BLS2 SD MKII

User Manual
Version1.0

SAFETY INSTRUCTIONS

1. Read this manual carefully.

2. Follow all instructions and warnings.

3. Only use accessories specified by WORK PRO.

4. Follow the safety instructions of your country.

5. Be careful with sound levels.

SYMBOLS

The following symbols are used in this document:

This symbol indicates a potential risk of harm to a person or damage to the product. You can also notify the user of the instructions that must be followed strictly to ensure the installation or safe operation of the product.

This symbol notifies the user about the instructions that must be followed strictly to ensure the correct installation or operation of the product.

This symbol notifies the user about additional information or optional instructions.

WELLCOME TO WORK PRO

Thank you for choosing the BLS2 SD MKII system from WORK PRO.

This document contains essential information on the use of the system. Read this document carefully to become familiar with the system.

Please check the WORK PRO website regularly to download the latest version of the document and software updates: https://www.workpro.es/

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CONTENT

1. INTRODUCTION

The devices of the BlueLine Digital MKII series allow the streaming of audio over IP through Ethernet, complying with the TCP / IP protocol stack. Using the BlueLine Digital MKII system it is possible to perform from a simple point-to-point audio transmission to a complex multi-channel system with alarm control and management.

BlueLine Digital MKII can make use of the existing physical network infrastructure in the installation, due to its low bandwidth consumption. On the other hand, it is compatible with commonly used low or high impedance amplification systems.

Thanks to the modular design of the system, BlueLine Digital MKII adapts perfectly to the features of each installation, being able to expand the system in the future if the characteristics of the installation require it.

Features:

- Management of audio strteamers and receivers.
- Different types of coding (PCM, MP3).
- Different audio extraction modes (Dual, Single, Mono).
- Control by OSC commands.
- Control by GPIO.
- Complement with the family of Light Mouse devices.
- Real-time system monitoring.
- Configuration by software.
- External power supply or PoE.

2. Components of the BlueLine Digital MKII System

In this chapter you will find information about the different devices that make up the BlueLine Digital MKII system.

The BlueLine Digital MKII system has four kinds of devices:

STREAMERS	BLS2 LITE MKII	One stereo channel sender
	BLS2 SD MKII	One stereo channel sender with SD player
RECEIVERS	BLR2 LITE MKII	One stereo channel receiver
	BLR2 MKII	One stereo channel receiver with 2xGPIs/2xGPOs
	BLR2 A plus MKII	One stereo channel receiver with 2xGPIs/2xGPOs and low impedance amplifier
PAGING	SPS 8	Paging station
WALLMOUNT CONTROLLERS	BLC 1	Wallmount controller for local receiver
	WNC 1	Wallmount controller through the network
	WAC 7	Customizable wallmount controller

Note: The BlueLine Digital MKII series is compatible with the previous series of devices, so you can include devices of both series in your installation.

3. AUDIO SENDERS

The BlueLine MKII senders are devices that are responsible for transmitting a stereo audio channel to the network. There are two types of senders:

- **BLS2 LITE MKII**: Transmitter of a stereo channel with analog input.
- **BLS2 SD MKII**: Transmitter of a stereo channel with SD player and analog input.

The BlueLine senders consume bandwidth continuously, regardless of whether you connect anything to its analog input or do not reproduce anything through the SD module.

3.1.1. Audio streaming formats

The BlueLine senders (BLS2 LITE MKII and BLS2 SD MKII) can transmit audio without coding or with coding, the audio format chosen will depend on the needs of your installation.

Depending on the chosen audio format, the bandwidth consumption by the senders will be different.

The following is the maximum number of devices that you can use in a dedicated subnet, with a bandwidth of 25Mbps.

PCM	Up to 16 stereo channels for 25Mbps dedicated bandwidth.
MP3	Up to 64 stereo channels for 25Mbps dedicated bandwidth.

Next, the features of each audio format and its bandwidth consumption are detailed:

- **PCM:** Format of audio digitization without losses. This implies that it is the format with the highest audible quality and with the highest bandwidth consumption, 1.5 Mbps per sender.

- **MP3:** Audio coding format with losses, that making use of psychoacoustic techniques, manages to reduce the amount of information to be transmitted with the minimum audible degradation. It has a bandwidth consumption of 220 Kbps per sender.

⚠ **The number senders in an installation with BlueLine Digital MKII devices will depend on the available bandwidth of the subnet.**

It is recommended to make use of the multicast filtering (IGMP snooping) in the switches of your LAN, to make an efficient consumption of the bandwidth. Review the **Network & OSC manual** for detailed information.

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4. BLS2 SD MKII

BLS2 SD MKII is an audio sender of one stereo channel, which is injected into the network through its built-in micro SD player module or its analog input.

The BLS2 SD MKII device will allow you to use all the pre-recorded audio that your installation needs, that is, you can use the device to store warnings, alarms and even playlists. These audios can be launched through OSC commands.

The device also has an unbalanced stereo analog input, which will allow you to connect any analog source of low impedance.

4.1. Features

| Micro SD module	
Micro SD Format	FAT 32
MP3 format	ISO 13813-3 layer 3 decoding
WAV format	Sampling frequency 8-48000 Hz
Input sensitivity	3.2 dBu (1.12V$_{rms}$)

Analog audio input	
Number of channels	1 stereo channel (unbalancead)
Audio connector	Euroblock, 3 pin 5.08mm
Input sensitivity	0.7 dBu (840mV$_{rms}$)

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Network	
Connector	RJ-45
Audio over IP	BlueLine UDP datagrams
Ethernet	100 base TX

Main supply	
External power supply	12/24 Vdc (Not included)
PoE Class	Class 0 802.3af
Consumption	1.5 W

General	
Control protocol	OSC
Audio streaming formats	PCM/MP3
Dimensions	109mm×133.75mm×40.45 mm
Weight	360 g

4.2. Device description
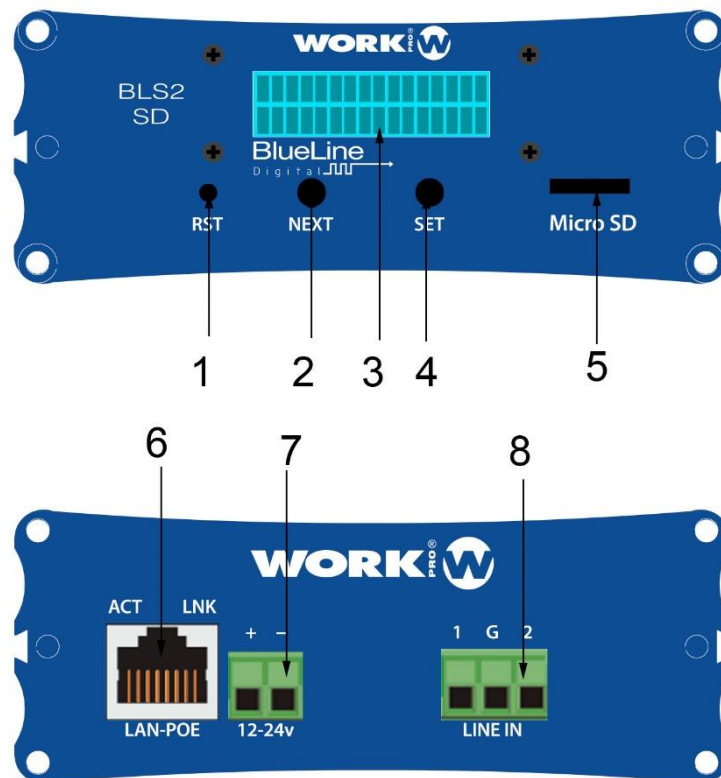
1. **Reset button**. Take the device to its factory configuration
2. **Next button.** It allows to advance between and through the different screens of the display.
3. **Display**. It shows different features of the device.
4. **Set button.** It allows access to a certain display screen and set the digits of the different screens.

5. **Micro SD module**: Port for the connection of a micro SD card.
6. **LAN port**. Connection port to the local network, RJ45.
7. **Main supply input**. 12/24 Vdc
8. **Analog audio input**. Unbalanced audio input, 3-pin Euroblock of 5.08 mm.

4.2.1. Display

On the front of the device you will find a display through which you can view or modify different parameters of the unit.

To navigate between the different parameters press the NEXT button if you want to edit any of these parameters, press the SET button to access it. Next, specify which parameters are editable and which are not:

- STATIC IP, editable.
- DYNAMIC IP, not editable.
- MAC, not editable
- SRC, editable.

STATIC IP, this is the static IP address. The device has a static IP address by default in the subnet 10.0.0.0/8. For editing, use the SET (to select and set the digit) and NEXT (for editing upwards) buttons.
NOTE: After a change, the device restarts to confirm the value.

DYNAMIC IP, this is the dynamic IP address of the device, which is assigned by a DHCP server.

MAC, this is the physical address of the device.

SRC, it refers to the channel (Source) in which the device transmits.
For editing, use the SET (to select and set the digit) and NEXT (for editing upwards) buttons.

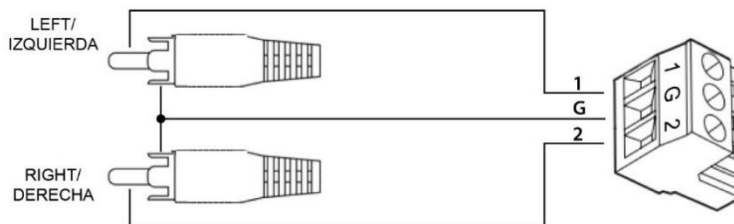**SD STATE**, it shows the state of the micro SD module, play or stop.

4.2.2. Micro SD module
Micro SD module acts only as a player, so the file management will be done from an external device such as a PC.
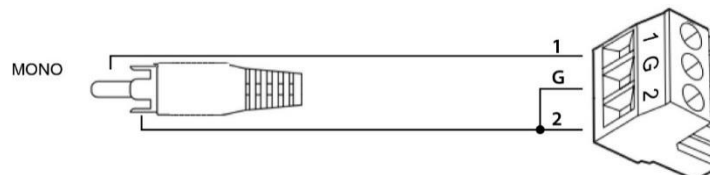
4.2.3. Analog audio input
The analog audio input of the device is unbalanced, keep in mind the following type of connection:

<u>STEREO</u>

<u>MONO</u>

4.2.4. LAN port
RJ45 port for LAN connection. Allows PoE power (Class 0 802.3af)
Next to the RJ45 connector you will find two LEDs indicating the status of the device:

LINK (green)	Indicates that the BLS2 LITE MKII is connected to the LAN
ACT (orange)	Indicates that packets are being sent or received

4.2.5. Main supply input

Power input for external source. The admitted voltage can be between 12/24 Vdc, with a minimum current of 500 mA.

Check the current polarity before connecting the main supply

**The external power supply is not provided with the device.**

4.3. Device setup

The configuration of the device can be done by software (WorkCAD3 configurator) or through display. The most comfortable way for the user is through WorkCAD3 configurator, since he will have access to all the functionalities of the device and he can also see the interaction of the device with the rest of the BlueLine Digital MKII network elements.

4.3.1. Setup through WorkCAD3 Configurator

After making the IP level configuration of the device and updating it if would be necessary (see **WorkCAD3 Configurator manual**), proceed with its setup.

If you click on the device with the left mouse button, the configuration interface will be opened and the following parameters will appear:
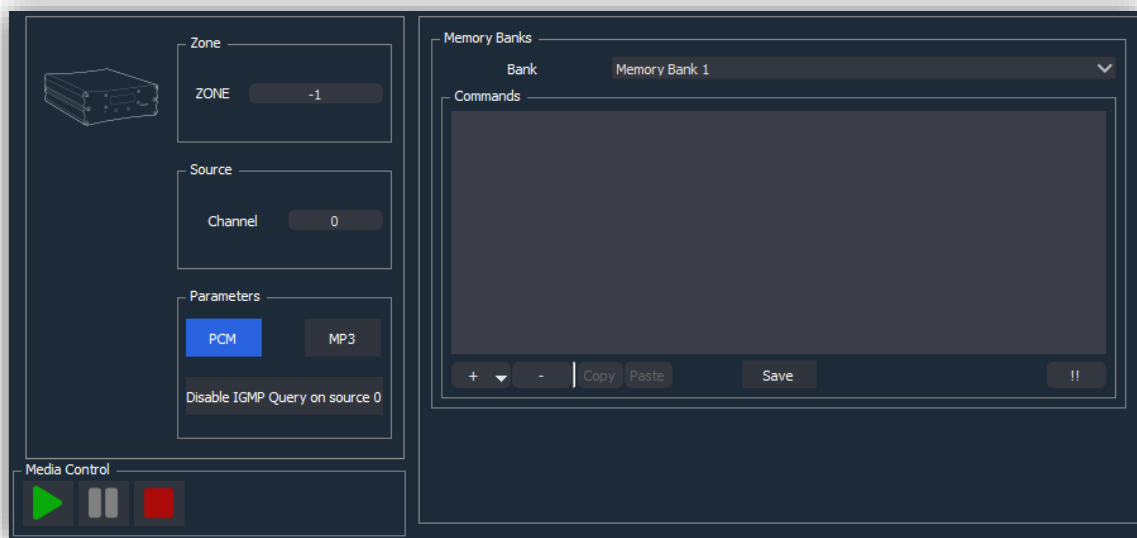
- **Zone:** This field refers to the zone to which the device belongs, in order to receive OSC control commands. By default, all BlueLine senders are in zone -1. It is recommended not to modify the zone in the senders.

- **Channel**: Channel number where the audio is emited. By default, all the senders are in channel 0. In the case that there is more than one sender, you must modify the channel in order to avoid conflicts, since only one sender can exist per channel.

- **Parameters:**

  - **PCM**: Audio streaming without coding.
  - **MP3**: Audio streaming with MP3 coding.

- **Disable IGMP Query on source**: Disable the IGMP querier in the case that the sender is emitting on channel 0.

- **Bank**: Memory banks where to store UDP / OSC commands that will be executed when a track of the BLS 2 SD MKII is triggered or finished.

- **Commands**: UDP / OSC command editor. Review the **WorkCAD3 configurator manual** for its use.

- **Play button**. It allows to launch de SD tracks, not in a concrete order.

- **Pause button**. It allows to pause the SD module.

- **Stop button**. It allows to stop the SD module.

4.4. File management in the micro SD card

4.4.1. Storage

When storing files in the micro SD card, it must be done from a PC. The audio files to be played must always be inside folders, due to the format of the arguments included in the OSC commands that will control the micro SD module.

The folders and tracks must be named as follows to be executed later:

- **Folders**. They will be named with a number from 01 to 99.

Tracks. They will be named with a number from 001 to 999, that can followed by the desired name.

4.4.2. Playing folders and files

To make use of the micro SD module we will send OSC commands from:

- WorkCAD3 player, device that executes a layout created with WorkCAD3 editor.

- SPS8, paging station with buttons and programmable GPIs.

- BLR2 MKII, BLR2 A PLUS MKII, LM GPIO, LM Serial, or devices that include programmable GPIs.

- Third-party devices, capable of sending UDP / OSC commands.

In the case of using the SPS8 or the existing GPIs from BlueLine / LightMouse devices to control the micro SD module, the programming will be done through the OSC command editor.

> ℹ **The OSC command editor is widely explained in the manual WorkCAD3 Configurator. In this manual we will only explain the exclusive control commands for the micro SD module.**

4.4.3. Play
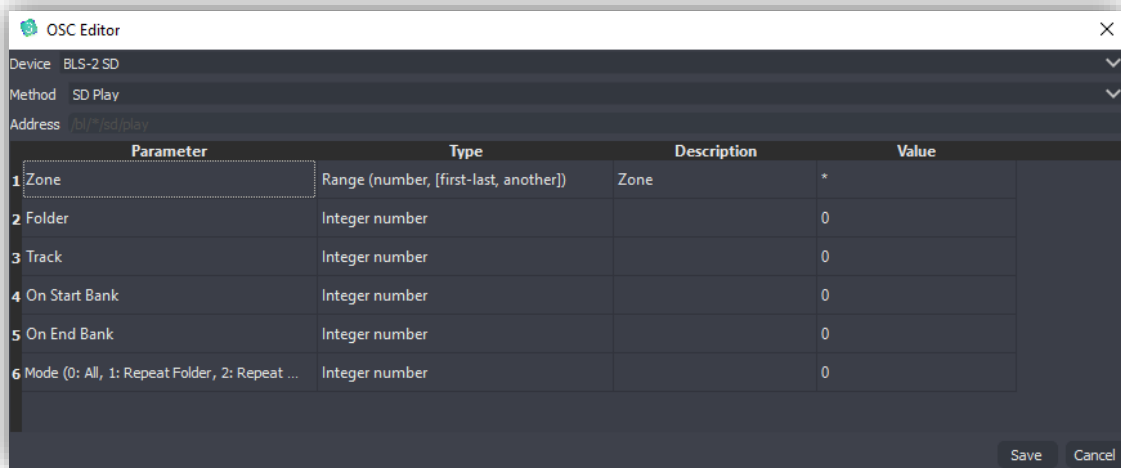
Zone. Normally we will select "0" in this field, it means all zones. All devices have associated a zone number, for senders it is "-1" by default. So, if we send an OSC command to a unicast IP address (BLS2 SD MKII IP address), when the command arrives to the BLS2 SD MKII, it will be processed due zone "-1" is included in all zones.

Folder. Folder number where the track to be played is located.

Track. Track number to be played.

On start Bank. Bank number that is executed just before the track starts. If you do not want to execute any bank enter "0".

On End Bank. Bank number that is executed when a track end. If you do not want to execute any bank enter "0".

Mode. Play mode.

4.5. Using memory Banks

The memory banks of the BLS2 SD MKII will allow you to store UDP / OSC commands in the device that will be executed in two ways:

- Just before playing a track of the micro SD card.

- Just when a track of the micro SD card has been played.

A typical example of use would be when you use the BLS2 SD MKII as a bell or pre-recorded messages trigger, coexisting with other BlueLine senders.

In this case the receivers could be listening to one of the other senders, for example a sender that emits background music.

Just before launching the track, the receivers should save its configuration and switch to the BLS2 SD MKII source channel. The commands that allow it will be saved in Bank 1, which will be executed as "On Start Bank".

Just after the track finish, the receivers should recover the previously saved state. This will be saved in Bank 2, which will be executed as "On End Bank".

Bank 1:

- "Push" command, in order to the receivers save its configuration.

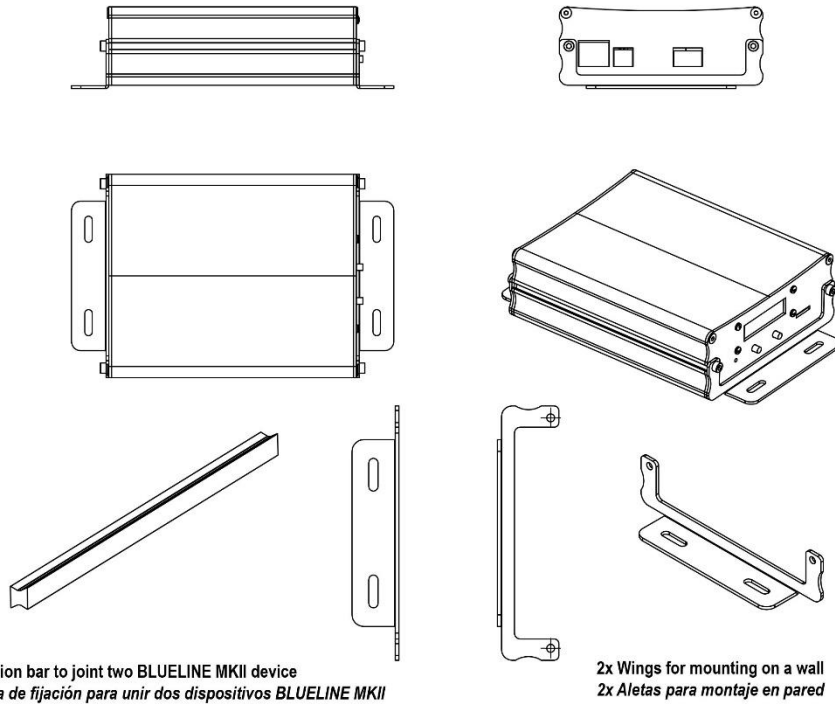- "Set source" command, to change the listening channel of the receivers to the BLS2 SD MKII.

Bank 2:

- "Pop" command, in order to the receivers load the configuration saved with "push" command previously, which will be executed as "On End bank".

4.6. Accessories

The BLS2 SD MKII includes a series of accessories for mounting on a wall or with the rack accessory BL AR 19 (not included):
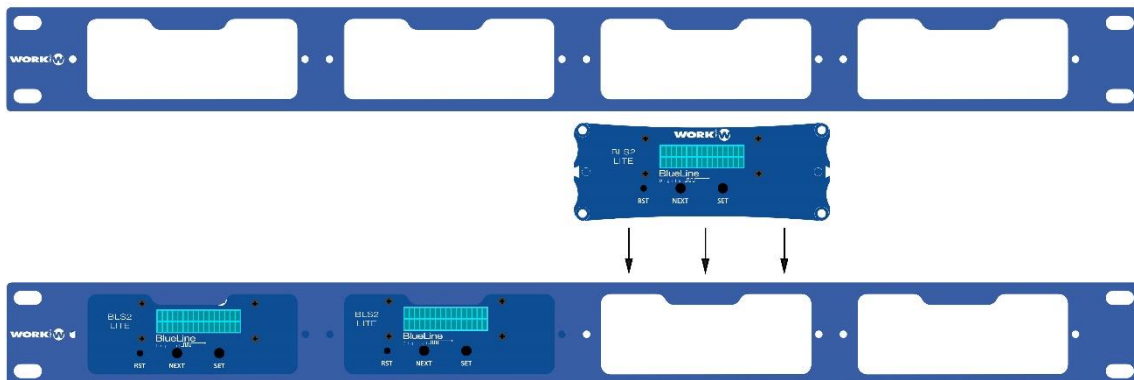
- 2x Wings for mounting in a wall.
- 4 screws.
- 1x Bar to joint two devices.

1x Fixation bar to joint two BLUELINE MKII device
1x Barra de fijación para unir dos dispositivos BLUELINE MKII

2x Wings for mounting on a wall
2x Aletas para montaje en pared

- Optional –

BL AR 19
Fixing accessory for standard rack 19" 1 HU to accommodate up to 4 devices of the Blueline MKII series.