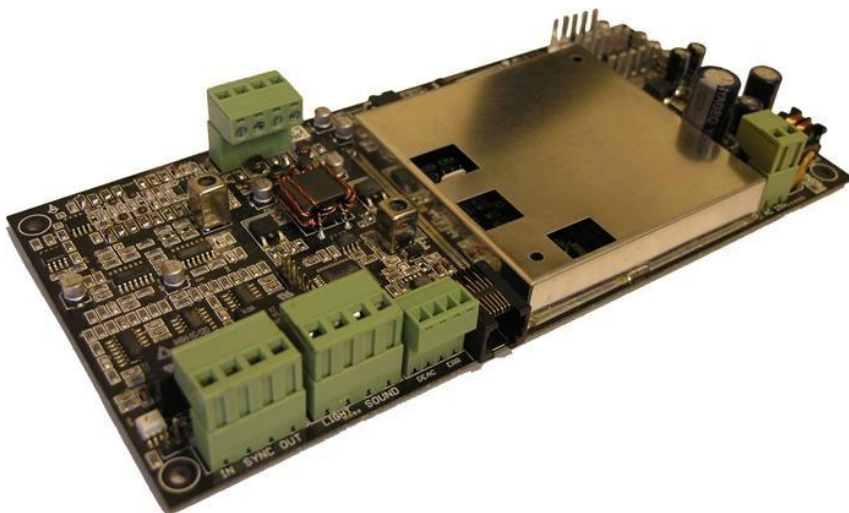


MONO 8.2 MHz (MONODSP8)

USER'S MANUAL

HISTORY OF REVISIONS AND REPAIRS:

07/2012 REV.A (HW:N:6163, REV.8.3; SW:V3.4)



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CONTENT

1. Safety guidelines 3

2. Basic information 3

3. El. board description (HW: N: 6163, REV.8.3; SW: V3.4)..... 4

4. Antennas 5

5. Connecting the el. board 5

6. RF application 8,2MHz MIX V3.46

6.1 Settings 7

6.2 System 7

6.3 Alarm 7

6.4 MONO 8,2MHz 8

6.4.1 Synchronization 8

6.4.2 TX 9

6.4.3 RX 9

6.5 Sync 10

7. Quick installation guide 11

7.1 Pre-installation 11

7.2 Basic equipment required 11

7.3 Configuration 12

7.4 Connection 12

7.5 Application settings 12

7.6 Final 14

8. Declaration 15

8.1 Equipment modification caution 15

8.2 FCC compliance 15

9. Notes 16

1. SAFETY GUIDELINES

Operate the system only as described in these operating instructions. Damage to hardware due to improper use may result in loss of warranty.



WARNING! Do not open the antenna el. board cover while it is connected to main power. **RISK OF ELECTRIC SHOCK!**



CAUTION! When connecting or disconnecting antennas make sure that el. board is switched off.



CAUTION! Do not disconnect the connectors from el. board unless adapter has been disconnected from main power.



CAUTION! Only USS authorized professional technicians can install and/or service this system

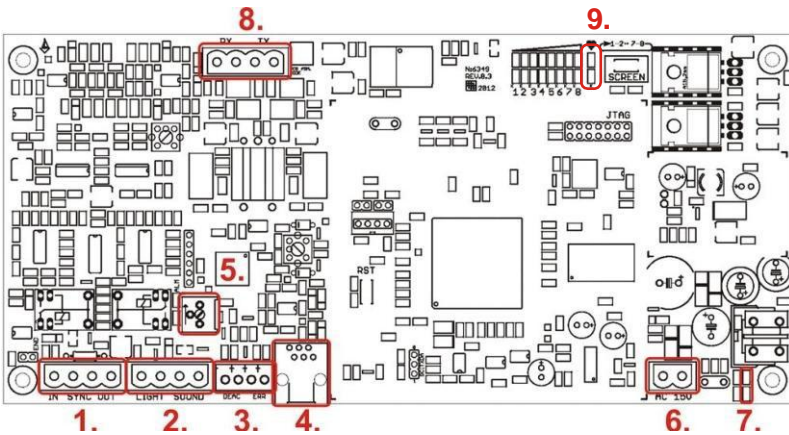
2. BASIC INFORMATIONS

ABOUT: This reference manual settings procedure, basic tuning for put into operation of the MONO RF 8.2MHz electronic board.


USE: The system MONO RF 8.2MHz electronic board is invented for protection of goods in stores entry/exit and it works in frequency range of 8.2 MHz. MONO 8.2MHz detects all kinds of tags from different producers, i.e. hard, soft and paper, which are intended for radio frequency systems with operating frequency of 8.2 MHz. The system MONO 8,2MHz consists of one mechanical pedestal and one electronic board. For higher number of systems, synchronization is performed by a two-wire cable or wireless by the setting in RF application. MONO 8.2MHz can operate even close to modern deactivators of paper tags without any reduction of sensitivity.

WORKING PRINCIPLE: Device transmits short high-frequency pulses and receives signals from tags which are located in the detection field. Radio-frequency system is designed for detection of RF tags and labels working on 8.2 MHz frequency. Detected tags activate sound and light alarm.

3. EL. BOARD DESCRIPTION (HW:N:6163, REV.8.3; SW:V3.4)



Pic. 1 - El. board description

1. - Terminal of external synchronization from/into another el. board. (for install and service only)
 2. - Terminal that drive external speaker and LEDs or lights to provide audio and visual alarms.
 3. – Terminal is not used in the USA
 4. - RS-232 interface (for install and service only)
 5. - Trimmer that adjust the volume of external speaker.
-  ***NOTE:** This is the only manual tuning required for normal installation!
6. - Terminal for power 15VAC supply, with consumption of at least 300mA.
 7. - ON/OFF power LEDs status.
 8. - Transceiver antenna terminal drives two uncoil antennas.

9. - Heartbeat LED - Blink slowly in normal run mode. Blink fast (for 9 sec.) when you turn ON the electronic board or during the quick adaptation (for 4 sec.) (system adaptation to environment interference) or during the time when is the Transmitter (TX) turned OFF.

4. ANTENNAS

The antennas that are connected with MONO RF 8,2MHz electronic board are always configured as multicoil transceiver devices. They combine transmit and receive function with one pedestal.



***NOTE:** See section 6.5 MONO 8,2MHz -> Synchro.

All settings about the antenna fine tuning and synchronization are performed in RF application 8.2MHz MIX V4.0.

5. CONNECTING THE EL. BOARD



***NOTE:** Please note that the device must be connected to the PC as long as you keep configuring it. Device is removed after configuration.

The MONO 8.2MHz system is configured and tuned mostly by software. The latest version of RF application 8.2MHz MIX should be installed before connecting to the control box. Electronic board is connected to the PC with a USB Hardware Key which is required for security purposes or with eComm via internet connection. When you start the application, you will see basic connection settings window.

Communication - Choose according to device which will mediate the communication. Serial includes devices with RS485 or RS232 interfaces, that provides USB connection with computer. Internet includes devices as eComm that provides remote server control via internet connection.

COM port - Choose number of USB port that is set for Serial communication in you computer. If you are unsure of what

Communication:

Serial (RS 485 or RS232)

Internet (Socket)

COM port:

4 Search

Connect Disconnect

Pic. 2 - Basic connection settings window

COM port needs to be selected, click "Search" button and the application will scan and display the correct one.

Socket communication - Here you can connect device remotely via internet connection with information and login authorized from provider of eComm.

The hardware key is connected to the 6-pin RS232 Serial connector on the control unit and then to an available USB port on the PC.



Pic. 3 - Hardware key

6. RF APPLICATION 8.2MHz MIX V3.4

6.1 SETTINGS

Settings page allows the user very basic control of the device as well as tests its functionality.

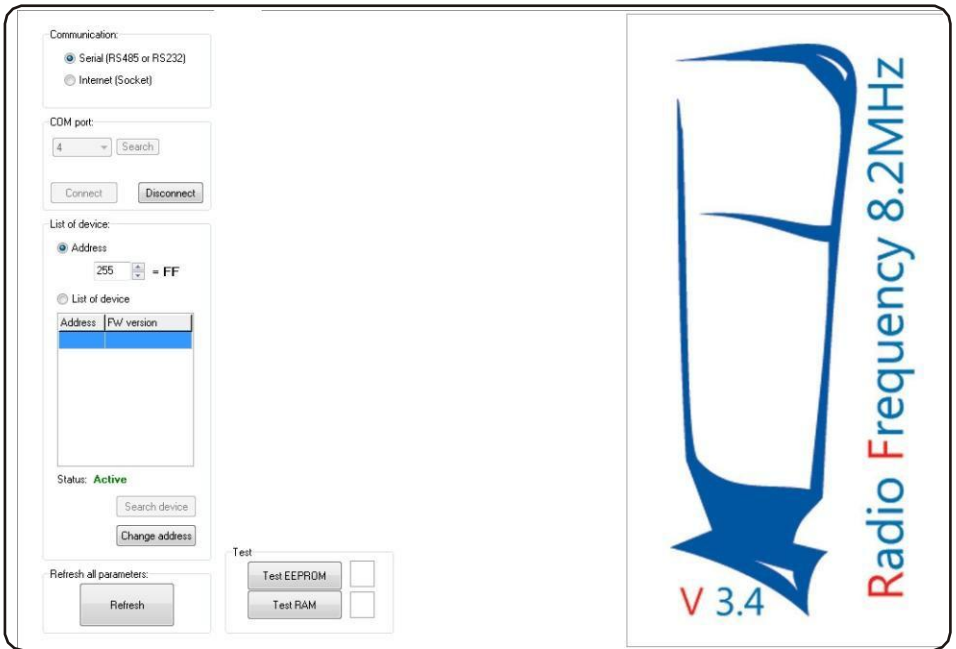
Communication - Sets the type of communication, either locally or remotely through the internet.

COM port - Allows the user to select the correct COM port manually through a scroll bar or automatically by clicking on the "Search" button. The "Connect" button connects the PC to the device locally or remotely and "Disconnect" disconnects it. Make sure to disconnect the device before unplugging it to avoid freezing of the computer and/or loss of data.

List of device - Shows list of connected devices. Here you can also change the address of device, simply with button "Change address".

Refresh all parameters - Updates all data from the controller unit with the latest values.

Test - Clicking on this buttons will test the EEPROM and RAM memory. If the memory is broken, contact manufacturer.



Pic. 4 - Settings window

6.2 SYSTEM

System parameters are for factory testing and modifications only. It is not recommended to change these values without the advice of manufacturer.

Software version - Shows the current version of the system and serves as important information for any possible future upgrades.

Device default setting - Returns all settings that you make to the factory settings.

6.3 ALARM

This page set up to three types of alarms. Each alarm is for different passing condition of the scanned gateway.

Duration of alarm light - Number specifies the time (in seconds) of how long will be the light alarm running after the trigger.

Blink frequency - Sets how fast will be the light alarm blink.

Duration of alarm sound - Number specifies the time (in seconds) of how long will be the sound alarm running after the trigger.

Beeper frequency - Changes the speed interval of beeps.

Type of beeps - You can choose between four types of beep intervals and assign them to different types of alarms.

Test buttons - Serves for testing of correct run of light and sound alarms.

Watchdog - This counter may be very important as the device will automatically reboot itself from time to time when it encounters an error. High number in short period of time may indicate a problem with the device. In that case contact manufacturer.

6.4 MONO 8,2MHz

6.4.1 SYNCHRONIZATION

Synchro - Type of synchronization - Mains frequency - Follows the moment of zero crossing from falling or rising edge based upon which transmit the signal. This option allows you to make simple synchronization with other systems to avoid them from the interference, that transmitting signal is delayed at the desired time (in microseconds).

Type of synchronization - Slave - System waits for synchronization pulses from "Master unit". Set of "Slave delay measurement of synchronization" depending on cable length. In case of longer cable reduce the value.

Type of synchronization - Individual synchro - Manual settings of system transmitting period. Use only in case of high interference from mains power.

- **Jitter** - Generates random values (the order of microsecond) and adds them to the phase delay. The setting helps eliminate mains interference.
- **Period** - Sets the value of the manual settings of system transmitting period. Parameter is changeable only when it is "Individual synchro" active.

6.4.2 TX

TX - TX power - Select the value using scrollbar and confirm it with button.

The transmit power can be minimum at level 2 and maximum at level 7.

- **Use sweep** - Leave this function always enabled. System transmits in eight frequencies in that case. This is important due to untuned labels in 8,2MHz frequency. You can set the range of minimum and maximum frequencies, but it is recommended to leave default values.

Due to restriction on certain frequency bands by the FCC, 8.2MHz MONO system does not transmit in the following bands:

Low frequency of forbidden band 1: 8.271 MHz

High frequency of forbidden band 1: 8.314 MHz

Low frequency of forbidden band 2: 8.342 MHz

High frequency of forbidden band 2: 8.435 MHz

- **Label protective mode** - Save label from high transmitting power near the antenna, which can destroy the label. Function temporarily reduces the transmitting power.

6.4.3 RX

RX - Gain - With scrollbar select the desire gain and confirms it with button. Higher gain can increase received signal but also noise from environment. Recommended value is 100.

Alarm counters - Display counted alarms.

Quick adaptation - System make continual quick adaptations after the set time. This button allow you to make adaptation instantly.

MONO82_USR_MAN_REV_A

RX channels - Shows received signal on eight channels. Frequency of each channel depends on parameter setting of "Use sweep" and range of minimal and maximal frequency. If it is "Use sweep" turned ON, frequencies are mathematically generated from minimal to maximal value. If it is "Use sweep" turned OFF, all of eight channels has the same value. Every channel can be deactivated by the checkbox.

Test and testing - For testing purposes. Capture values from the electronic board and report on them. Bias values should be around 2100, different values indicate error.

6.5 SYNC

Sync - Takes down one period of mains frequency. Green rectangle represent bursts that system transmits. Red signal represents everything else, like environmental or static noise, other systems, interference etc. This signal helps, when you want to synchronize systems to avoid them from interference with each other. If you want display actual received signal, choose "Automatic read" checkbox and click on "Read array" button.

D/A - Shows different types of signals used mostly for testing purposes.

7. QUICK INTALLATION GUIDE

This section is meant to describe the basic steps for installing the RF system in a standard environment. It is not meant to troubleshoot, but only to show the necessary steps in sequential order.

7.1 PRE-INSTALLATION

- (A) Review User Manual and Rules of Installation.
- (B) Install your PC latest version of RF Software.
- (C) Test the system before going to the location site.

7.2 BASIC EQUIPMENT REQUIRED

- (A) PC with Windows XP, Vista or 7 operating system or later and 1 free USB 2.0 port.
- (B) Hardware key with USB Cable and twisted „phone" cable with RJ14 + RJ12 connectors or eComm with cross UTP patch cable, power supply and twisted „phone" cable with RJ14 + RJ12 connectors.
- (C) Antennas.
- (D) RF Hard tag or RF sticker label.
- (E) Power supply for electronic board (HW:N:6163, REV.8.3; SW:V3.4).
- (F) 4 screws (8mm or 10mm diameter, at least 60mm long) for each antenna, not included with system.
- (G) Washer and plastic screw anchor (unless using a hardening agent) for each screw.
- (H) 4mm Allen (hexagon) wrench for antenna screws.

7.3 CONFIGURATION

- (A) Consult section 6.5 and inspect the environment to decide on the best configuration of antennas. Several configurations may need to be tested before finding the most suitable one.

7.4 CONNECTION

- (A) Connect the power supply to the electronic board (HW:N:6163, REV.8.3; SW:V3.4) marked in the Pic. 1 - El. board description.
- (B) Interconnect the hardware key to the electronic board (HW:N:6163, REV.8.3; SW:V3.4) and the PC.
- (C) Plug in the power supply to the mains supply. Open the RF Application software.

7.5 APPLICATION SETTINGS

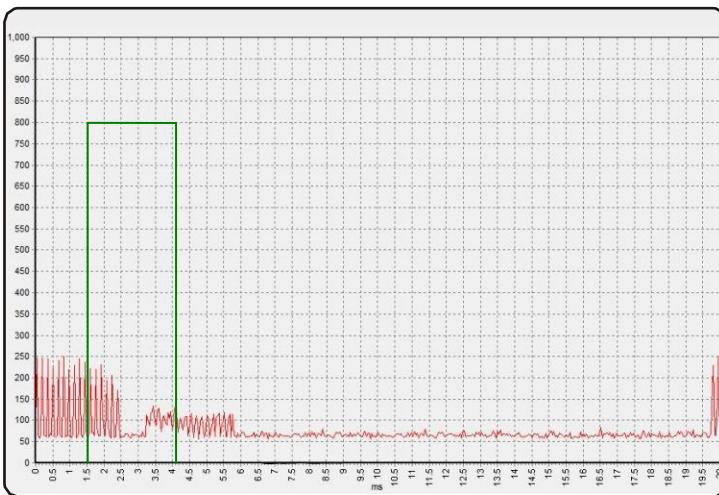
- (A) In "Alarm" page verify that correct alarms (A) and jammers are turned on, so that the system alarms will go off correctly when they are tested.

(B) At the RX page set Gain to the value 100 or that RX channels are in green or yellow.

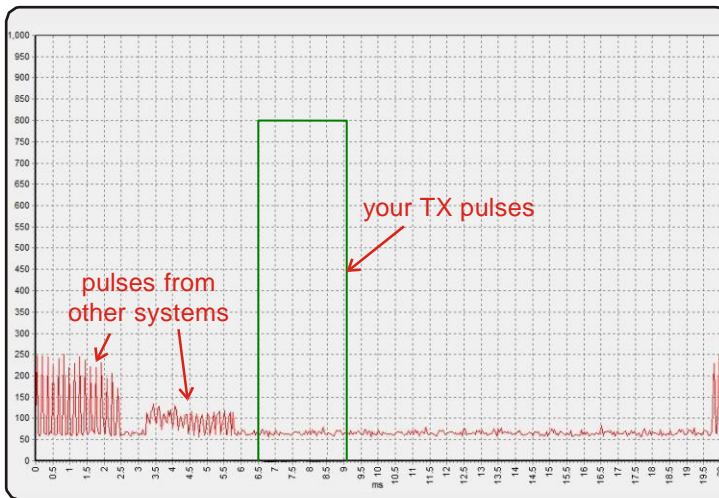
(C) In Synchro choose checkbox “manual” and the “mains frequency”. Go to the “Sync” window. Choose “Automatic read” and click on “Read array” button. Look if there is some interference with another system that transmit in frequency 8.2 MHz. Set "Delay of phase" so that signals do not overlap. On Pic. 6 and Pic. 7 you can see two other RF systems that are synchronized with each other. The farther away the other systems are, the smaller the pulses will be, but the systems can affect each other up to 100m away in some cases, resulting in false-alarms and poor detection of all RF systems. The pulses may be combined with electrical noise, so it is important to evaluate the signal closely.

Delay of phase us [5 - 18000] default 5

Pic. 5 - Delay of phase setting in "Sync" window



Pic. 6 - Unsynchronized systems



Pic. 7 - Properly synchronized systems



***NOTE:** If installing more than one controller unit in the same location, turn on and synchronize the systems one by one!!!

7.6 FINAL

- (A)** Move on to the second electronic board if these will be also installed. Repeat steps 7.3-7.5.
- (B)** Disconnect from the system on the Settings page and then turn OFF the electronic board (HW:N:6163, REV.8.3; SW:V3.4).
- (C)** Drill holes and attach the antennas to the floor. Lay the cables in the floor and place the controller unit in its final location.
- (D)** Turn the system back on and reconnect. Test detection again with the antennas attached and cables in the floor. Verify that everything is okay and set the Alarm lights and sounds to the customer's wishes.
- (E)** On the Settings page, Export the settings to a text file for future reference. Also, a screenshot of each page in the software can be extremely helpful to have for reference, even more so than the settings file.

8. DECLARATION

8.1 EQUIPMENT MODIFICATION CAUTION

Equipment changes or modifications not expressly approved by manufacturer, the party responsible for FCC &/or CE compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

8.2 FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction's manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense. The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

9. NOTES

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