

# *PowerMonitor III*

**Digital Power and SWR meter for HF bands**



2016

**Power Monitor III** is an accurate Power and SWR meter as well a protective device. PTT line will be interrupted if power or SWR exceed their maximum values. The display shows all parameters and an alarm status of a transmission line.

**Power Monitor III** is independent device with a microcontroller process control. There are two main blocks of the Power Monitor III – Coupler (3000 or 5000 watts) and a microcontroller with a display block. Coupler is responsible to measure direct and a reflected power and connected with a cable to a microcontroller block where all data processed and shown on a display.

**Power Monitor III** has a peak-hold numeric readout for power and SWR.

### ***Power Monitor III Specification***

• Frequency Range	0.1 - 30MHz
• SWR Range	1.00 - 10.00
• Power Range	0.1 – 3000 or 5000 watts
• Real time power and SWR measurements	
• Power Accuracy	0.1 dBm
• SWR Accuracy	2 decimal places
• Power Indicator	Progress Bar
• Peak-hold power readout	
• Power display units	Watt or dBm
• Simultaneous direct and reflected power in Watts	
• Return Loss Indicator	
• High Power and SWR alarm system	
• Simple two button setup	
• SO239 UHF connectors	
• Dimensions	170 x 110 x 50mm
• 12VDC power connector	

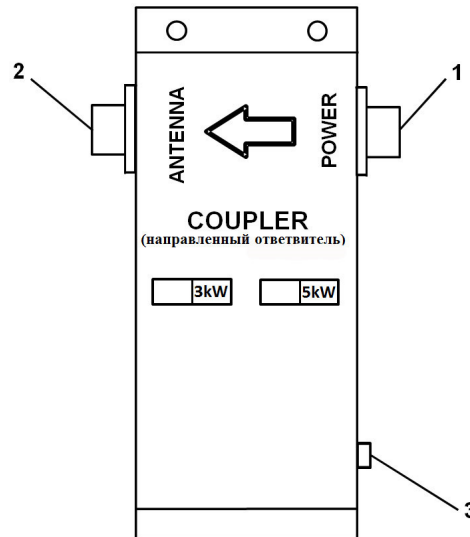
## Operation Manual

Coupler installed in a transmission line between an amplifier and antenna. Coupler can be used with a 50 Ohm coaxial cable.

Coupler must be installed after an amplifier and after all tuning devices, such as tuners, filters and so on.

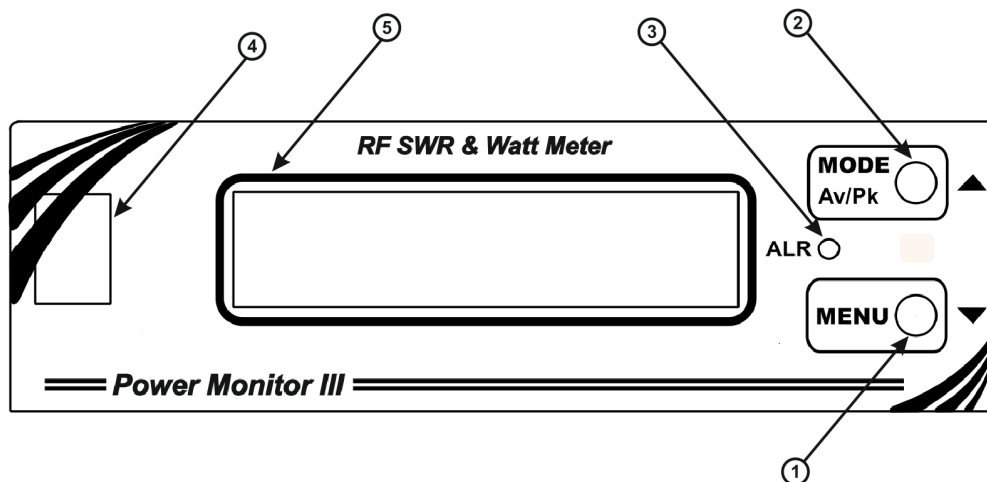
DO NOT EXCEED A MAXIMUM COUPLER POWER SHOWN ON A COUPLER FOR A LONG PERIOD OF TIME.

(The maximum output power shall not exceed more than 5-10% of a maximum coupler power for short period of time, no longer than 10 - 20 sec)

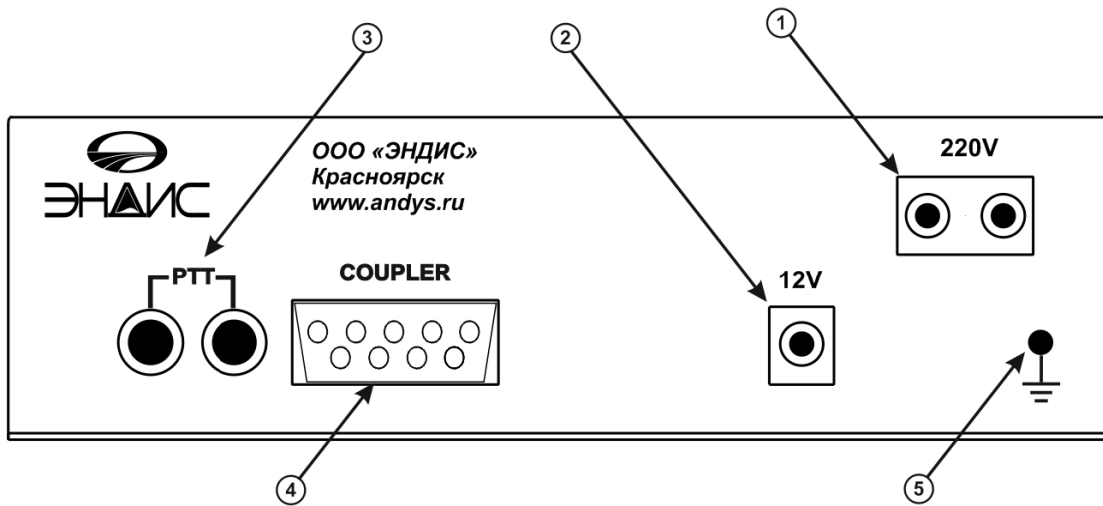


1. POWER – Input port
2. ANTENNA – To Antenna port
3. Connection to Main Unit

### Front/Rear Panel View:

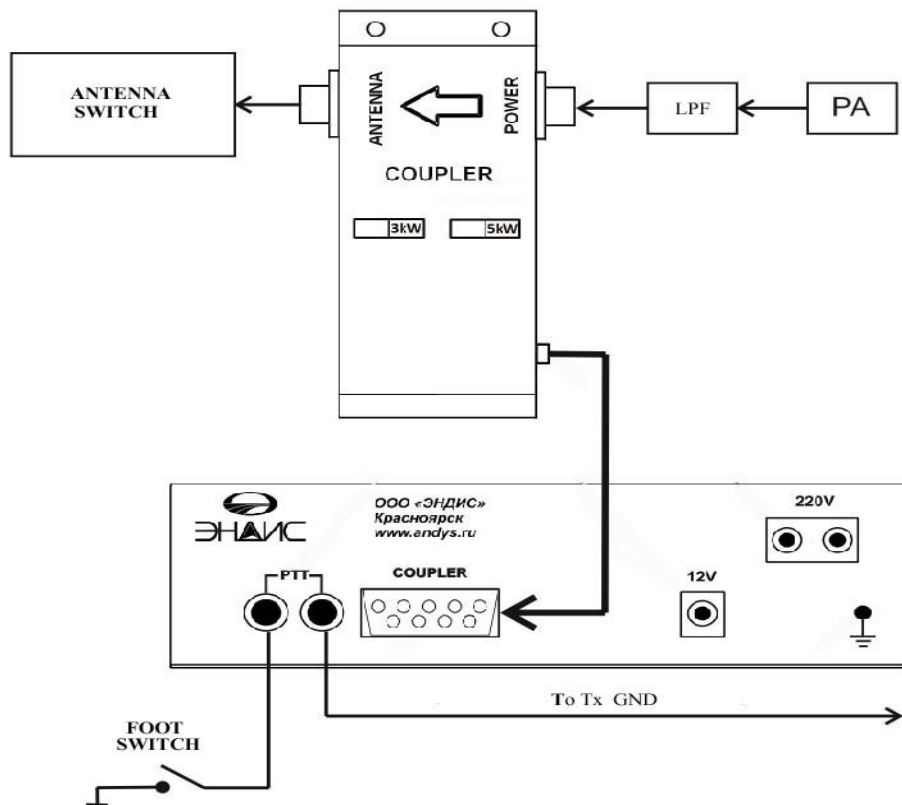


1. Button **MENU** (see 3)
2. Button **Av/Pk MODE** (see 3)
3. **ALR** – alarm status indicator
4. Power switch
5. Display



1. 120/220 VAC connector
2. 12 VDC connector
3. PTT – PTT or foot pedal switch line
4. COUPLER – Connection to Coupler
5. GND –Ground Connector

**Connection Diagram:**



## 2. Button Functions

All buttons have two functional behaviors, **TAP** and **HOLD**:

- **TAP** (press briefly for 0.5 sec)
- **HOLD** (press and hold longer than 1 sec)

You can hear a short beep signal when function completed:

- **TAP** (one beep signal)
  - **HOLD** (double beep signal)
- =====

**MENU** button:

ENTER to **MENU** (**HOLD** to activate)

EXIT from **MENU** (**HOLD** to activate)

If you are in a **MENU** mode – ARROW DOWN tapping will decrease a MENU value (**TAP** to activate)

Band change DWN (**TAP** to activate) ARROW DOWN

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**MODE** button:

DISPLAY mode change (**HOLD** to activate). Every **HOLD** press will change Display mode. (See 3)

If you are in a **MENU** mode, press **HOLD** to change a menu option (**HOLD** to activate)

If you are in a **MENU** mode, press **TAP** to increase a value in any **MENU** option (**TAP** to activate) ARROW UP

Band change UP (**TAP** to activate) ARROW UP

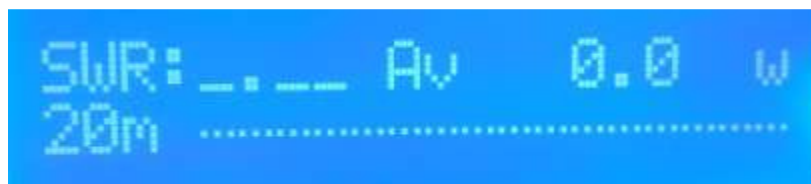
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## 3. Display Mode

Press **HOLD** the **MODE** button to enter to DISPLAY mode.

DISPLAY mode changes reflected on main display:

**Mode 1** – “**Av**” shows an **Average Output Power**. This is a **Default** mode to show an average output power. CW is where “**Av**” option recommended to be used



- SWR and Band (SWR mode can be changed see 5)
- Output Power

### ATTENTION!

**Output Power in this mode is:**

$$P = P \text{ (forward)} - P \text{ (reflected)}$$

This is not an amplifier output power.

If you would like to know your amplifier output power, “**F-R**” Forward-Reflected Mode should be used.

- Progress Bar reflects the level of output power. Progress Bar appearance can be changed.
- Band indicator reflects a band currently under measurements. Band indicator can be removed (see 5).

**Mode 2** – “**Pk**” shows a peak output power.

SSB is a mode where "PK" mode recommended to be used.



**Mode 3 - "E-R" Forward-Reflected Mode:**



**F – Forward power in Watts**

**R – Reflected power in Watts**

- This mode allows to control SWR and to see how much power Reflected.
- The peak detector is disabled in this mode.



**Mode 3 – Shows power in dBm and Return Loss in dB:**

- SWR and Band ( can be changed see 5)
- P – Output Power in dBm
- RL – Return Loss in dB
- The peak detector disabled in this mode.

#### **4. «ALR» Alarm Indicator**

If any parameter exceeds the maximum level the "ALR" LED indicators is ON.

At this moment PTT relay interrupt PTT line to get an amplifier off the line.

Display shows SWR and Power alarm messages as shown below:



**MENU** option – Time Stop Alarm allows automatic reset operations (see 5)

**Please, remove all problems that caused PTT interruption to resume operation!!**





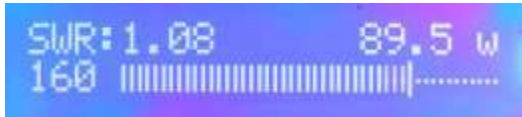
### 5. Menu

**HOLD** (press and hold) **Menu** button to enter into menu options. There are 9 items available for the setup.

Every **MENU** item shown on a display with saved in a **PowerMonitor** memory.

**TAP** (short press) **“MODE”** button to increase a menu item value or **TAP “MENU”** option to decrease the value.

**HOLD** (press and hold) **“MODE”** button to go to the next Menu item. The current menu item value will be save into memory.

	<p><b>SWR Alarm Level</b>  <b>TAP</b> (short press) <b>“MODE”</b> button to increase alarm SWR by 0.1  <b>TAP</b> (short press) <b>“MENU”</b> button to decrease alarm SWR by 0.1  Maximum alarm SWR – <b>5</b>.  Setting SWR alarm – <b>OFF</b> will show SWR up to level 10.  Alarm will be ON if SWR would exceed 10.</p> <p><i><b>HOLD</b> (press and hold) button <b>“MODE”</b> to go to the next menu item.</i></p>
	<p><b>Default power step is 50 watts</b>  Power step can be changed to <b>50, 100, 150, 200 or 250</b></p> <p><i><b>HOLD</b> (press and hold) button <b>“MODE”</b> to go to the next menu item</i></p>
	<p><b>Power Alarm Level</b>  <b>TAP</b> (short press) <b>“MODE”</b> or <b>“MENU”</b> buttons to change Power Alarm level in a power step increment described in Menu item 2 above.  <b>OFF</b> mode defines the maximum power level of 4000 or 7000 watts.  <b>PTT</b> line will be switched <b>OFF</b> if output power exceed the maximum level.</p> <p><i><b>HOLD</b> (press and hold) button <b>“MODE”</b> to go to the next menu item</i></p>
 	<p><b>BAND on Display OFF/ON</b>  <b>TAP</b> (short press) <b>“MODE”</b> button to show <b>BAND</b> indicator on a display ON or OFF.</p> <p><i><b>Band indicator is “ON”</b></i></p>

	<p><b>BAND indicator is "OFF"</b></p> <p>If <b>BAND</b> indicator is OFF the band power calculation correction is OFF as well. Power accuracy will be lower with power level accuracy around 5%.</p> <p><i>HOLD (press and hold) button "MODE" to go to the next menu item</i></p>
	<p><b>SWR on Display:</b></p> <p>SWR level if no power applied:</p> <p>1 - symbols &lt; -.- &gt;</p> <p>2 - <b>hold last SWR</b> shown on a display value</p> <p><b>TAP</b> (short press) "MODE" button to change SWR mode.</p> <p><i>HOLD (press and hold) button "MODE" to go to the next menu item</i></p>
	<p><b>Alarm Enable Time</b></p> <p>The speed of Alarm reaction speed can be changed from 0 to 9 value.</p> <p><b>TAP</b> (short press) "MODE" button to change a value.</p> <p>Recommended value between 3 and 6</p> <p><i>HOLD (press and hold) button "MODE" to go to the next menu item</i></p>
	<p><b>Alarm Hold Time</b></p> <p>It can be changed from 1 to 20.</p> <p><b>TAP</b> (short press) "MODE" button to change a value.</p> <p><i>HOLD (press and hold) button "MODE" to go to the next menu item</i></p>
	<p><b>Progress Bar view</b></p> <p><b>TAP</b> (short press) "MODE" button to change a value.</p> <p><i>HOLD (press and hold) button "MODE" to go to the next menu item</i></p>
	<p><b>Maximum (Peak) Power Hold Time</b></p> <p>It can be changed from 1 to 20.</p> <p><b>TAP</b> (short press) "MODE" button to change a value.</p> <p><i>HOLD (press and hold) button "MENU" to exit "MENU"</i></p>

\* **HOLD** (press and hold) button "MENU" to exit "MENU"

\* **BAND** change (if **BAND** on Display is ON) can be done:

**MODE - Band UP**

**RESET - Band DWN**