

MTH410 User Manual

Wideband Wireless
Professional Handheld
Transmitter

Rev.04 (ref. FW 1.4.0.J)

Date: 19 March 2024

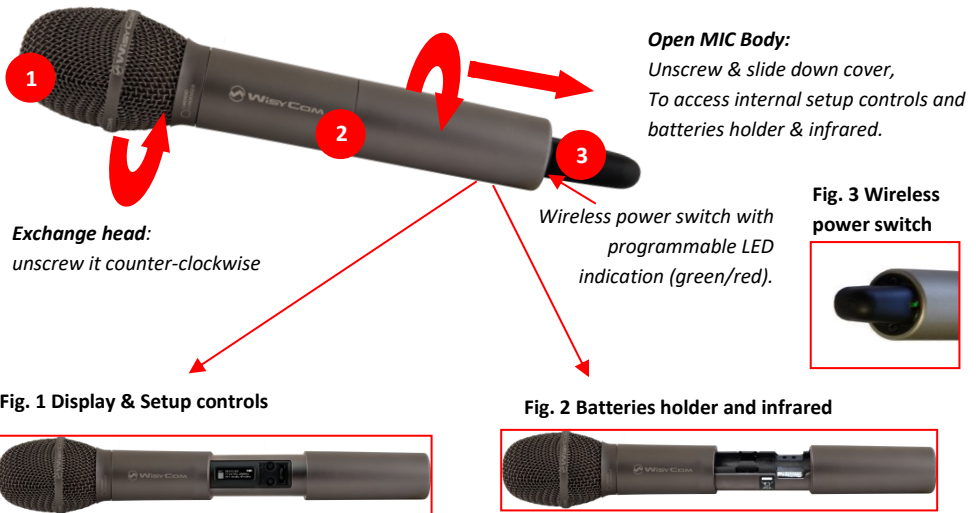


INTRODUCTION

MTH410 is a professional radio microphone especially designed for broadcast/high quality applications.

MTH410 is composed by 3 detachable parts:

- **MIC Head** (available with cardioid/hyper-cardioid polar pattern).
- **MIC Body** (the below part can be open to access “Display & Setup controls” area (fig.1) and on the back the “Batteries holder & Infrared” area (fig. 2).
- **MIC Antenna**, made with fibreglass reinforced housing and with a “Wireless power switch” (fig. 3). “MIC Antenna” is fastened to body with 2 anvils and a micro-connector.



SAFETY INSTRUCTION

- Read this safety instruction and the manual first
- Follow all instructions and information.
- Do not lose this manual.
- Do not use this apparatus under the rain or near the water.
- Do not install the apparatus near heaters or in hot environments, do not use outside the operating temperature range.
- Do not open the apparatus, only qualified service technician are enabled to operate on it. The apparatus needs servicing when it is not properly working or is damaged by liquids, moisture or other objects are fallen in the apparatus.
- Use only accessories or replacement parts authorized or specified by the manufacturer.
- Clean the apparatus only with dry cloths, do not use liquids.
- Report the serial number and the purchasing date in front of the manual. It is needed to have proper replacement parts or accessories from the manufacturer.
- When replacement parts are needed, use only replacement parts authorized from the manufacturer. Substitution with not authorized parts could result in electric shock, hazards or fire.
- Keep attention on all the labels with warnings or hazards on the apparatus.

LED INDICATION (POWER SWITCH)

Led indication with bicolor led (**red & green**) on wireless power switch (fig. 3):

- Wireless transmission status: **green** when RF transmission power is on (on power on the device, this LED is **red** and become green when the RF transmission power is on).
- Battery status: **green** steady, slowly blinking (< 25%), quickly blinking (<12%)
- Modulation peak (if activated): **red**
- PTT status: **red** if active

BATTERIES

MTH410 is working with 2 AA alkaline, NiMH or Lithium batteries (select correct type on setup controls). Battery status can be checked on internal OLED display or looking to LED status on power switch (see LED INDICATION section) **3**.

Battery substitution:

- Open MIC body: unscrew counter-clockwise the below cover to access batteries holder;
- Take out below battery to release upper battery leverage;
- 2nd battery falls down and can be remove

Attention: always replace both the batteries

POWERING UP

Move the wireless power switch (fig. 3) in upper position (towards MIC body) to activate wireless transmission: the front LED **3** lights up red and then green when the RF transmission power is on (blinking when battery is low!)

SETUP CONTROL

Open MIC Body to access the “display and controls” area (fig. 1):

- A.** Graphics Display (**OLED**)
- B.** Channel selection buttons (**ch**)
- C.** MIC gain setup buttons (**gain**)
- D.** 3 position selector (**up / down / click**)

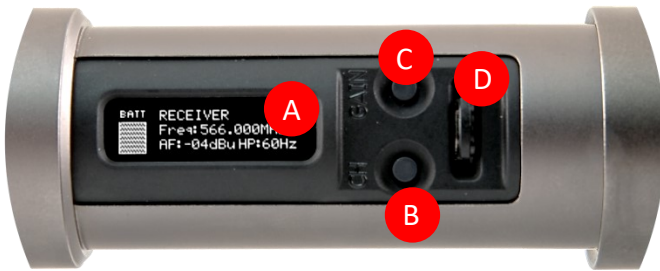


Fig. 4

OLED POWER UP (OLED IS IN OFF CONDITION)

Pushing down selector (**click**), the graphic display oled turns on.

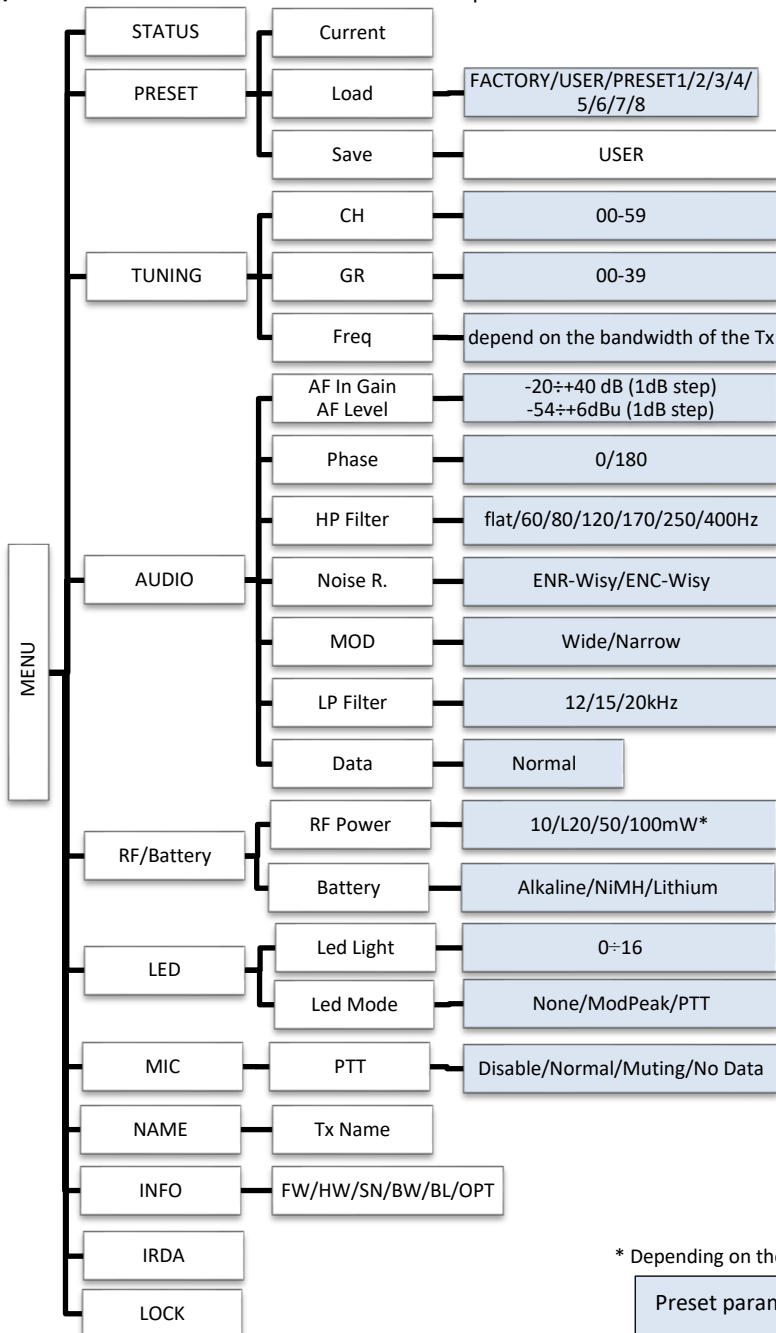
At the beginning a <START UP> menu is displayed, then <STATUS> menu enters automatically. In order to keep the <START UP> menu active, it is necessary to push and hold selector (click) for at least 2 sec.

OLED POWER DOWN (OLED IS IN ON CONDITION)

Display turns off automatically after 15 sec, unless in <AUDIO> menu (with audio level < 5% from nominal).

DISPLAY MENU

Using **up/down** selector all menus can be accessed in sequence.



* Depending on the Power Profile

Preset parameters

Using <up/down> selector all menus can be accessed in sequence, push <click> to enter edit mode (on the left side of the display appear "EDIT" and the selected parameter starts blinking):



<up/down> to setup field

<click> again to confirm changes and exit.

If no button is pressed, the device exits the EDIT mode and returns the parameter as it was previously set.

<START UP> menu

These menus are displayed during power up for few seconds.



This menu gives indication on product:

- product id (MTH410),
- the firmware release (ex. 1.30.0A),
- the band in extended format and
- the serial number.

Keep selector pushed to hold this menu!

<STATUS> menu

This is the first menu displayed after power up.



Major info are displayed:

- Current channel/group (i.e. CH:03 GR:03) or Receiver's name (i.e. RECEIVER) if the microphone has already been synchronized with a receiver
- Current frequency (i.e. 610 MHz)
- Mic gain (i.e. -03dB) and high pass filter (i.e. 60Hz)
- If in the top right there is "RF10", "RF 50" or "RF 100", the transmission is active respectively at 10, 50 or 100mW (see [RF/BATTERY menu](#))
- On left side, the battery bar is displayed

<PRESET> menu

This menu can be entered by scrolling selector.



MTP41 can recall configuration presets.

"FACTORY" recalls the Wisycom factory configuration.

"USER" recalls the user configuration (the transmitter configuration is copied into the USER using the "save to" submenu).

All "USER" menus are not locked by default, thus this is quick way to unlock features!

When the user changes some parameters from the PRESET configuration (for less than frequency) a star appears on the top-right corner until a save command is executed.





The other 8 configuration presets are user programmable thru the infrared and the PC interface (using the programmer UPK 300/UPKMini or the receiver MRK950/MRK960).

We provide the device with some preset configurations specifically designed for certain types of microphone or applications (it's possible to change these presets in any time using the TX manager). All parameters can be "left unchanged", "changed" or "changed and lock", allowing a very flexible way to pre-program MTH410 configuration.



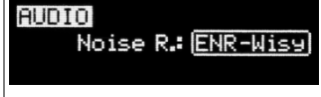
<TUNING> menu

This menu can be entered by scrolling selector or using *quick channel setup* button (**ch**).

	<p>In this menu current channel/group and frequencies can be setup. The name of the group is shown on the top right of the display. Sync group is a quick self-settable channel synchronized by receiver (with SYNC group, on the top right of the display is shown the name of the synchronized receiver). Use the selector to change values (<+/->) and <click> to confirm.</p>
	<p>Using quick channel setup buttons (<CH>), it is possible to enter quickly in the tuning menu. Note that the menu has a different layout (see the side image)</p>


<AUDIO> menu

This menu can be entered by scrolling selector or using *quick gain setup* button (**gain**).

	<p>The sensitivity of the audio input is settable between “AF Gain” (measured in dB) or “AF Level” (measured in dBu). To help proper audio gain setting, an audio bar is supplied (with maximum peak indicator) indicating the headroom to audio peak (0 dB , nominal deviation 40KHz). <i>Set the gain, with the maximum input signal, avoiding the peak on the audio bar.</i> TRY TO SETUP TO HAVE A MAX PEAK HOLD BAR CLOSE TO -6dB.</p> <p>Using quick gain setup buttons (<GAIN>), it is possible to enter quickly in the audio gain menu. Note that the menu has a different layout (see the side image)</p>
	<p>The second <AUDIO> menu allows to set: - audio phase (0° or 180°) - High Pass filter (Flat, 60, 80, 120, 170, 250, 400 Hz)</p>
	<p>The third <AUDIO> menu allows to set the noise reduction:</p> <ul style="list-style-type: none"> • ENR-Wisy: designed for maximum noise reduction • ENC-Wisy: designed for maximum audio fidelity (use this in case of special vocal application or to remote instruments)
<p>MODULATION / LP FILTER DATA</p>	<p>Use this menu to set the type of modulation and the audio low pass filter. Setting Wideband modulation, FM peak deviation is ±56kHz and the audio filter can be set 12/15/20kHz. Setting Narrowband modulation, FM peak deviation is ±35kHz and the audio filter can be set 12/15kHz. NOTE: MTH410 passes type of modulation (Wide/Narrow) to Wisycom receivers MPR52/MRK980 during the SYNC process. In this way the receiver MPR52/MRK980 automatically adapt the filter setting. Data parameter is related to the type of information send with the tone squelch. With the current firmware version “Data” is fixed to normal and it means that it sends the battery level.</p>


<RF/BATTERY> menu

This menu can be entered by scrolling selector.

	<p>RF power can be setup to 10mW, 20mW, 50 mW or 100mW (depending on the Power profile).</p> <p><i>If it's selected "10mW", in the top right on the STATUS menu appear "RF10".</i></p> <p><i>If it's selected "50mW", in the top right on the STATUS menu appear "RF50".</i></p> <p><i>If it's selected "100mW", in the top right on the STATUS menu appear "RF100".</i></p> <p>Battery type can be setup in Alkaline, NiMH or Lithium.</p>
--	---


<LED> menu

This menu can be entered by scrolling selector.

	<p>Power switch green LED brightness can be setup → Led light (from 0 to 16).</p> <p>Led Mode setting define when the LED on the power switch (see Fig. 3) have to become RED:</p> <ul style="list-style-type: none"> - None: never, - ModPeak: when audio get close to saturation) - PTT: when the PTT button is pushed
--	---


<MIC> menu

This menu can be entered by scrolling selector.

	<p>4 different PTT mode can be selected: Disable, Normal, Muting, No Data.</p>
--	---

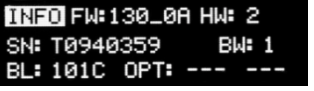
<NAME> menu

This menu can be entered by scrolling selector.

	<p>In this menu it's possible to see the frequency set on the device and the name of the transmitter.</p> <p>It's possible to enter on this menu also pressing at the same time the CH/GAIN buttons (B+C)</p>
--	--


<INFO> menu

This menu can be entered by scrolling selector.

	<p>In this menu it's possible to see:</p> <ul style="list-style-type: none"> - FW version - HW version - Serial number - Bandwidth - Bootloader version - Option
--	--

<IRDA> menu


This menu can be entered by scrolling selector.

 A screenshot of the IRDA menu on a device. The screen is black with white text. At the top, it says "IRDA" in a larger font. Below it, it says "IRDA Enabled".	<p>While there is this menu, the device can be connected to IRDA for setup or firmware upgrades. <u>Note: if the IRDA interface is enabled and there's no communication for around 10 seconds, the IRDA interface is automatically turned off.</u></p>
---	--

On power on the device, the IRDA interface is enabled for 14 seconds.


<LOCK> menu

This menu can be entered by scrolling selector.

 A screenshot of the LOCK menu on a device. The screen is black with white text. At the top, it says "LOCK". Below it, it says "Keep toggle pressed to enable RF & LOCK".	<p>Long pressing (2 sec.) selector button (click) it locks MTH410 in transmission mode. To unlock, long pressing (2 sec.) selector button again.</p>
---	---

<BOOTLOAD> menu

This menu can be entered by turning on the transmitter while pushing **at the same time** the quick channel setup button <CH> or connecting the device via IRDA using the IR Programmer for FW update

 A screenshot of the BOOTLOAD menu on a device. The screen is black with white text. It says "BOOTLOAD".	<p>Device is forced in bootloader mode to allow FIRMWARE UPDATE.</p>
--	---

The following table sums up which parameters can be set and the related range settings.

MENU	PARAMETER	MEANING	RANGE SETTINGS
TUNING	CH	Channel	0 ÷ 59
	GR	Group	0 ÷ 39 + SYNC GROUP
	Freq	Frequency	It depends on the MTH410 Model: See technical spec. and variants for further details
AUDIO	AF Gain AF Level	Gain of the audio signal	-20dB ÷ +40dB step of 1dB -54dBu ÷ +6dBu step of 1dBu
	Phase	Audio signal phase	0° or 180°
	HP	High Pass filter	Flat/60/80/120/170/250/400 Hz
	Noise R.	Noise reduction	ENR: Wisycom Extended-NR, noise optimized ENC: Wisycom Extended-NC, voice optimized
	MOD	Modulation	WB wideband / NB narrowband
	LP Filter	Audio Low Pass Filter	12/15/20kHz
	Data	Normal	Tone squelch with battery level
RF/BATTERY	RF Power	RF Power	10mW or 20mW or 50mW or 100mW (depending on the power profile)
	Battery	Battery type	Alkaline, NiMH or Lithium
LED	Led Light	Power switch green brightness	0 ÷ 16
	Led Mode	It defines when the power switch led (see Fig. 3) has to become RED	None: never ModPeak: when audio get close to saturation PTT: when the PTT button is pushed
MIC	PTT Mode	It defines how and what information the transmitter has to send	Disable: when the PTT button is pushed, nothing happen. (the transmitter sends AF+Tone squelch) Normal: when the PTT button is pushed, the transmitter send a different RF signal. According to the receiver configuration the audio can be enabled/disable on LINE (and/or COM). Muting: the transmitter doesn't send the audio. The voice is cut, it doesn't enter to the microphone No Data: the transmitter sends neither tone squelch nor battery data.

HOW TO USE WISYCOM MANAGER (v.3.1.0 OR ABOVE)

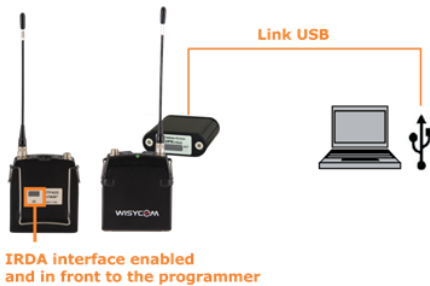
Wisycom Manager allows to read, modify and update the configuration of Wisycom transmitters.

Connection

It is necessary to

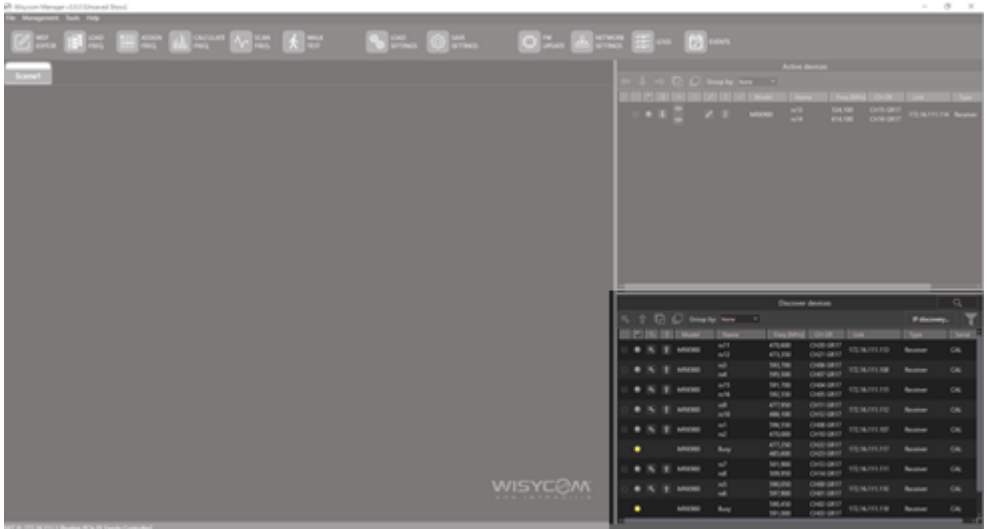
- connected the programmer UPK300E/UPK^{Mini} or the receiver MCR54 (in bridge) or MRK950/MRK960 to the PC thru **USB connection**
- run the Wisycom Manager
- enable the IRDA communication on the transmitter (see IRDA menu)

NOTE: Wisycom Manager doesn't work whit MRK950/MRK960 if it is connected to the PC using an Ethernet cable.



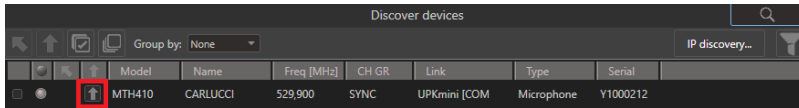
Wisycom Manager is divided into 4 main operational areas.


Discovery devices Area



This area of the manager allows you to search any Wisycom device connected to the computer, despite it is connected via Ethernet or USB/IRDA. Once the device has been discovered it's possible

to activate it by pressing the up arrows (image below) which will take your unit to the active device with a click.



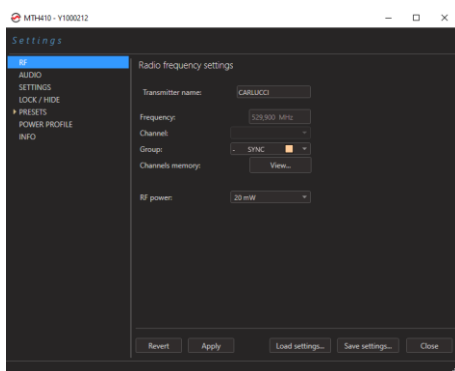
	Model	Name	Freq [MHz]	CH GR	Link	Type	Serial
	MTH410	CARLUCCI	529,900	SYNC	UPKmini [COM	Microphone	Y1000212

Active devices Area



This area allows you to see which device is currently active. By clicking on the pencil button you can enter the setting for the selected unit.

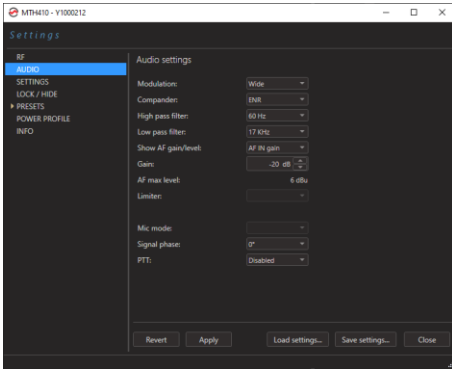
RF Settings



Use RF Setting to verify/change:

- Transmitter name
- Frequency setting (Group /Channel/Frequency)
- RF power level

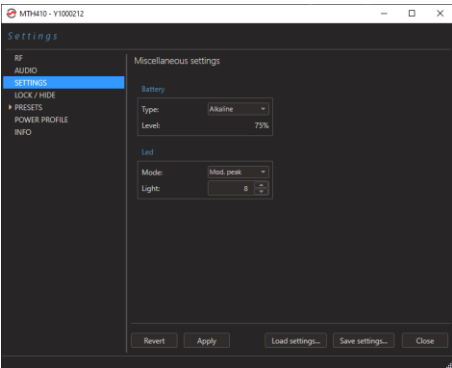
AUDIO Settings



Use AUDIO Setting to verify/change:

- Modulation
- Comander
- High and Low pass filter
- Gain and unit
- Limiter enable
- Mic Mode
- Phase
- PTT

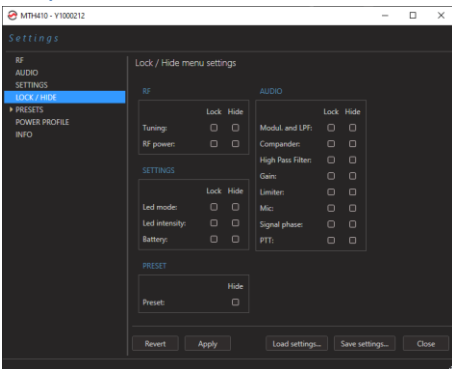
Miscellaneous Settings



Use Miscellaneous Setting to verify/change:

- battery type
- LED mode and lightness

Lock/Hide



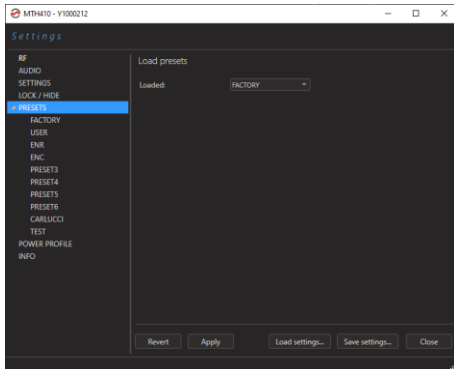
Thanks to the Lock/Hide function it is possible to locked or hide some parameters.

When the parameter is locked, the user is not able to change the value by display menu.

When the parameter is hidden, the parameter is not visible on the display menu.

Lock/Hide is a propriety of the parameter on all the PRESET.

Presets



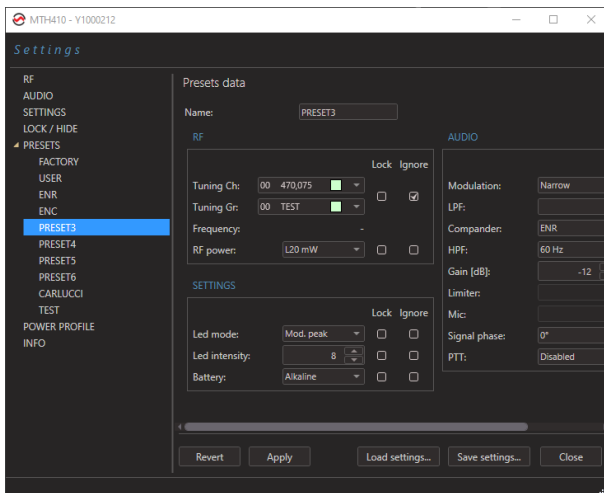
The Preset panel allows to manage all the 10s available configurations.

For each configuration it is possible to set the name and all the parameters value except for FACTORY and USER configurations (see table below).

PRESETS	NAME*	LOCK/ IGNORE	PARAMETERS VALUE
FACTORY			
USER			√
OTHERS	√	√	√

√=change is allowed

* Be careful to write a meaningful name for the preset because the name will appear on the settings list of the device menu! Please, avoid empty names.

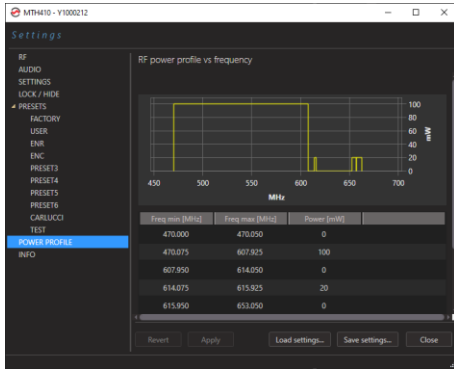


If a parameter is “locked”, it cannot be modified by device menu (using OLED display), while if “ignore” propriety is active, when the user load the configuration, the parameter’s value doesn’t changed.

ATTENTION: Changes are applied only after a “save” action.

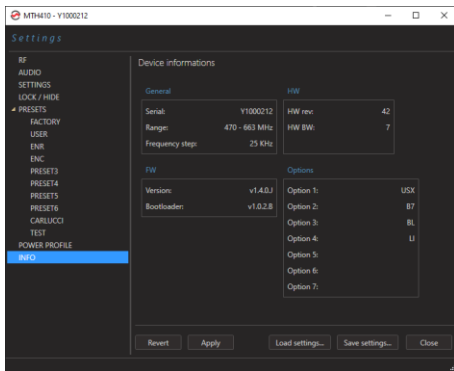
NOTE: “a trick” In case of the user have a locked parameter and he is in great need for modify it, he can save the configuration to USER configuration by OLED (see PRESET menu) and then load the USER configuration (in this way all the parameters have the lock propriety disable and the user can modify all the parameters).

Power Profile



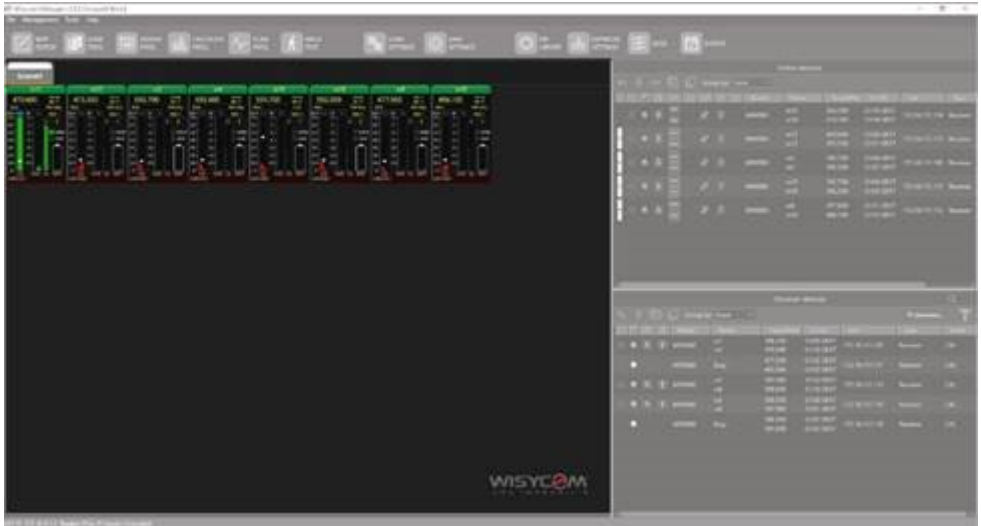
Power Profile panel shows the frequency range and the maximum RF power settable on your transmitter.

Info



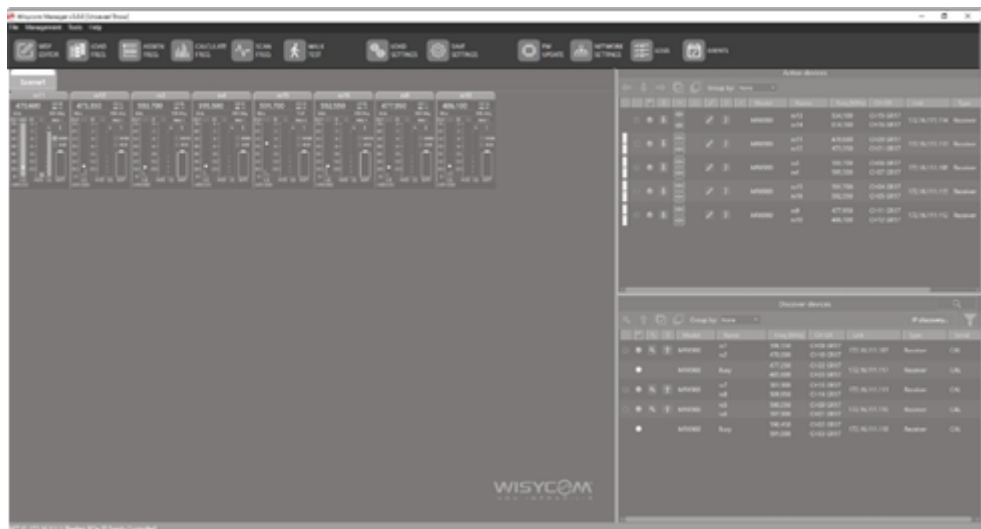
On this panel is possible to check the firmware version and all the option installed on your transmitter.

Monitor Area (NOT for Wireless Microphone Transmitters)



In the Monitor area, you can visualize all the basic unit information such as RF levels, battery status, frequencies and channel names. You can also organize your devices by creating scenes to virtually recreate your hardware deployment.

Tool Bar

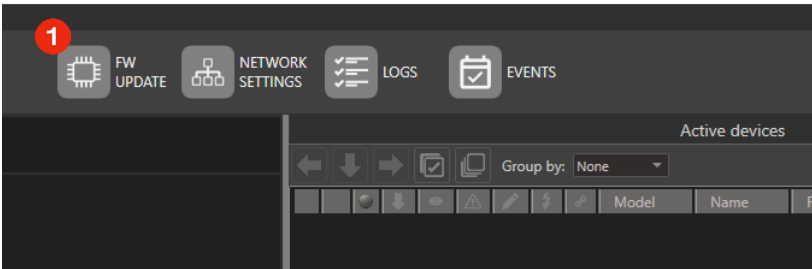


On the tool bar you have all the unique tools Wisycom puts at your disposal to help you through your daily job. It goes from a WDF editor to the frequency scan and the frequency calculator. Each icon will open a different tool or window each of what will be analyzed in the Tool bar dedicated section.

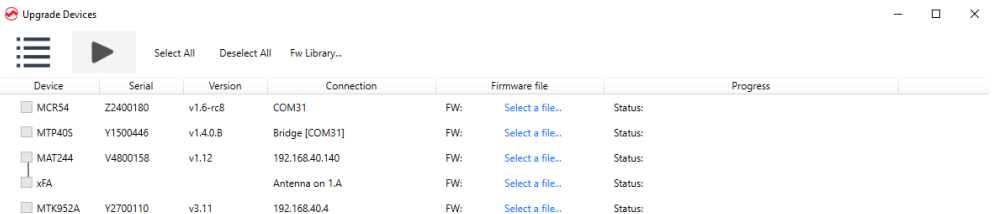
Firmware Upgrade

Wisyscom Wireless Manager allows you to update the firmware for any Wisyscom firmware based unit.

To be able of updating the firmware, the device must be connected to via ethernet, USB or infrared as explained on the “Connection” chapter above. It’s not necessary to active the device by dragging it into the “Active Devices” area, it simply needs to show up under the discovery area. Note that in case of rack units, the unit must be reachable and not “Busy”.

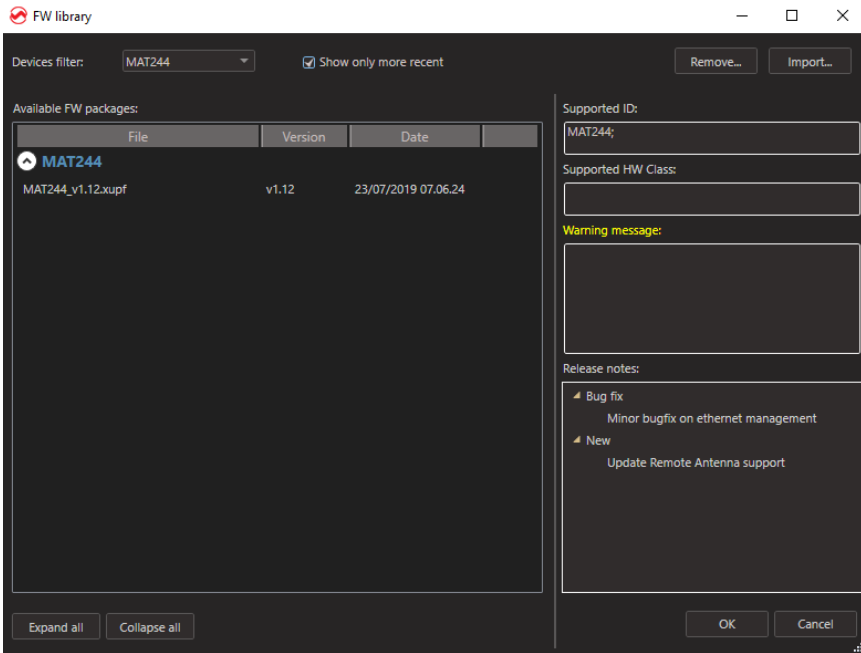


Once the desired unit appears in the discovery area, go to the tool bar and find the “FW Update” tab **1**. Then you click on the “FW UPDATE” icon the “Upgrade Devices” window will appear. On this window are listed all the reachable and updatable units. Please keep in mind that, for safety, if a unit is monitored it can’t be updated, as the upgrade will reboot the device at the end of the procedure; a warning pop up will remind you this as soon as you open the “Upgrade Devices” window if you have some monitored units.

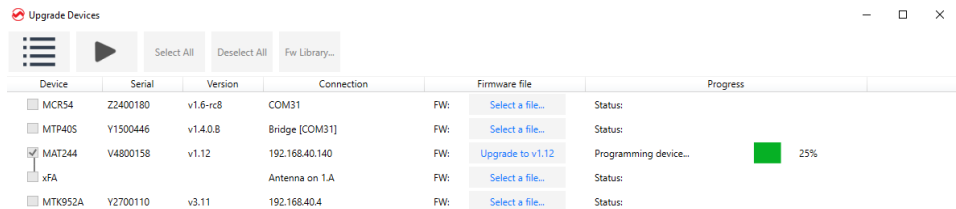


To enter the desired device FW library click on “Select a file”.

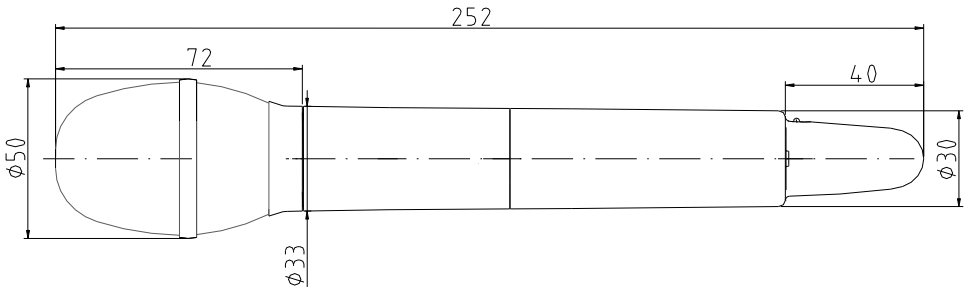
From this window you also get the general firmware information such as the supported devices by that specific firmware or the release note. To choose the firmware click on it and then press OK or simply double click on the DEVICE name (e.g. MAT244)



After choosing the firmware you'll return to the Upgrade devices window from which you can run the update by pressing the black triangle start button. A green bar will tell you the updating status.



DIMENSIONS



Note: unit is mm

For the commercial code, see in the Variants area of the Products on our website

VARIANTS:

▪ POWER PROFILE & COUNTRY

FREQUENCY RANGE:

EU max power 50mW (Europe)

EUX max power 100mW* (Europe)

USX max power 100mW (USA & Canada)

US8 max power 100mW (USA & Canada)

JP max power 10/50mW (Japan)

▪ COLOR

BL body color black

PV body color titanium grey



▪ FREQUENCY RANGE

B7 470-663 MHz **B8** 940-960 MHz

B3 510-698 MHz **B6** 960-1160 MHz

B2 566-798 MHz **B9** 1240-1260 MHz

Compliance

Model	In Compliance with	Max Power	Country
MTH410-EU	EN 301 489-1/-9 EN 600065 EN 300 422-1/-2	50mW	Europe CE
MTH410-EUX	EN 301 489-1/-9 EN 600065 EN 300 422-1/-2 EN 300 454-1/-2	100mW*	Europe CE
MTH410-USX	 PART 74 FCC-ID: POUMTH400USX RSS-123, RSS-102 IC: 11967A-MTH400USX Limited to 663MHz	100mW	USA, Canada
MTH410-US8	 PART 74 FCC-ID: POUMTH410US8 RSS-123, RSS-102 IC: 11967A-MTH410US8 Limited to 941.50-952.00MHz, 952.85-956.25MHz, 956.45-959.85MHz	100mW	USA, Canada
MTH410-NZ	EN 300 422-1/-2 EN 300 454-1/-2 Limited to the range 502÷698MHz	100mW	New Zealand

* MTH410-EUX is not an SRD device, it requires specific authorization by your local frequency authority! **Note:** The above technical specifications refer to the MTH410 “transmitter” section. The acoustic specs are relevant to the microphone-head used. The MTH410 transmitter complies with ETSI 300 422.



Before putting the device into operation, please observe the respective country-specific regulations!

EU DECLARATION OF CONFORMITY

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from:
wisyscom.com/products/d/MTH410

MANUFACTURER DECLARATIONS

In compliance with the following requirements

- RoHS Directive (2002/95/EC)



- WEEE Directive (2002/96/EC)
Please dispose of the diversity transmitter at the end of its operational lifetime by taking it to your local collection point or recycling center for such equipment



- Battery Directive (2006/66/EC)
The supplier batteries or rechargeable batteries can be recycled. Please dispose of them as special waste or return them to your specialist dealer. In order to protect the environment, only dispose of exhausted batteries.

FCC Conformity

This device complies with Part 74 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operations.

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC ID can be found near the battery compartment (unscrew & slide down the cover).

FCC ID: POUMTH400USX option USX

FCC ID: POUMTH400US8 option US8

Industry Canada Conformity

EN

This device operates on a no-protection, no-interference basis. Should the user seek to obtain protection from other radio services operating in the same TV bands, a radio licence is required. For further details, consult Innovation, Science and Economic Development Canada's document Client Procedures Circular CPC-2-1-28, Voluntary Licensing of Licence-Exempt Low-Power Radio Apparatus in the TV Bands.

This device complies with Industry Canada RSS-123.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

FR

Ce dispositif fonctionne selon un régime de non-brouillage et de non-protection. Si l'utilisateur devait chercher à obtenir une certaine protection contre d'autres services radio fonctionnant dans les mêmes bandes de télévision, une licence radio serait requise. Pour en savoir plus, veuillez consulter la Circulaire des procédures concernant les clients CPC-2-1-28, Délivrance de licences sur une base volontaire pour les appareils radio de faible puissance exempts de licence et exploités dans les bandes de télévision d'Innovation, Sciences et Développement économique Canada.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio RSS-123.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

ITALY ONLY

Obblighi di informazione agli utilizzatori

ai sensi dell'art. 13 del Decreto Legislativo 25 luglio 2005, n. 151 "Attuazione delle Direttive 2002/95/CE, 2002/96/CE e 2003/108/CE, relative alla riduzione dell'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonché allo smaltimento dei rifiuti"

Smaltimento di apparecchiature elettriche ed elettroniche di tipo professionale



Il simbolo del cassonetto barrato riportato sull'apparecchiatura o sulla sua confezione indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti.

La raccolta differenziata della presente apparecchiatura giunta a fine vita è organizzata e gestita dal produttore. L'utente che vorrà disfarsi della presente apparecchiatura dovrà quindi contattare il produttore e seguire il sistema che questo ha adottato per consentire

la raccolta separata dell'apparecchiatura giunta a fine vita.

L'adeguata raccolta differenziata per l'avvio successivo dell'apparecchiatura dismessa al riciclaggio, al trattamento e allo smaltimento ambientalmente compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

Lo smaltimento abusivo del prodotto da parte del detentore comporta l'applicazione delle sanzioni amministrative previste dalla normativa vigente.

Smaltimento batterie usate



Questo prodotto può contenere batterie. Questo simbolo apposto sulle batterie significa che non possono essere smaltite insieme a normali rifiuti domestici, bensì devono essere depositate negli appositi punti di raccolta delle batterie.

Iscrizione al Registro A.E.E. n. IT0910000006319



Via Tiepolo, 7/E • 35019 Tombolo (PD) • Italy
Tel. +39 -0424 -382605 • Fax +39 - 0424 - 382733
www.wisycom.com • e-mail: sales@wisycom.com