OPERATING INSTRUCTIONS

S BOX - 30

SHOT CONTROL SYSTEM

SHOT CONTROL SYSTEM

Abstract

This manual describes the functionality of the SBOX-30 device for operation with the Shot Control System hardware and software system.

All information necessary for setting up and configuring the device in the «Controller mode» and «Receiver mode» modes is described in detail, as well as some «useful tips» and important points are given.

The manual describes in detail the basic issues of organising the address space for setting up the Shot Control System hardware-software complex using SBOX-30 devices.

Recommendations on safety measures and recommendations on power management and maintenance of the device are given.

We strongly recommend that you read the instructions in detail before using the system. If you have any questions, you can contact us:

1. By email: support@mainfx.ru
2. or in any messenger:

https://mainfx.ru/

Before operating this appliance, please read this manual in its entirety and carefully retain it for future reference.
The construction of this appliance suggests that it should be used by a qualified person who has been trained in the use of this appliance.

1 Purpose of the device

The SBOX-30 device — is a hardware and software system for controlling external devices using the SHOT CONTROL protocol.

Due to the SHOT CONTROL protocol capability and with the support of SBOX-30 devices, as well as other devices supporting the protocol operation, it is possible to create a multi-channel and multi-zone control network of electronic devices using software logic algorithms.

The end products of SBOX-30 devices can be various pyrotechnic products and other low-voltage loads.

SBOX series devices are used for the organisation of programmable control of pyrotechnic and other special devices at pyrotechnic shows and concert programmes. As well as for use in the film and video industry.

The SHOT CONTROL protocol allows controlling hundreds of different devices from one controller.

The SBOX-30 can operate in two modes:

1.1 «CONTROLLER MODE»

In the «Control» mode, the SBOX-30 can control any devices that support the SHOT CONTROL SYSTEM radio protocol.

In «Controller mode», this device has one physical and 8 logical control buttons.

It has an active bluetooth module for the possibility of connecting this device to a mobile application.

When working in the «Controller mode», the display of the device shows the corresponding status and information corresponding to the «Controller mode».

1.2 «RECEIVER MODE»

In the «Receiver mode» the device receives signals from the control device and can start pyrotechnic products and is also able to control any other loads by supplying them with a voltage of 20 volts with controlled duration and delay. This device, in Receiver mode, is controlled by the SHOT CONTROL radio protocol.

In «Receiver mode» it is possible to connect up to 5 (five) external products to the device through 5 groups of contacts for direct connection of pyrotechnic igniters, and also, through 2 RJ45 connectors it is possible to connect 2 external expansion boards, 15 channels each.

When 2 expansion boards are connected, the device can signal 30 igniters at once.

When operating in the «Receiver mode», the device display shows the corresponding status and information corresponding to the «Receiver mode».

1.3 UPDATING THE DEVICE

The device is updated and configured via a special software application. To configure and update the device, it is necessary to connect it to a mobile device (smartphone, Android tablet) via Bluetooth channel, on which a special application is installed. (To work with the special application for setting up SBOX-30 devices, see separate instruction).

1.4 DEVICE PACKAGE

The SBOX-30 device is supplied in a branded package containing:

- The SBOX-30 device
- The Antenna

Figure 1: Standard antenna for SBOX-30

- RJ45-USB-C adapter for connecting the charger to the RJ45 port on the top cover of the SBOX-30.

Figure 2: RJ45 – USB-C device charging adapter

- Instruction manual

1.5 STORAGE OF THE DEVICE

It is recommended to store the SBOX-30 in its original packaging in a dry and ventilated room.

Storage conditions for the device:

- Storage temperature from –30°C to +50°C
- Relative humidity from 10% to 80%

It is recommended that the battery be removed from the device when storing it for long periods of time.

IMPORTANT!

Do not store the device with flammable substances or objects

1.6 ADDITIONAL ACCESSORIES FOR SBOX-30

The device is additionally supplied with:

(1) RJ45 -> USB-C device charging adapter

(2) Expansion board for 15 channels: (it is possible to connect 2 boards to one device without parallel connection)

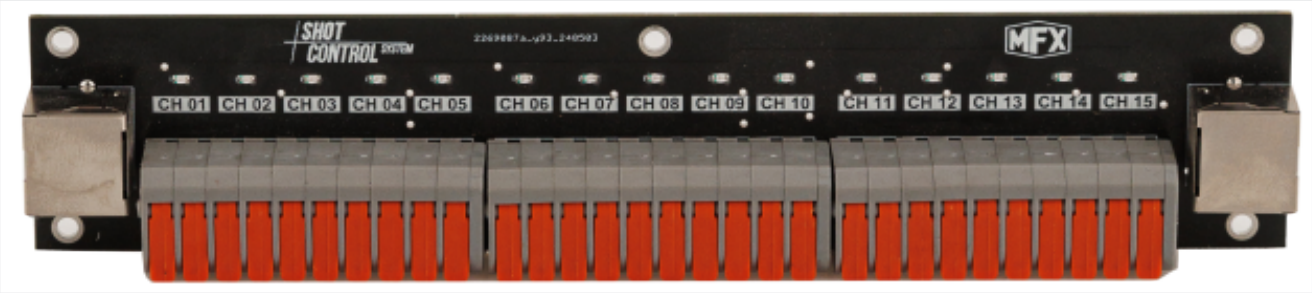

Figure 3: Expansion board for 15 channels

2 List of definitions and terms

Device — equipment (device) that performs certain functions and is controlled from a control device via radio channel or DMX

control device, Shot Control — A hardware device that is configured via a mobile app on a mobile device and controls the devices connected to it via radio and/or DMX

Mobile Device — a phone or tablet (IOS, Android) on which the application is installed and from which the user configures the Remote Control and the devices connected to it

Application — mobile software installed on the mobile device used to configure devices and consoles. (See separate instructions describing the Application)

Programme — a specific sequence of actions written to a file for subsequent assignment to a button and transmission to the control device. It is a set of points structured in a time sequence

Programme point — a separate entity within a programme that describes a specific action for a device. It can have different entity types and different parameter sets, depending on the entity type

User — a person who uses the complex

Button — depending on the context, may mean: {indexButton

- Button in the application interface
- A hardware button on the control device and an entity in an application to which a specific programme (or a sequence of programmes) can be assigned, as well as a number of parameters governing its operation

Channel — A channel is a physical contact on the SBOX-30 (or other SHOT CONTROL SYSTEM protocol devices) to which external control devices are physically connected via a wired connection: pyrotechnic igniter, electromagnet, other special device.

The channel externally represents a terminal with two contacts (+ and -), to which a voltage of up to 20 Volts and a current of up to 5A is applied with a certain time delay on command from the control device.

To control a channel from the control device, the channel is assigned an address in the format: position number `POSITION` + `ADDRESS`. (See section for more details: 6.2.1 on page 19)

Note that there are comments throughout the text,

VERY IMPORTANT!

Please read and consider these comments carefully. They are really very important!

IMPORTANT!

These comments are equally important and we highly recommend reading them

USEFULLY!

with this tag to reflect tips and tricks.

3 Cautions

To prolong the life of this device and avoid injury, please read this section carefully before using the SBOX-30 to ensure proper and safe operation.

3.1 WARNINGS

Before operating the instrument, make sure that it is charged and that there is no visual damage to the instrument.

Immediately stop using the unit if it starts to smoke, becomes excessively hot, or if there is an unusual odour or noise. These conditions may result in fire. Switch off the unit immediately, and then contact your dealer for a technical inspection.

The SBOX-30 must be charged using a charger recommended by the manufacturer.

When using the appliance, never open or remove the screwed-on enclosure covers unless specifically instructed to do so in the operating instructions.

Do not modify the SBOX-30 or modify parts of the SBOX-30. Modifications and alterations may cause it to malfunction.

Use only the recommended battery types. Batteries not of the recommended type may damage the appliance or ignite.

Ensure the batteries are installed with the correct polarity. Incorrectly installed batteries may cause ignition and damage to the device, this case is not covered by the warranty.

Using the device without the antenna connected may damage it.

The use of non-branded antennas may cause damage to the radio path. (non-warranty)

Do not store the device with flammable substances or objects

The SBOX-30 should only be installed and configured after reading these instructions.

4 Technical characteristics

Table 1: Technical characteristics

№	Specification	Value
1	Weight:	360 grams
2	Dimension:	30mm*66mm*125mm
3	Output supply voltage:	20 VDC
4	Radio frequency range:	864-869MHz
6	Temperature	
6.1	Operating:	-20° - +40° Celsius
6.2	Storage:	-30° - +50° Celsius
7	Relative humidity (operating)	0-80%
8	Battery Capacity	Type: Li-Ion 3000mAh
9	Active Battery Life:	24 hours
10	Sleep standby time	1 month
11	Case Material:	Anodised Aluminium
12	Display type:	OLED
13	Moisture Protection Class:	ip 57
14	Number (lines) of radio channel positions:	1000
15	Number of channels in one radio channel position:	10,000
16	Number of receivers to be connected to the SBOX-30 in control mode:	255
17	Service life:	2 years

5 Description of controls

5.1 FRONT PANEL OF THE DEVICE

The SBOX-30 is made of a solid aluminium case with a rectangular shape.

Figure 4: Front panel of the SBOX-30

1. External device connector [2xRJ45] for connecting charger and expansion boards up to 30 channels.
2. Antenna connector [BNC]
3. Menu navigation button (up)
4. Menu navigation button (down)
5. Menu function button (right)
6. (SHOT) button for controlling external devices in the control mode.
7. 5-channel external devices connection strip
8. ARM button for controlling devices in the control mode.
9. Menu function button (left). Switches the device on. Switches the device off. Switches to the «Sleep» mode.
10. Display of the unit.

5.2 TOP VIEW

The top view of the device is shown schematically and indicates the main elements:

Figure 5: Top view of the SBOX-30

1. External device connector [2xRJ45] for power connection and channel scaling
2. Antenna connector
3. Fixing screws (4 pcs)

5.3 BOTTOM VIEW

The bottom view of the device is shown schematically and indicates the main elements:

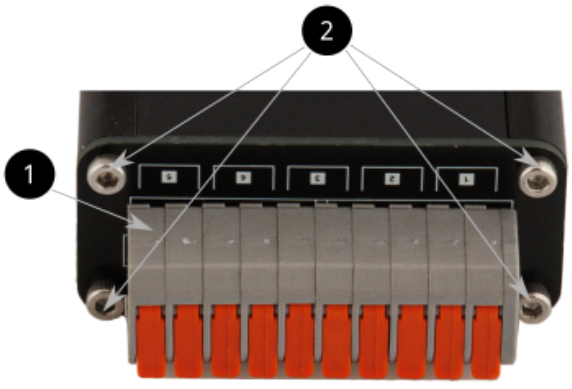

Figure 6: Bottom view of the SBOX-30 device

1. Connector for connecting external devices on the first 5 channels. (Duplicates the connection of the 5 channels at the top of the unit, via RJ45 connectors)
2. Fixing screws (4 pcs)

! USEFULLY!

When dismounting the device, use a hexagonal screwdriver or a 2mm spanner. For detailed instructions on how to disassemble the device, see section 9.7 on page 77

5.4 CONNECTING A MOBILE DEV. TO THE SBOX-30

In order to download programmes and manage the SHOT CONTROL SYSTEM network, you must switch on BLUETOOTH on the SBOX-30 and pair it with a mobile device (phone or tablet (G)). See 7.6.1 on page 37 and pair it with a mobile device (phone or tablet (H)) on which a special application for controlling the controller is installed.

! USEFULLY!

The SBOX-30 can only be paired with a mobile device when the «Control mode» is enabled (see section for details 7 on page 28)

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When pairing is established, the SBOX-30 device becomes available in a special application on a mobile phone (or tablet), through which it is possible to download programmes to the device and control the operation of the entire shot control system network. See Fig. 7.

Figure 7: Control panel

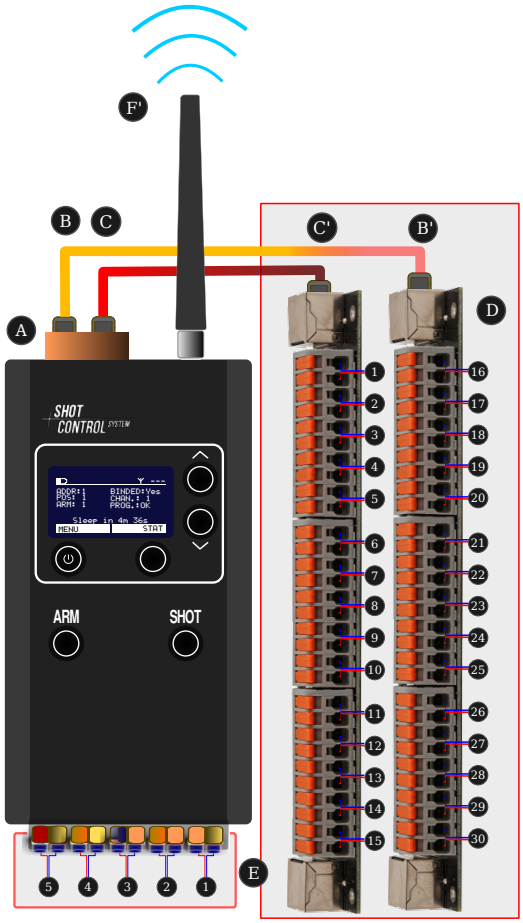


Figure 8: Receiver with 30-channel expansion board

5.5 CONNECTING THE EXPANSION BOARD TO THE SBOX-30

It is possible to connect 2 expansion boards (D) to the SBOX-30 receiver via a special connector (B) and (C) (See Fig. 8 on the preceding page) and to increase the external controlled channels from 5 to 30.

The connection is made using standard cables (patch cord RJ45) with twisted pair direct pinout.

Channels 1 to 5 on the expansion board are duplicated with the channels on the device itself (See Fig. 8 on the facing page (E))

! USEFULLY!

Expansion cards are not included with the SBOX-30 and must be purchased separately.

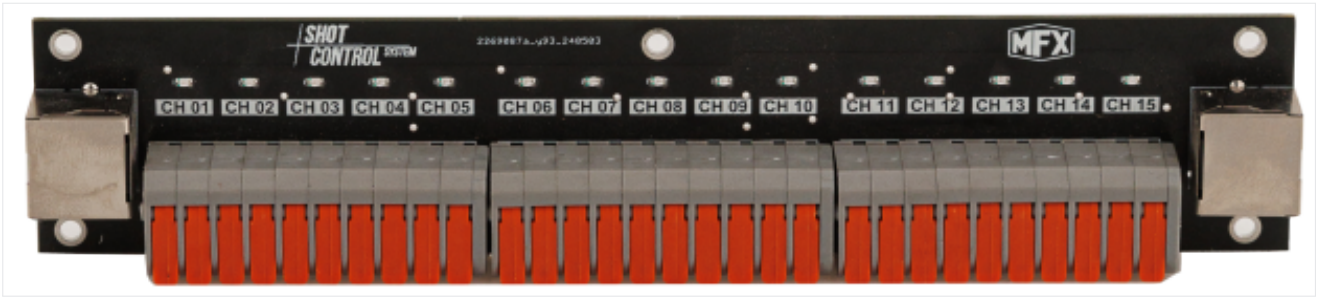


Figure 9: Expansion board for 15 channels for SBOX-30

6 The SHOT CONTROL protocol

The main theses of the SHOT CONTROL protocol discussed in this chapter:

1. SBOX-30 device — is a hardware-software complex for controlling external devices via SHOT CONTROL protocol SHOT CONTROL SYSTEM .
2. The SHOT CONTROL SYSTEM protocol allows you to create an extensive radio network for automatic control of pyrotechnic and special effects devices for various shows and performances.
3. The devices are controlled via the radio network by means of a control device. (There are several models of control devices available under the MAINFX brand name.)
4. The SBOX-30 can be operated in both the ‘’Control‘’ and ‘’Receiver‘’ modes.
5. The radio network is organised by radio connection of devices working with the SHOT CONTROL SYSTEM protocol.
6. 255 Receivers can be connected to one SBOX-30 in the Control mode at a time.
7. Each «Receiver» is connected to 1 or more products (depending on the receiver model) via wire channel (pyrotechnic igniters and special control equipment).
8. The network and devices are managed through a special address space.
9. Several devices of the same type can be connected to a single channel (Channel = position + address, see section 6.2.1 on the next page for details).
10. The control scenario for external channels (with connected pyrotechnics and special devices) is programmed in a special mobile app or in a simulation program on a PC for subsequent transmission to a phone or tablet.
11. The control scenarios are saved as a special programme and downloaded to the remote control.
12. The programme is started by pressing the «SHOT» button on the control device.
13. In accordance with the programme task, a signal is transmitted to the address in the position via radio channel. All devices connected to this address are triggered simultaneously.

(14) The control of external channels (with connected pyrotechnic devices) is possible in automatic and manual mode.

(15) Examples of address space management using the SHOT CONTROL SYSTEM protocol.

6.1 DEVICES OPERATING WITH SHOT CONTROL PROTOCOL

The following devices can be connected to the SHOT CONTROL SYSTEM network console via radio link[1]:

- S-box30,
- S-box100,
- switch pack 4,
- crazy flame,
- direct flame,
- jump jet,
- s-play

For a description of each device, see separate instructions.

6.2 ADDRESS SPACE SHOT CONTROL

The SHOT CONTROL SYSTEM protocol organises a special address space. The address consists of two parts:

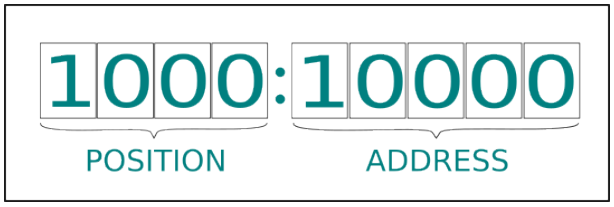


Figure 10: Address structure of SHOT CONTROL

(1) from 1 to 1000 — position number `POSITION`

(2) from 1 to 10000 — address number in the given position `ADDRESS`

When the programme is started from the control device, the programme transmits signals to the addresses one after another. All devices in the SHOT CONTROL SYSTEM network are triggered when the `SHOT` signal is received at their address and position.

6.2.1 FORMAT OF CHANNEL ADDRESS

A channel is a physical contact on the SBOX-30 device (or other devices operating according to the SHOT CONTROL SYSTEM protocol) to which external control devices are

[1] The list of devices is updated as new models are released

physically connected via a wire connection: a pyrotechnic igniter, an electromagnet or another special device.

The channel externally represents a terminal with two contacts (+ and -), to which voltage up to 20 volts and current up to 5A is applied on command from the control device with a delay and pulse duration set in the programme.

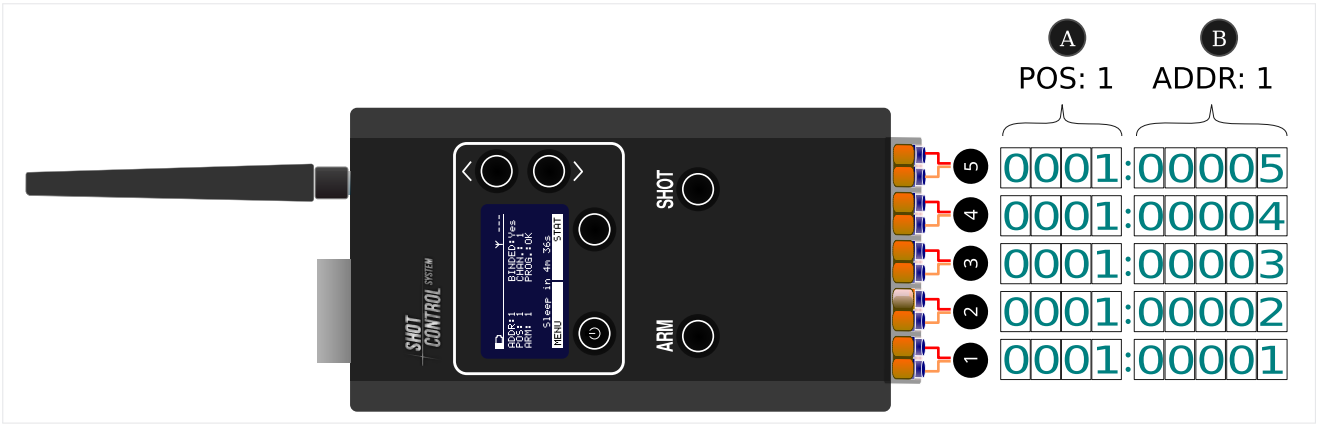


Figure 11: Address space of channels

Each channel has its own address consisting of two parts: (A) — the position number (assigned to the Receiver) and the number of the contact on the given Receiver (B).

In the standard version (without expansion board) the SBOX-30 has 5 channels (see Fig. 11), labelled in the figure from ❶ to ❺.

Each output channel in the SBOX-30 is assigned a unique address starting from the starting address (see section: 8.4.1 on page 66) and then +1 for each subsequent channel. (For details on address allocation on the device, see 6.2.2).

If you change the starting address ADDRESS in the receiver settings, the channel numbers are automatically recalculated using the formula:
PHYSICAL CHANNEL NUMBER + START ADDRESS .

For example. : if you set the number POSITION on the «Receiver»: 1 and start address ADDRESS : 10, then all output channels will receive addresses: 0001:00010 to 0001:00015, respectively.

6.2.2 CONFIGURING CHANNEL ADDRESSES ON THE RECEIVER

Each receiver can be assigned its own address range in the format:
POSITION NUMBER:START ADDRESS — POSITION NUMBER:END ADDRESS . Where ENDING ADDRESS = START ADDRESS + Number of output channels on the unit (without expansion card 5 channels).

When the SBOX-30 is used as a receiver without an expansion board, up to 5 pyrotechnic devices or special devices can be connected to it to the standard connector with five pairs of pins (5 channels) (see Fig. 5.3 on page 15), so in this version the SBOX-30 can control 5 addresses.

By connecting up to 2 expansion cards to the receiver (see Fig. 8 on page 16), the receiver's address space is increased to 30 addresses.

Each receiver is assigned a position number POSITION when it is connected to the console (see section: 7.7.3 on page 48) (see section: 8.4.2 on page 66 for details). This parameter is the first part of all device addresses connected to this «Receiver». Next, the starting address parameter is set on the receiver (see section: 8.4.1 on page 66)

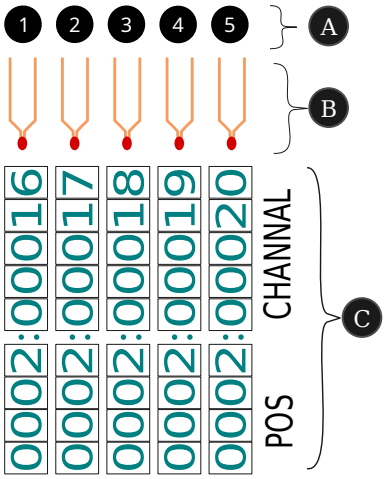


Figure 12: Address structure of the SBOX-30 standard device
For example: «Receiver» is set position number POSITION equal to 1 and start address 1, then all output channels, this receiver will have addresses: from 0001:00001 to 0001:00005. see figure.

For example: «Receiver» is set to position number POSITION equal to 2 and start address 16, then all devices connected to this receiver will have addresses: from 0002:00016 to 0002:00020. see the figure below.

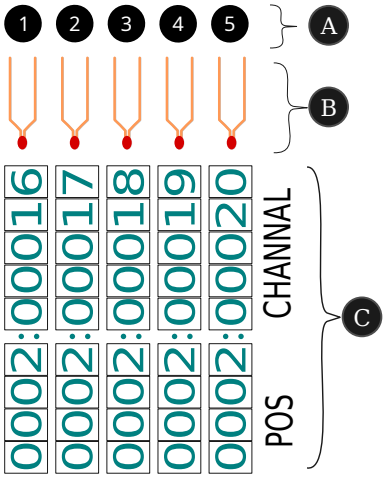


Figure 13: SBOX-30 address space with start address 16

(A) — physical numbers of output channels on the SBOX-30 device

(B) — schematic representation of the connection of external devices to the channels of the receiver.

(C) — correspondence of addresses of the space SHOT CONTROL SYSTEM and output pins of the SBOX-30

For example: An expansion card with 15 devices is connected to the «Receiver» and the position number POSITION is set to 2 and the starting address is 16, then all devices connected to this receiver will have the addresses: 0002:00016 to 0002:00030. see the figure below.

Channels 1 to 5 on the expansion board are duplicated with the channels on the device itself, see Fig. 8 on page 16 (E).

Accordingly, when 2 expansion cards are connected, the device will manage

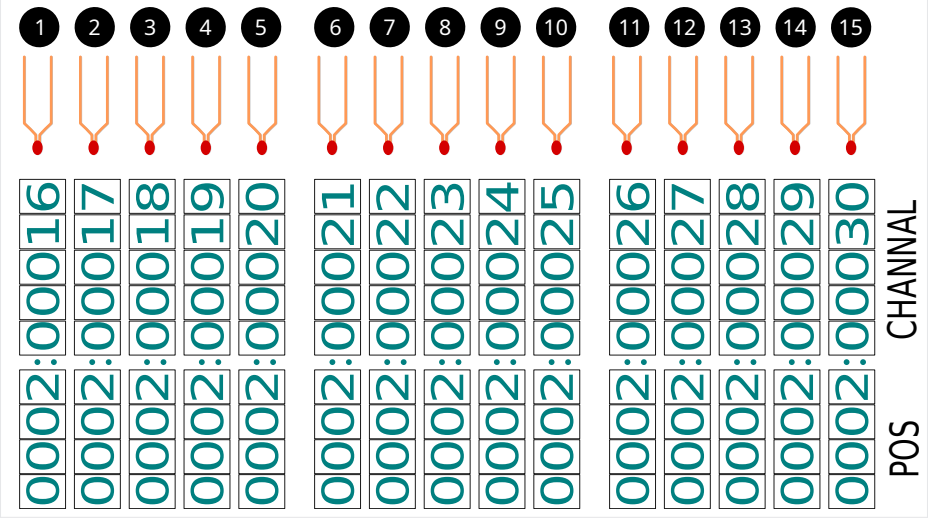


Figure 14: SBOX-30 address space with start address 16 and expansion card

30 addresses from 0002:00016 to 0002:00045

IMPORTANT!

When configuring the address space, assign each receiver its own position number for easier maintenance and network management.

USEFULLY!

To organise parallel launches of pyrotechnic items, set the same position numbers and starting addresses in the «Receivers» settings.

6.2.3 ADDRESS ALLOCATION ON RECEIVERS IN ONE POSITION

Procedure for setting up and allocating addresses in «Receivers» SBOX-30:

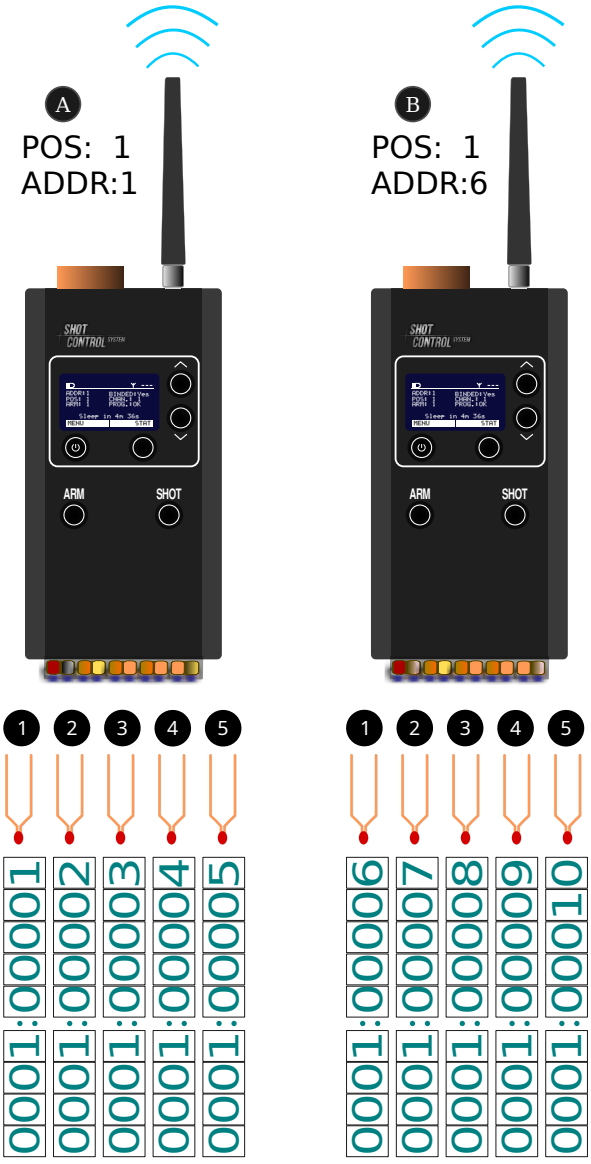


Figure 15: Address allocation when connecting in the 1st position

When multiple receivers are connected to the same control device and the receivers are assigned the same POSITION position number (see section: 8.4.2 on page 66 for more details), in order to distribute addresses sequentially between the end devices, it is necessary to set different start addresses on the receivers so that they do not overlap the address range on the other device.

For example: When the position number POSITION:1 and address number ADDRESS:1 are set on the (A) «Receiver», i.e. there is no expansion board on the SBOX-30, this device will occupy the addresses from 0001:00001 to 0001:00005 in the address grid. When a second «Receiver» is connected to the control device and POSITION:1 is set on it, the starting address ADDRESS:6 must be set on the (B) to prevent the addresses from overlapping, and accordingly the second device will occupy the address range from 0001:00006 to 0001:00010.

Connecting the following devices in position 1, allocate up to 10000 addresses in the address space based on the physical presence of output channels on the devices.

Accordingly, when connecting devices with an expansion board for 15 channels, the device will occupy the address space from the starting address + 15 addresses, for example, the third device with an expansion board will occupy addresses from 0001:00011 to 0001:00025.

6.2.4 CONNECTING RECEIVERS IN DIFFERENT POSITIONS

The order of setting and allocation of addresses in «Receivers» SBOX-30 in different positions:

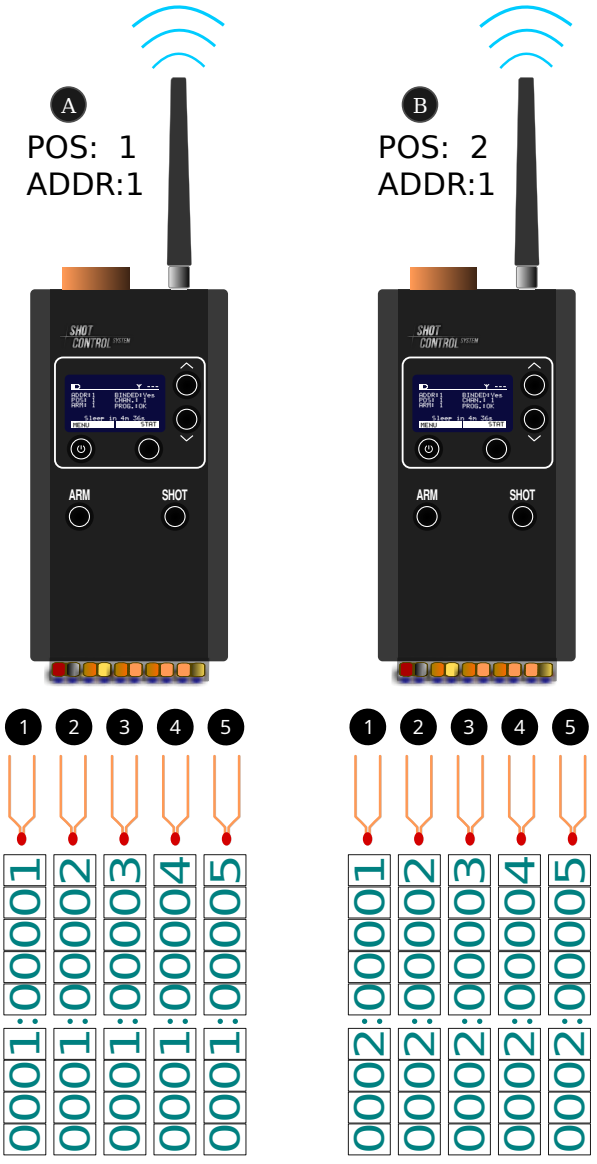


Figure 16: Address allocation when connecting in 1st position and 2nd position

If you connect multiple receivers to the same control device and assign different POSITION position numbers to the receivers (see section: 8.4.2 on page 66 for details), each receiver will have its own unique address space, even if the ADDR values are the same.

For example: When the position number POSITION:1 and address number ADDRESS:1 are set on the «Receiver», i.e. there is no expansion board on the SBOX-30, this device will occupy the addresses from 0001:00001 to 0001:00005 in the address grid. When a second «Receiver» is connected to the SBOX-30 and (B) is set to POSITION:2, the second «Receiver» will have its own address space and when the addresses are assigned to ADDRESS:1, the second device will occupy the address range from 0002:00001 to 0002:00005, which will be unique addresses different from the address space of the SBOX-30.

Connecting the following devices with other position numbers will create a unique address space on each «Receiver» channel.

IMPORTANT!

The full channel address consists of two values: the position number of the «Receiver» and the channel address number on the receiver ADDRESS

6.2.5 CONNECTING RECEIVERS IN THE SAME POSITION WITH THE SAME STARTING ADDRESS

The order in which addresses are used in «Receivers» SBOX-30 with the same settings:

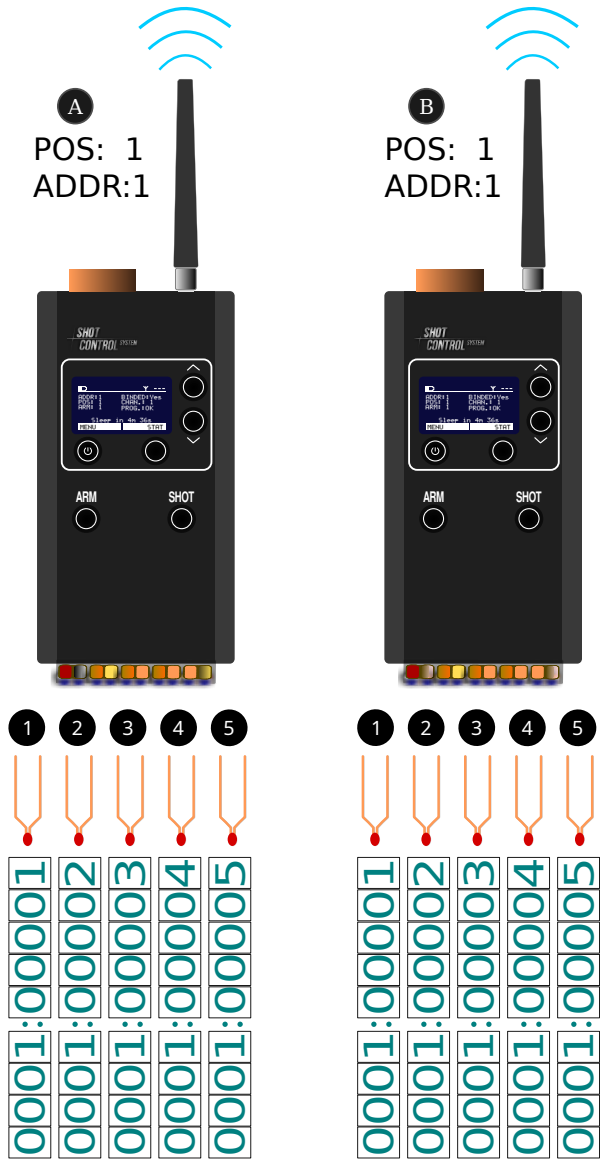


Figure 17: Address allocation when connecting in the 1st position

In the control scenario for pyrotechnic and special devices, sometimes identical devices need to be fired in parallel.

For example: to activate a pyrotechnic igniter simultaneously from four corners of the site, or shots must be fired in groups of several shots in one salvo, etc.

To organise such a scenario, it is necessary that the same POSITION and start address settings are set on the parallel receivers, and the same type of external devices (e.g. pyrotechnic igniters) are connected to the output channels.

For example: To fire 5 salvos of 2 shots per salvo in parallel, you must set up 2 «Receivers» (A) and (B) and set them to the same position number POSITION:1 and address number ADDRESS:1. Both devices will have the address space set from 0001:00001 to 0001:00005 and when a signal is received from the console SHOT with the specified addresses, a shot will be fired in parallel on both devices.

In order to increase the number of parallel shots, it is necessary to add the required number of SBOX-30 devices and connect pyrotechnic igniters to them. If 10 SBOX-30 devices are connected in parallel, the salvo will respectively have 10 shots simultaneously when one channel is accessed.

To realise the same scenario, provided that these devices are in different positions, 10 steps will have to be written into the programme, one step for each channel.

6.3 ARM ZONE FOR CONTROLLING RECEIVERS

All settings of the equipment to be connected are made before the event.

For safety reasons and to prevent abnormal situations during the complex

operation, it is recommended to divide the receiver groups into ARM ZONEs.

Up to 8 ARM ZONEs are provided in the complex.

! USEFULLY!

ARM ZONE — this is a logical distribution of the «Receivers» connected to the «control device» into groups (up to 8 ARM ZONEs on one controller). Each ARM ZONE can be switched on and off during programme execution without interrupting the programme.

When ARM ZONE with a certain number is switched off on the control device, receivers with ARM ZONE switched off switch to test mode and do not transmit incoming signals from the control device to external channels. I.e. devices connected to this receiver do not work.

When ARM ZONE is switched on — the receiver switches to working mode and continues to control the pyroflammers and devices connected to it.

For example: Two receivers are set up in a network, one receiver has ARM ZONE:1 and the other has ARM-ZONE:2.

1. Initially, both ARM ZONEs are switched on and the operator presses the SHOT button and starts the programme on the control device.
2. The programme is executed on both receivers.
3. An abnormal situation has occurred in the zone of receiver 1.
4. The operator is shutting down ARM ZONE:1.
5. The programme continues to run, but starts only at the receiver in ARM ZONE:2.
6. After the abnormal situation in ARM ZONE:1 is cleared, the operator switches on ARM ZONE:1.
7. The programme continues to run in both ARM ZONEs from the current time as if the disconnection had not occurred, but after the programme is completed, the items that were not started when the emergency was resolved will remain unused.

! VERY IMPORTANT!

On the SBOX-30 in «Control mode», the signal is transmitted to all 8 ARM ZONEs at once and this setting has no effect on the execution of the scenario.

To set up ARM ZONE on the SBOX-30 in «Receiver» mode, see section 8.4.3 on page 67.

RF-LOCK mode If an abnormal situation occurs on a receiver during ARM mode, it is possible to individually disable the receivers without disabling the entire ARM ZONE.

To do this, the `RF-LOCK` mode must be enabled for the specific receiver selected (see section 7.7.6 on page 53 for details).

When you switch on the RF-LOCK mode on the control device for the selected receiver, the receiver switches to the test mode and does not transmit incoming signals from the control device to external channels. I.e. devices connected to this receiver do not work.

When the RF-LOCK mode is disabled — the receiver switches to the operating mode and continues to control the igniters and devices connected to it.

7 «Control Mode»

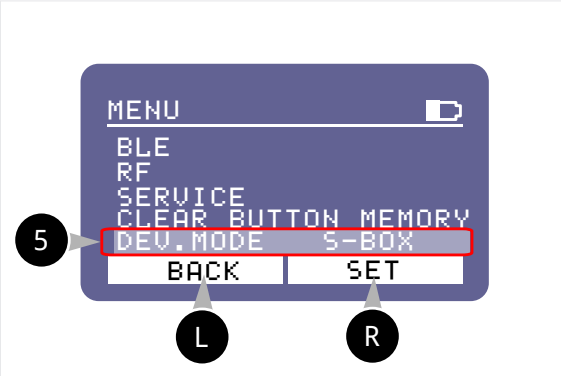
In the «Control Mode» mode, the SBOX-30 can control any devices and run special programmes on them, which support the possibility of connection via SHOT CONTROL SYSTEM radio protocol.

Up to 255 receivers of various types supporting SHOT CONTROL SYSTEM radio protocol can be connected to the SBOX-30 device at a time

In control mode, this device has one physical and 8 logical control buttons.

It has an active bluetooth module to connect this device to a mobile application.

To activate the device in control mode, go to the DEV.MODE menu and set the CONTROL value (see section 7.6.5 on page 44):



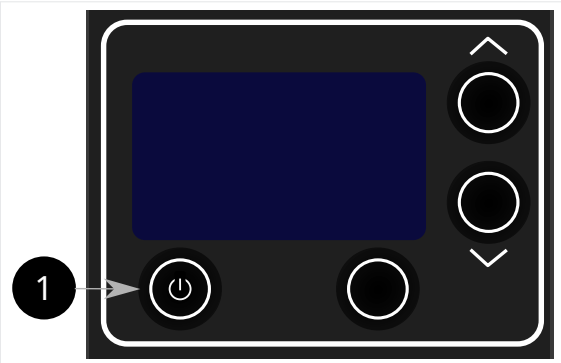
«Control Mode» To switch the device to the «Control Mode»

1. Press the R button. EDIT
2. Use the navigation buttons to select the value CONTROL
3. Press the R button again. SET to save the «Control Mode».

7.1 SWITCHING ON THE DEVICE.

VERY IMPORTANT!

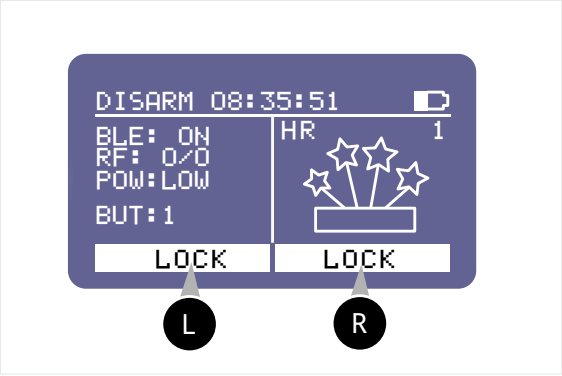
To avoid burning out the radio path on the device! The device may only be switched on with a CONNECTED ANTENNA!



1 — Press and hold the 1 button for 1 sec. to switch on the device. The unit will automatically boot up and enter the current mode.

IMPORTANT!

When the device is switched on, the keypad is initially locked and the display shows LOCK LOCK on the bottom line.

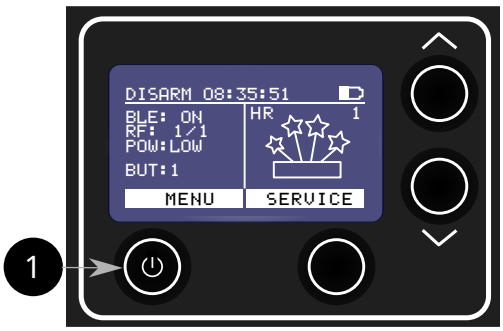


To deactivate the keypad lock on the device, press the button simultaneously R and L.

You can also press the R button and keep pressing the L button to unlock the keypad. The keypad will be unlocked and the display will show MENU.

To lock the keypad, perform the same action as above, press R and L at the same time, the keypad will be locked and the display will show the keypad lock information on the bottom line LOCK LOCK.

7.2 SWITCHING OFF THE DEVICE



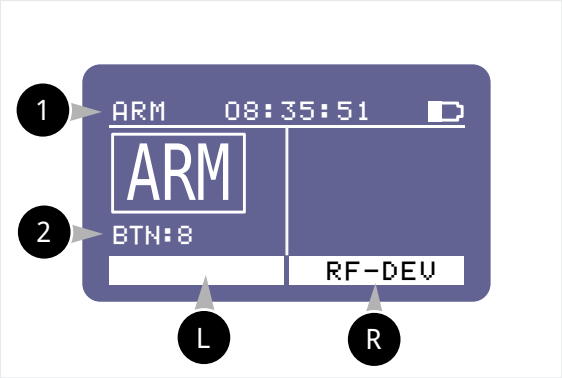
1 — To switch off the device, press the 1 button for 2-3 seconds. The device will automatically switch off and memorise all the current settings.

When you switch the device on again, it will boot up in the current settings mode.

7.3 SWITCHING BETWEEN ARM AND DISARM MODES.

When operating in the «Control Mode», the device display shows the corresponding status in the upper line of the display ARM or DISARM and information corresponding to the «Control Mode».

The button 8 ARM (See Fig. 5.1 on page 14) is used to control these modes. Pressing it switches the modes to ARM and DISARM alternately.



1 — ARM mode indication

2 — Display of the currently active virtual button.

R — pressing the SHOT button activates the programme loaded on the selected button.

When the ARM mode is switched on, the ARM indication will appear on the display.

Press the ARM button again to switch the control device to DISARM mode. In DISARM mode the display will show DISARM in the status bar.

In the DISARM mode the buttons for programme execution are not available for pressing on the control device. In this mode, the control device communicates with devices via radio channel to transmit and update programmes, configuration, telemetry data.

VERY IMPORTANT!

When you have finished using the device, be sure to switch it back to DISARM mode.

IMPORTANT!

You must go from the menu to the main screen before you can put the control device into ARM mode, otherwise the control device will not go into ARM mode.

IMPORTANT!

If the control device is set to general DISARM mode during programme playback, all programmes will be terminated.

7.4 OPERATING PROCEDURE IN THE «CONTROL MODE»

7.4.1 PREPARING THE DEVICE FOR OPERATION

The SBOX-30 in the «Control mode» can control 255 «Receivers» paired with it via the SHOT CONTROL SYSTEM protocol.

To prepare the SBOX-30 in the «Control mode», proceed as follows:

(1) Switch on the device (see section 7.1 on page 28)

(2) Enable «Control mode» on the device (see section 7.6.5 on page 44)
DEV.MODE: CONTROL

(3) Set the SBox-20 to the DISARM state (see section 7.3 on page 29).

(4) Enable BLUETOOTH (see section 7.6.1 on page 37)

(5) Launch the control device app on your mobile device (phone/tablet).

(6) Connect the SBox-30 to your mobile phone via BLUETOOTH.

(7) Download programmes from an application to the SBox-30.

(8) Check for free frequency channels (see section 7.7.2 on page 47) and select a free channel in the settings 7.6.2 on page 40)

(9) Pair with receivers (see sectoin 7.7.3 on page 48)

(10) Perform address space configuration on receivers (see section 7.7.5 on page 51)

(11) Verify software loading and signal transmission to end devices (see section 7.7.4 on page 49).

7.4.2 MAJOR OPERATIONS PERFORMED ON THE DEVICE

After the SHOT CONTROL SYSTEM network devices have been preset, the following operations can be performed from the unit in the control device mode:

Activating ARM mode (see section 7.3 on page 29)

! VERY IMPORTANT!

In ARM mode, all receivers are switched to receive-only mode and settings cannot be changed in this state.

! VERY IMPORTANT!

For health and safety reasons, it is not recommended that people be in the vicinity of the receivers when in ARM mode. Injury may occur due to the triggering of pyrotechnic devices.

In this mode, the entire SHOT CONTROL SYSTEM network is made ready to execute the programmes loaded on the control device.

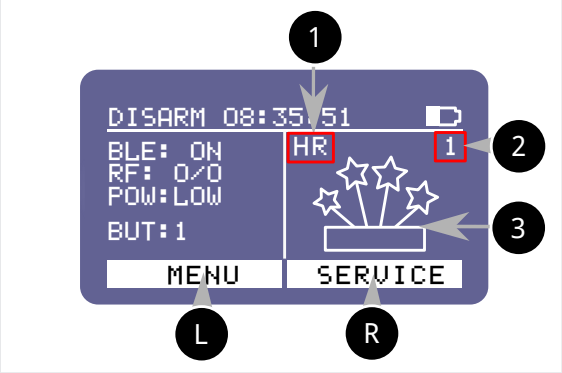
VERY IMPORTANT!

After switching on the ARM mode on the control device, it takes up to 3 seconds for all receivers to switch to active mode and charge the capacitors. After 3 seconds the system is ready to start programmes.

Selects a work button to start the programme: The device is equipped with 1 physical SHOT (6) button (see fig. 4 on page 14) and 8 logical buttons.

Before pressing the physical SHOT button, it is necessary to link it to a logical button (see Fig. 7.5 on page 36), i.e. select the number of the logical button via the main menu.

The display will show information about the connected programme on the selected button.



1 — programme settings (see section 7.4.2 on the next page Description of programme settings for details)

2 — Before pressing the SHOT button, shows the number of programmes on the current button (BUT:1).
In active mode (when a programme is running), shows the number of remaining programme steps.

3 — programme icon (you can choose a programme icon from the available catalogue in the mobile application or draw it yourself on the smartphone screen and upload it to the application).

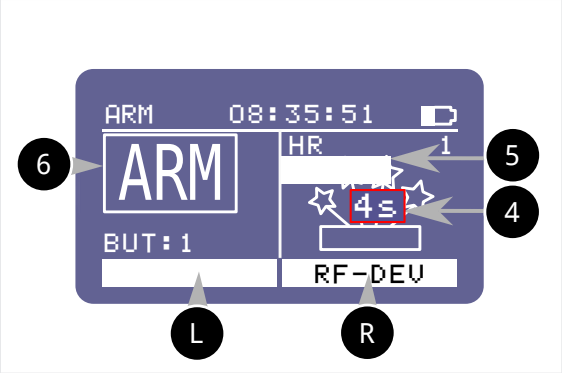
IMPORTANT!

Pressing the SHOT button will execute a cycle of programmes loaded on one logical button of the device currently selected.

To start the programme from another button, you need to make this button the current button (see Fig. 7.5 on page 36) and press the physical SHOT button.

Starts the programme on the current button: Pressing the SHOT button starts the programmes loaded on the selected button.

After pressing the SHOT button, the SBOX-30 displays the progress of the programme:



Progress bar 5 — shows the time remaining until the next programme point is reached or the time until the last point is completed.
Appears under the upper status bar when you press the SHOT button. Disappears when the programme ends.
4 — time in seconds until end of programme execution.

6 — ARM mode enabled indication is displayed.

When the programme is finished, you can press the SHOT button again.

If the NO REPETE mode is set for a current programme, the display will show FINISH and in order to restart the programme it is necessary to perform the function **CLEAR BUTTON MEMORY** (to remove the NO REPETE mode see section 7.6.4 on page 43) or to select another logical button and start it.

The button can be pressed again only after the entire cycle of the programmes loaded on the selected button has been completed.

Description of programme settings In the figure above, 1 indicates the settings of the loaded programme for the selected button:

H — the programme is in the HOLD mode, which means that the programme will run as long as the SHOT button is held down.

S — the programme is in the SHORT mode, which means that a short press on the SHOT button is enough to start the programme.

R — means that the programme has REPEAT ON. That is, when the programme is finished, pressing the SHOT button again will restart the programme.

If the programme has been set to REPEAT OFF, the display will show FINISH when the programme is finished.

On the display, the indication can be shown as: HR SR H S.

2 —. Shows the number of remaining programmes on the button. During programme execution, it shows the total number of points in the programme.

3 — Icon set when configuring the button in the mobile app. Needed for convenience and visual understanding of which programme is assigned to the button.

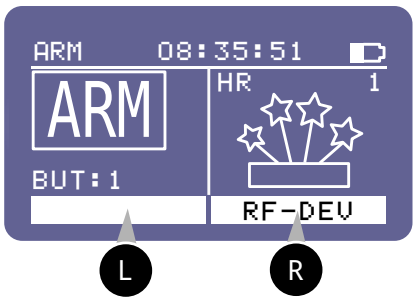
Locking/unlocking receivers (RF-LOCK mode) For safe elimination of abnormal situations during programme execution, the control device has a receiver lock mode.

When a programme scenario is executed and an abnormal situation occurs on external devices, it is necessary to switch «Receiver» into RF-LOCK mode from the «control device» (see section 7.7.6 on page 53 for details).

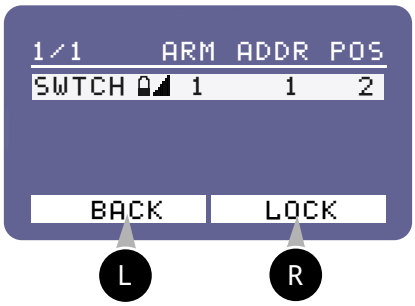
In the locked mode «Receiver» does not process signals from the control device to start external devices connected to it. The display of «Receiver» shows information that it is locked.

To unlock the receiver, you need to unlock it via the main menu of the «control device» (for details see section 7.7.6 on page 53).

Activating RF-LOCK in ARM mode In ARM mode, all receiver setup menus are not available, but to eliminate abnormal situations, the R button has a RF-DEV function. This allows you to go to the list of receivers connected to the control device to lock them.

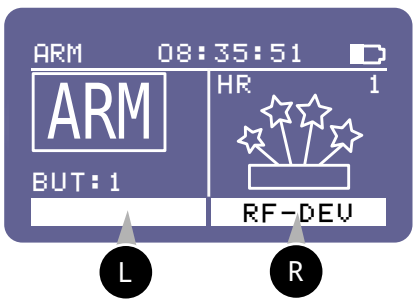


Press the R RF-DEV button to switch to the list of available devices connected to the control device.

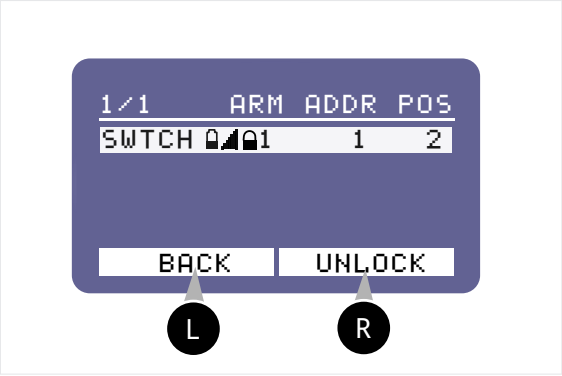


Only the LOCK mode is available on the right-hand control button. Select the device to be locked with the navigation buttons and press the R button. LOCK button. The receiver will enter the RF-LOCK mode.

Shut down RF-LOCK in ARM mode To switch off the lock in ARM mode, from the main work screen, press the R RF-DEV button. And go to the list of receivers connected to the control device to unlock.



Press the R RF-DEV button to switch to the list of available devices connected to the control device.



When a locked device is selected, only the UNLOCK mode is available on the right-hand control button. Select the device to unlock with the navigation buttons and press the R UNLOCK button. The receiver will enter RF-LOCK mode and the status bar will no longer display a lock indicating that the device is locked.

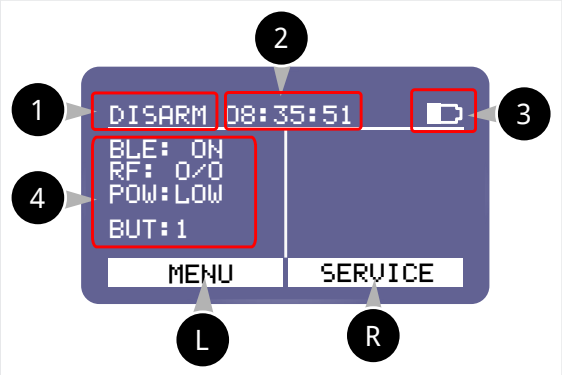
7.4.3 ENDING DEVICE OPERATION/STORAGE

When you have finished working in the remote mode, you must:

1. Set the SBOX-30 to the DISARM mode (see section 7.3 on page 29).
2. Switch off the power (see section 7.1 on page 28)
3. Perform preventive maintenance
4. Put the device back in its original packaging

7.5 DEVICE MENU IN THE « CONTROL MODE»

In the «Control mode», two menus are available to control connected devices and to configure the device itself.



1 Displays the current device mode (in this case **DISARM**). Pressing the 8 ARM button (Fig. 5.1 on page 14) switches the modes to ARM and DISARM alternately.

2 The current time set on the device (synchronised with the set time of an external Bluetooth device when it is connected to the control device).

3 Device charging level — visually: the coloured area shows the remaining charge level:

— battery is discharged

— battery is fully charged

— battery is half charged

The function keys labelled 5.1 on page 14 in the figure control the device according to the indication in the white display field on the lowest line:

The 8 button in Fig. 5.1 on page 14 button performs the action indicated by MENU in the left white area of the display: (hereafter labelled as: L in the diagrams).

6 button in Fig. 5.1 on page 14 performs the action indicated by SERVICE : in the right white area of the display (hereinafter referred to as:
im3emrbtn in the diagrams).

4 — menu of the main display screen

BLE:ON — the display shows the BLUETOOTH mode status.

BLE: ON — Bluetooth on the device is switched on

BLE: OFF — Bluetooth on the device is switched off

RF 0/2 — RF mode is indicated on the display

0 — number of bound and active external devices (receivers) — of the 2 devices bound to the control device, 0 are online.

2 — number of bound and inactive external devices (receivers) — there are 2 devices bound to the control device.

POW: LOW — power level of the device.

LOW — low signal power level.

MID — medium signal strength.

HIGH — high signal strength.

BUT: 1 — active connected button

- You can operate 8 buttons in the device by selecting them with the navigation buttons 3 and 4 See Fig. 5.1 on page 14.
- The buttons show the programmes loaded on the control device.
- If no programme is loaded on the button, no information is displayed on the right side of the display when the button is selected.
- If a programme is loaded on the button, the icon of the loaded programme will appear on the right side of the display.

VERY IMPORTANT!

You can set up and download programmes to the control device via the mobile app.
To set up the control device, connect it via bluetooth to the mobile app.

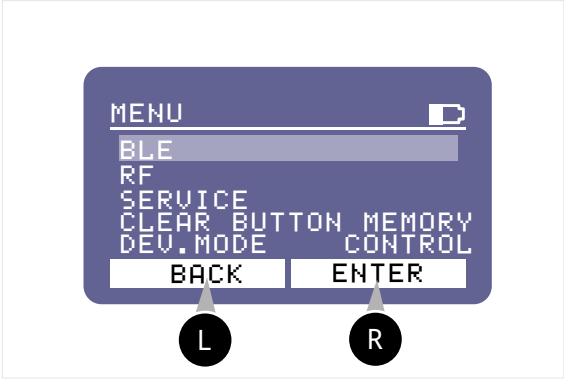
7.6 MAIN MENU

There are two menus in the «Control mode»: Main Menu MENU and Settings Menu SERVICE.

The main menu is displayed on the left side of the screen.

To go to the «Main Menu», press the L button from the main menu of the device (see Fig. 5.1 on page 14).

The «Main Menu» is loaded on the new screen and the button assignments are changed.



R — Press the ENTER button to switch to the control of the selected item in the «Main Menu».

L — To return to the previous menu level, press the BACK button.

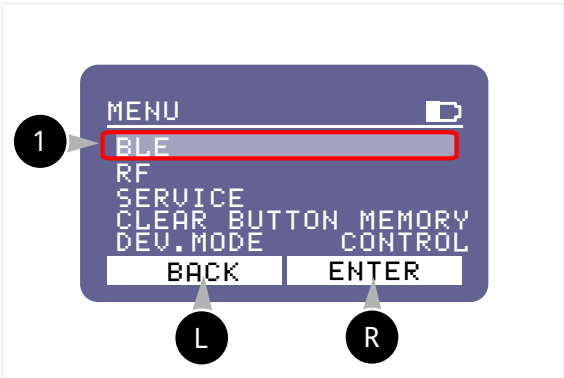
! USEFULLY!

To move between the menu lines on the display, use the 3 (to move up) and 4 (to move down) buttons on the unit. 5.1 on page 14

7.6.1 BLUETOOTH MENU

The BLUETOOTH mode is intended for connection with a mobile device to configure the Box-30 via an application.

In this mode, «Control Mode» connects to a special application on the mobile device, for downloading programmes to the console and controlling it.

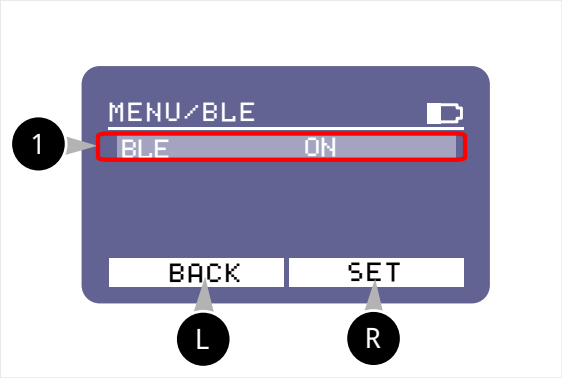


1 — setup mode **BLUETOOTH** (bluetooth - wireless connection mode with external devices). In this menu mode it is possible to switch Bluetooth on and off

IMPORTANT!

When BLUETOOTH mode is disabled, the connection to the mobile application is not available and programme settings cannot be controlled

To switch to editing the selected menu item, press the R button.



R — Press to enter EDIT editing mode.

Use the navigation buttons to select Bluetooth ON/OFF.

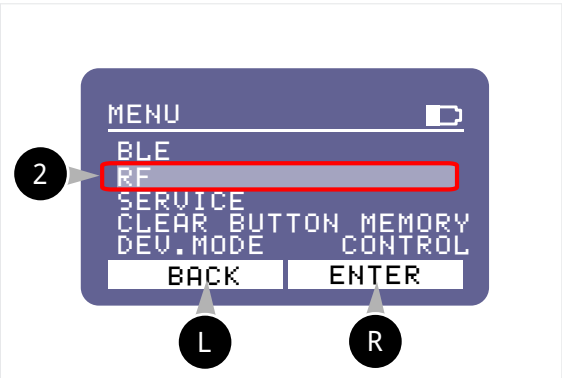
Press the R button again. SET button again to save the result

L — Press to return to the previous menu BACK

7.6.2 RF MENU

RF mode is intended for controlling devices connected to the Sbox-30 in «Control Mode> via radio channel.

In this mode it is possible to pair (remove pairing) with receivers and other devices operating via SHOT CONTROL SYSTEM protocol.



2 — Control mode RF .
RF mode displays the status of external devices (receivers) connected to the Sbox-30 in «Control Mode». External devices can be active or inactive. Active devices are currently communicating with the control device. Inactive devices are not currently communicating with the control device.

Press the R button to switch to editing the selected menu item.

In RF mode, the main control of the radio channel and external devices connected to the control device is performed.

When RF mode is switched on, all pre-set receivers on this control device will automatically come out of sleep mode and connect to the control device.

When RF mode is switched off, all connected receivers will enter sleep mode within 5 minutes.

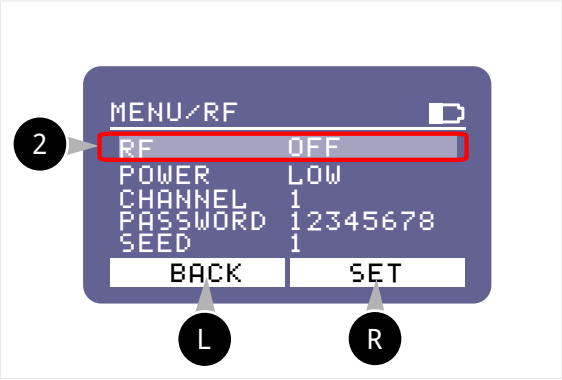
When controlling the radio channel in RF mode, the channel power is set, the channel operating frequency is selected and the communication quality is tested with the devices connected to the control device.

Switching RF mode To change the RF settings, use the navigation buttons to select the `RF ON/OFF` line and press the R button to change the setting.

VERY IMPORTANT!

When `RF` is off, the unit does not operate in «Control mode» or communicate with external devices.

Use the navigation buttons to select ON or OFF and press the `SET` button again to save the result or the `BACK` button to cancel the changes.



R — Enable/disable RF mode `SET`

L — return to previous menu `BACK`

Controlling the power level of the device The power level of the radio link to external devices affects the battery life of the rSBox-30 and the quality of communication. When working over long distances and in areas with high interference in the radio channel, it is necessary to set a higher transmitter power.

To change the power settings of the device, use the navigation buttons to select the `POWER` line and press the R button to change the setting.

In `POWER` mode, the values change alternately:

`LOW` — low signal strength

`MID` — medium signal strength

`HIGH` — high signal strength

Select the desired mode by pressing the UP and DOWN navigation buttons. After finishing the selection of the power mode, press the R button to save the selected result to the device memory. `SET` button to save the selected result to the device memory.

IMPORTANT!

Under ordinary conditions, low power is intended for devices located within 100 metres, medium power up to 500 metres, and high power above 500 metres. If the device is near the control device, high or medium signal strength may overload its radio receiver, affecting signal quality.

Selecting the operating channel of the device The device operates in the frequency range from 864 MHz to 869 MHz.

Various radio transmitting devices that do not support the SHOT CONTROL protocol may operate simultaneously in this area and negatively affect the operation of the control device. In order to avoid negative consequences, it is necessary to perform diagnostics of the air frequencies load and select a free channel.

To change the settings of the working channel of the device, select the CHANNEL line with the navigation buttons and press the R button to change the setting.

When the CHANNEL line is active, pressing the navigation buttons changes the channel number values from 1 to 40. The UP navigation button — increases the channel number value, the DOWN navigation button — decreases the channel number value.

When the channel number selection is complete, press the R button to save the selected result to the device memory. SET button to save the selected result to the device memory.

USEFULLY!

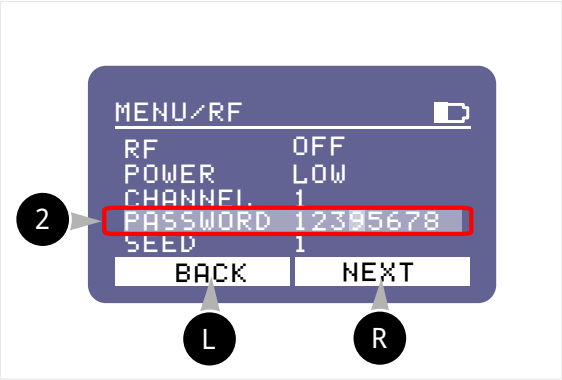
To select a channel number, first check that this band is free: (see 7.7.2 on page 47 SPECTRUM mode)

.

IMPORTANT!

. The value of the selected channels, corresponds to the set operating frequency of the device: The frequency changes in 0.2 MHz increments per channel. Channel 1 — 864.0 MHz, Channel 2 — 864.2 MHz, etc. Channel 40 — 868.8 MHz.

Assigning the channel encryption password This mode provides a highly secure connection between the control device and the receiver and prevents tampering with the control of devices connected to the control device.



R — Moves the cursor to the right to select the current digit to change the password NEXT

UP navigation button — Increases the number in the selected digit.

DOWN navigation button — decreases the number

L — return to previous menu BACK

To change the password settings, use the navigation buttons to select the PASSWORD line and press the R button to change the setting.

When the password change mode is selected, the designation on the function buttons changes.

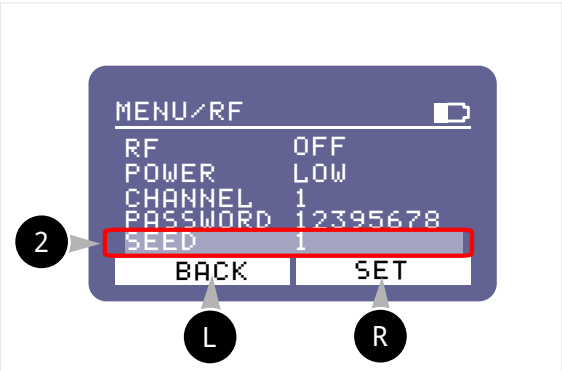
VERY IMPORTANT!

The communication channel encryption setting allows you to set a special encryption mask on the transmitted signal from the device.

USEFULLY!

To set up a more secure channel between the control device and the receivers, try to set a password with random combinations of digits and avoid obvious patterns. For example: the password 11111111 is a bad password and the password 94500127 is a good password.

Setting the radio protocol speed



Navigation Button UP — increases the number of channel speeds

DOWN navigation button — decreases the number of channel speeds

Press the R SET button to save the selected result to the device memory.

The radio protocol speed affects the quality of communication between devices and the delay between sent and received signals from the control device to the receiver.

To change the radio protocol speed settings, use the navigation buttons to select the SPEED line and press the R button to change the setting.

Pressing the navigation buttons changes the speed number values from 1 to 4. The UP navigation button — increases the speed number value, the DOWN navigation button — decreases the speed number value.

USEFULLY!

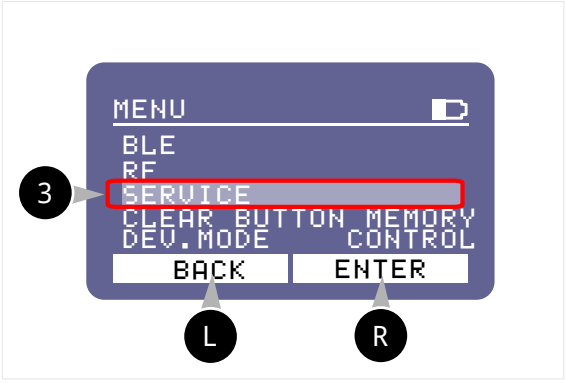
Selecting the baud rate in the link changes the signal delay time. At speed 1 — the signal delay in the communication channel will be: 80-100ms. When speed 4 is selected — the signal delay in the communication channel will be: 20ms.

IMPORTANT!

To keep the delay in the communication channel to a minimum and not to lose the quality of the transmitted signal — operate at speed 4 and short distances.
When working at long distances, it is desirable to set the speed 1, which will give stable communication and increase the signal delay up to 100ms.

7.6.3 SERVICE MENU

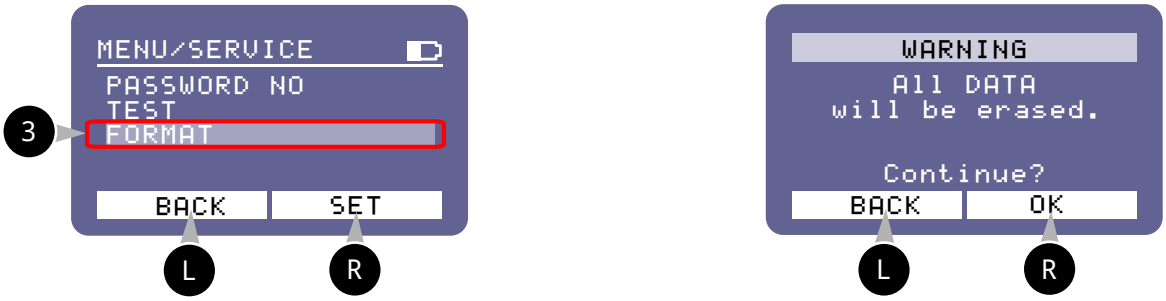
SERVICE mode is used to perform maintenance functions and restore factory settings.



3 — control mode SERVICE.
SERVICE mode allows you to perform necessary service procedures on the unit. At the moment, a full initialisation of the device and a factory reset are available.

To switch to editing the selected menu item, press the R button.

Formatting device settings In the menu that opens, use the navigation buttons to select FORMAT mode.



Press the R button and on the new screen, select to confirm the device formatting by also pressing the R button.

To cancel the formatting, press the L button.

VERY IMPORTANT!

Selecting FORMAT deletes all device settings and erases information about connected devices. A factory reset is performed.

7.6.4 CLEAR BUTTON MEMORY MENU

When setting up programmes loaded on the SBox-30, the programme can be set to NO REPETE mode. This means that the programme is executed once and will not be repeated.

In order to reset the NO REPETE sign to zero, it is necessary to execute the CLEAR BUTTON MEMORY menu command, the NO REPETE sign of the programme will be reset and the programme will be available again.

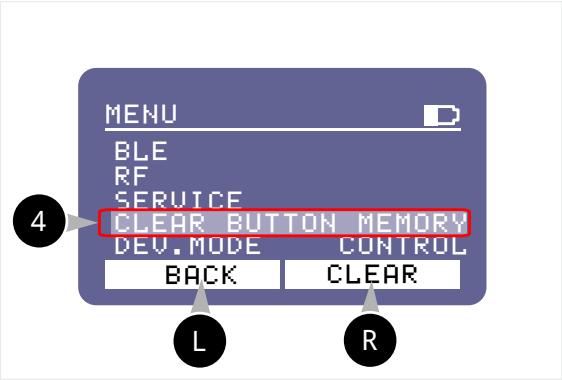
IMPORTANT!

When setting up a programme, the programme may be set to NO REPETE.
That is, once the programme has been executed once, it is no longer executed and pressing the SHOT button does not lead to anything.
To reset the NO REPETE mode, perform the CLEAR BUTTON MEMORY function.

Press the navigation buttons to select a main menu item CLEAR BUTTON MEMORY.

The name of the function buttons automatically changes on the screen.

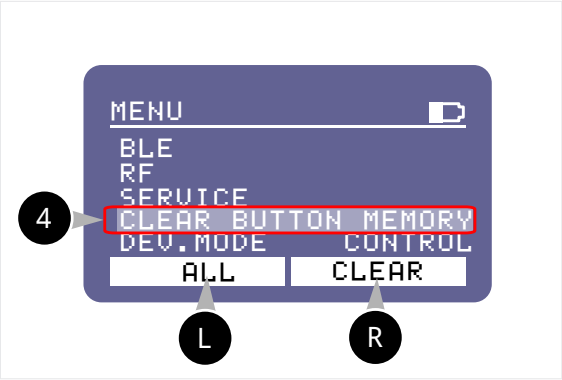
Resetting the NO REPETE sign on one button: Use the navigation buttons to select the current button and press R CLEAR to reset the NO REPETE sign on the selected button.



4 — control mode CLEAR BUTTON MEMORY.

R — CLEAR function name is displayed.

Resets the NO REPETE indication on all buttons at once: To perform the CLEAR BUTTON MEMORY function to reset all buttons to NO REPETE, you need:

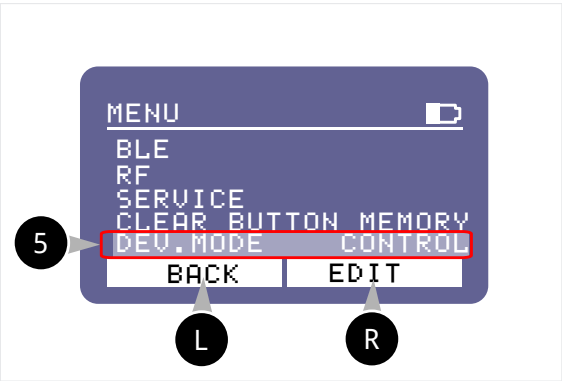


press the R button one after the other CLEAR button and then press the L ALL button without releasing it. (The left button will display ALL — all buttons.) The NO REPETE mode will be reset and the SHOT function will be available again.

7.6.5 DEV.MODE MENU

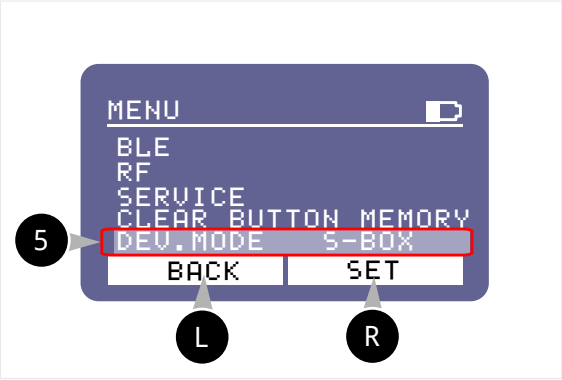
The DEV.MODE menu is necessary to switch the device between «Control Mode» and «Receiver» modes.

Press the navigation buttons to select the main menu item DEV.MODE. The name of the function buttons will automatically change on the screen.



4 — control mode DEV.MODE.

R — EDIT function name is displayed.



«Receiver mode» To switch the device to the «Receiver mode»

1. Press the R button. EDIT
2. Use the navigation buttons to select the value S-BOX
3. Press the R button again. SET button again to save the receiver mode.

«Control Mode» To switch the device to «Control Mode»

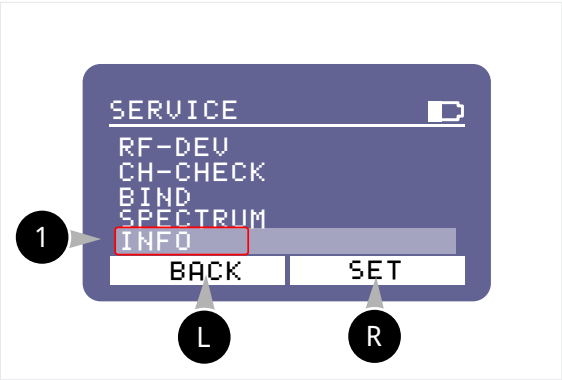
1. Press the R button. EDIT
2. Use the navigation buttons to select the value CONTROL
3. Press the R button again. SET to save the «Control Mode».

Confirm the device reboots after changing the mode.

7.7 SERVICE MENU

To go to the «SERVICE» menu, press the R button from the main menu of the device (see Fig. 5.1 on page 14).

On the new screen, the «SERVICE» menu is loaded and the button assignments are changed.



R — Press the SET button to switch to the control of the selected item in the «SERVICE» menu.

L — To return to the previous menu level, press the BACK button.

! USEFULLY!

To move between the menu lines on the display, use the box-30 buttons 3 (to move up) and 4 (to move down) Fig. 5.1 on page 14

The following menu items are defined in the SERVICE menu:

RF-DEV — tuning the receivers

CH-CHECK — testing the electrical circuits of connected devices

BIND — pairing receivers

SPECTRUM — test the radio channel.

INFO — current device information

MAN.SHOT — ARM manual control

7.7.1 INFO MENU

To switch to the INFO screen, in the previous menu, use the navigation buttons to position the cursor on the line labelled INFO and press the R button. 1 and press the R SET button. The device information screen appears:

UID: — A unique device identification number consisting of two groups of 4:8 characters separated by a colon. The unique device number is duplicated on the back cover of the device and printed as a QR code.

BAT.SOC: — the actual battery level of the device in %.

FW: — Firmware version installed on the device.

HW: — HARDWARE code display of the device version.

! USEFULLY!

Firmware is special firmware loaded into the memory of the device.
Firmware is periodically updated and available for downloading to the device.

IMPORTANT!

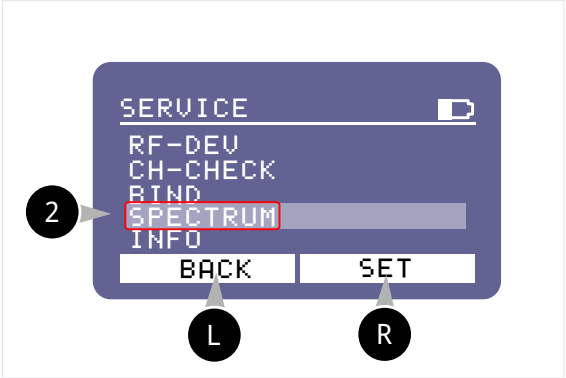
When updating the Firmware on the device, make sure that the Firmware version on all connected devices (control device and receivers) is identical.
If connected devices with different Firmware versions are used, the complex operation is not allowed.

IMPORTANT!

Identification of the device, binding to the owner, maintenance of the device in the service centre and updates are performed by a unique UID number

7.7.2 SPECTRUM MENU

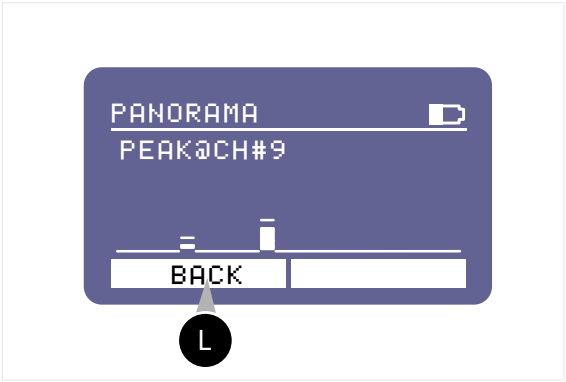
The SPECTRUM mode is used to diagnose radio frequencies on the air to select a stable frequency range on the device.



To go to the SPECTRUM screen, use the navigation buttons to position the cursor on the line labelled SPECTRUM 2 and press the R SET button. This will display the screen for diagnosing frequencies on the air:

VERY IMPORTANT!

To operate in SPECTRUM mode, the RF mode (see section 7.6.2 on page 38) must be enabled. To avoid damage to the unit and burning out the amplifier board, be sure to connect the standard antenna to the antenna connector before activating the RF mode.



PANORAMA — Displays the broadcast status in the operating frequency range of the unit (Channel 1 to Channel 40) from 864 MHz to 869 MHz.

PEAK@CH#9 — Indicates that there is interference on channel 9. It is not recommended to use this channel.

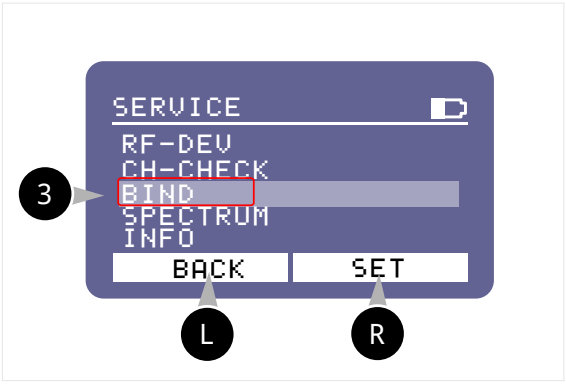
Press the L button to return to the menu. BACK

! USEFULLY!

To select and configure the channels of the unit (see section 7.6.2 on page 40).

7.7.3 BIND MENU

This mode is used to bind external devices in the UNBIND state to the control device.



To go to the BIND screen, use the navigation buttons to position the cursor on the line labelled BIND 3 and press the R SET button. The screen for linking a new device appears:

Scan — When the BIND screen opens, the remote scans all available SHOT CONTROL SYSTEM devices nearby that are in the UNBIND state (see section 8.4.4 on page 68 for details).

Select — Use the navigation buttons to select the device to be connected and press the R button. BIND

The device is connected. To view active connected devices, see section 7.5 on page 35 under **RF Mode**).

7.7.4 CH-CHECK MENU

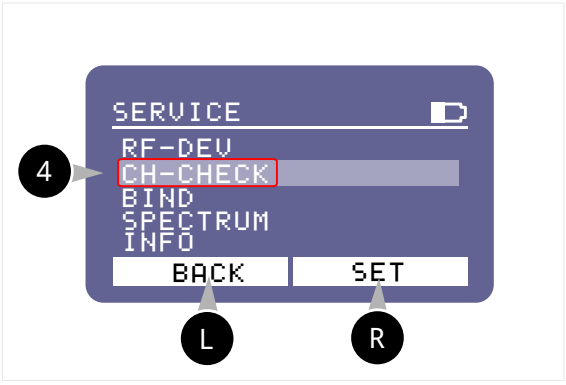
VERY IMPORTANT!

A very important mode for pre-checking the operation of all network settings. Runs commands to all receivers to test connections with external devices connected to the receivers.

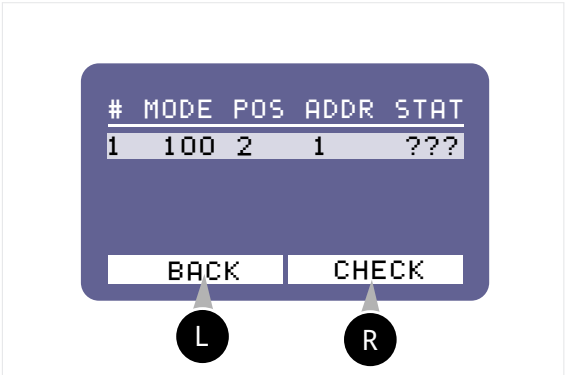
This mode is intended to check the communication channel with connected devices for errors in settings, is performed in low current mode and should not cause triggering of pyrotechnic products.

USEFULLY!

In the CH-CHECK mode, a current of 3.3 V and 100 microamperes is applied to the contacts from the SBOX-30 to test the connections.



To go to the CH-CH-CHECK screen, use the navigation buttons to position the cursor on the line labelled CH-CHECK 4 and press the R SET button. This displays a screen to check the communication with the connected devices:



Scanning — When the CH-CH-CHECK screen opens, the control device scans all configured external devices on the control device and displays them in a list.

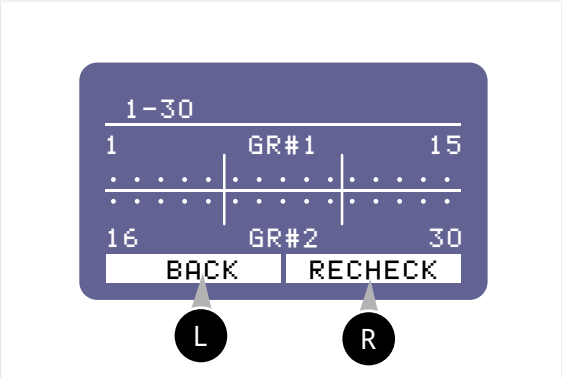
— number in order.

MODE — connection mode

POS — device position

ADDR — address of the device inside the control device

STAT — displays the status of the communication channel with the device



Select — use the navigation buttons to select the device to be connected and press the R RECHECK button.

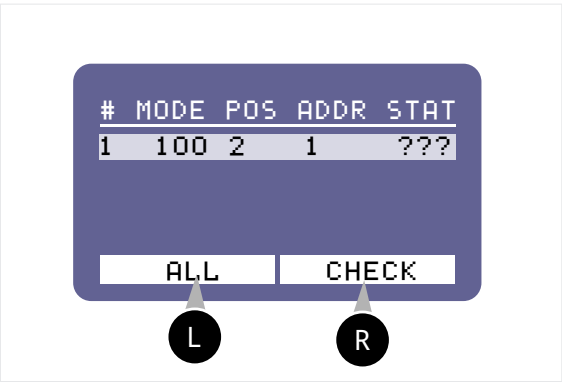
Display — the status of each measured communication channel with the external device will be displayed in the loaded window.

When the RECHECK button is pressed, the output channels are checked for the presence of load. At this moment 3.3 volts with 100 microampere current is applied to the output channels. This current is not sufficient to trigger the igniter.

VERY IMPORTANT!

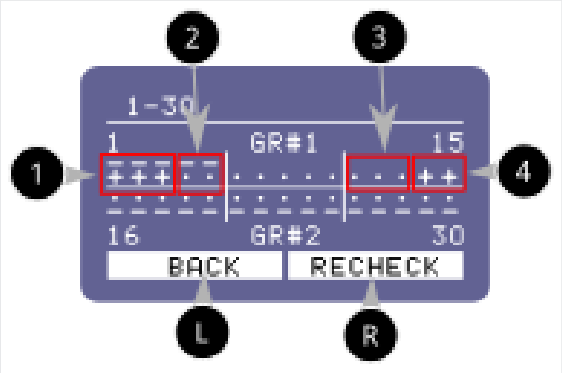
When performing the CH-CHECK procedure, always stay in a safe area away from dangerous devices and products connected to this receiver

Checking all channels at once — To activate this mode, follow the steps:



To check communication on all channels and devices at once, press the R CHECK button and without releasing the first one, press the L ALL button. The control device will scan all channels and display the status of each device in the device list.

Indication of channel test results the following symbols are used on the screen to describe the channel status:



1 — the channel is marked — This channel is used in the programme, there is load in the channel, everything works properly.

2 — the channel is marked — This channel is used in the programme, there is no load in the channel, no device is connected.

3 — the channel is marked . on the screen — the programme is not loaded, there is no load in the channel.

4 — channel is marked + on the screen — the programme is not loaded, there is load in the channel, the device is not connected correctly.

IMPORTANT!

After performing the diagnostics, be sure to reconnect the devices marked with + and no - above the plus sign, this device is connected to a channel on which no programme is loaded.

When the CH-CHECK procedure is complete, the status of the completed channel check will be displayed on the screen.

USEFULLY!

Channel Statuses:

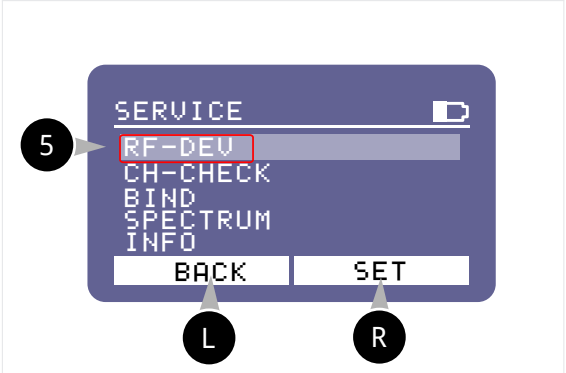
??? — the channel hasn't been scanned yet;

OK — all channels on the receiver under test are working properly (i.e. all channels under test have the same status as 1 and 3 — see picture above);

ERR — the receiver under test has detected errors in the channels and requires additional checking (i.e. some of the channels have the status 2 and 4 — see figure above).

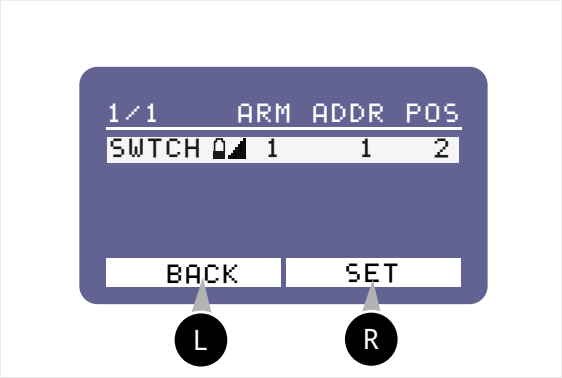
7.7.5 RF-DEV MENU

This mode is intended for displaying full information about all connected devices to the control device and their settings



To switch to the RF-DEV screen, use the navigation buttons to position the cursor on the line labelled RF-DEV 5 and press the R SET button. This displays a screen to view the list of connected devices.

List of connected devices to the control device:



1/1 — number of active tethered devices (receivers)/number of inactive tethered devices. In this setting, one receiver is bound to the control device and it is currently active (i.e. it is connected).

SWTCH — device name

— battery level on the external device

— the signal strength of the external device.

ARM — ARM zone in which the receiver is operating.

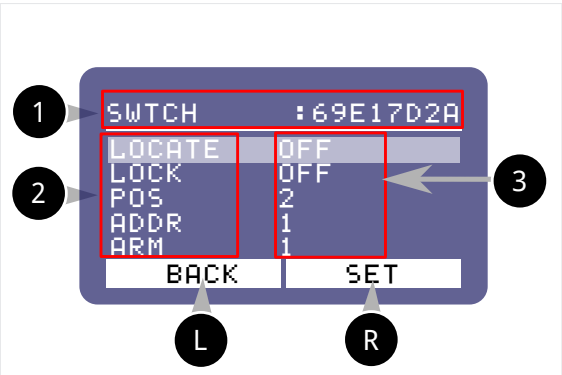
ADDR — the starting address of the selected receiver (see section **??** on page ?? section for details on the address space)

POS — receiver position number

To configure an external device, click on the button in the active line with the device name: R.

7.7.6 RECEIVER PARAMETER CONTROL MENU

To set up external devices («Receivers»), go to the RF-DEV menu (see section 7.7.5 on the previous page), select the device to be set up from the list and press the R SET button.



External device settings:

1 — name of the external device and its unique number

2 — name of the parameters of the external device to be configured (The list of settings may vary depending on the type of connected device).

3 — External device setting values

! USEFULLY!

To move between the menu lines on the display, use the Sbox-30 buttons 3 (to move up) and 4 (to move down) Fig. 5.1 on page 14
To move to edit the selected position — click on the R SET button.

LOCATE menu item is used to search for an external device.

To search for an external device, press the R SET button in the active position LOCATE OFF (see the figure above). The display will change to LOCATE ON and the LOCATE indication on the external device will start flashing in big letters (see figure on the left).

LOCK menu item is used to lock the device.

LOCK OFF — the device is available and fully functional

LOCK ON — device is locked and does not receive signals in SHOT mode.

Press the R SET button to switch the LOCK mode.

When the device is locked, the receiver will display RF LOCK in large letters on the screen (see the figure on the left).

When you switch on the RF-LOCK mode on the control device for the selected receiver, the receiver switches to the LOCK mode and does not transmit incoming signals from the control device to external channels. I.e. devices connected to this receiver do not work.

When the RF-LOCK mode is switched off — the receiver switches to the operating mode and continues to control the connected igniters and devices.

Enabling RF-LOCK mode is possible from three control device states:

① — the control device is in DISARM mode.

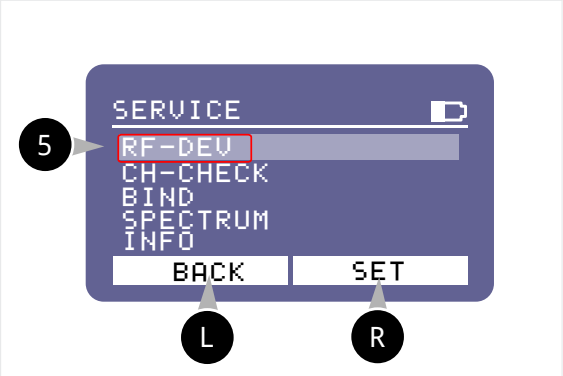
② — the control device is in ARM mode and the programme is not running (SHOT button is not pressed).

③ — the control device is in ARM mode and the programme is running (SHOT button is pressed).

Activating RF-LOCK from DISARM mode allows you to lock the receiver in 2 ways:

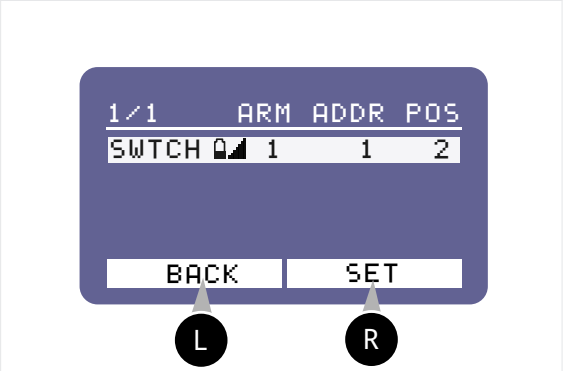
Via the SERVICE menu:

① In the «Control mode» on the device, go to the SERVICE menu and select the item RF-DEV



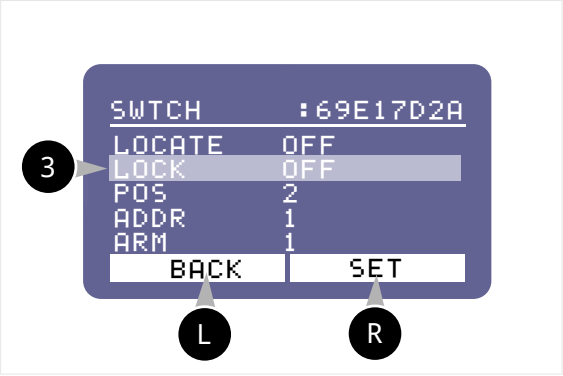
To switch to the receiver control screen, use the navigation buttons to position the cursor on the line labelled RF-DEV 5 and press the R SET button. This displays a screen to view the list of connected devices.

② On the display screen, select the device to lock:

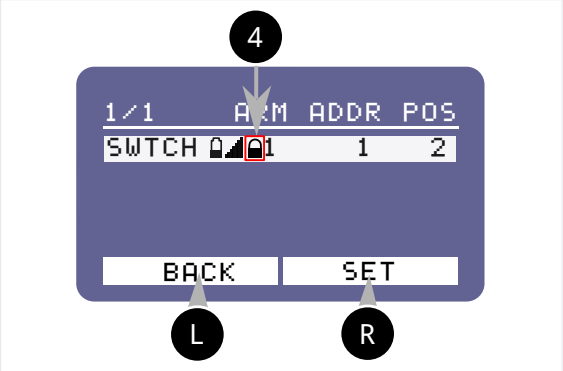


Press the R SET button to go to the device settings screen

③ In the device settings window, use the navigation buttons to select the line LOCK:OFF



Use the navigation buttons to select ON and press the R SET button to save the change.



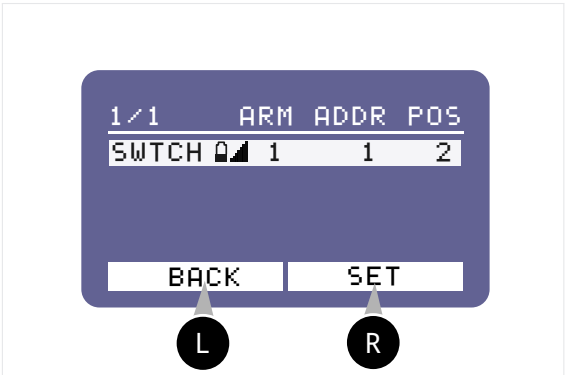
The selected receiver will enter LOCK mode and a closed 4 lock will be displayed in the status bar of the device.

Unlock in the same sequence with the LOCK menu item set to OFF.

Device locking mode by double pressing control buttons R and L.

This is done without going to the receiver's main setup menu. Simply select the line with the name of the device to lock and double-click the R and L buttons as described below.

Perform all the steps in the SERVICE menu described above up to the (2) item, and select the line with the locking device on the screen that appears:



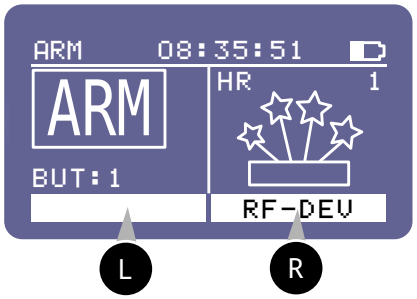
Press the R button and the left button will become LOCK, without releasing the button press the L button. The device will enter the lock mode and a lock will be displayed in the status bar (see the figure above).

To deactivate the lock, press the R button again and without releasing it, press the R button. The lock in the device status bar will not be displayed and the device will be unlocked.

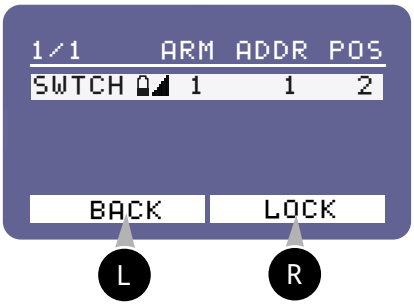
! **USEFULLY!**

The RF-LOCK lock and unlock mode can be activated and deactivated repeatedly:
Press the R button and keep pressing the L button, keep pressing the R button, the next press of the L button will unlock the device. This is done repeatedly without going to the receiver setup menu.

Activating RF-LOCK in ARM mode In ARM mode, all receiver setup menus are not available, but to eliminate abnormal situations, the R button has a RF-DEV function. This allows you to go to the list of receivers connected to the control device to lock them.

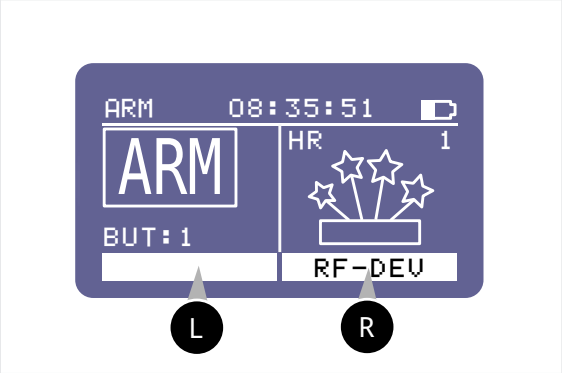


Press the R RF-DEV button to switch to the list of available devices connected to the control device.



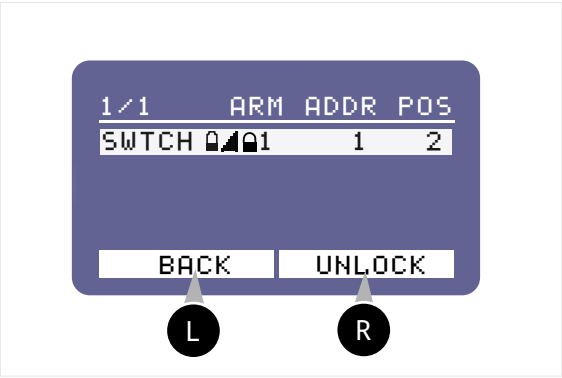
Only the LOCK mode is available on the right-hand control button. Select the device to be locked with the navigation buttons and press the R LOCK button. The receiver will enter the RF-LOCK mode.

Switching off RF-LOCK in ARM mode To release the lock in ARM mode,



from the main work screen, press the R RF-DEV button. And go to the list of receivers connected to the control device to unlock.

Press R RF-DEV button to go to the list of available devices connected to the control device.



When a locked device is selected, only the UNLOCK mode is available on the right-hand control button. Select the device to unlock with the navigation buttons and press the R UNLOCK button. The receiver will enter RF-LOCK mode and the status bar will no longer display a lock indicating that the device is locked.

POS menu item is used to remotely change the position number of the device.

To change the receiver position number, select the POS menu bar with the navigation buttons, press the R SET button and use the UP/DOWN navigation buttons to set the desired device position number. To save the result, press the R SET button again. (See the 6.2 on page 19 section for more information on the address space)

ADDR menu item is used to remotely change the start number of the device address.

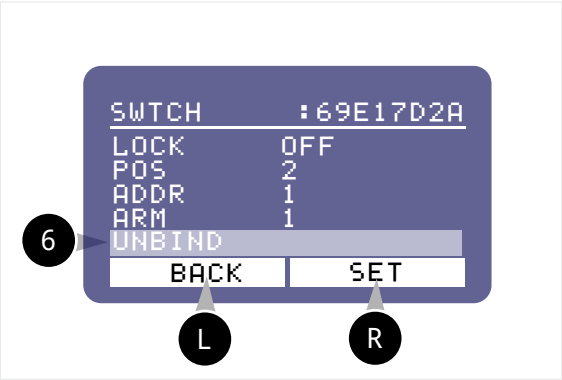
To change the starting address number of the receiver, select the ADDR menu bar with the navigation buttons, press the R SET button and use the UP/DOWN navigation buttons to set the desired device address number. To save the result, press the R SET button again. (See the **??** on page ?? section for more information on the address space)

ARM menu item is used to remotely change the ARM ZONE number of the device.

To change the ARM ZONE number of the external device, select the ARM menu bar with the navigation buttons, press the R SET button and use the UP/DOWN navigation buttons to set the desired ARM ZONE number of the device. To save the result, press the R SET button again. (For more information,

see the ARM ZONE application section in the 6.3 on page 25 section)

UNBIND menu item is used to unbind the selected device from the control device.



To decouple an external device from the control device, select the menu line 6 with the navigation buttons, press the R SET button and confirm the decoupling of the device in the message on the control device screen.

IMPORTANT!

You can unbind the device either from the device itself or from the control device.
If the device has been untagged in its main menu, you must perform the untagging procedure in the control device's menu.

IMPORTANT!

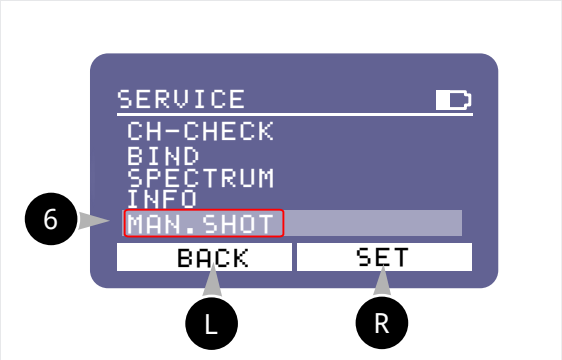
Unhooked devices will be displayed in the control device settings as passive and not connected.

7.7.7 MAN.SHOT MENU

This mode is designed to activate the ARM mode without loading programmes into SBox-30 from the mobile application and allows to control pyrotechnic products in manual mode.

USEFULLY!

This mode is convenient for quick setup and control of a small number of receivers and devices connected to them.

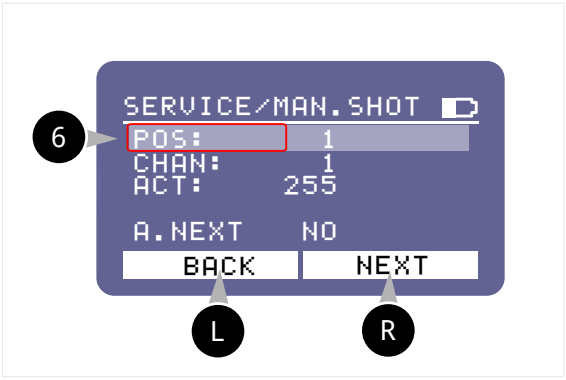


Selects the MAN.SHOT mode:
To select MAN/SHOT mode, select the line labelled MAN.SHOT 6 using the navigation buttons in the SPECTRUM menu and press the R SET button.

In the menu that opens, the parameters POSITION , CHANNAL , ACTION and the automatic mode for changing the selected values A.NEXT can be changed.

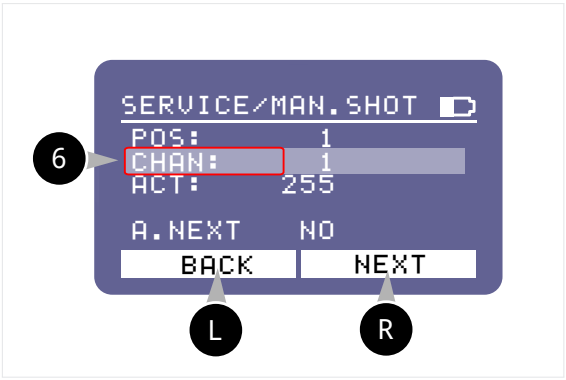
The MAN.SHOT menu is navigated by pressing the R NEXT button.

POS Menu — is the position number of the receivers to which the SHOT signal will be sent.



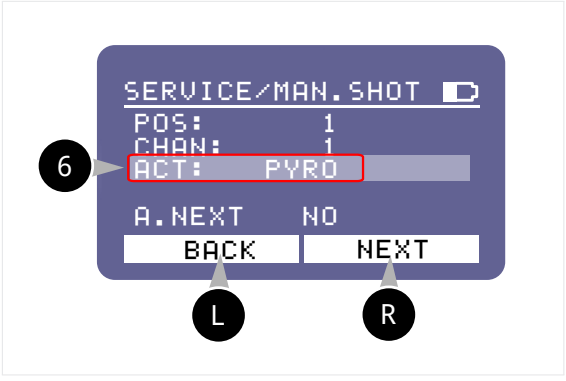
Press the R NEXT button to select the current line POS . In the active line, use the navigation buttons on the device (see Fig. 4 on page 14) to select the required value of the POS number to which the SHOT signal will be sent (from 1 to 1000).

CHAN menu — is the number of the receivers active channel to which the SHOT signal will be sent.



Press the R NEXT button to select the current line CHAN . In the active line, use the navigation buttons on the device (see Fig. 4 on page 14) to select the required value of the channel number to which the SHOT signal will be sent (from 1 to 10000).

ACT menu — is the action code (or command for the receiver) to be sent to the selected address: POS+CHAN.

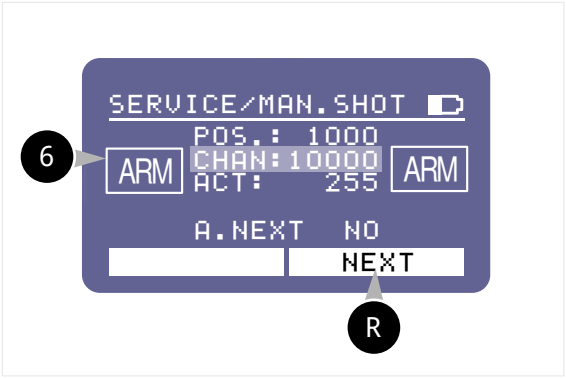


Press the R NEXT button to select the current line ACT . In the active line, use the navigation buttons on the device (see fig. 4 on page 14) to select the required action value:

- for the generated receivers set the value from 2 to 255, according to their command list.

- for pyrotechnic igniters set the value PYRO. This value allows to apply a trigger current for 100ms to the selected address to trigger the pyro igniter.

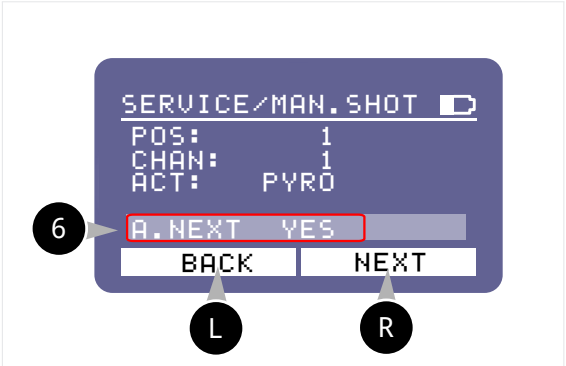
MAN.SHOT mode operation procedure To start working in the active mode, press the ARM button.



Press the ARM «control device» button. All connected receivers to «control device» will enter ARM mode and will be ready to receive SHOT commands from «control device». ARM mode indication will be displayed on the display of «control device» and «Receivers».

1. Pressing the NEXT button in ARM mode moves the cursor through the POS/CHAN/ACT menu lines.
2. Pressing the UP and DOWN navigation keys in ARM mode changes the values in the current line.
3. Pressing the SHOT button will send a signal to the radio channel with the current POS/CHAN/ACT values set.
4. To send the command to the same address again, press the SHOT button again without changing the POS/CHAN/ACT values and without switching off the ARM mode.
5. To send a command to another address: set new POS/CHAN/ACT values and press the SHOT button without changing the POS/CHAN/ACT values and without switching off the ARM mode.

Automatic change of values in MAN.SHOT mode To automatically change channel or position numbers, you must:



1. Select the A.NEXT line and set it to YES using the navigation buttons.
2. Enable ARM mode
3. Use the NEXT button to select the current position for automatic value change (For example: CHAN — channels).

4. Use the UP and DOWN navigation buttons to set the starting value in the selected row.

5. Press the SHOT button to send the command to the selected address. (The address value will automatically increase by +1).

6. Pressing the button again will automatically increment the address value and send the command without having to change the address manually.

8 «Receiver Mode»

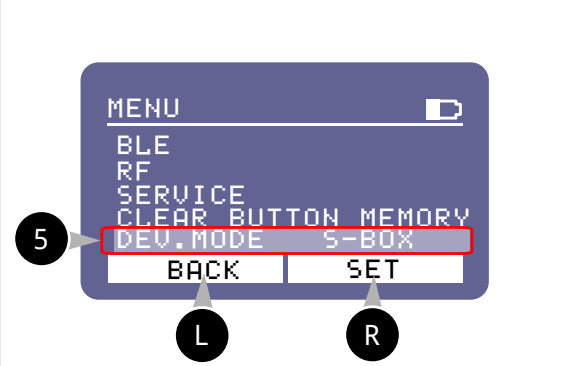
In the «Receiver mode», the device receives signals from the control device and supplies control current to external channels to start pyrotechnic products or switch on electromagnets or other special devices. This device in the receiver mode is controlled by radio protocol SHOT CONTROL SYSTEM .

In the «Receiver mode» it is possible to connect up to 5 (five) external devices to the device, through 5 groups of contacts (channels) for direct wire connection of pyrotechnic igniters, and also, through 2 RJ45 connectors it is possible to connect 2 external expansion boards, 15 channels each.

When 2 expansion boards are connected, the device can signal 30 pyrotechnic igniters at once.

When operating in the «Receiver mode», the device display shows the corresponding status and information corresponding to the «Receiver Mode».

To switch the device on in the receiver mode, go to the DEV.MODE menu and select S-BOX :



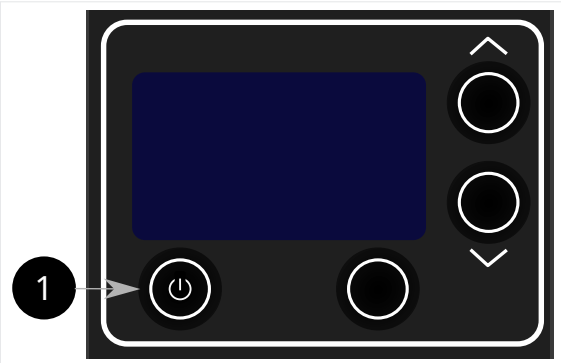
«Receiver» To switch the device to the «Receiver mode»

1. Press the R button. EDIT
2. Use the navigation buttons to select the value S-BOX
3. Press the R button again. SET button again to save the «Receiver mode».

8.1 SWITCHING ON THE DEVICE.

VERY IMPORTANT!

To avoid burning out the radio path on the device! The device may only be switched on with a CONNECTED ANTENNA!



1 — To switch on the device, press the 1 button for 1 sec. The device will automatically boot up and enter the current mode.

IMPORTANT!

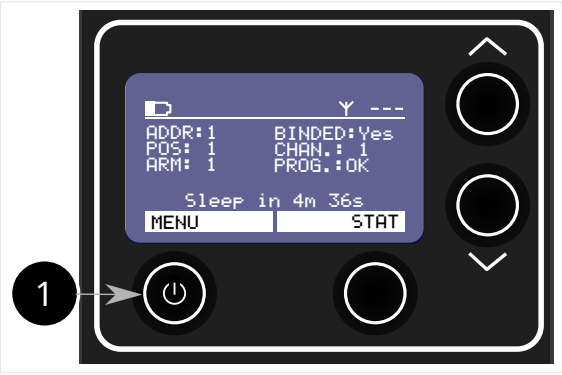
When the device is switched on, the keypad is initially locked and the display shows LOCK LOCK on the bottom line.

To disable the keypad lock on the device, press the R and L buttons simultaneously.

You can also press the R button and press the L button without releasing it. The keypad will be unlocked and the display will show MENU.

To lock the keyboard, perform the same action as above, press R and L at the same time, the keyboard will be locked and the display will show the keyboard lock information in the bottom line LOCK LOCK.

8.2 SWITCHING OFF THE DEVICE.



1 — To switch off the device, press the 1 button for 2-3 seconds. The device will automatically switch off and memorise all the current settings.

When you switch the device on again, it will boot up in the current settings mode.

8.3 OPERATING PROCEDURE IN THE «RECEIVER MODE»

8.3.1 PREPARING THE DEVICE FOR OPERATION

The SBOX-30 in the «Receiver Mode» can receive signals from the Control Device via the SHOT CONTROL SYSTEM protocol and control up to 30 external devices connected to it via wired communication.

To prepare the SBOX-30 device for operation in the «Receiver Mode», perform the following actions:

(1) Switch on the device (see section 8.1 on the preceding page)

2. Enable «Receiver Mode» on the device (see section 8.4.5 on page 69)
   DEV.MODE: S-BOX
3. Pair with the control device (see section 8.4.4 on page 68).
4. Perform address space configuration (see section 8.4.1 on page 66)
5. Connect devices to external channels to control them

IMPORTANT!

Before you start, make sure the receiver is not in lockout mode LOCK. In the LOCK mode, the receiver does not process signals from the control device and does not respond to keypad presses. (For more information on disabling LOCK mode, see section 7.7.6 on page 53)

8.3.2 MAJOR OPERATIONS PERFORMED ON THE DEVICE

The SBOX-30 device in the receiver mode, after setting up and pairing with the control device, operates in automatic mode and does not require the presence of an operator. The ARM mode is switched on and off via radio channel from the control device.

VERY IMPORTANT!

For health and safety reasons, it is not recommended that people be in the vicinity of the receivers when in ARM mode. Injury may occur due to the triggering of pyrotechnic devices.

VERY IMPORTANT!

After switching on the ARM mode on the control device, it takes up to 3 seconds for the receiver to switch to active mode and charge the capacitors. After 3 seconds the complex is ready to run programmes.

8.3.3 ENDING DEVICE OPERATION/STORAGE

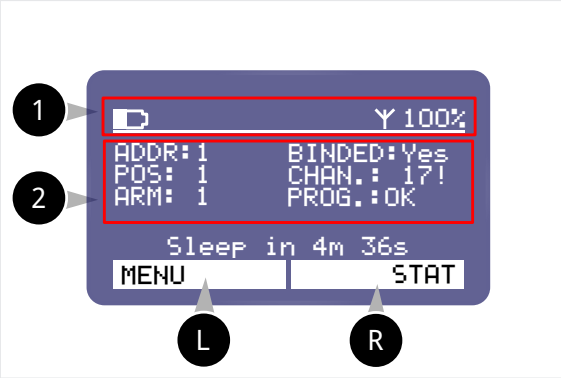
After completing the receiver mode, you must:

1. Switch off the power (see section 8.2 on the preceding page).
2. Disconnect devices from external channels

③ Perform preventive maintenance

④ Put the device back in its original packaging

8.4 DEVICE MENU IN «RECEIVER MODE»



1 The top line of the display in the «Receiver Mode» shows the battery charge level of the device and the communication level with the control device shows the signal strength in %. If there is no signal with the control device, `---` is displayed.

2 The current setting parameters of the device.

Device Charge Level — visual: the coloured area shows the remaining charge level:

— battery is discharged

— battery is half charged

— battery is fully charged

The function keys marked in the figure control the device according to the indication in the white field of the display:

The **8** button in Fig. 5.1 on page 14 performs the action indicated by `MENU`: (hereinafter referred to as: **L** in the diagrams) in the left white area of the display

2 — main display screen menu

6 button in Fig. 5.1 on page 14 performs the action indicated by `STAT`: (hereinafter referred to as:

R in the diagrams).

ADDR:1 — the display shows the starting address of the device

POS: 1 — the display shows the position number of the device

ARM: 1 — the display indicates the number of the ARM ZONE in which the device is operating.

BINDED:Yes — indicates that the device is binded to the control device:

Yes — linkage established

No — in control device search mode

CHAN.: 17! — the number of the operating channel of the unit communicating with the control device.

PROG.: OK — indication of the loaded programme for the device operation.

OK — the programme has been loaded for this unit and the unit is ready for operation.

ERR — No programme has been loaded for this unit and the unit is not ready for operation.

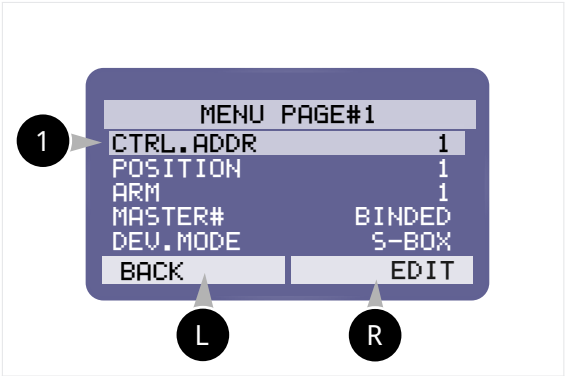
IMPORTANT!

For correct operation of the device, the programme for this device must be loaded from the control device and the string PROG.: must be set to OK.

If the status PROG: ERR is in the device line, it is necessary to switch the control device to which this device is connected to the DISARM mode and wait for the full download of the programme to the receiver and establishment of the status PROG OK.

8.4.1 CTRL.ADDR MENU

This menu is used to set the start address of the device.

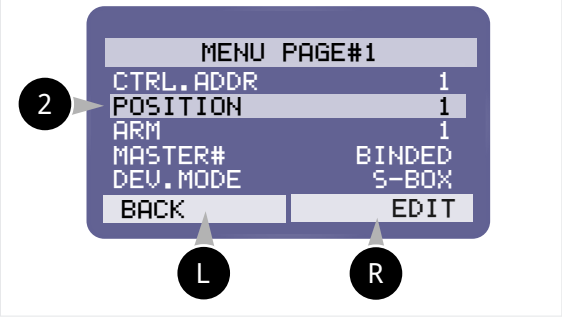


To edit the device address, use the navigation buttons to position the cursor on the line labelled CTRL.ADDR and press the R EDIT button. Use the UP/DOWN navigation buttons to set the desired starting address value and save the changes by pressing the R ENTR button.

To cancel the changes made, press the L BACK button.

8.4.2 POSITION MENU

This menu is used to set the position number of the device.



To edit the device position number, place the cursor on the line labelled POSITION using the navigation buttons and press the R EDIT button. Use the UP/DOWN navigation buttons to set the desired device

position and save the changes by pressing the R ENTR button.

To cancel the changes made, press the L button.

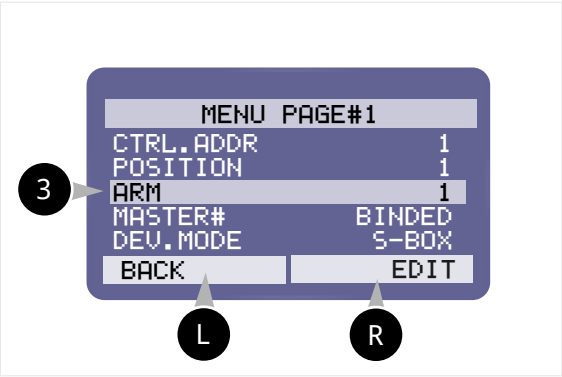
IMPORTANT!

Changing the position number in the device settings will erase all memory on the device and change the position number

.

8.4.3 ARM MENU

Use this menu to change the ARM ZONE number of the device.



To edit the ARM ZONE number of the device, use the navigation buttons to place the cursor on the line labelled ARM and press the R EDIT button.
Use the UP/DOWN navigation buttons to set the desired value.

ARM ZONE of the device and save your changes by pressing the R ENTR button.

To cancel the changes made, press the L BACK button.

IMPORTANT!

When SBOX 30 units are connected to each other as «Control Mode» and «Receiver Mode», the ARM signal from the control device comes through all 8 ARM ZONEs at once.

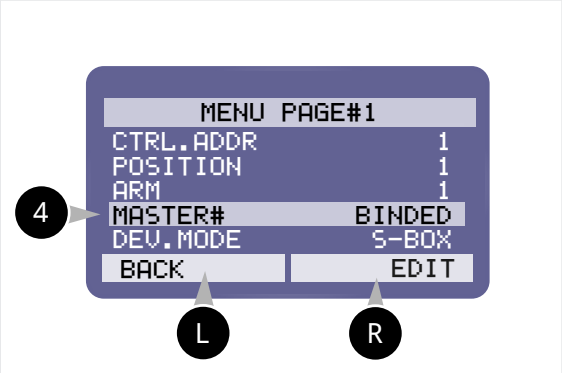
IMPORTANT!

When connecting SBOX 30 units in the Receiver mode to a large control device, the ARM signal from the control device is only sent to the set ARM ZONEs 1 to 8. When working in this configuration, be sure to check the ARM ZONE number setting on the units.

8.4.4 MASTER MENU

This menu is used to disconnect the device from the control device.

It is only possible to connect the receiver to the control device from the menu in «Control mode» (see section 7.7.3 on page 48 for details).



To disconnect the device from the control device, use the navigation buttons to position the cursor on the line labelled MASTER 4 and press the R EDIT button.
Use the UP/DOWN navigation buttons to set the value UNBIND

To save the changes made, press the R ENTR button.

To cancel the changes you have made, press the L BACK button.

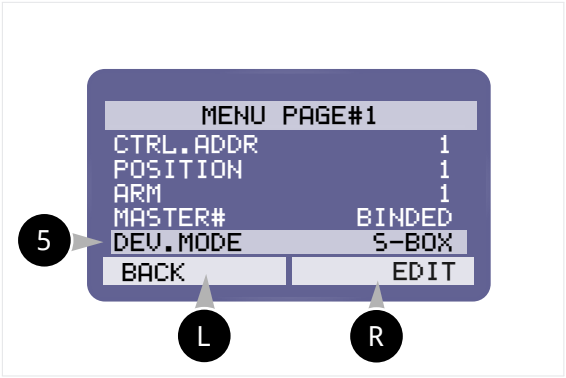
BINDED — connection to the control device is established, UNBIND — connection to the control device is not established and this receiver is available for connection by any control device that will scan for devices to connect to, see section 7.7.3 on page 48 for details.

USEFULLY!

When a device is unhooked from the control device, the information about the device is stored on the control device. To completely disconnect the device from the control device, you must also perform the disconnection procedure on the control device. (For details, see section 7.7.3 on page 48)

8.4.5 DEV.MODE MENU

This menu is used to set the basic mode of the device («CONTROL MODE» or «RECEIVER MODE»)

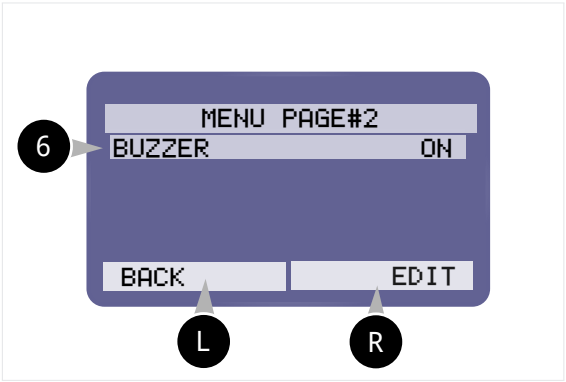


To switch the basic operating mode of the device, place the cursor on the line labelled DEV.MODE and press the R EDIT button.
Use the UP/DOWN navigation buttons to set the desired value.

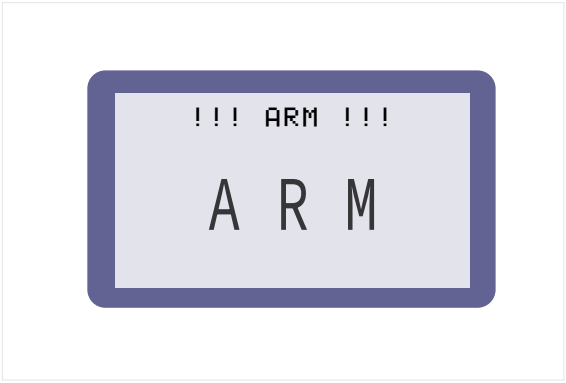
CONTROL — to set the «Control Mode» or S-BOX — to set the «Receiver Mode» and save the changes made by pressing the R ENTR button. To cancel the changes made, press the L BACK button.

8.4.6 BUZZER MENU

Use this menu to set the audible alarm on the device.



To set the beep mode on the device, use the navigation buttons to position the cursor on the line labelled BUZZER and press the R EDIT button.
Use the UP/DOWN navigation buttons to set the desired value. To cancel the changes, press the L BACK button.



BUZZER ON — When the ARM mode on the control device is turned on, the unit will emit intermittent high-pitched sounds and flash the display.

BUZZER OFF — When the ARM mode on the control device is turned on, the unit will only flash the display.

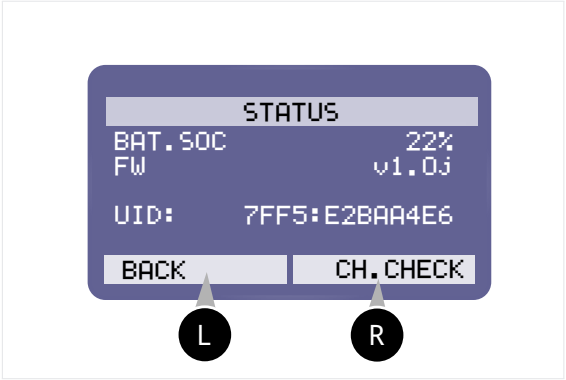
(ON — to set the sound on the device in ARM mode or OFF — to mute the sound on the device in ARM mode.)

Save your changes by pressing the R ENTR button.

8.5 STATUS MENU

To enter the STATUS menu, press the R STAT button on the main screen of the device in the «Receiver Mode» (see section 8.4 on page 65).

The display shows the status of the device.



BAT.SOC — the actual charge level of the device in %

FW — Firmware version installed on the device.

UID: — The device's unique identification number, which consists of two groups of 4:8 characters separated by a colon. The unique device number is duplicated on the back cover of the device and printed as a QR code.

USEFULLY!

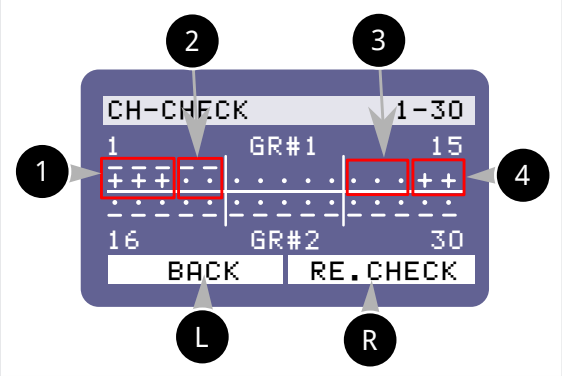
Firmware is special firmware loaded into the memory of the device.
Firmware is periodically updated and is available for downloading to the device.

IMPORTANT!

When updating the Firmware on the device, make sure that the Firmware version on all connected devices (control device and receivers) is identical. If connected devices with different Firmware versions are used, the complex operation is not allowed.

8.5.1 CH-CHECK MENU

This mode is intended for checking wired contacts with connected external devices to the output channels (see Fig. 8 on page 16 for details on connecting external devices directly to the SBOX-30 device standard connectors or via an expansion board for up to 30 channels).



Start — R RE.CHECK the receiver scans all of its channels and displays their status.

Display — the loaded window will display the status of each channel of the external device connection being measured.

Indication of channel test results the following symbols are adopted on the screen to describe the channel status:

1 — on the screen the channel is marked ∓ — The programme uses this channel, there is load in the channel, everything works properly.

2 — on the screen the channel is marked ¯ — The programme is using this channel, there is no load on the channel, no device is connected.

3 — the channel is marked . on the screen — the programme is not loaded, there is no load on the channel.

4 — the channel is marked + on the screen — the programme is not loaded, there is load in the channel, the device is not connected correctly.

IMPORTANT!

After performing the diagnostics, be sure to reconnect the devices marked with + and no - above the plus sign, this device is connected to a channel on which no programme is loaded.

When the CH-CHECK procedure is complete, the status of the completed channel check will be displayed on the screen.

! USEFULLY!

Channel statuses by test result:

??? — the channel has not yet been scanned;

OK — all channels on the receiver are working properly (i.e. all channels being tested have the same status as ❶ and ❸ — see section above);

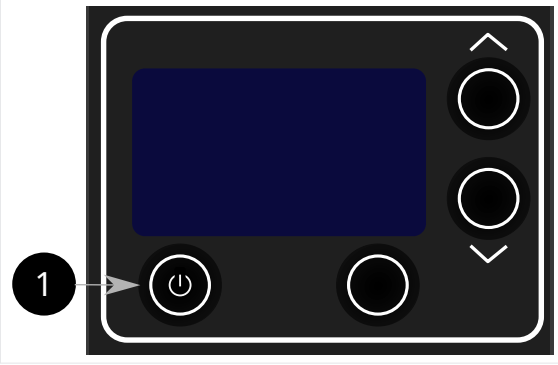
ERR — the receiver under test has errors in the channels and requires additional testing (i.e., some of the channels have a condition corresponding to items ❷ and ❹ — see description above).

9 Power management of the device

9.1 SWITCHING ON THE DEVICE

VERY IMPORTANT!

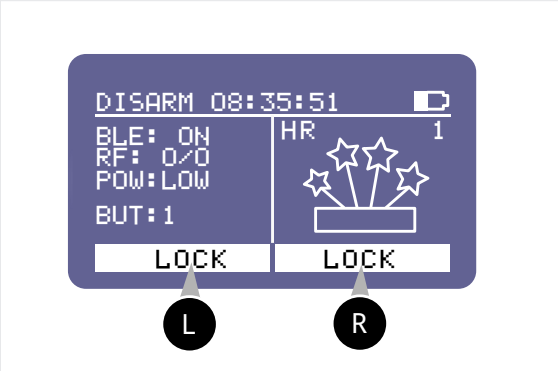
To avoid burning out the radio path on the device! The device may only be switched on with a CONNECTED ANTENNA!



1 — To switch on the device, press the 1 button for 1 sec. The device will automatically boot up and enter the current mode.

IMPORTANT!

When the device is switched on, the keypad is initially locked and the display shows LOCK LOCK on the bottom line.

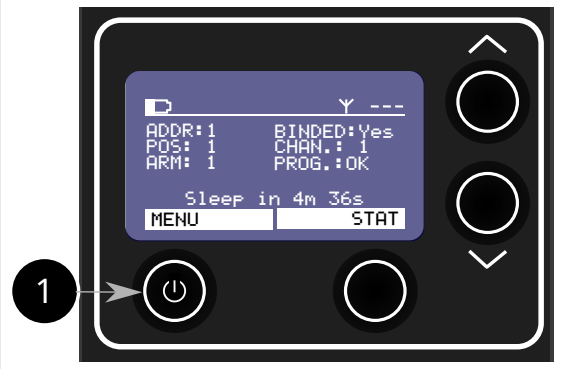


To disable the keypad lock on the device, press the R and L buttons at the same time.

You can also press the R button and press the L button without releasing it. The keypad will be unlocked and the display will show MENU.

To lock the keyboard, perform the same action as above, press R and L at the same time, the keyboard will be locked and the display will show the keyboard lock information in the bottom line LOCK LOCK.

9.2 SWITCHING OFF THE DEVICE

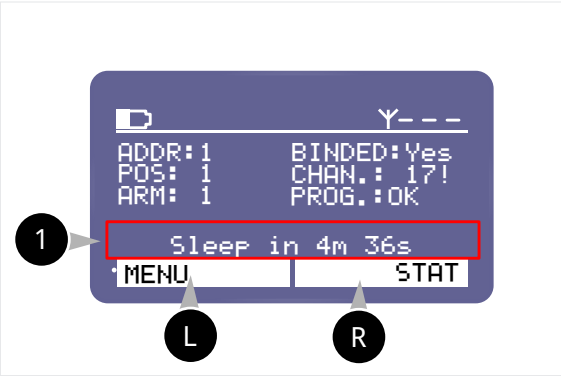


1 — To switch off the device, press the **1** button for 2-3 seconds. The device will automatically switch off and memorise all the current settings.

When the device is switched on again, it will boot up in the current settings mode.

9.3 AUTOMATIC SWITCHING TO SLEEP MODE

SLEEP (hibernation) mode — is required to save battery power on the device. In this mode, the unit periodically checks if communication with the control device is restored, and when communication is restored, the unit will automatically resume operation.



1 — When communication with the control device is interrupted, the unit automatically starts a timer (5 minutes) to enter the SLEEP mode

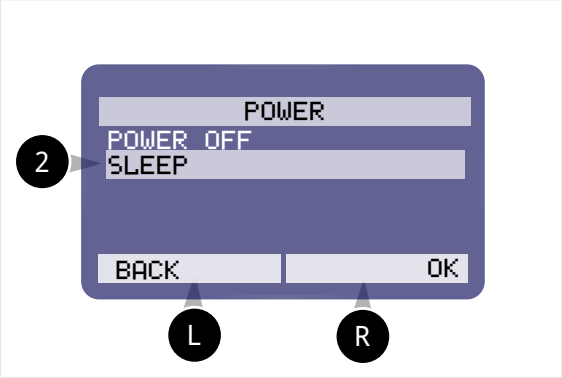
Recovery — When communication with the control device to which the unit was tethered is restored, the unit will automatically wake up within 2 minutes.

VERY IMPORTANT!

The device can stay in SLEEP mode for up to 1 month.

9.4 FORCED SWITCHING TO SLEEP MODE

To forcibly switch the device to SLEEP mode, you must:



2 — Press and hold the **L** MENU button on the device for 2 seconds (up to a maximum of 2 seconds to prevent the device from going into POWER OFF mode).

Select SLEEP — use the navigation buttons to select the line labelled SLEEP

R — press the OK button.

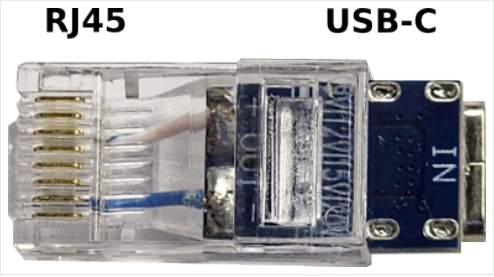
9.5 FORCED WAKE-UP FROM SLEEP MODE

If the device is in the SLEEP mode, briefly pressing the «Power» button (see section 9.1 on page 73) will wake up the device and automatically connect it to the control device.

9.6 CHARGING THE DEVICE BATTERY

VERY IMPORTANT!

To avoid burning out the radio path on the device! The device may only be switched on with a CONNECTED ANTENNA!



To charge the device, insert the [RJ45xUSB-C] (B) adapter into the output connector of the device and connect a power supply of at least 60W and 20V with Power delivery technology to the adapter (A).

To charge one device, simply connect the power supply via the [RJ45xUSB-C] adapter to any RJ45 output connector on the SBOX-30 device (see Fig. 19 on the next page).

! USEFULLY!

Up to 4 SBOX-30 units can be daisy-chained to a single charging adapter via cables (PATCH CORD RJ45) (C).

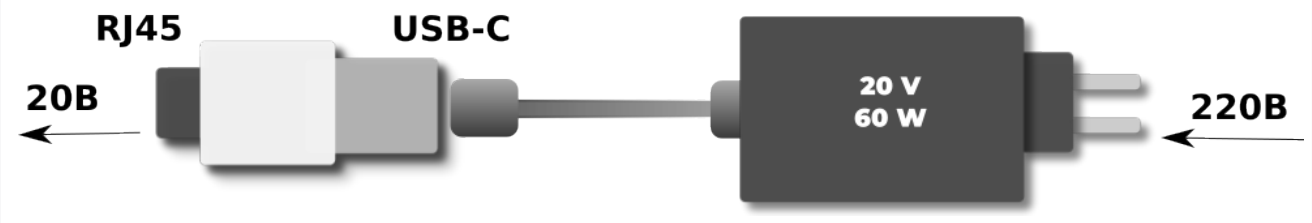


Figure 18: Charging the SBOX-30 via an adapter [RJ45xUSB-C]

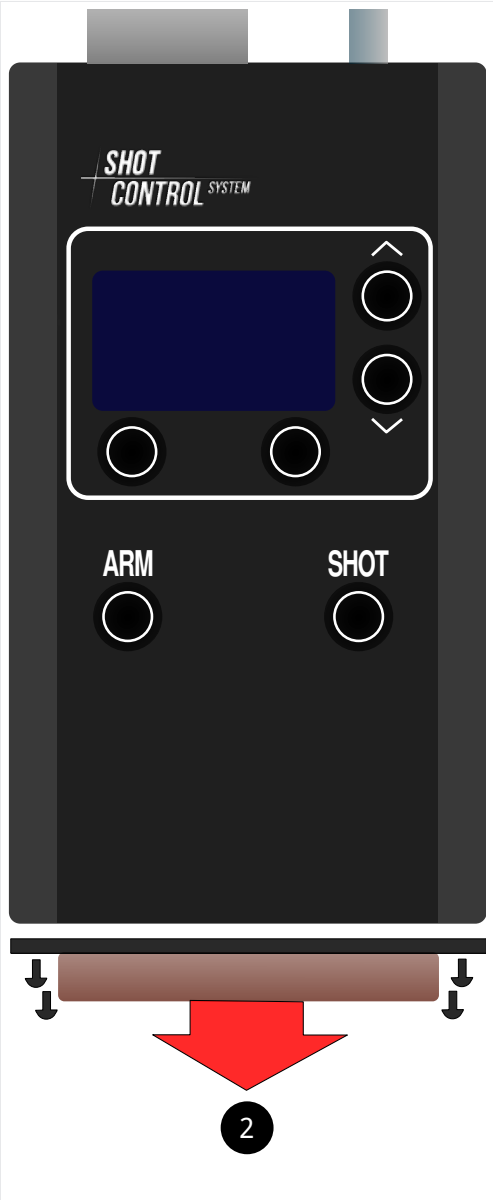
Figure 19: Charging 4 SBOX-30 devices

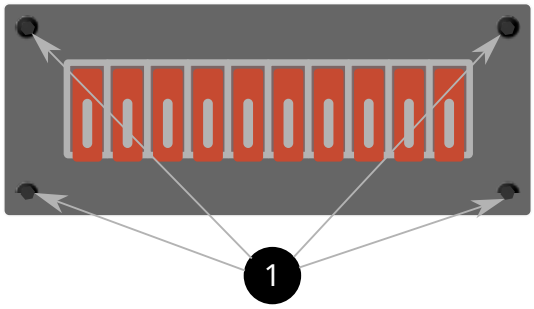
VERY IMPORTANT!

Connecting more than four devices in series with the charger may burn out electronic components.

9.7 REMOVING THE BATTERY FROM THE DEVICE

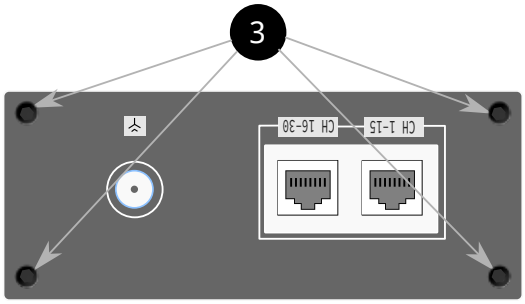
Removing the battery pack is required for transporting the device in aeroplanes. To remove the battery pack from the device, you must:



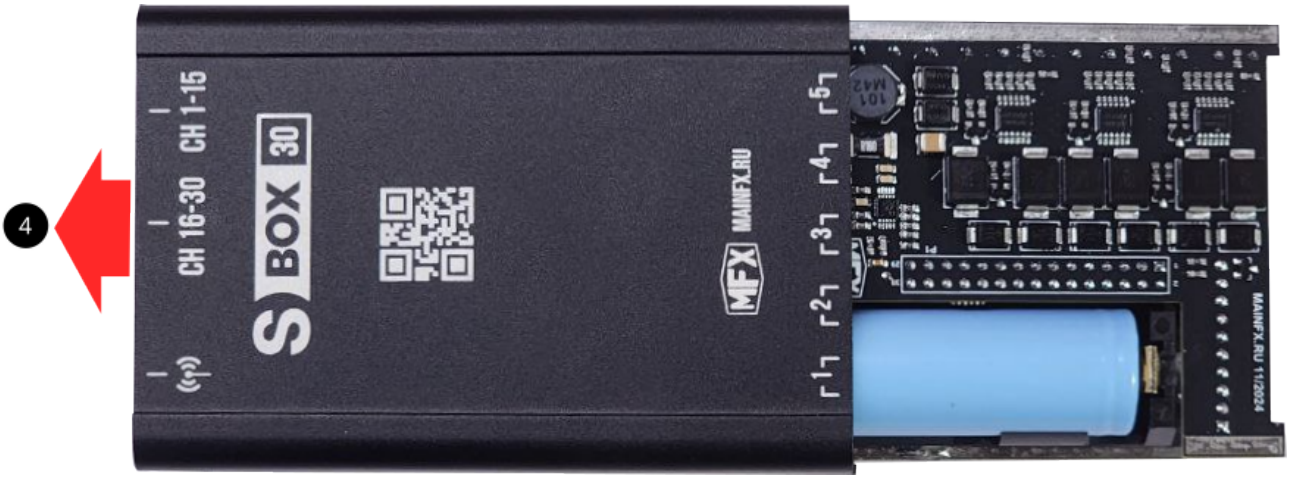


1 3 — unscrew 8 screws located on the upper and lower ends of the device housing using a 2mm hexagon.

2 — Carefully disconnect the upper and lower boards with connectors from the centre assembly.



4 — Gently press the centre assembly in the grooves out of the housing with your finger towards the bottom of the housing



5 — After removing the back cover, remove the battery from its original place in the device.

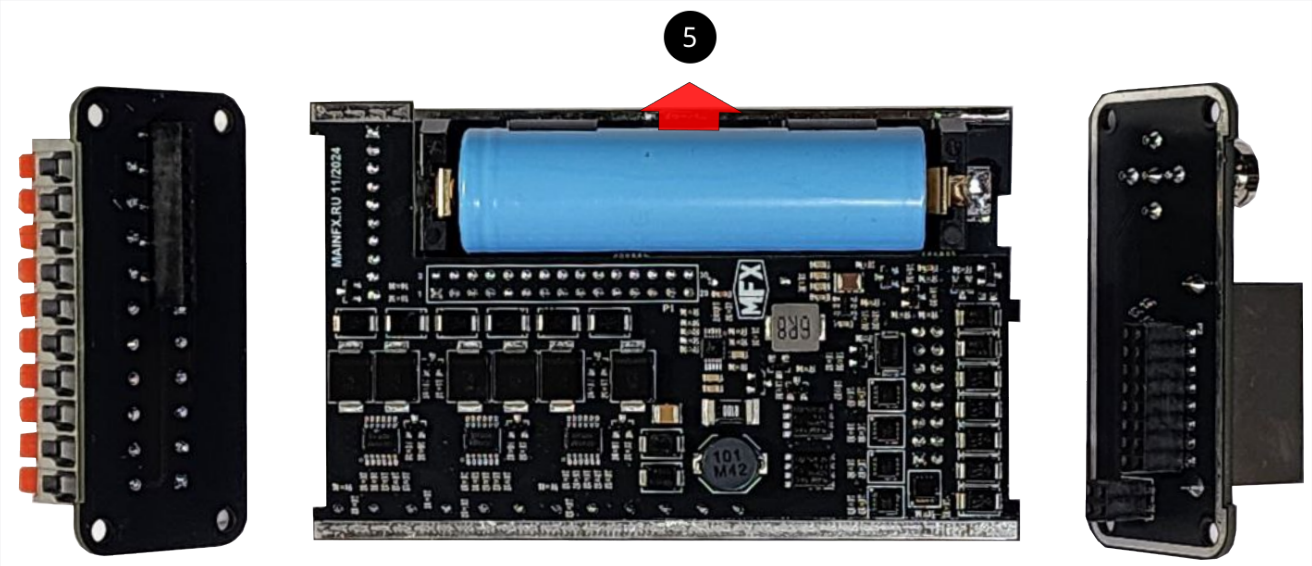


Figure 20: Removing the battery from the SBOX-30

! USEFULLY!

Carefully remove the battery without using metal objects.

Reassemble the unit in reverse order, aligning the connectors on the top and bottom ends with the centre assembly.

10 Maintenance of the device

10.1 DAILY CARE AND MAINTENANCE

After using the device and before placing it in its original packaging, wipe the device with a dry cloth and remove any dirt.

Before packing, remove the antenna and disconnect cables and contact wires from the connectors.

Switch the device on and switch it off by holding down the power button to avoid storing the device in the SLEEP state (sleep state).

It is not recommended to keep the device in the sleep state to avoid draining the device battery and premature battery failure.

10.2 BATTERY REPLACEMENT

If the battery life is reduced, it must be replaced. You can replace the battery yourself (see section 9.7 on page 77) or have it replaced by a service centre.

10.3 SERVICE MAINTENANCE

The device does not require service except for software update.

To update the software, it is recommended to contact a specialised service centre.

The user can perform the update by himself (Please read the software update instructions beforehand).

! USEFULLY!

It is important to update the software on all devices at once, as the update may make changes to the radio protocol and devices with different firmware versions may no longer be compatible.

In case of device malfunction, please contact the service centre.

Transport costs for sending the device for repair and elimination of identified defects and return delivery of the device to the customer are at the expense of the customer (in warranty and non-warranty cases).

11 Troubleshooting

If you encounter difficulties while operating this unit, refer to the table below. If the problem persists, switch off the unit, disconnect the power cord, and seek help.

Table 2: Fault table

Symptom	Possible cause	How to fix
The display does not light up when the power is turned on.	The battery is low	Connect the adapter and charge the device
When fully charged, the device discharges quickly	Battery is defective	Replace the battery.
The device does not connect to the mobile app	BLUETOOTH is switched off	Switch on BLUETOOTH and pair the device with the mobile app.
The device stopped charging	RJ45-USB-C adapter malfunction or incompatible power supply	Change the adapter and try charging again
Device stopped charging	Trouble with ports or charger electronics board	Contact a service centre

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12 Appendices

12.1 APPENDIX A (CHANNEL FREQUENCY TABLE)

Table 3: Table of device channel frequencies

№ channel	Frequencies Mhz	№ channel	Frequencies Mhz
1	864,125	21	866,625
2	864,25	22	866,75
3	864,375	23	866,875
4	864,5	24	867
5	864,625	25	867,125
6	864,75	26	867,25
7	864,875	27	867,375
8	865	28	867,5
9	865,125	29	867,625
10	865,25	30	867,75
11	865,375	31	867,875
12	865,5	32	868
13	865,625	33	868,125
14	865,75	34	868,25
15	865,875	35	868,375
16	866	36	868,5
17	866,125	37	868,625
18	866,25	38	868,75
19	866,375	39	868,875
20	866,5	40	869

13 Warranty obligations

All MainFX and SHOT CONTROL brand products purchased officially from («GlavaEffect» LLC) MainFX are warranted for a period of twenty-four (24) months from the date of purchase of the product under the terms and conditions set forth in this warranty.

The MainFX International Warranty covers manufacturing defects existing at the time of purchase of the product.

The warranty is only effective if the warranty certificate is properly and completely filled out, dated and stamped by an authorised MainFX dealer.

During the warranty period and upon presentation of a valid warranty certificate, you are entitled to have defects repaired free of charge. If your MainFX devices cannot be restored to normal use by repair, MainFX warrants replacement with a MainFX device with the same or similar characteristics.

Transport costs for sending the device for repair and elimination of identified defects and return delivery are at the expense of the customer (in warranty and non-warranty cases).

The manufacturer’s warranty does not cover:

- battery life;
- natural wear and tear, ageing (e.g. scratches on the glass/housing; discolouration);
- any damage to any parts of the products as a result of improper use, lack of care, negligence, accident (bumps, dents, broken glass, etc.), misuse of the devices and failure to follow the operating instructions provided by MainFX.

14 Copyright and privacy policy

This manual is supplied only as part of the documentation package when purchasing the Shot Control System hardware and software.

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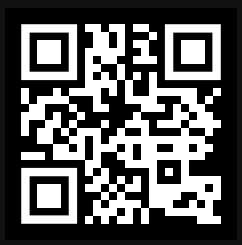

support@mainfx.ru