mp3 bBOX 9-24V

INSTALLATION GUIDE 4.0

Wiring

First, connect the speakers to terminals **3-4** for left channel and **5-6** for right channel.

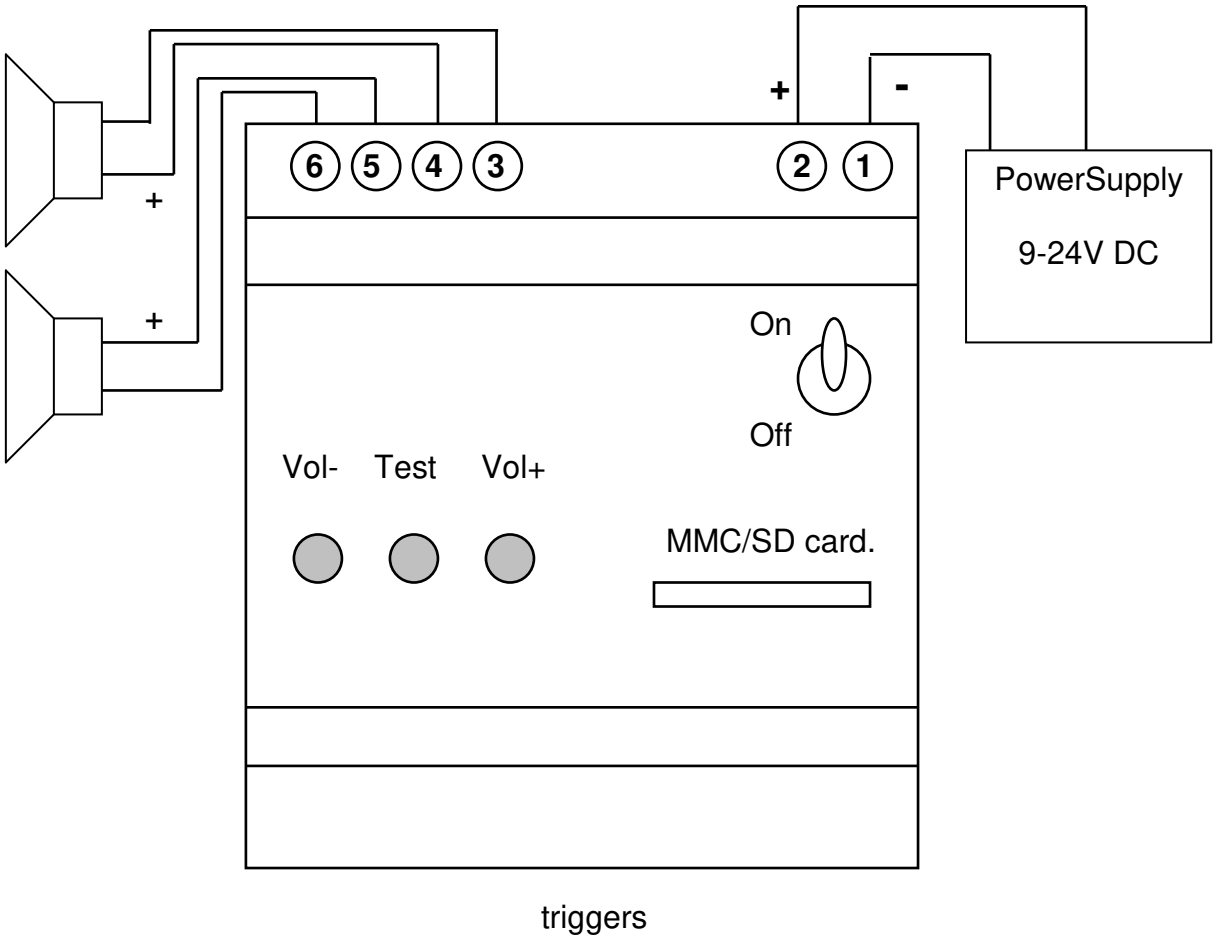
You can use several loudspeakers in parallel on each output, taking care of preserving resulting impedance higher than 2 ohms.
In a mono installation, you can use a "bridge" configuration by connecting the loudspeaker between **4** and **5**.

Check that the main switch on front panel is **OFF** (lever down)

Connect the power supply between terminals **1 (- 0V)** and **2 (+ 9 up to 24V)**

The device is ready to be tested.

Power and speaker wiring diagram



Line Out model : 6 – 5 – 4 – 3 HP connectors are replaced with a female Mini-Jack

Preparation of the MMC/SD memory card.

You can use SD memory cards or MMC memory cards.
On a blank card, copy the mp3 files containing the audio tracks. If the memory card is not empty, format it first (quick formatting option).
Audio files have to be previously encoded in mp3 at a rate chosen by the user from 32 to 256 kbs or VBR (variable bit rate).

The files must be copied into the root folder of the card, do not create folders.
The maximum number of files is 250.
The maximum size for a file is 32 Mbytes.
The files will be played in the same order they were copied to the memory card.
Be carefull not to place hidden files or system files on the card, this generally happens with MAC OS.

Check your files by listening to them on your computer from the memory card.
Do not withdraw card of its reader before the copy is fully completed, with a right click on the icon representing the card reader, choose "eject".

Memory card insertion and start

With the bBox switched OFF, insert the card into its place, label up, contacts down, and the side whose corner is cut towards the interior.

Switch ON the bBox by using the main switch located on the front panel. The LED indicator must light ON for a few seconds, then OFF. The device is on standby waiting for a trigger.

Press on the small switch labeled "test", the first track is played. The led must flash while playing.

Using the switches V- and V+ you can change the sound level. Each pressure increases or decreases level, it is useless to press long. This setting is stored and restored after power down.

To stop playing a track press V- and V+ at the same time.

Triggering the bBox (for Trigger model, not Serial model)

If the test worked fine, you can now carry out the connection of the triggers. Switch OFF the main power during this operation.

There are multiple software options for trigger control of the bBox, each option is tailored to a specific application field. Actually available software are:

2x20W amplifier & HP output
This software works for several applications with parametrable functionalities through on start Setup Switching. Configuration is done with front panel switches. (this software is the default installation if no other specified on order).

no amplifier but line-out mini-jack output
Same as above but for use without amplifier but for line-out output.

NETWORK request hardware serial chip
Several bBox can be controlled through a network from a central computer or dedicated controller. Network is based on RS485 serial communication. Note that this mode request serial hardware option to be installed in the bBox (in place of trigger's octocoupler). Several serial adapters exist (Ethernet, Profibus, …).

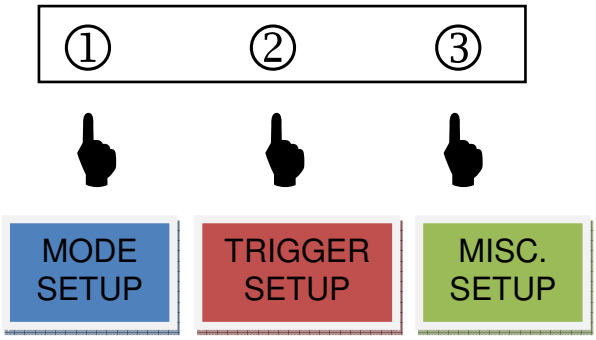
Other software :
Other special software exist already (industrial, pulse, elevator …), and our R&D Dpt can also develop specific software for your specific needs.

Firmware upgrade
Each bBox is factory preloaded with one of this software options. It is possible to install new software on a bBox with a memory card, as you could do with a floppy disk on a PC.
With a PC computer, put the new software on a blank (formatted) card, this should be the only file on the card. With bBox power off, put this card in the bBox. Now press the 2 leftmost switches on the front face at the same time and power the bBox. Keep the switches pressed for a couple of second, the led should go on. You can release the switches, the led should remain on for about 10 sec while the software is upgrading. After 10 seconds, the light will flash. The software is upgraded, switch off the bBox and remove the software card.

SETUP WITH SWITCHES, for triggers software version

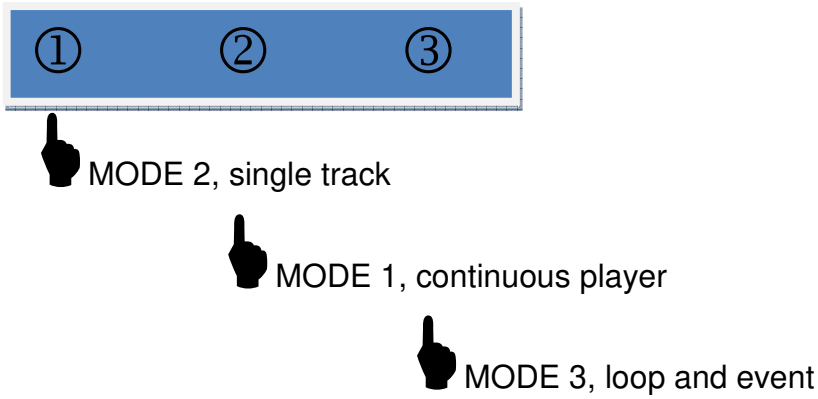
SHUT DOWN THE POWER

RESTART THE POWER WHILE HOLDING ONE SWITCH PRESSED



Wait 5 sec and RELEASE THE SWITCH,
led flashes, beep…beep…beep

IF YOU HAVE PRESSED "**MODE SETUP**"
*NOW, PRESS A SWITCH AGAIN TO CHOSE A **MODE***



- Single track, when it has been started, a track is played and the device stops at the end of this track.

- **Continuous**, all the tracks on the card are played after each other, the player never stops.

- **Loop and event**, the first track is repeated forever, when a trigger occurs, an alternate track is played, when this one is finished, the player restart looping the first track.

SHUTDOWN THE bBOX AFTER EACH NEW SETUP (then restart it to test)

OR IF YOU HAVE PRESSED "**TRIGGER SETUP**"
*PRESS A SWITCH AGAIN TO CHOSE A **TRIGGER SETUP***

DIRECT (trig 1 play 1, trig 2 play 2, …)

CD PLAYER. (next / prev / VOL- / VOL+)

Track 1 / RANDOM / Previous / Next.

- **Direct**, each of the 4 input trigger start a different track.

- **CD player**, input 1 is for next track, input 2 is for previous track,
input 3 is for volume down, input 4 is for volume up.

- **Random**, input 1 start track 1, input 2 start a random track, input 3 and 4 are for next and previous track

OR IF YOU HAVE PRESSED "**MISC. SETUP**"
PRESS A SWITCH AGAIN TO CHOSE BETWEEN N.O., N.C. or 15 coded inputs

4 TRIGGERS, **NORMALY OPEN**, must be closed to start

4 TRIGGERS, **NORMALY CLOSED**, must be open to start

15 TRIGGERS N.O. and **binary coded**,
ex: Closed | Open | Closed | Closed, will start track 11

To apply different setups, you must power down and restart the process from the beginning.

BBOX screw terminals

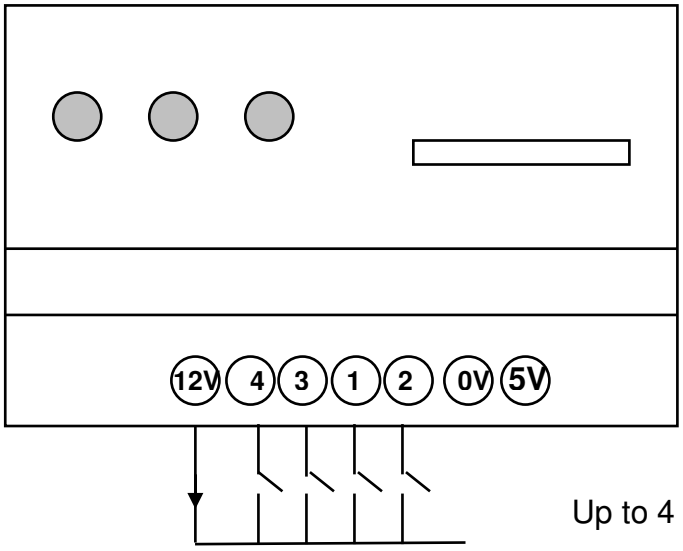
+12V (9-24V)	INPUT 4	INPUT 3	INPUT 1	INPUT 2	0V GND	+ 5V

+12V (9-24V) means if your supply bBox with 9V power this trigger will be 9V, as 12V powering is 12V trigger, and the same up to 24V.

TRIGGER DIRECT CONNECTION

This option is better suited for push button applications, where a user will push a button for starting a message. It should also be used for non-triggered repeater applications when the device is used to play messages or background music as soon as it is powered up.

Normally Open wiring diagram



If a single switch or starting relay (trigger) is used, it could be connected at location **12V (9 up to 24V) or 5V** and **1** of the lower connector block.

Any type of switch can be appropriate, it is possible to use other equipment, provided that they produce a **temporary closure** (i.e. contact have to be re-opened before the end of audio sequence).

Other triggers have to be connected in the same way, connector 12V is common to all, it source current (from 9 up to 24V) to the trigger switches.

Audio tracks are started as following:

Contact plug 12V to plug 1 -> play track 1
Contact plug 12V to plug 2 -> play track 2
Contact plug 12V to plug 3 -> play track 3
Contact plug 12V to plug 4 -> play track 4

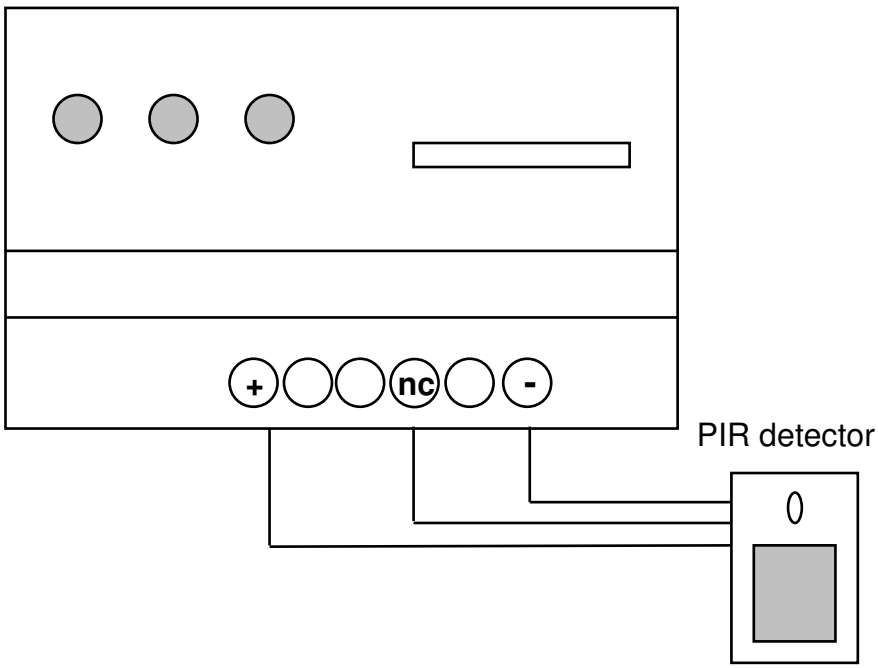
Priorities: a higher number input has priority on a lower one.
If contact 3 is closed while track 1 is playing, track 3 start playing.
On reverse if track 3 is playing, closing switch 2 will not start track 2.
Also, closing any switch while its track is playing, does not restart this track.

NC NORMALLY CLOSED trigger option

This option is to be selected when using devices that behave like a normally closed switch. This is most the case with **security devices** that needs to trigger an alarm when the wires are cut.
In this mode, the bBox can supply power to an external trigger like a 12V PIR detector.

Any type of switch can be used. As soon as the loop is opened, the track is started. The loop should be closed again before the end of the track or it will be restarted.

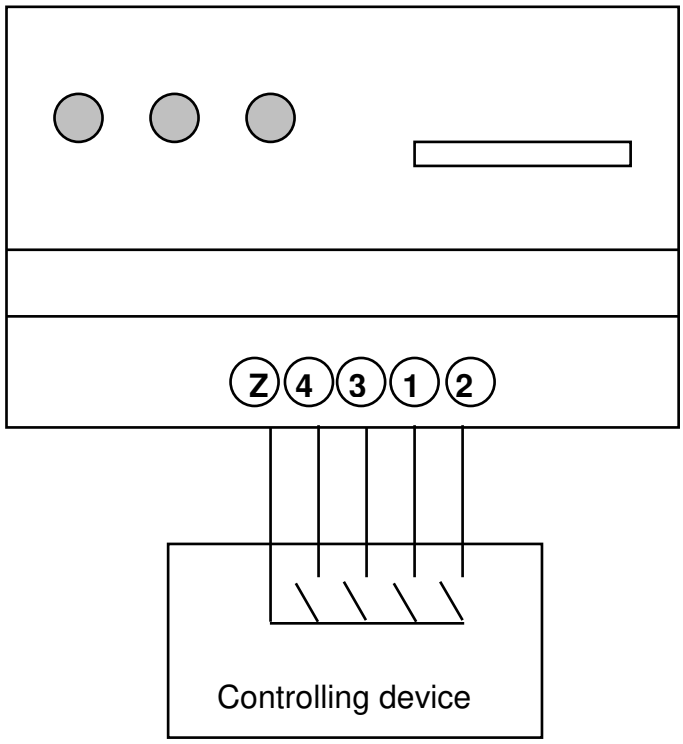
Normally Closed mode with PIR wiring diagram



Pay attention that in this option, you have to close the other triggers to avoid continuous play of the other triggers/tracks.

15 TRIGGERS N.O. and **binary coded**

This option is to be selected when one needs more than 4 tracks. The control will be done using combination of the inputs. (Z=12V)



0=open 1=closed

1	2	3	4	Track being played
0	0	0	0	No track
1	0	0	0	Track 1
0	1	0	0	Track 2
1	1	0	0	Track 3
0	0	1	0	Track 4
1	1	1	1	Track 15

When over 15 trigger is requested, you may use our serial Multrigger24 optional devices (up to 24 triggers), or our serial keyboard (or keyboard pins) which can allow up to 255 triggers.

Industrial : **Configuration by config file,** to be used with **industry.hex** firmware

With industrial software, you should save a file named config.txt in the root folder of the memory card. This filed *should be written after all audio tracks* have been written on the card.
This is how the file looks like.

```
;bBox example configuration file
;version 1.1
[vol]=65 ; volume 0=max 255=min
[inp]=0  ; input type 1=bin, 0=not coded
[lck]=0  ; locked 1=yes, 0=no
[int]=1  ; interupt. alowed 1=yes, 0=no
[num]=1  ; file names with number 1=yes, 0=no
[lop]=1  ; continuous play 1=yes, 0=no
[all]=0  ; seq. play 1=yes,0=no
[cnt]=5  ; nb. repeat
End
```

Comments can be added by preceding character "**;**", everything following is ignored up to the end of the line.Bbox setup parameters are defined this way:

`[name]=value` name is a 3 letters code for the parameter
value is an integer value. Do not add spaces.

vol : audio attenuation, from 0 = max audio level to 255 = audio off (def=15)

inp : input type (def = 0) 0 : 4 direct input
1 : 15 input with binairy coding

lck : if set to 1, front switches are disabled (def = 0)

int : interupt enabled(def = 0) 0 : track will be played to its end
1 : a trigger can interrupt a playing track

num : if flag is 0, track 1 is the first file on the card (def = 0)
if flag is 1, track are sorted, files names must be AXXXX.mp3

lop : if set to 0, track is played only once (def = 0)
if set to 1, track is played in loop after trigger

all : option for loop mode, 0 : for loop mode, same track is repeated
1 : for loop mode, each track is played in turn (def = 1)

cnt number of repetition for loop, 0 = loop forever (def = 0)

If the file is not present, or if a parameter is missing, the last value stored in flash memory will be used

In case of trouble

The Led on the module gives indications on its operation.

At powering ON, the led lights on and remains lit during initialization of the module and memory card. During playing, led is flashing, speed depends on the bitrate.

Led do not light on.

Check power supply, is polarity correct?

On starting, bBox emits a « beep », LED lights on and do not light off.

This indicates a problem with the memory card.
Is there is a SD or MMC card and is it well inserted?
Are there mp3 files on the card? (See 1, preparation of the memory card)

After a trigger contact, LED is flashing slowly but no sound.

Check that Volume is not set to minimum.
Check speakers and their connections.

Technical specifications

Recording Format :	Digital mp3, 32->256kbs + vbr,
Sample frequency :	22khz or 44khz, mono or stereo.
Bandwith (-3db):	20 – 20khz
Output impedance :	> 2Ω
Separate stereo :	> 58db
S/N :	> 92db
Track access time :	< 100ms
Output Power :	2X20W RMS on 2Ω
Interface trigger :	5V optoisolated
Processors :	2 (CPU RISC + DSP)
Recording media:	Flash MMC « MultiMediaCard » or SD
Power Supply :	From 9 up to 24VDC
Start playing :	By closing or opening contact or serial
Communication :	Serial asynchronous 9600,8,N,1

Recording time :

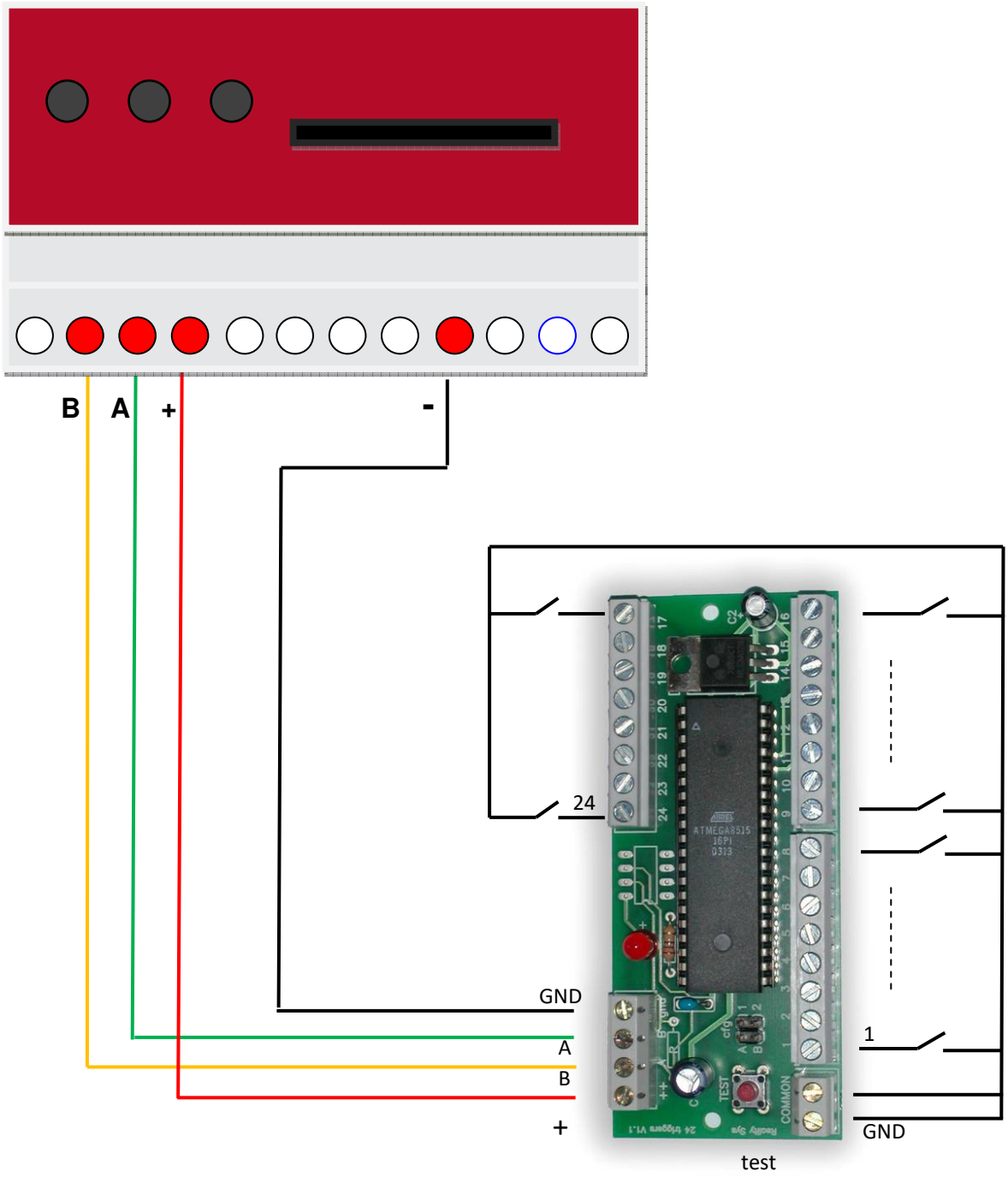
SD/MMC Card	comments	+ music	« CD » quality
32MB	2 h	90 min	40 min
64MB	4 h	3 h	80 min
128MB	8 h	6 h	160 min
256MB	16 h	12 h	5h 30 min
512MB	32 h	24 h	11 h
1GB	64 h	48 h	22 h
2GB	128 h	96 h	44 h

SPECIFIC DEVICES CONNECTION METHODS HERE AFTER

MultiTrigger24 – up to 24 Triggers input board

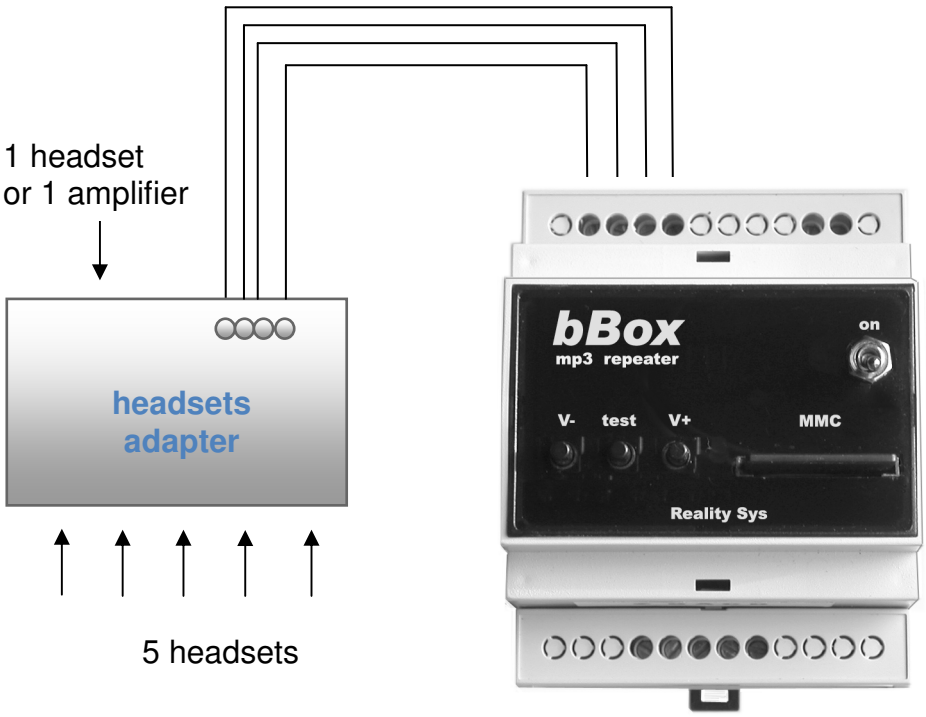
Triggers switches are connected to terminals numbered 1 to 24, the two common terminals (GND) is a common return to all switches.
On powering, the LED light control board flashes a few times to indicate that the card is ready. The small switch can be used to test the connection; each press starts the new track on the bBox.

The card is powered by the bBox (+12V and GND).
RS485 link is connected to terminals AB.
The bBox must use a firmware for a serial RS485 link. (BBOX485.HEX)

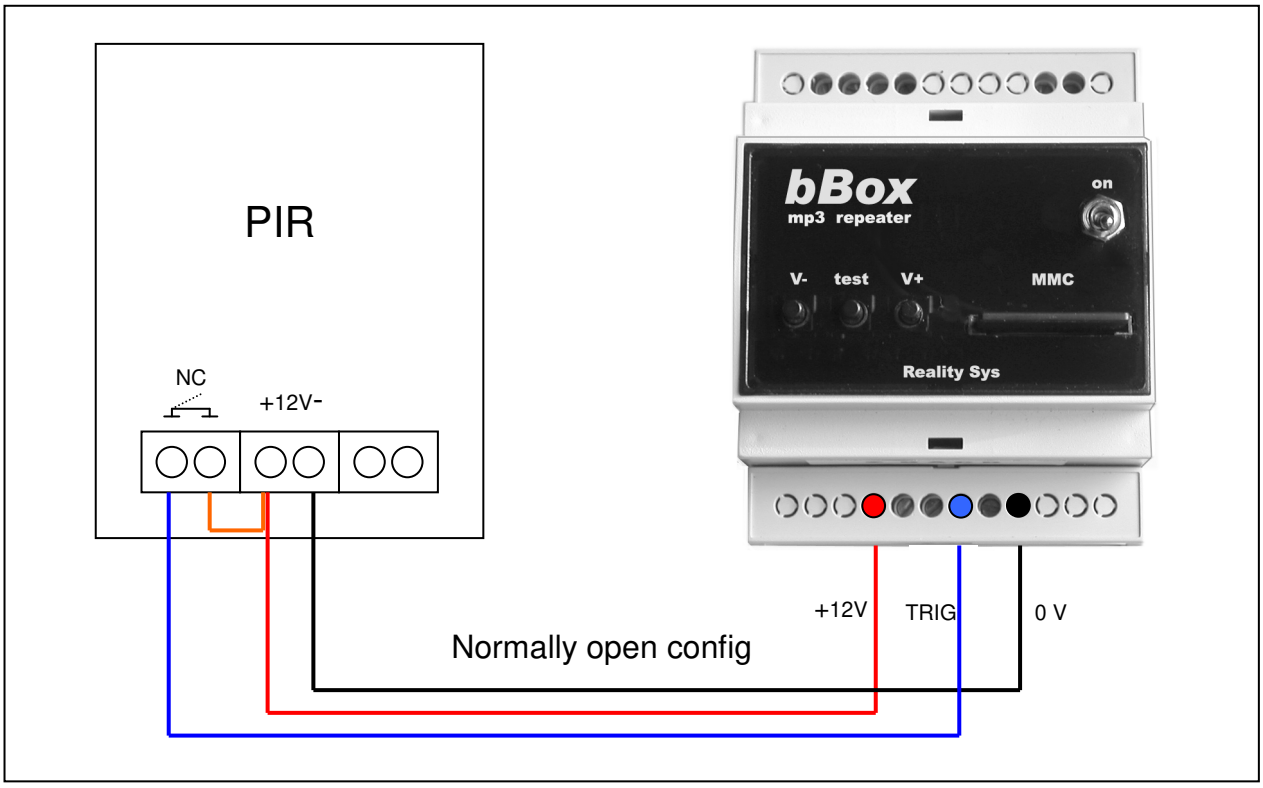


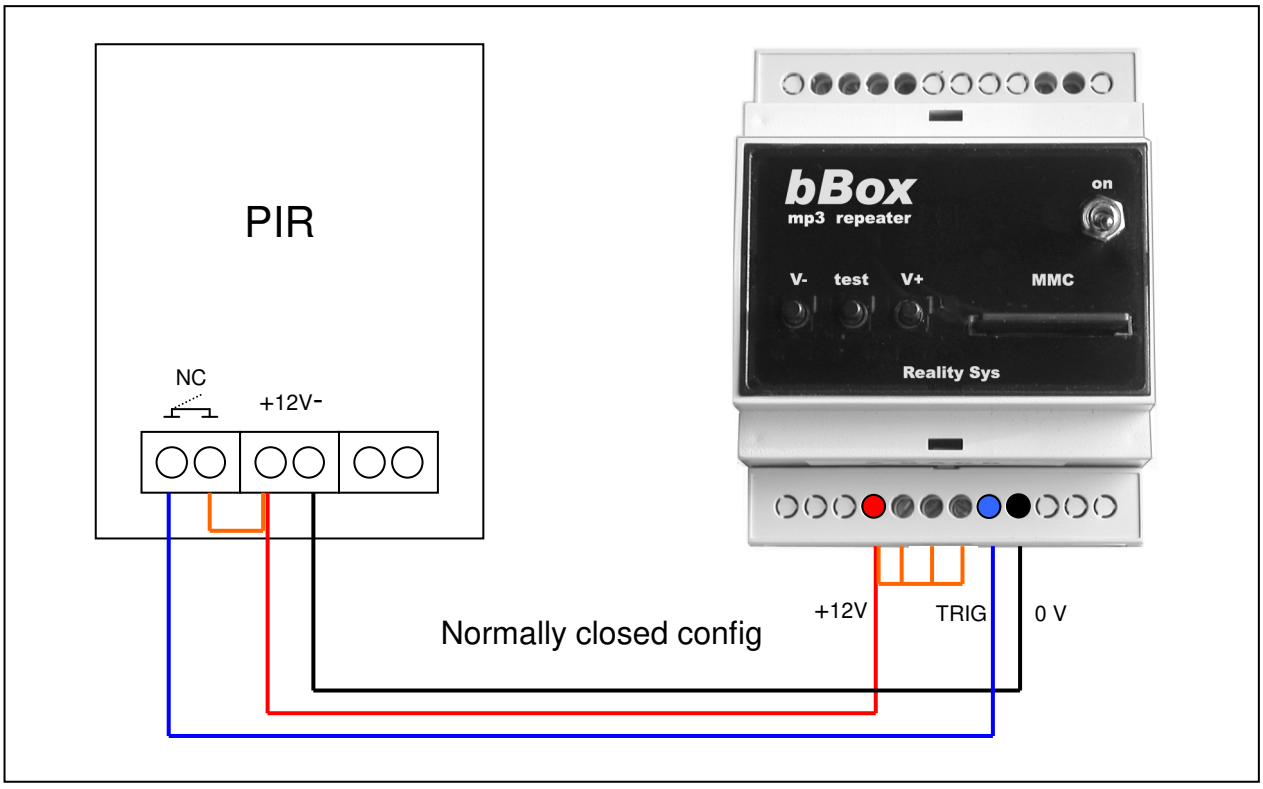
Multiple headsets adapter

The accessory allows you to connect up to 6 stereo headsets on a bBox.
Connection is made as indicated in the illustration.
Follow the order of connections.



Passive IR proximity detector

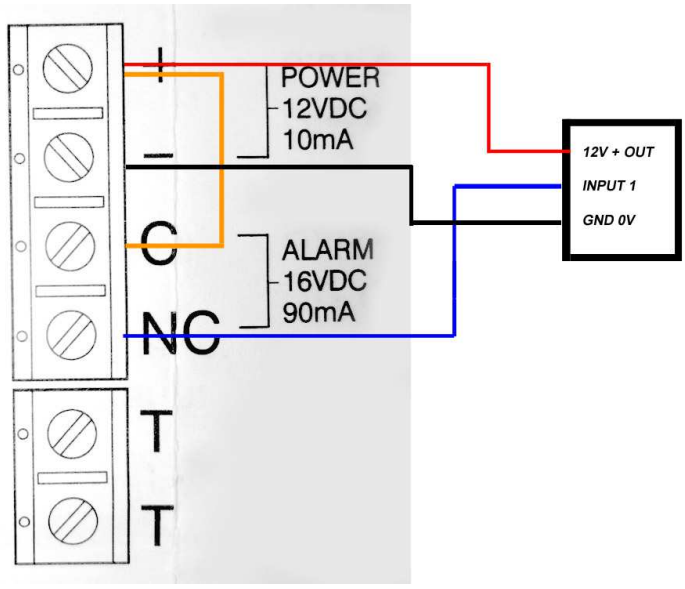




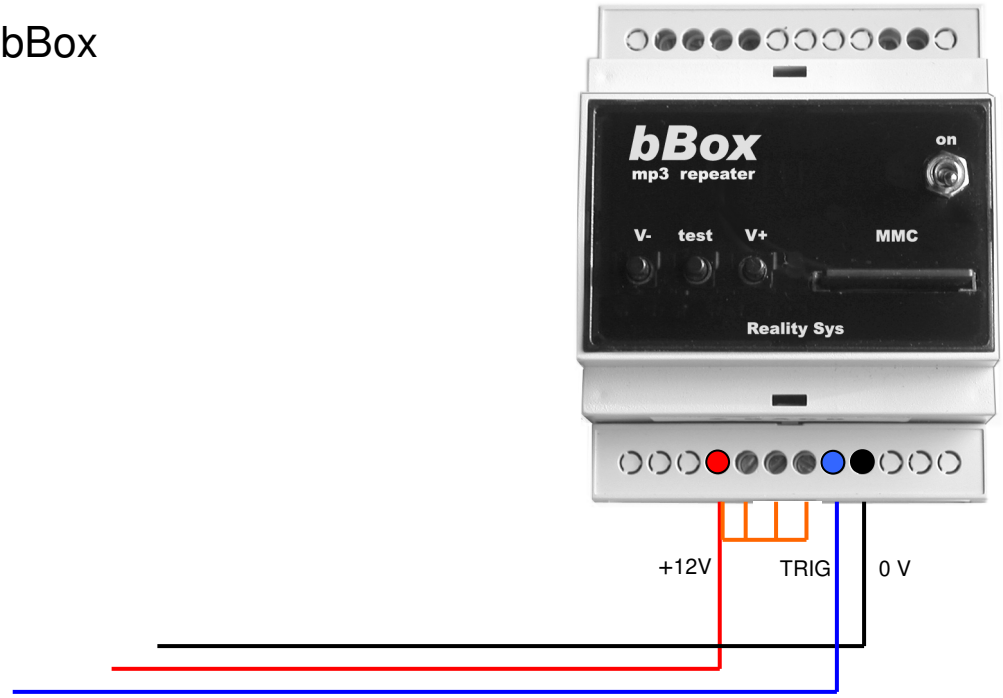
INTELLISENSE IS-215T + BBOXPP01MUTE.HEX sw

On NC, the connection between the two devices requires 3 wires + 1 cross wire on PIR + close contact trigger 2,3 & 4 on bBox. Pay attention to the polarity. The link length can reach 30M. The Intellisense will be powered by the bBox.

Intellisense
IS-215T PIR



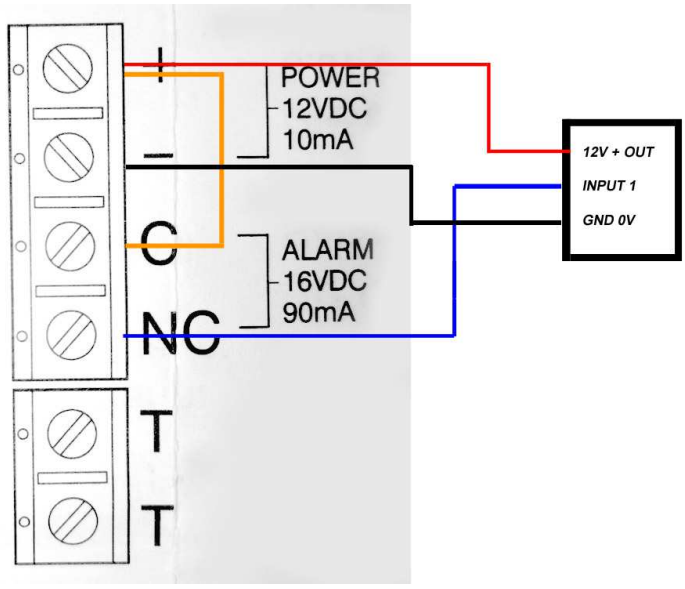
bBox



INTELLISENSE IS-215T + SECURITY.HEX software

This configuration is for 1 trigger input 1 only The connection between the two devices requires 3 wires + 1 cross wire on PIR. Pay attention to the polarity. The link length can reach 30M. The Intellisense will be powered by the bBox.

Intellisense
IS-215T PIR

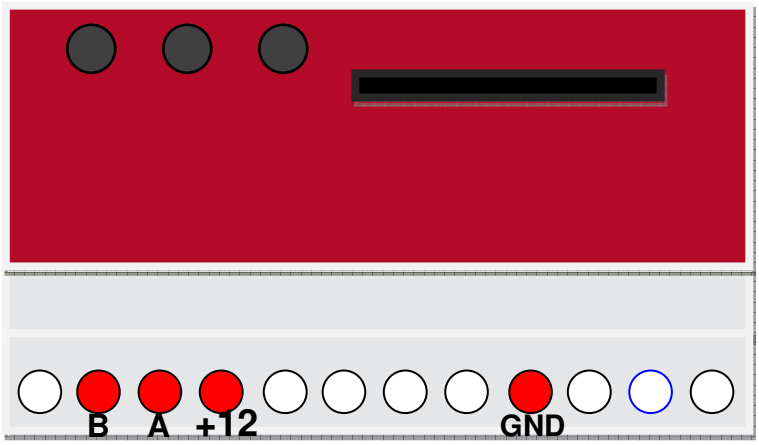


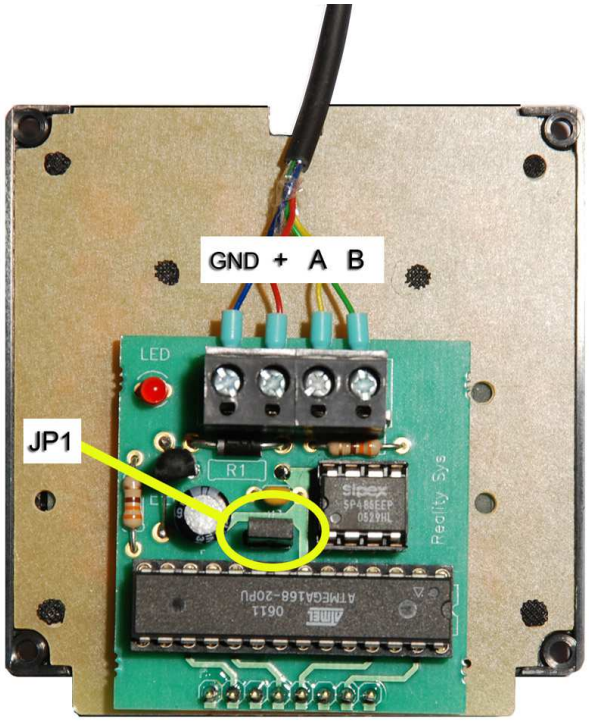
bBox

12V+ out
INPUT 1
GND 0V

16 Keys keyboard

The connection between the two devices requires 4 wires, 2 wires for power and 2 for signal communication. Pay attention to the polarity. The link length can reach 30M.





On powering, the LED light control board flashes a few times to indicate that the card is ready.

The keyboard can be used in 2 ways.

JUMPER JP1 PRESENT

Each button will start playing a track.

1-9	for tracks from 1 to 9
0	for track 10
ABCD	for tracks from 11 to 14
*	for track 15
#	for track 16

Note : It is possible to use an empty track to switch off.

JUMPER JP1 MISSING

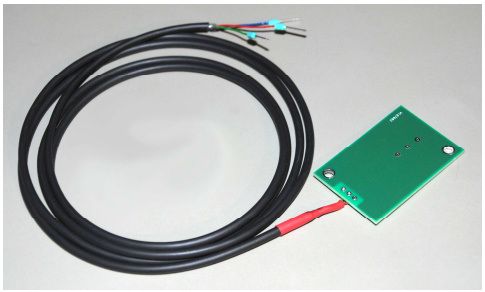
The track number (0-255) is composed then finished with a #

A key, playing the next track. (NEXT)
B key, playback the previous track. (PREV)
C key, increase the volume. (VOL +)
D key, decrease the volume. (VOL -)
* key, Pause.
# key, Stop.

Jumper can be replaced by an external switch.

The bBox must use a firmware for a serial RS485 link (BBOX485.HEX).

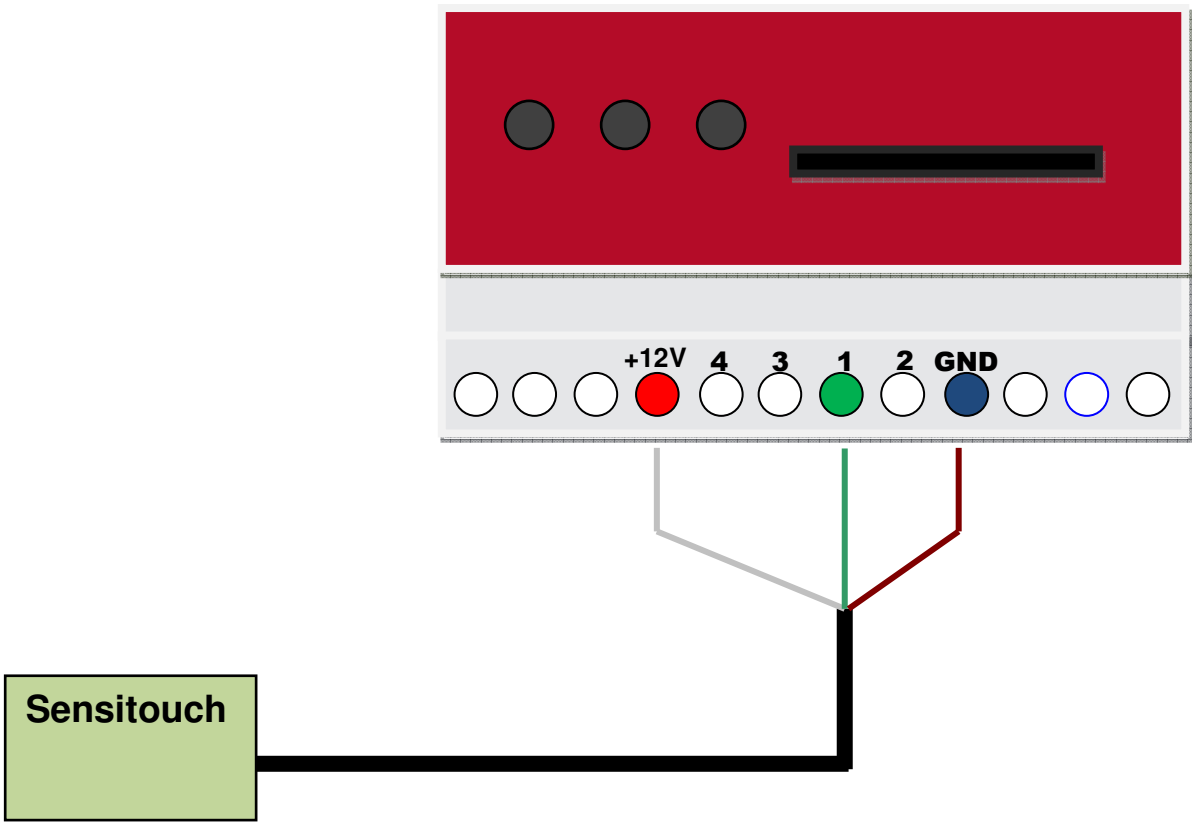
Sensitouch



The Sensitouch is a device able to detect the proximity or touching on an electrode by capacitive effect. It can be placed behind a non-metallic surface (wood, cardboard, glass, plastic…) and detect the approach of a finger or a hand.

The Sensitouch is connected to the bBox using the supplied cable.

Red wire :	to +12V bBox output
Blue wire :	to 0V (GND) bBox output
Green or yellow wire :	a trigger input to the bBox (entry 1 in the illustration)



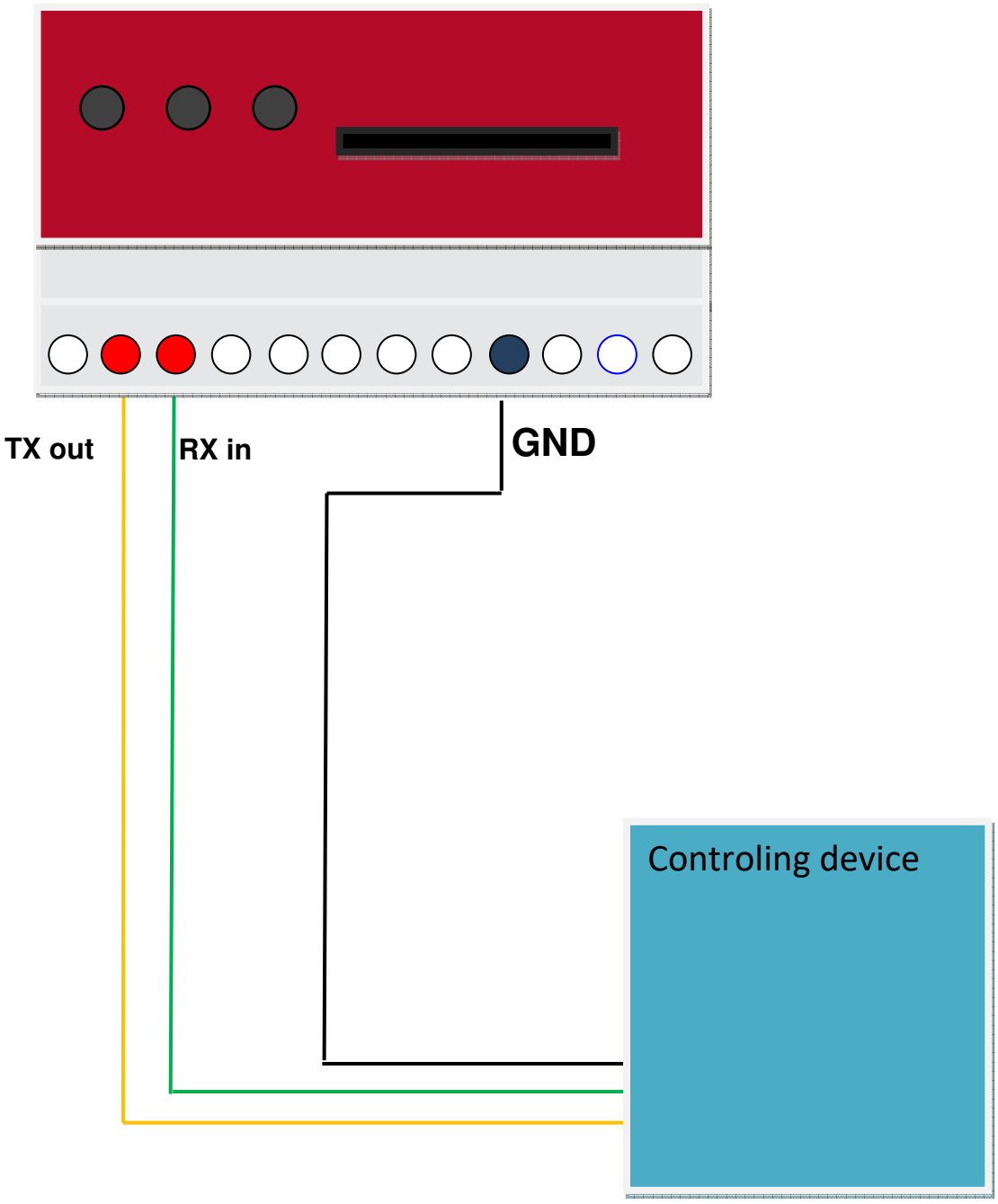
If necessary, the cable can be extended. It is possible to connect in a similar way up to 4 Sensitouch on a bBox.

In some cases, it may be necessary to connect the GND terminal of the bBox to the ground to obtain good results.

The bBox must be set for triggers N.O. (normally open).

TTL UART serial connect (3.3V)

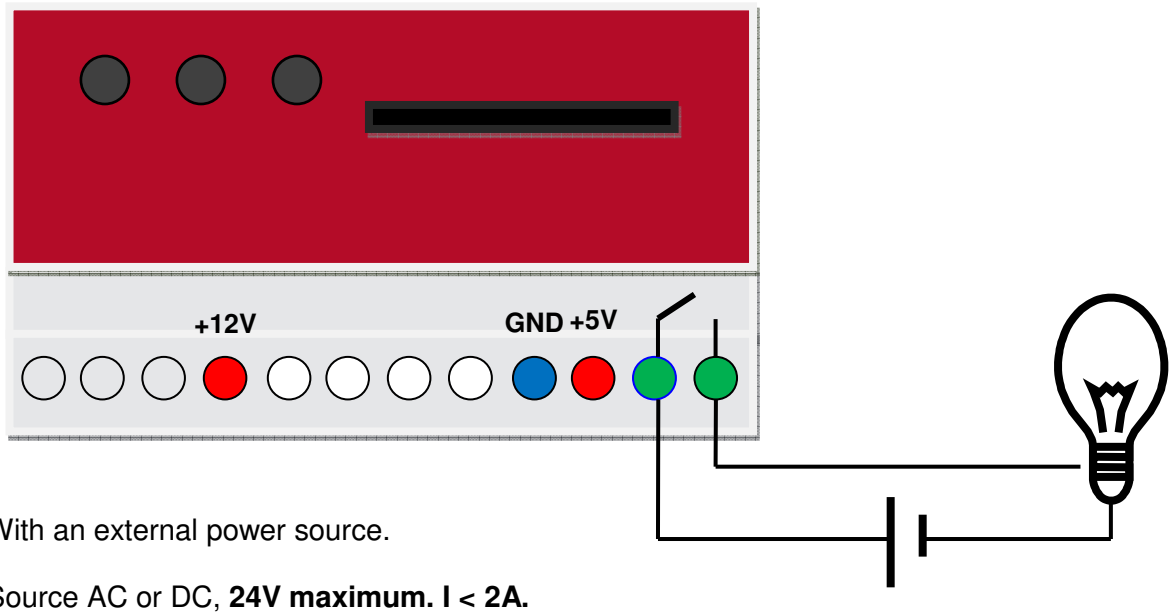
The bBox must use a firmware for serial link : (BBOX485.HEX).



For the complete command set, see the serial protocol manual

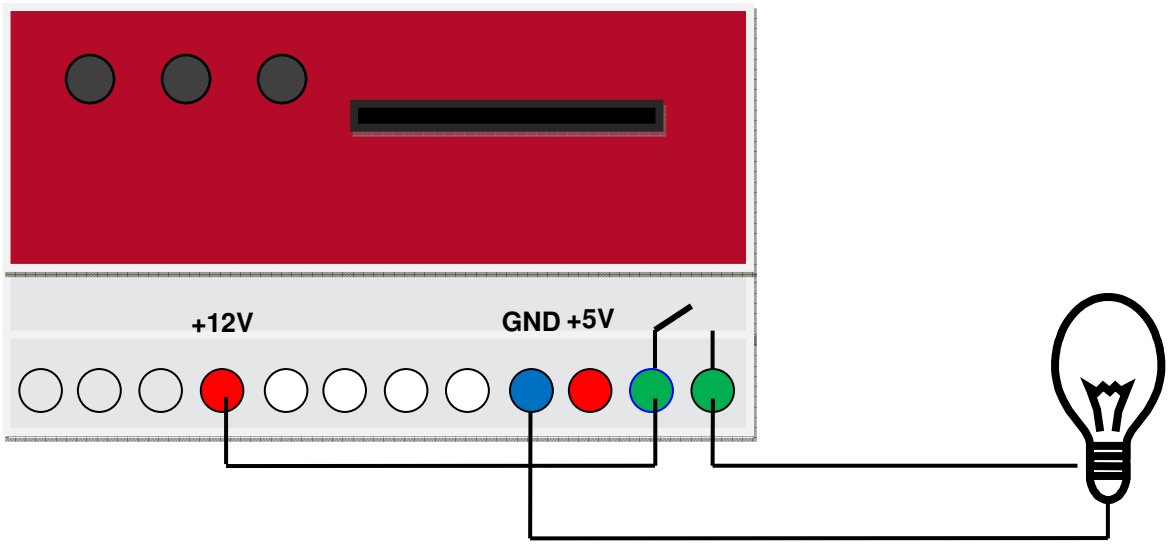
Control of an external device

In this configuration, the bBox can control an external equipment by closing a relay while playing.



With an external power source.

Source AC or DC, **24V maximum. I < 2A.**



From the internal power supply 12V (100mA max)
or 5V (50mA max)