mobile Use</i>	<b>10</b>
<i>Other Applications</i>	<b>10</b>
<b>Care and Maintenance</b>	<b>11</b>
<b>Technical Support</b>	<b>11</b>
<b>Two-Year Transferrable Warranty</b>	<b>11</b>
<b>Out Of Warranty Service</b>	<b>11</b>
<b>Returning Your Product For Service</b>	<b>11</b>
<b>Product Feedback</b>	<b>12</b>

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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 FTL-Meter. The FTL-Meter 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 FTL-Meter plugs into the external meter jack on the FT-857 or FT-897 radio. Like the original FT-Meter, the FTL-Meter is highly portable, making it ideal for DXpedition use, but the FTL-Meter provides a much larger meter face for easier readability from even farther away.

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

Ok, but at least read this one section before operating the FTL-Meter:

1. Configure the FT-857 or FT-897 for normal operation.
2. Plug the FTL-Meter into the radio’s meter jack using the right angle plug. The meter jack is on the bottom of the front panel, under the FUNC button on the FT-857, and just to the right of the main tuning knob on the FT-897.
3. Optionally, connect a 12 volt, 100mA DC power supply to the 2.5x5.5mm coaxial power jack (center positive). This only is needed for powering the backlight; the meter will function without 12V.
4. Using the radio’s extended menu system, under menu items number 60 and 61, select the desired parameters to display on the meter for receive and transmit.
5. Operate the radio normally; the meter will continuously display the selected receive and transmit values.

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## SPECIFICATIONS

- Giant, 4.75" (diagonal) 500  $\mu$ A analog meter movement.
- S-meter, Discriminator, or Battery Voltage readout on receive.
- Power Output, SWR, Modulation, ALC, or Battery Voltage on transmit.
- Externally powered cool blue backlighting with adjustable brightness.
- On/Off switch for backlight.
- Dimensions: 5.2w x 4.2h x 4.5d inches. Weight: 14 oz
- Backlight requires 12VDC, 250mA. 2.5 x 5.5mm jack, center positive.

## GETTING TO KNOW YOUR FTL-METER

Your FTL-Meter 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 FTL-Meter shows seven calibrated scales:

- **S:** Received signal strength
- **ALC:** Automatic Level Control voltage, on transmit. Shares the S-meter scale.
- **PWR:** Transmit power output in watts
- **SWR:** Transmit Standing Wave Ratio
- **MOD:** Transmit modulation percentage
- **VOLT:** Battery voltage, in transmit or receive
- **DISC:** FM discriminator reading on receive

The FTL-Meter displays different scales on receive and transmit. Selection of which scales is made in the radio's setup menu. There are no controls on the FTL-Meter; operation is fully automatic.

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*Back Panel:*



The rear panel of the FTL-Meter 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, 100mA, 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 FT-857 or FT-897. If desired, a standard headphone extension cable may be used to place the FTL-Meter 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

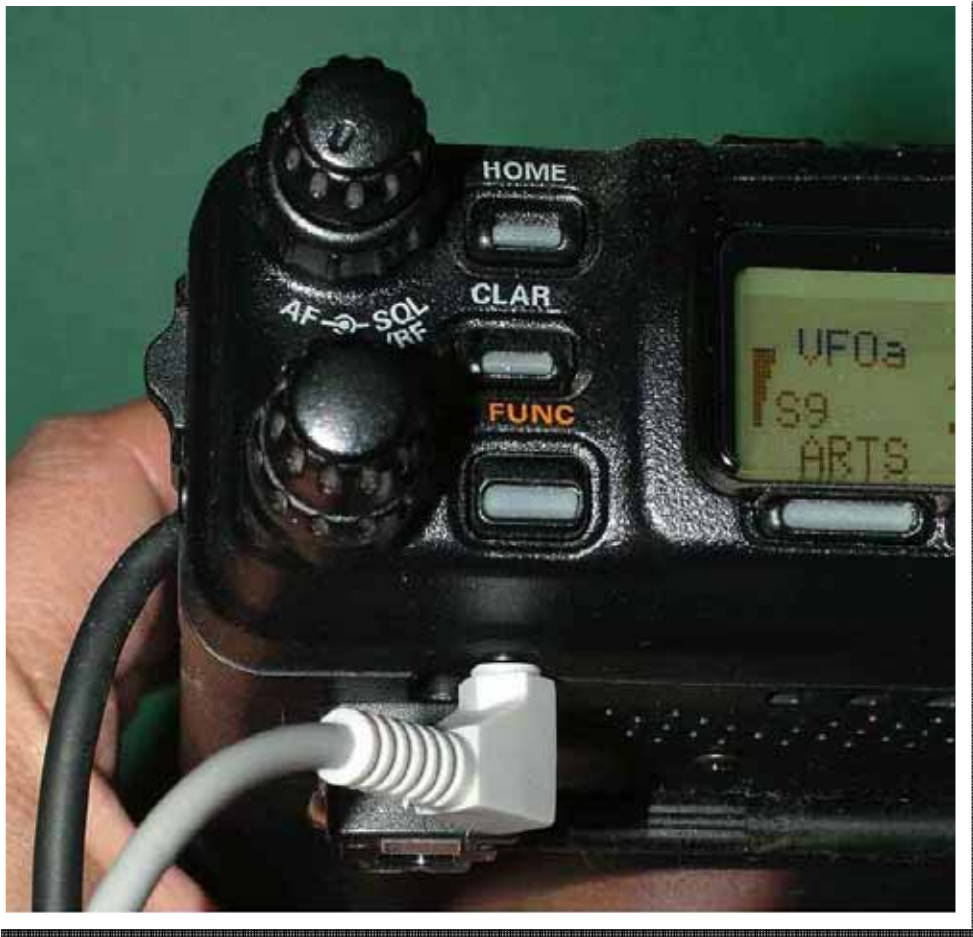
The FTL-Meter is intended for indoor use only; it is not water-resistant. If you use it outdoors, (QSO Party outdoor barbecue, for example) you must protect it from rain.

Place the FTL-Meter in a convenient location near the FT-857 or FT-897. The included cable has a six foot reach.

### *FT-857 Installation:*

The meter jack on the FT-857 is located under the front panel, near the FUNC button. Plug the right-angle 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 FTL-Meter.

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



FTL-Meter, 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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### *FT-897 Installation:*

The meter jack on the FT-897 is located under the front panel, just to the right of the main tuning knob. Plug the right-angle 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 FTL-Meter.

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



FTL-Meter, 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**

Yaesu included two menu items in the extended menu system of the FT-857 and FT-897 transceivers, to allow configuring an external meter such as the FTL-Meter. In order to access those menu items, first, the extended menu system must be enabled if it is not already.

Press and hold the **FUNC** button on the transceiver to enter menu mode. Rotate the **SELECT** knob until menu 1, "EXT MENU" is showing. Turn the main tuning knob until EXT MENU is "**ON**". This enables the extended menu system.

### *Initial Calibration*

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

Next, the full scale reading of the meter should be calibrated. With the transceiver turned on, enter menu mode, and rotate the **SELECT** knob until menu item 60 "MTR ARX SEL" is showing. Now rotate the main tuning knob until "**FS**" is displayed. This tells the transceiver to output a full-scale reading signal on the meter jack, for calibration. Verify that the needle is now resting on the very right-hand edge of the red portion of the S-meter scale, just to the right of the +60 mark.



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If the full scale reading requires adjustment, insert a small flat blade screwdriver into the hole marked "FS" on the rear of the FTL-Meter, and turn the potentiometer gently left or right until the needle is exactly in the correct position on the meter.

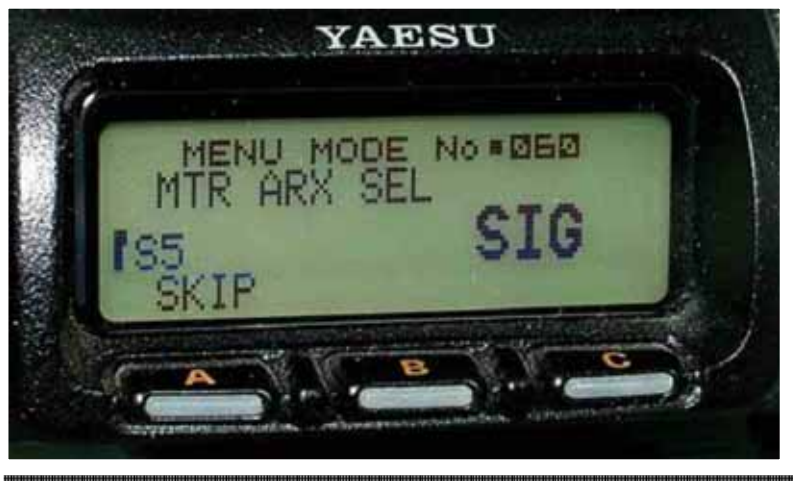
The meter is now calibrated, and further calibration should not be necessary.

*Receive Parameter Selection*

With the transceiver still in menu mode, on menu #60, "MTR ARX SEL", rotate the main tuning knob to choose which radio parameter is displayed on the FTL-Meter during receive operation. There are four options from which to choose:

<i>Menu #60 MTR ARX SEL</i>	<i>Meaning</i>
<b>OFF</b>	No meter display when receiving
<b>VLT</b>	Displays incoming power supply voltage
<b>CTR</b>	FM discriminator centering. FM reception is tuned properly when the needle is in the center.
<b>SIG</b>	Received signal strength (S-Meter)

Select the desired parameter that will be displayed when the transceiver is in receive mode.





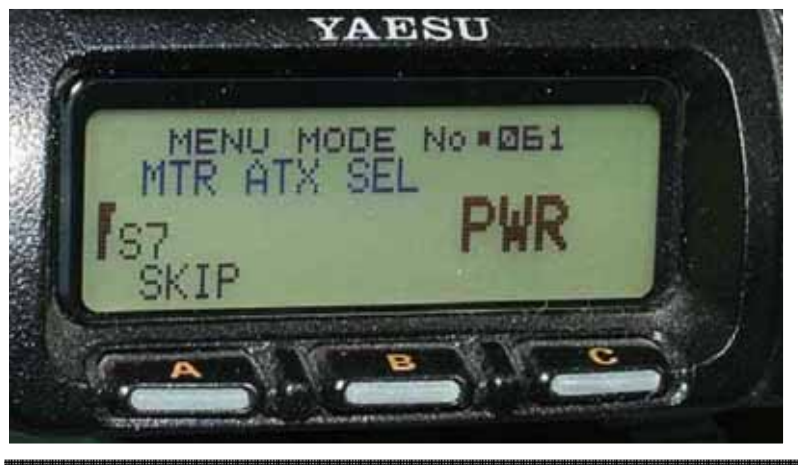
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## Transmit Parameter Selection

With the transceiver still in menu mode, turn the **SELECT** knob until menu item #61, “MTR ATX SEL” is displayed. This menu selects what value is displayed on the meter during transmit operation. Rotate the main tuning knob to select one of the following 6 options:

<i>Menu #61 MTR ATX SEL</i>	<i>Meaning</i>
<b>OFF</b>	No meter display when receiving
<b>VLT</b>	Displays incoming power supply voltage
<b>SWR</b>	Standing Wave Ratio (SWR)
<b>MOD</b>	Modulation percentage / deviation level
<b>ALC</b>	Automatic Level Control voltage
<b>PWR</b>	Transmit power output

Select the desired function to display.



### *Finish Setup*

When finished with selecting receive and transmit parameters, press and hold the **FUNC** button to return the radio to normal operation. If, at some point, it is desired to display different parameters, the parameter selection process can be repeated. Just select menu item 60 for the receive parameter, or menu item 61 for the transmit parameter.

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## OPERATION

Operation of the FTL-Meter is completely transparent. There are no controls, and no user input is required. Simply operate the transceiver as usual, and the FTL-Meter will display the selected parameters during transmit and receive operation. If the display of different parameters is desired, simply repeat the Receive Parameter Selection or Transmit Parameter Selection as required.

## APPLICATION NOTES

### *Base Station Use*

The FTL-Meter 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.

### *Mobile Use*

The FTL-Meter is ideal for mobile operation. As the FTL-Meter is a bit larger than its smaller cousin, use of Velcro to mount the meter to the dashboard is not recommended.

If using the FTL-Meter in a mobile application, LDG recommends that a fused power cable (not included) is used to power the FTL-Meter. A 1 amp "fast-blow" fuse is recommended.

Remember to keep your eyes on the road, and not on the giant FTL-Meter's meter face!

### *Other Applications*

LDG designed your FT-Meter specifically for the Yaesu FT-857 and FT-897 transceivers, 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 FTL-Meter 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 FTL-Meter 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.

## **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.

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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 on the LDG website.

Mail your carefully packaged repair 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/>

