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VECTOR DIGITAL WATTMETER FX1
3/5 kWatt

USER MANUAL

SAFETY INFORMATION

Handle your FX1 with care. It may be damaged if dropped, burnt, punctured or broken, or if it comes into contact with liquids. Do not use FX1 if it has been damaged.

Repairs. Do not open FX1 and try to repair by yourself. Disassembly may damage the device or cause you injury.

Do not exceed the maximum power of the FX3 or FX5 sensor. All powers shown are P&P (peak). FX5 sensor max 5kW and FX3 3kW peak in SSB mode .

Do not try to modify the sensors or tamper with them. In case of use in CW/RTTY/FM/AM/FT8 the permitted power decreases in percentage with the passing power.

If the sensor overheats, reduce the power and turn off the instrument. Do not transmit with high SWR. Use RF cables well sized for the power applied.

Disposal of Electrical & Electronic Equipment. This symbol indicates that this RAEE product should not be treated as household waste. Instedhand it over to the appropriate collection point for recycling of electrical and electronic equipment which will conservenatural resources. If it is not possible to deliver to a collection point, it can be disposed of through your local retailer.

IMPORTANT INFORMATION Read all the operating instructions, safety tips and warnings in the instruction manual. Identifying potential hazardous situations and observing the appropriate safety rules will avoid accidents.

Dangerous situations to avoid in order to prevent all risks that are shown above. Never use the FX1 inappropriately, but only as described in the user manual. Not responsible for incorrect measurements or calibration problems.The Manufacturer reserves the date the technical information contained in this manual without notice.

INTRODUCTION

The Metropwr FX1 Wattmeter is designed for amateur radio use. It is a very useful tool for monitoring the power of a radio or linear amplifier. It is managed by a powerful 32bit microprocessor and also has a USB port to interface it with the computer. All the parameters are displayed on a large, very fast and bright 3.1" OLED display. The update frequency of the measurements is very high and they are all in real time. The FX1 has an internal EEPROM memory where all the parameters are stored calibration parameters. Through a service menu it is possible to update the fw and recalibrate the wattmeter in a very simple way. We can connect an FX7 (optional) Antenna switch and two sensor FX5 or FX3 3 or 5 kWatt. The FX1 can measure:

- **Autoranging Power FWD/REF mode P&P / AVG / dB**
- **SWR**
- **Impedance Z**
- **Resistance R**
- **Reactance |X|**

All measurament are displayed simultaneously and can be shown graphically on the display.

Tha FX1 can be interfaced to PC via USP port and through proprietary software it is possible to view all parameters. Each function can be modified and upgraded through a simple firmware update.

A convenient menu allows the user to recalibrate the instrument at any time using a simple reference wattmeter.

It is possible to combine up to two sensors, even with different power, and a 1 x 4 position switch antenna. It allows you to switch up to 4 antennas directly from the wattmeter menu and external software. This function is ideal for remote control of the instrument.

METROPWR FX1

DESCRIPTION

Display OLED 3.1”

POWER LED
ALARM LED

POWER ON/OFF

MODE SWITCH

SET SWITCH

SETUP SWITCH

FX7 PORT*
(don’t connect PC/LAN)

POWER 13,8V

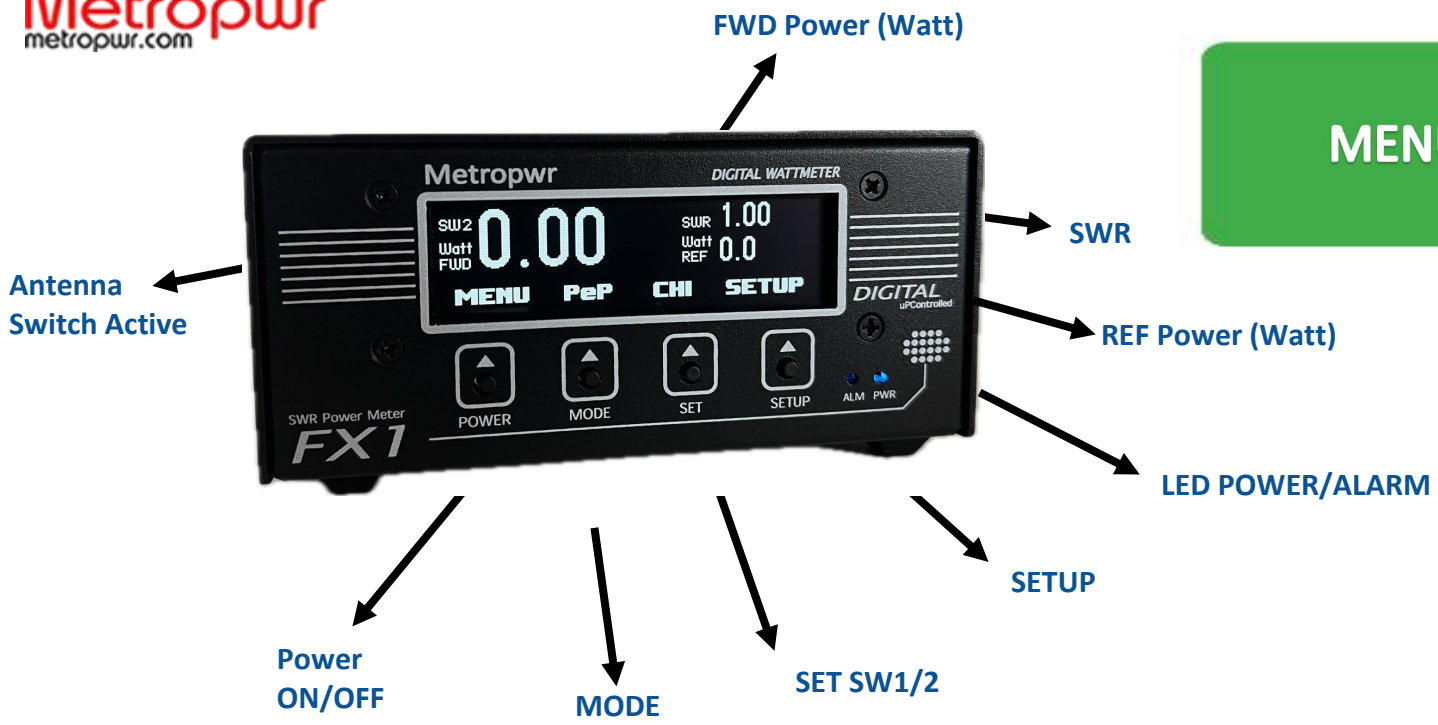
MICRO/USB PORT

PORT SENSOR B

PORT SENSOR A

Attention don’t connect PC or LAN Switch, use only to connect Antenna SWITCH FX7 (optional) .

MENU



MENU METER

- FWD Power, SWR and Active Switch.

MENU R/Z/X

- Impedance, Resistance, Reactance, SWR displayed.

SETUP

- Adjustment of the screen saver time of the display. After the set period the screen saver starts

BEEP ON/OFF

- Disable the function key beep.

POWER MODE

The display shows:
- forward power
- forward power - reflected power (default)

USB ON/OFF

- Enable or disable the USB port. If the FX1 is interfaced to the PC, set USB ON.

SWR ALARM

- SWR alarm protection intervention threshold. Once the set threshold is exceeded, a BEEP is heard and the Alarm LED lights up.

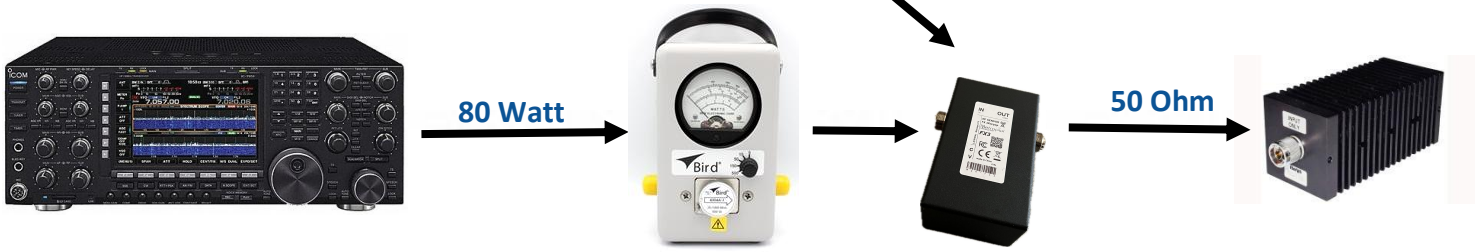
FW VERSION

- This menu shows the installed firmware

POWER CALIBRATION

To CALIBRATE POWER:

- Disconnect the power cord and while reconnecting, push the POWER button
- Connect the Coupler as in the figure to a 50 Ohm dummy load
- Transmit a precise power of 80Watt in CW
- Save measurement with SAVE button
- Repeat the operation for all bands 160 to 6mt.



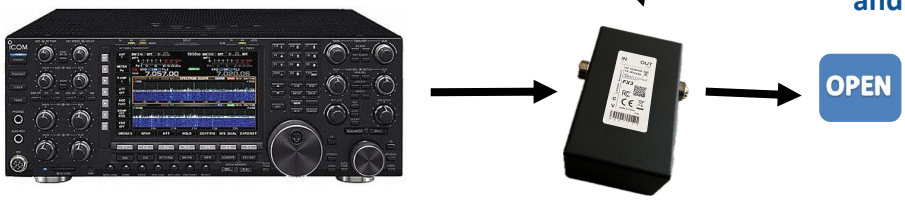
⚠ Be careful transmit with precise 80Watts. A different power compromises the accuracy of the calibration.

SWR CALIBRATION

To CALIBRATE SWR:

- Disconnect the power cord and while reconnecting, push the MODE button
- Connect the Coupler as in the figure.
- Disconnect the antenna or dummy load from OUT port of the coupler
- Transmit power of 30/50Watt in CW
- Save measurement with SAVE button
- Repeat the operation for all bands 160 to 6mt.

*The transmission power is not critical and can be between 30 and 50 Watts



⚠ **Be careful transmit for a few seconds, the radio can be damaged without antenna.**

RESET

To RESET device:
- **Disconnect the power cord and while reconnecting, push the SETUP button**
- **Confirm EEPROM deletion with MODE button**
- **After the reset, recalibrate the wattmeter.**

Erasing the EEPROM involves the loss of all calibration parameters.

SCHEMATIC

Jack 2.5mm
13,8Volt

Micro USB

Coupler 2

Coupler 1

Do not connect PC or Lan cable

***Connect the Couplers respecting the colors of SMA connectos as in the photo.**

NOTE

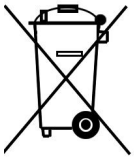
DECLARATION OF CONFORMITY

Manufacturer's: Metropwr di Ferrulli Antonio & C.

Address: Via Cap.Locorriere 32 70025 Grumo Appula (Italy)

Product Moldel: Metroprw FX773

Date 1/1/2024



Crossed-out Wheeled Bin Symbol

Equipment marked with the Crossed-out

Wheeled Bin Symbol complies

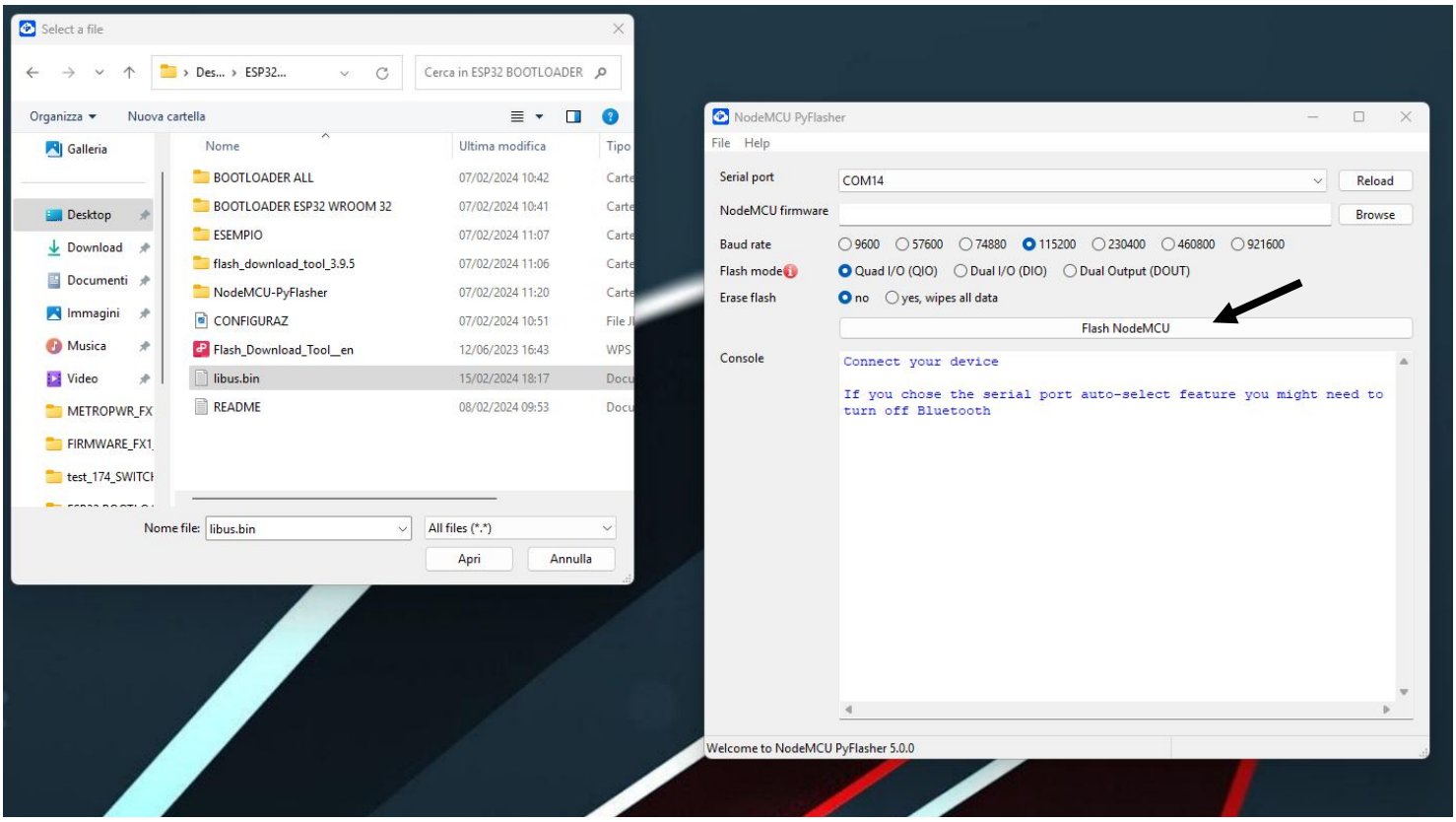
with council directive 2002/96/EC

(the "WEEE Directive") in European

REFERENCE N.	TITLE	EDITION DATE
EN 61326.1:2006 EN55011 class B	Radio disturbance characteristics - Limits measurement test	2006 January 2017
EN61000-4-2	Electrostatic discharge immunity test	April 2011
EN61000-4-3	Radiated, radio-frequency electromagnetic field immunity test	April 2007

FW UPGRADE

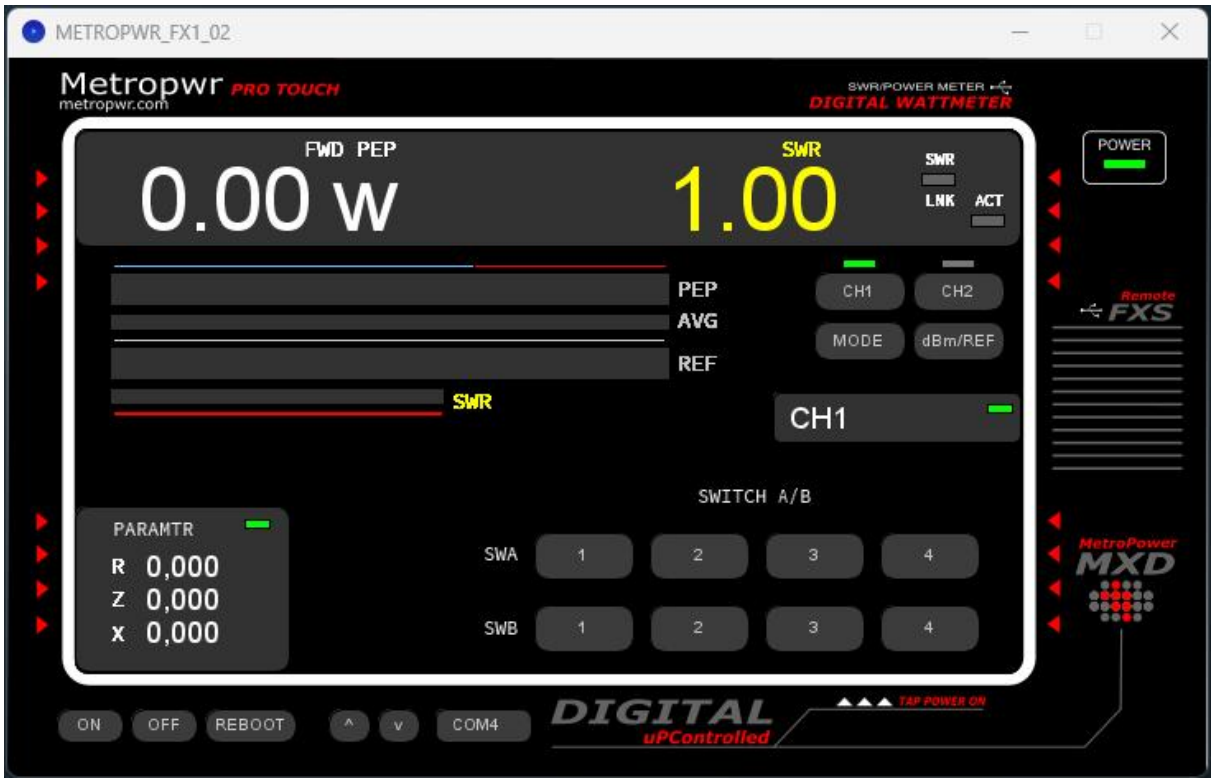
NodeMCU PyFlasher utility



UPGRADE FIRMWARE

- SET Baudrate 115200
- Flash mode Quad I/O
- Erase Flash No
- Set your SerialPort
- Browse --> LIBUS.BIN
- Push button Flash NodeMCU
- Reboot FX1

Do not disconnect power while updating firmware.



Software X64 for Pc

The FX1 Wattmeter can be completely remoted via USB through its software. It is compatible with Windows X64 and soon also with Mac OS. It is possible to view all parameters except the frequency and the buttons of the second antenna switch. The port is compatible with a micro USB connector. The same software is compatible with the FX773 and FX775 series Wattmeters.

ACCESSORY

Fx7 Antenna/Radio Switch

- Coverage 1.8/55 MHz 160/6mt
- Power 1kW PeP
- 1X4 Positions So259
- Flatness 0.1 dB
- In/out EXP Bus (Not Lan)
- Max Distance to Wattmeter 2mt
- No need ext. supply

FX3 HF/50MHz Coupler

- Coverage 1.8/55 MHz 160/6mt
- Power 500mW/3kW PeP
- Directivity 30dB*
- Flatness 0.1 dB
- Connector so259 + SMA

FX5 HF/50MHz Coupler

- Coverage 1.8/55 MHz 160/6mt
- Power 500mW/5kW PeP
- Directivity 30dB*
- Flatness 0.1 dB
- Connector so259 + SMA

*depend frequency.

TECHNICHAL CHARACTERISTICS

Metropwr FX1 Technical Features

- Coverage 1.8/55 MHz
- Display Oled 3.1”
- 4 multifunction switch
- 8 SMA input to connect 2 Coupler
- Measurament R, Z, |X|, SWR
- Autoranging Power Meter P&P,AVG,dBm
- Calibration SWR,Power menu
- Accuracy SWR <5%*
- Directivity Coupler 30 dB*
- Accuracy Power meter <5%*
- Accuracy R,Z,X <10%*
- Operating Voltage 13.8V
- Fast uP processor 32bit
- Accessory Antenna switch FX7
- Coupler FX3 / FX5 3/5kWatt
- Micro usb Port
- Adc Resolution 16bit
- Firmware upgradable via USB
- Compact dimensions 145 x 145 x 70 mm
- Weight 250gr

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Technical features and internal menus may change without notice. Note *depend frequency