

# TSP40

## User Manual



[www.audac.eu](http://www.audac.eu)

#### **ADDITIONAL INFORMATION**

This manual is put together with much care, and is as complete as could be on the publication date. However, updates on the specifications, functionality or software may have occurred since publication. To obtain the latest version of both manual and software, please visit the Audac website @ [www.audac.eu](http://www.audac.eu).

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# Introduction

## Professional FM tuner

The TSP40 is a professional FM tuner with worldwide FM band support which provides access to a wide variation of radio stations while guaranteeing a high-quality audio reproduction. Station selection can be done manually or automatically, while up to 10 preferred channels can be internally stored and recalled.

The front panel of the system accommodates a 2.8" TFT display in combination with a push rotary function dial and 4 tactile pushbuttons. The controls and indicators on the front panel of the unit are guaranteeing an intuitive and user friendly operation, allowing hassle free operation and configuration to even unexperienced users. Information such as radio station information carried by RDS and signal reception strength are indicated.

The signal output level is user configurable and traffic announcement volume can be individually set which guarantees the best intelligibility in specific requiring applications. Other functions such as mono/stereo switching always guarantee the best possible audio reception. The FM tuning range can be switched between 64 ~ 108 MHz and 87.5 ~ 108 MHz for worldwide FM band support.

The antenna input is implemented by an F-type connector allowing connection of the included antenna cable or any other external antenna using 75  $\Omega$  coaxial cabling. The balanced stereo line output is connected through two 3-pin terminal block connections.

The RS-232 communication port allows system integration with any home or industrial automation system, while an optional 2.4 GHz remote control allows handheld control while hidden out of sight.

# Precautions

## **READ FOLLOWING INSTRUCTIONS FOR YOUR OWN SAFETY**

ALWAYS KEEP THESE INSTRUCTIONS. NEVER THROW THEM AWAY

ALWAYS HANDLE THIS UNIT WITH CARE

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

NEVER EXPOSE THIS EQUIPMENT TO RAIN, MOISTURE, ANY DRIPPING OR SPLASHING LIQUID. AND NEVER PLACE AN OBJECT FILLED WITH LIQUID ON TOP OF THIS DEVICE.

DO NOT PLACE THIS UNIT IN AN ENCLOSED ENVIRONMENT SUCH AS A BOOKSHELF OR CLOSET. ENSURE THERE IS ADEQUATE VENTILATION TO COOL THE UNIT. DO NOT BLOCK THE VENTILATION OPENINGS.

DO NOT STICK ANY OBJECTS THROUGH THE VENTILATION OPENINGS.

DO NOT INSTALL THIS UNIT NEAR ANY HEAT SOURCES SUCH AS RADIATORS OR OTHER APPARATUS THAT PRODUCE HEAT

DO NOT PLACE THIS UNIT IN ENVIRONMENTS WHICH CONTAIN HIGH LEVELS OF DUST, HEAT, MOISTURE OR VIBRATION

THIS UNIT IS DEVELOPED FOR INDOOR USE ONLY. DO NOT USE IT OUTDOORS

PLACE THE UNIT ON A STABLE BASE OR MOUNT IT IN A STABLE RACK

ONLY USE ATTACHMENTS & ACCESSORIES SPECIFIED BY THE MANUFACTURER

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME

ONLY CONNECT THIS UNIT TO A MAINS SOCKET OUTLET WITH PROTECTIVE EARTHING CONNECTION

THE MAINS PLUG OR APPLIANCE COUPLER IS USED AS THE DISCONNECT DEVICE, SO THE DISCONNECT DEVICE SHALL BE READILY OPERABLE



### **CAUTION – SERVICING**

This product contains no user serviceable parts. Refer all servicing to qualified service personnel. Do not perform any servicing (unless you are qualified to)



### **EC DECLARATION OF CONFORMITY**

This product conforms to all the essential requirements and further relevant specifications described in following directives: 2014/30/EU (EMC) and 2014/35/EU (LVD)

## WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

The WEEE marking indicates that this product should not be disposed with regular household waste at the end of its life cycle. This regulation is created to prevent any possible harm to the environment or human health.



This product is developed and manufactured with high quality materials and components which can be recycled and/or reused. Please dispose this product at your local collection point or recycling centre for electrical and electronic waste. This will make sure that it will be recycled on an environmentally friendly manner, and will help to protect the environment in which we all live.

## CAUTION

The symbols shown are internationally recognized symbols that warn about potential hazards of electrical products. The lightning flash with arrowpoint in an equilateral triangle means that the unit contains dangerous voltages. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the users manual.



These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.





# Chapter 1

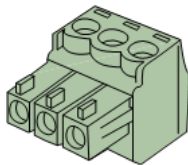
## Pin connections and connectors

### CONNECTION STANDARDS

The in- and output connections for AUDAC audio equipment are performed corresponding to international wiring standards for professional audio equipment.

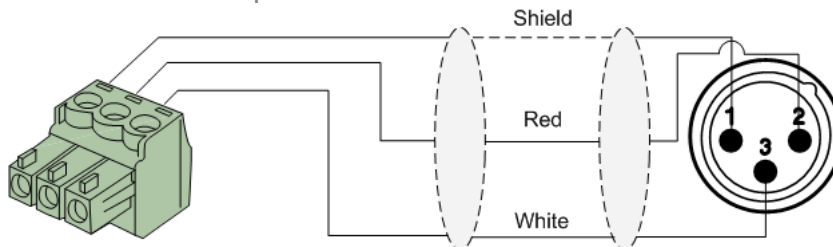
#### 3-Pin Terminal Block:

For balanced in & output connections

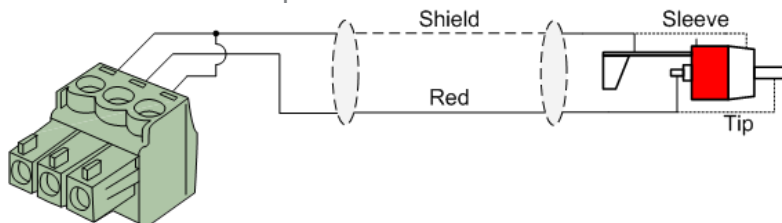


**Left:** Signal – (XLR Pin 3)  
**Center:** Signal + (XLR Pin 2)  
**Right:** Ground (XLR Pin 1)

For balanced line output connections:



For unbalanced line output connections:



#### RS232 (serial connection interface):

For connection with home automation systems, or other remote control equipment

<b>Connection</b>	Standard RS232
<b>PIN 2</b>	TSP40 TX
<b>PIN 3</b>	TSP40 RX
<b>PIN 5</b>	GND
<b>Settings</b>	19200 Baud
	8 Bit
	1 Stop bit
	No parity
	No Handshaking

### RS232

The complete command set for controlling the TSP40 through RS-232 is available in the TSP40 commands user manual which is freely downloadable on [www.audac.eu](http://www.audac.eu)

# Chapter 2

## Front & rear panel

### Front Panel overview



### Front panel description

#### **Graphical LCD display with tactile push buttons and rotary selection dial:**

A clear system overview and intuitive user experience is offered using the 2.8" graphical LCD display accompanied with four tactile selection buttons (left side) and a rotary selection dial (right side). The true colour display offers a clear overview of the systems current operation mode with intuitive and user friendly browsing through the menu structure.

The functionality of the four tactile push buttons on the left side depends on the current mode and position in the menu structure. Icons on the left side of the display are indicating the current functionality linked with the buttons.

Parameter adjustment and browsing is made easy using the rotary function dial. This multifunctional dial allows easy one-hand operation throughout the entire menu structure. Browsing through the menu is done by rotating it while actions are made by pressing it.

#### **Power switch:**

Allows to power the system ON and OFF. The blue indicator LED illuminates when switched on.

# Rear Panel overview



## Rear panel description

### **AC Power inlet with fuse:**

The mains power supply (100–240V AC – 50/60 Hz) has to be applied to this AC power inlet. The connection is made by an IEC C14 power connector and is fitted with a fuse. When replacing the fuse, make sure that the value of the replacement fuse matches the value of the original fuse. (T0.5AL/250V)

### **RS232 Connection:**

The RS232 connection can be used to control the system through any external hardware such as home and industrial automation systems. The pinout and communication settings are described in an earlier chapter of this user manual. The complete RS232 command instruction set and configuration information can be downloaded from the AUDAC website.

### **USB (Update) Connection:**

The USB (Update) connection can be used for system firmware updates and/or for connection of the RF remote control (RMT40) receiver.

### **Balanced stereo line output:**

The balanced stereo line output is implemented using two 3–pin terminal block connectors. The audio output available on this connector allows it to be fed to any amplifier or pre–amplifier.

### **F–type antenna connection:**

The antenna (input) connection is implemented using an F–type connector where the supplied FM antenna should get connected. Depending of the installation conditions, location and signal strength, it can be recommended / necessary to extend the antenna using 75  $\Omega$  coaxial cable and connect an external or outdoor antenna.

# Chapter 3

## Using the TSP40






The TSP40 control and configuration is done through the front panel of the device which includes a 2.8" graphical LCD display, which is accompanied with four tactile push buttons (left side) and a rotary selection dial (right side). This combination allows you to navigate through the systems user interface and access all the available control and configuration possibilities of the system.



The functionality of the four tactile push buttons on the left side depends on the current mode and position in the menu structure. Icons on the left side of the display are indicating the current functionality linked with the buttons.

The rotary selection dial can be used for parameter adjustments and browsing to station lists, playlists or any other. This multifunctional dial allows easy one-hand operation throughout the entire menu structure. Browsing is done by rotating it while actions are made by pressing it.

The functionality for each icon is indicated in following table:

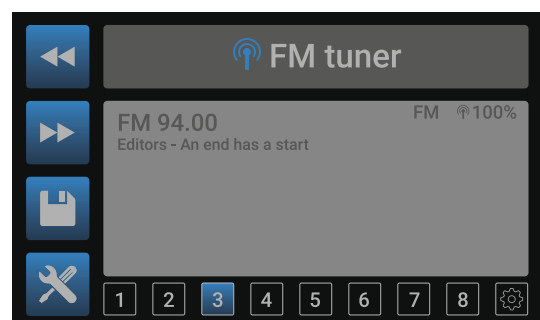
ICON	DESCRIPTION
	Automatic tuning to previous station
	Automatic tuning to next station
	Mark / save current selection as favourite
	Go to general settings
	Go to FM tuner settings

## Main screen

### Radio station selection:

- Automatic tuning:


The currently playing radio station can be selected by pressing the ◀◀ (tuning down) and ▶▶ (tuning up) buttons. When selected, it will automatically start searching for the next station with sufficient signal strength. The currently tuned frequency will be indicated at the center of the screen, also indicating additional carried RDS information (if available) such as the currently playing station or track name.



- **Manual tuning:**

The tuning frequency can be manually adjusted by rotating the function dial until the tuned frequency is highlighted in blue colour. When highlighted, confirm manual tuning adjustment by single pressing the rotary dial and adjust the tuner frequency by rotating clockwise (tuning up) or counter-clockwise (tuning down). Once tuned to the desired frequency, conform the tuned frequency by single pressing the function dial once again.


**Save radio station:**

The currently playing station can be stored to one of the 10 available positions. A horizontal array with numbers from 1 to 10 is indicated on the bottom of main tuner screen, representing the 10 positions whereto the presets can be saved. Rotate the function dial until the number for radio station storage is highlighted, and press the  (save) icon for saving the currently selected frequency to the selected position.

**Recall radio station:**

A stored radio station can be recalled by rotating the function dial until the number on the horizontal array on the bottom of the main tuner screen is highlighted. When highlighted, confirm the recall of the stored frequency by single pressing the function dial. The stored frequency under this position is now recalled and the radio station will start playing.

**General settings:**

The  (General settings) button gets you to the general settings menu where all general settings for the device can be configured.

## TSP40 Settings screen

The settings menu for TSP40 can be loaded by rotating the rotary dial until the  (settings) symbol is highlighted in blue colour. When highlighted, confirm to proceed to the settings menu by single pressing the rotary dial.

**Gain:**

The gain can be adjusted within a range of +8 dB and –55 dB, allowing optimization of the output level according to the input sensitivity of the connected amplifier or pre-amplifier. For adjusting the output gain, rotate the function dial until ‘Gain’ is highlighted and press it for proceeding to the gain settings. The level can be adjusted by rotating clockwise (tuning up) or counter-clockwise (tuning down). Press the rotary dial for confirming the currently set output level.



**Gain TA (Traffic announcement):**

The traffic announcements gain allows a different output level for traffic announcements (if playing radio station includes TA information). This feature can be useful for applications where traffic announcements should be heard at higher volumes than background music.

The traffic announcement gain can be adjusted within a range of +8 dB and –55 dB, allowing to switch to the set TA gain when any TA signal is detected on the currently playing radio station. In the maximum position (TA GAIN = TA), the output level will remain unchanged when any TA carrier is detected.

**Freq. Range:**

The FM reception frequency range can be switched between 87.5 ~ 108 MHz and 64 ~ 108 MHz, depending in which part of the world the system will be used. Toggling between both frequency ranges can be done by single pressing the function dial.

**Mono:**

The FM reception is standard set to stereo mode, however it will switch automatically to mono mode if the signal reception strength is insufficient. This reduces the noise and improves the sound quality when having poor signal reception.

Manual switching the output to mono mode is possible using this function, allowing the output to be fed to mono systems, such as 100V public address amplifiers. Toggling between mono and stereo mode can be done by single pressing the function dial.

**Back:**

Returning to the main screen is done by selecting 'Back'.

## General settings

The general settings menu for TSP40 is loaded when pressing the ✕ (general settings) button. The general settings menu allows to configure all the global settings for the TSP40 unit, keeping aside the audio and frequency settings.

**Lock:**

When selecting 'Lock', the system will be locked and will require a password to be entered before any further action can be taken (if the password is enabled).

**Info:**

Info will give an overview of the software versions the TSP40 is running.

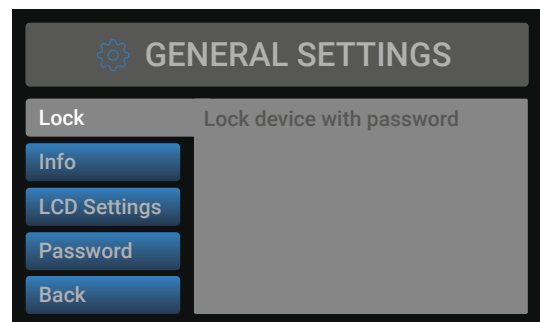
**LCD Settings:**

Adjustments for the LCD settings can be made here. The brightness can be adjusted within a range of 10% to 100% (standard is 80%). Adjusting of the LCD brightness can be convenient when the device is placed in an environment with very low or very high ambient light. Hereby the clarity of the LCD can be adjusted being clear but unobtrusive.

The backlight off time can be adjusted within an interval of 10 up to 120 minutes or never (always on), making the backlight of the LCD automatically turn off after the set time.

**Password:**

Password protection can be enabled, avoiding unauthorized users to make any adjustment to the system. The password is a four-digit code. In default, the password is set to '0000' which gives full access to the system without requiring any password to be entered. If the configured password is different from '0000', the user will be requested to enter the password before any access to the systems functions is provided.



The currently set password will be shown and the adjusting digit can be selected (turns red) and confirmed by turning and pressing the rotary selection dial. Consecutive digits will increase when the maximum value has been reached.

After the desired password has been selected it can be confirmed by pressing (turns red) and turning the function dial clockwise to the entire right side where the 'OK' word will appear. After pressing again the password is confirmed.

**Back:**

Returning to the main screen is done by selecting 'Back'.

# Chapter 4

## Additional information

### Technical specifications

Input	F-type antenna connection (75 Ω)
Output	Balanced stereo line output (2 x 3-pin Euro Terminal Block ~ 3.81 mm)
FM tuning range	64 ~ 108 MHz 87.5 ~ 108 MHz
Output level	+8 dB ~ -55 dB (Software configurable)
Control	Front panel RS232 (DB9 connector) RMT40 Remote control (optional)
Display	2.8" Graphical LCD
Sensitivity	- 100 dBm
Signal/noise	42 dB
THD+N	< 0.1%
Frequency response	30 Hz – 15 kHz
Crosstalk	42 dB
Power supply	Type Switching mode Range 100–240V AC – 50/60 Hz
Power consumption	0.5 Watt
Dimensions (W x H x D)	482 x 44 x 330 mm
Weight	3.15 Kg
Unit height	1 HE
Optional accessories	RMT40 RF remote control – 2.4 GHz ASK10S 4-Way antenna splitter kit RGA10 Omnidirectional outdoor antenna