

MEDIA ENGINEERING

"ME-TUN"

A professional FM sound broadcasting receiver



- precision FM receiver in newest solid state circuitry
- 2 transformer balanced antennae inputs
- headphones output with UP/DOWN push-button controlled volume setting
- operator guidance with microcomputer controlled key illumination
- wide angle visible white on blue LCD display
- numerical read out of the receiving frequency
- bar graph display of the receiving signal strength
- display of the selected antenna input
- display of the PSN signal in case of RDS reception
- 40 memory presets in non volatile memory
- complete operational restart after power interruption
- analog audio outputs via XLR connectors, balanced, transformerless
- digital audio output via XLR connector, transformer balanced, AES/EBU
- 4 selectable sampling frequencies: 32kHz, 44.1kHz, 48kHz and 96kHz
- Decoupled MPX signal and RDS data & clock via auxiliary output connector
- 3 photocoupler outputs for carrier-loss, stereopilot-loss & RDS-data loss
- 2 photocoupler outputs for RDS flags TP and TA

! PROFESSIONAL ! COST EFFECTIVE ! FEATURE LOADED ! ONLY 19"/1RU !



"ME-TUN"

"ME-TUN" is a FM sound broadcasting receiver from MEDIA ENGINEERING developed for professional applications. It's a branch-development originating in the project "FM-SPY" from MEDIA ENGINEERING and it has been developed due to a number of customer requests asking for a professional FM sound broadcasting receiver.

The "ME-TUN" FM receiver is a very powerful and cost effective device. It has been developed under strict considerations of all relevant norms as well as own experiences of MEDIA ENGINEERING in this field of engineering. "ME-TUN" is intended to be used in rebroadcasting relais-stations or as monitoring receiver in broadcasting stations or in cable headends.

Only an AC power source and a receiving antenna signal are necessary for the operation of the "ME-TUN". Special circuitry inside the "ME-TUN" is securing that the most often operating problems – mainly in systems with more than one tuner – are prevented due to precautionary measures. It is providing many functions and possibilities and especially a multitude of interesting additional signals and functionalities, which are very difficult to obtain with traditional means.

BASICS

The "ME-TUN" FM sound broadcasting receiver is built into a full metal case made of magnetic chromium steel with a scratch-resistant pearl-effect lacquer. Delivered with the accessories is a rack mount set with which the table top device is expandable into a 19"/1RU component. The set is mountable very fast and easy with only one screw.

The power supply to the "ME-TUN" is made with a three wire power cord connected to the power line network. A modern switched mode power supply is allowing unrestricted operation of the "ME-TUN" over a wide power line voltage and power line frequency range worldwide.

2 ANTENNAE INPUTS

The precision FM tuner built into the "ME-TUN" is receiving its RF signal from one of two antennae inputs. This is advantageous in case of receiving certain stations only via cable and others only via air. The antenna input connectors are type "F" connectors and they are mounted on the rear side of the device. Delivered with the accessories is a pair of F↔IEC adapters in order to provide the possibility to connect antenna cables with IEC connectors.

Both antennae inputs are DC-free decoupled with RF transformers. So the inputs are completely earth-free; they are not having a connection to the chassis or to earth via the power cord. The decoupling prevents that the potential of the antenna cable (which is very seldom earth) is short-circuited with the earth supplied by the power supply, for this were leading to compensation currents which in turn is the most often reason for hum problems.

Both antennae inputs have an impedance of 75Ω. With the help of a newly developed solid state RF switch it's possible to match also the unused antenna input with 75Ω. This is especially helpful in larger systems with several receivers for no problems are to be expected due to variable impedances.

ANALOG AUDIO OUTPUTS

The "ME-TUN" FM sound broadcasting receiver is featuring an analog stereo output with two 3pin XLR connectors mounted on the rear side of the device. The output driving amplifiers are transformerless and built as electronically balanced circuits in the well known "*balanced servo loop amplifier*" technique. So the nominal operating level on the output is constant also while loading the output strongly unbalanced.



"ME-TUN"

DIGITAL AUDIO OUTPUT

The "ME-TUN" FM sound broadcasting receiver is having a digital audio output additionally to the analog output. This output is realized with a XLR connector mounted on the rear side of the device. The circuit is built as a transformer-coupled driver for a digital audio signal according to AES/EBU (rsp. IEC958 & EIAJ CP-340). The built-in impulse transformer is featuring a screen inbetween the primary and secondary windings what leads to excellent CMRR and clock jitter values for sampling frequencies up to 96kHz.

The factory setting for the digital audio sampling frequency is 48kHz. With only a few easy and fast manipulations the "ME-TUN" sampling rate can be changed to 32kHz or 44.1kHz or 96kHz also.

ELEGANT OPERATION

The "ME-TUN" FM receiver is equipped with LED illuminated push-buttons on the front side. The operational concept is very easy and smart for the following rule is applicable for all states:

ONLY ILLUMINATED PUSH-BUTTONS ARE PERMITTING A USEFUL INPUT COMMAND IN ANY STATE.

This means that no detailed knowledge of a user's manual is necessary and the operation is going to be faster, saver and simpler.

Proceeding on the assumption that the "ME-TUN" is in its normal operating state – which is the default state as taken up after three seconds without any action – the following operational steps are possible:

- ▶ Setting the receiving frequency by keying in directly the new frequency. The frequency has to be set with 0.025MHz precision

- ▶ Selecting the proper antenna input
- ▶ Storing the actual receiving frequency and antenna input as one of 40 presets
- ▶ Toggling the display for a bar graph or numerical reading of the signal strength meter and the PSNS of the RDS data stream
- ▶ Selecting the menu function for stepping up or down the receiving frequency in 25kHz steps or within the presets

The two push-buttons near the headphones connector on the front panel are serving as volume controls for the headphones output. Each pressing of a key changes the volume by 1dB. If the key is held down a longer period of time the volume is fading up or down. When both push-buttons are pressed down simultaneously the volume switches to the lowest possible value and if they are pressed down simultaneously and for a longer timer the level jumps up to a predetermined value.

A wideangle readable LCD display module with white characters on blue background is showing:

- ▶ the actual receiving frequency in MHz
- ▶ the PSNS signal (when RDS is present)
- ▶ the signal strength of the antenna signal
- ▶ the selected antenna input A or B

RESTARTING AFTER POWER INTERRUPTION

After an interruption of the AC power supply the "ME-TUN" is restarting rsp. rebooting automatically within a second. It's taking on the operational state it had before the power failure happened. The analog outputs are driving the analog signal after a second and the digital AES/EBU output after additional 3 seconds.



"ME-TUN"

TECHNICAL SPECIFICATIONS "ME-TUN"

ANTENNAE INPUTS

number of antennae inputs 2
 antenna input impedance 75 Ω
 antenna input connector type F (receptacle)
 antenna input circuit transformer balanced earthfree
 antenna selecting switch: the unused input is matched to 75 Ω

FM RECEIVER

receiving frequency range 87.500MHz - 108.000MHz
 receiving frequency step width 25kHz
 sensitivity 5µV@30dB_{SINAD}
 intermodulation 5mV (73dB) suppression

ALARM OUTPUTS

connector type D-type, chassis receptacle (female), 25 pin
 alarm outputs 5 photocouplers
 alarm outputs loading U_{CEmax} = 35V / I_{Cmax} = 50mA
 additional DC supply output +15.0 VDC, stabilized
 fusing additional DC supply output PTC, I_{hold} = 0.5A

POWER SUPPLY

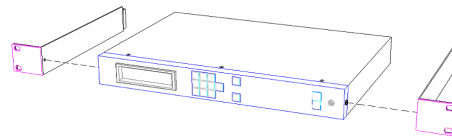
mains power voltage 90 - 250 VAC
 mains power line frequency 47 - 63 Hz
 power consumption < 25 Watt

PHYSICAL DIMENSIONS

width x depth x height 380 x 260 x 44 mm
 weight 4.5 kg

INCLUDED ACCESSORIES:

- 1 pcs. power cord, 3wire
- 2 pcs. antenna connection adapter type "F-male" ↔ "IEC-male"
- 2 pcs. 19"/1RU rack mount kit
- 1 pcs. user's manual



subject to change

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<p>MADE IN SWITZERLAND BY MEDIA ENGINEERING WEB: WWW.MEDIAENGINEERING.COM</p>	<p>MODEL: ME-TUN SN: [] REV: []</p>	<p>WARNING: TO PREVENT ELECTRIC SHOCKS, REMOVE MAINS CORD FROM POWER SOURCE BEFORE REMOVING COVER. REFER MAINTENANCE TO QUALIFIED PERSONNEL ONLY. NO USER-SERVICEABLE PARTS INSIDE. RISK OF FIRE: REPLACE FUSE WITH SAME TYPE & RATING ONLY.</p>	<p>DIGITAL AUDIO AES/EBU OUTPUT</p>	<p>PIN 1 = "0" PIN 2 = "+" PIN 3 = "-"</p> <p>TRANSFORMER BALANCED</p> <p>[] 52.0 [] 44.1 [] 48.0 [] 96.0</p>	<p>ANALOG AUDIO OUTPUTS, SERVO-BALANCED, TRANSFORMERLESS</p> <p>LEFT RIGHT</p>	<p>OFF-POWER-ON</p>	<p>AC MAINS 47...63Hz</p>