

PX249

Audio DMX Player

Manual



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Manufacturer reserves the right to make modifications in order to improve device operation.

1. GENERAL DESCRIPTION

The new DMX-512 protocol-controlled PX249 audio player replaces the previous version – MP3 PX154.

The device can be controlled directly or with the use of any driver operating in the DMX-512 standard. The player can mate with DMX devices in four- or seven-channel modes.

The SD/MMC card can be uploaded with up to 85 tracks in the WAV format of any length, the only limitation is the capacity of the memory card.

Functions implemented by PX249 using DMX control allow for playback, selection of a particular song, looping one and multiple tracks, smooth volume control, bass, treble and balance control. Additionally, there is a possibility to connect an external START button. Moreover, the menu of the device allows for defining the behaviour of the player if no DMX signal is present.

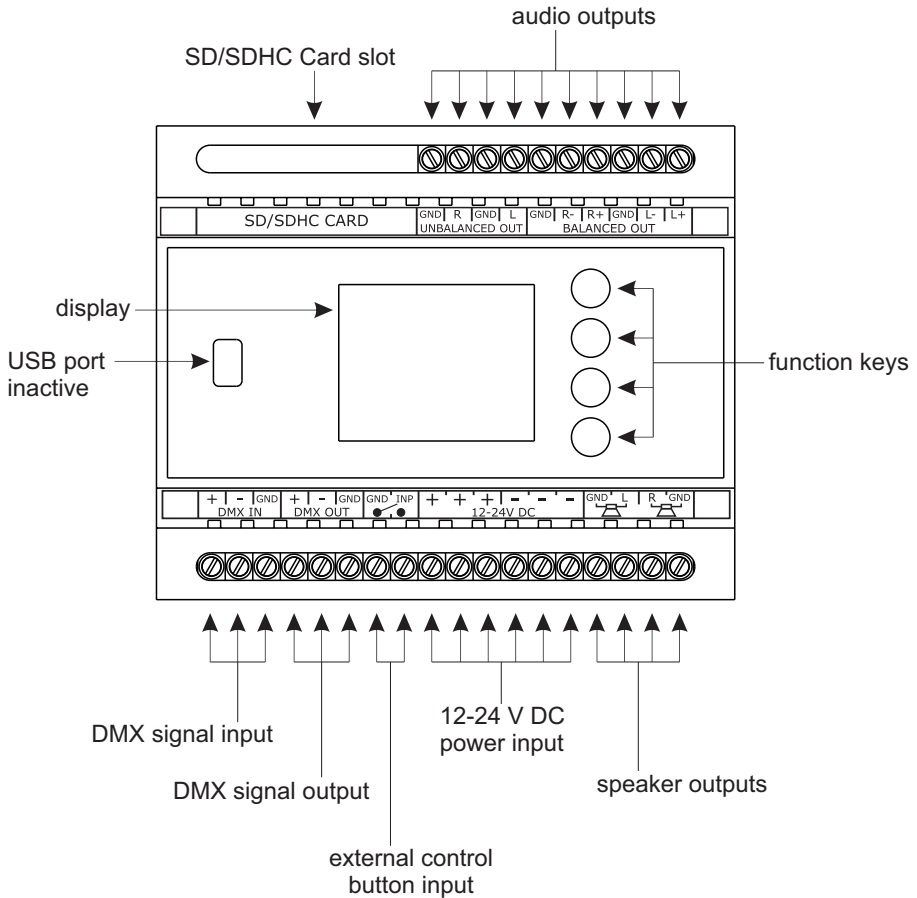
The unit is produced in a housing adapted for mounting on 35-millimeter DIN buses which facilitates installation to a great extent.

2. SAFETY CONDITIONS

The PX249 Audio DMX Player is a device powered with 12 - 24V safe voltage. However, during its installation and use the following rules must be strictly observed:

1. The device may only be connected to 12-24V DC current (stabilized voltage) with current-carrying capacity compatible with technical data.
2. All the conductors should be protected against mechanical and thermal damage.
3. In the event of any conductor damaging, it should be replaced with the one of the same parameters.
4. Connection of DMX signal should be made with shielded conductor.
5. All repairs and connections of outputs or DMX signal can only be made with switched off power supply.
6. The PX249 should be strictly protected against contact with water and other liquids.
7. All sudden shocks - particularly dropping - should be avoided.
8. The device cannot be turned on in places with humidity exceeding 90%.
9. The device cannot be used in places with temperature lower than +2°C or higher than +40°C.
10. For cleaning use only a damp cloth.

3. DESCRIPTION OF THE PLAYER



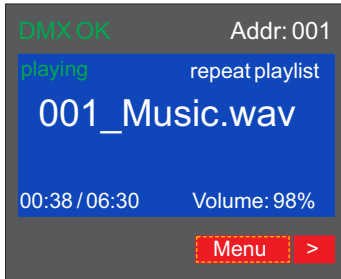
4. DIRECT CONTROL

Menu navigation is facilitated by programming keys. Each key is described on the right side and their use is as follows:

- **escape** - exiting the parameter that is currently being programmed or moving the menu up
- ↗ - scrolling the menu up or right (horizontal menu), increases the value of the parameter
- ↘ - scrolling the menu down or left (horizontal menu), decreases the value of the parameter
- **enter** - allows for entering the selected device option and confirms the set values

5. PLAYER STATE AFTER TURNING ON THE DEVICE

When PX249 is turned on, the start menu appears on the screen. The menu design varies depending on whether the device is receiving the DXM signal or not. Direct keyboard support (played track control) is possible when the DMX signal is not being received.



The start menu screen if no DMX signal is received.





The start menu screen if the DMX signal is received.

Selecting the **[Menu]** screen button and confirming the selection by pressing the „enter” button allows for entering the menu in which the DMX address, number of DMX control bytes, behaviour of the player if no DMX signal is present and the parameters of a played track can be set.

If no DMX signal is received, you can change the playback settings directly on the initial menu. To do so, you need to select the icon:

-  play
-  pause
-  stop
-  rewind
-  forward

and then confirm your selection by pressing "enter"

Similarly, you can change the volume level, playback mode and track number. To do this, use the following keys:  and 

6. AUDIO FORMATS, MEMORY CARDS AND FILES NAMING

The Audio DMX Player supports audio files in the .wav format with the following parameters only:

- *.wav files with bits per sample value of 16-bit on two-channels
- acceptable sampling frequencies:
 - 48 kHz
 - 44,1 kHz
 - 32 kHz
 - 22,05 kHz
 - 16 kHz
 - 11,025 kHz
 - 8 kHz

NOTE: The player supports only SD or SDHC cards formatted in the FAT32 file system. Moreover, the memory card cannot contain more than 85 files. A higher number of tracks or additional directories can result in the module's malfunctions when changing tracks.

Tracks on the SD card should be named according to the following principle:

xxx_ABCD....O.wav

where:

xxx - numbers from 001 up to 085

ABCD....O - up to 15 alphanumeric characters

*.wav - WAV files extension

Example:

001_Music.wav

002_Mozart.wav

003_Beethoven.wav

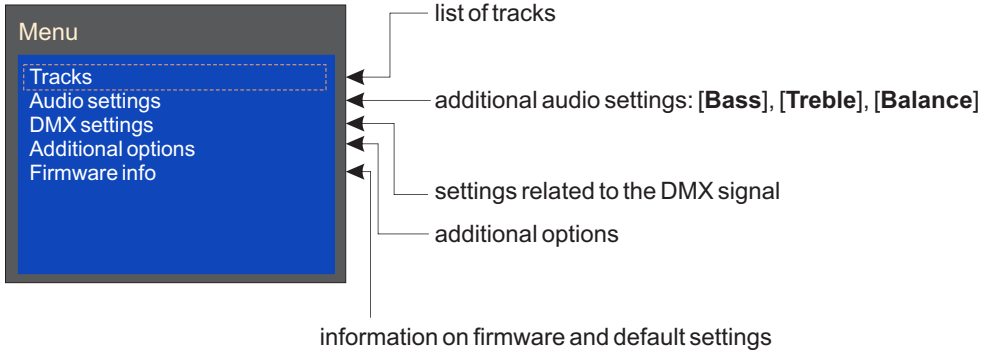
⋮

085_Chopin.wav

NOTE: If the correct track naming or the maximum number of tracks are not followed, playback or track changing problems may occur.

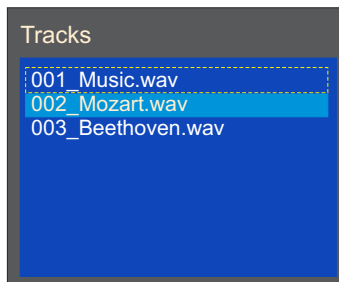
7. PLAYER MENU

After going to the **[Menu]** tab, you can edit the following options:



8. TRACKS

The **[Tracks]** submenu allows for viewing a list of tracks uploaded to the SD card, and if the DMX control is impossible, changing the currently played track. To change the track being played, select a new one and confirm the selection by pressing enter.

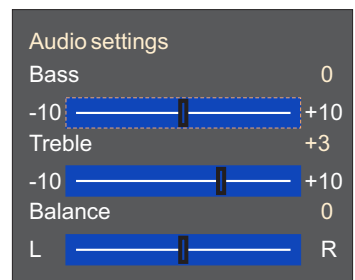


9. AUDIO SETTINGS

This submenu allows for changing the PX249 output audio parameters.

The user can modify the Bass, Treble and Balance settings. All parameters can be changed in the range from -10 up to +10.

In order to make changes to these parameters, select a given setting, confirm your selection by pressing enter and then change the value as required. Return to the previous screen by pressing escape.



10. DMX SETTINGS

Selecting a bookmark **[DMX settings]** allows you to change the settings related to operation in the DMX mode.

The screenshot shows the DMX settings menu with the following items:

- DMX address: 1
- DMX mode: 7 ch
- No signal: run
- Default values:
 - chn1: 192 play
 - chn2: 2 track 1
 - chn3: 224 repeat playlist
 - chn4: 191 vol 75%

Annotations with arrows point to the following items:

- starting address taken by PX249 (points to DMX address)
- operation mode of the device when the DMX signal is connected (4 or 7 channels) (points to DMX mode)
- behaviour if there is no DMX signal (points to No signal)
- default values for the four DMX channels that will be read and played when there is no DMX signal (points to the Default values section)

In the **[No signal]** mode, you can set the following:

- **off** - the playback stops after the DMX signal disappears
- **run** - the player automatically starts the track set in the **[Default values]** visible in the same menu
- **last** - the player resumes its operation
- **ext1** - starts a track using an external button in accordance with the parameters defined in **[Default values]**, each successive press of the external button will replay the defined track
- **ext2** - starts a track using an external button in accordance with the parameters defined in **[Default values]**, each successive press of the external button during the course of the track will have no effect, the track will be played to the end

In the **[Default values]** field for the first channel: you can change the settings related to playback (play, stop, pause, rewind, forward), for the second channel: the number of the current track being played, the third channel: operation mode (**[single track]**, **[repeat track]**, **[single playlist]**, **[repeat playlist]**), and for the fourth channel: volume.

11. ADDITIONAL OPTIONS

In this submenu, you can change the interpretation of the 0 DMX value by the PX249.

By the default the 0 value for each channel is changing the behavior of the device (e.g. For channel 1 stops playing), but after checking the box in this menu the zero is interpreted as neutral.

[DMX filter] - filtration of short-term changes in the DMX signal. The player will react to the value if it remains unchanged for at least 5 DMX frames.

The screenshot shows the Additional options menu with the following items:

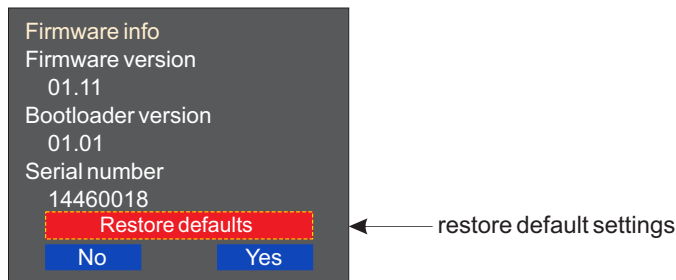
- Neutral 0 value: Off
- DMX filter: On
- Equalizer: On
- DMX volume lock: Off

[Equalizer] - turning the equalizer on allows for changing the sound timbre. Turning it off increases the volume level.

[DMX volume lock] - when the DMX is used for control, the volume level is locked at a value set using the keyboard. After restarting the device, it takes the value from the **[DMX Settings]** menu.

12. FIRMWARE INFO

The submenu **[Firmware info]** includes the following information:



To restore the default settings in the device, confirm the highlighted on-screen **[Restore defaults]** button and select the YES button visible on the screen. Confirm with „enter”.

NOTE: Please note that if the default settings are restored, all the previous configuration settings on the device will be lost.

13. FIRMWARE UPDATE

The PX249 firmware update procedure is as follows:

1. prepare an empty SD card (FAT32 file system)
2. upload only the update file to the card (extension: .upg)
3. disconnect the Audio DMX Player from the mains
4. remove the existing SD card and insert a new one that is updated
5. reconnect the updated device to the mains.

The update procedure is automatic. After the end of the process, the start menu will appear.

NOTE: After the update has been completed, remove the card with the update as otherwise it will update your device whenever it is powered up.

14. DMX-512 CONTROL

Using the DMX protocol, control over the device can be implemented through four or seven channels. For the four-channel control, the play/stop/resume, song selection, play, single/continuous looped playback and volume control functions are available.

a) Description of channels for control on four channels:

Channel 1: Stop, pause, resume, start. DMX values:

- 1 - 63 - stop
- 64 - 127 - pause
- 128 - 255 - resume/start (play)

NOTE: Only a stopped track [**stop**] can be started. Only a paused track can be resumed.

Channel 2: track number selection (1 - 85)

DMX value	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39
Track number	001	002	003	004	005	006	007	008	009	010	011	012	013

DMX value	40-42	43-45	46-48	49-51	52-54	55-57	58-60	61-63	64-66	67-69	70-72	73-75	76-78
Track number	014	015	016	017	018	019	020	021	022	023	024	025	026

DMX value	79-81	82-84	85-87	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117
Track number	027	028	029	030	031	032	033	034	035	036	037	038	039

DMX value	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147	148-150	151-153	154-156
Track number	040	041	042	043	044	045	046	047	048	049	050	051	052

DMX value	157-159	160-162	163-165	166-168	169-171	172-174	175-177	178-180	181-183	184-186	187-189	190-192	193-195
Track number	053	054	055	056	057	058	059	060	061	062	063	064	065

DMX value	196-198	199-201	202-204	205-207	208-210	211-213	214-216	217-219	220-222	223-225	226-228	229-231	232-234
Track number	066	067	068	069	070	071	072	073	074	075	076	077	078

DMX value	235-237	238-240	241-243	244-246	247-249	250-252	253-255
Track number	079	080	081	082	083	084	085

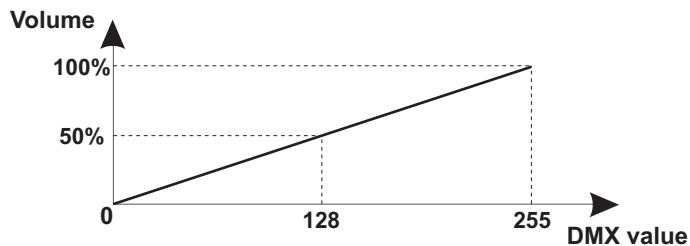
Channel 3: Playback Mode - single (a selected track is played once), single loop (a selected track is played back repeatedly), single continuous (starting from a selected track, the playback runs one after the other, the playback is stopped after the last track), continuous loop (starting from a selected track, the playback runs in a specific order, the first track is played after the last one in the list)

DMX values:

- 1 - 63 - single playback [**single track**]
- 64 - 127 - single loop playback [**repeat track**]
- 128 - 191 - single continuous playback [**single playlist**]
- 192 - 255 - continuous loop playback [**repeat playlist**]

Channel 4: 100-grade volume control

On the fourth DMX channel, the device supports volume control in the range from 0 up to 100%. The volume is changed linearly in accordance with the following schedule: for the DMX signal with a value of 0 the volume is zero, while for the value of 255 the volume is 100%.



b) Description of channels for control on seven channels:

In the seven DMX channels mode, in addition to the same settings on the first four channels (as for the four-channel mode), PX249 can change parameters of **[Bass]**, **[Treble]** and **[Balance]** on the fifth, sixth and seventh channel.

All channels in this mode are described below:

Channel 1: stop/pause/play

Channel 2: track number selection (1 - 85)

Channel 3: Playback mode - single, single loop, single track list, looped track list

Channel 4: volume control (100 grades)

Channel 5: bass control (-10 up to 10)

Channel 6: treble control (-10 up to 10)

Channel 7: balance control (L-10, -9 ... 0 ..., 9.10-R)

For each of the three additional channels (5, 6, 7), adjustment through DMX control is made for the same values.

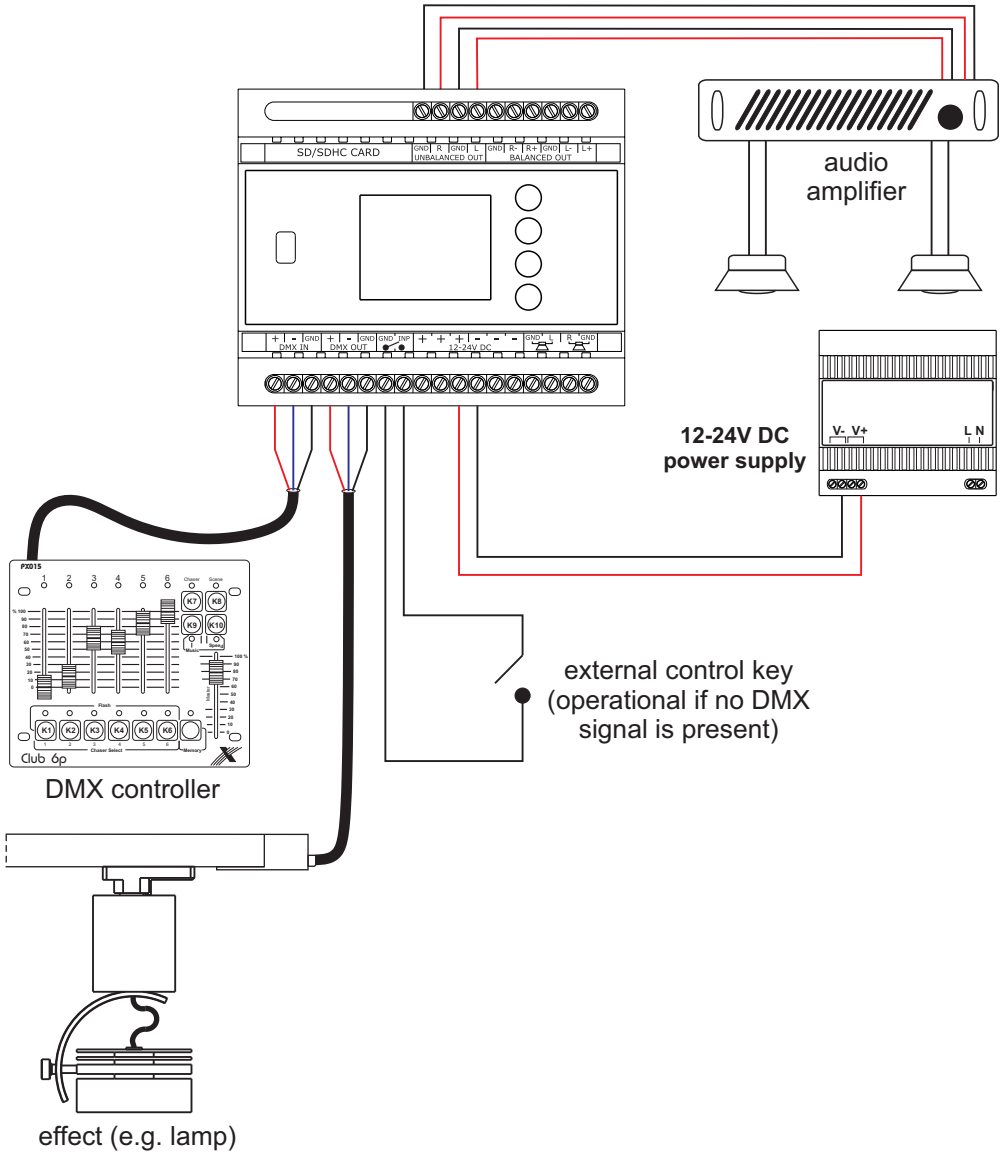
These values are shown in the table below:

DMX value	0-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-135
adjustment value	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0

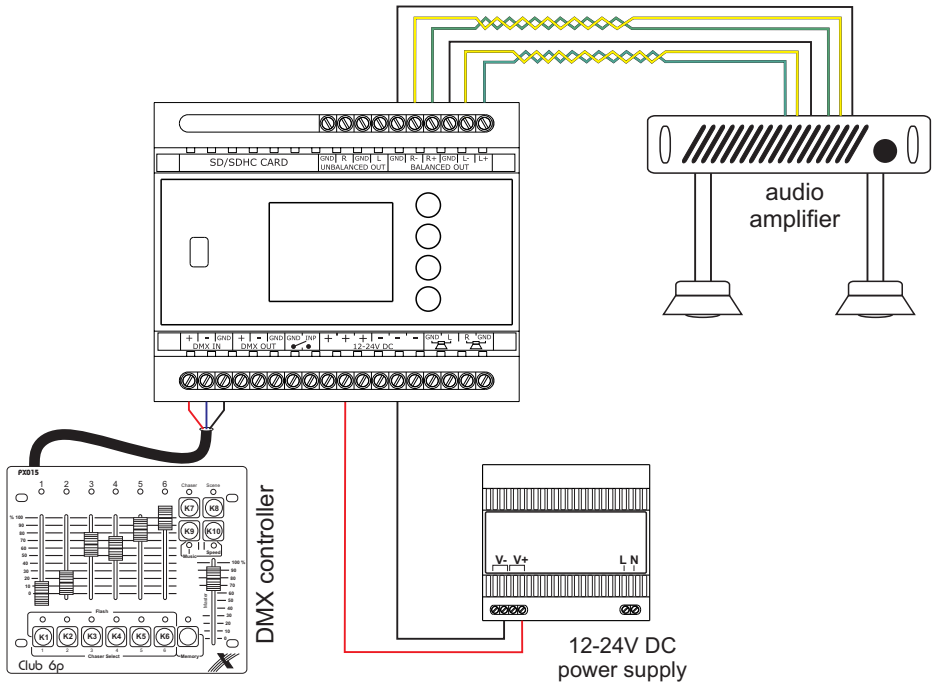
DMX value	136-147	148-159	160-171	172-183	184-195	196-207	208-219	220-231	232-243	244-255
adjustment value	1	2	3	4	5	6	7	8	9	10

15. CONNECTION DIAGRAM

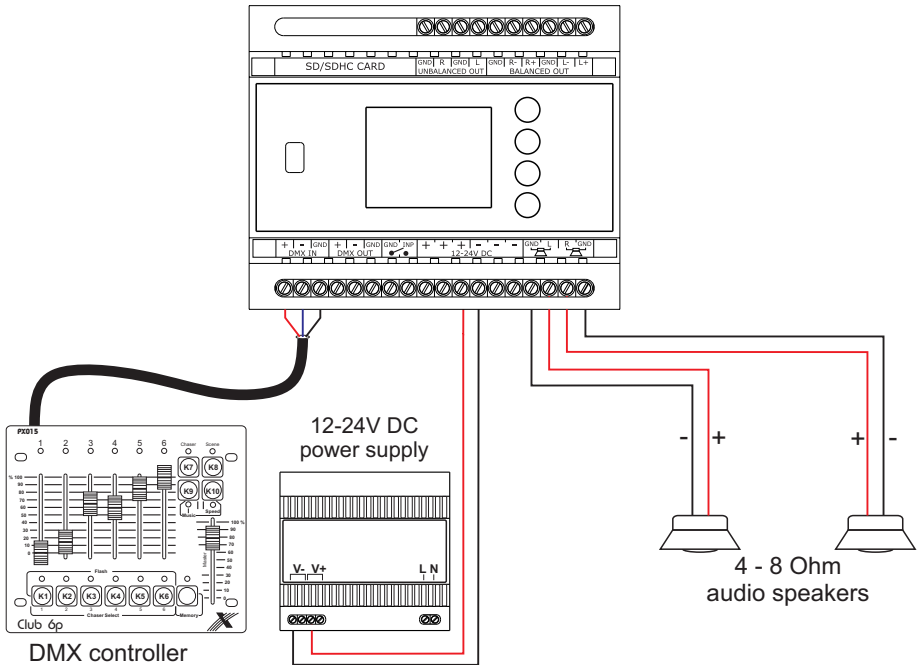
a) amplifier connection diagram (unbalanced output)



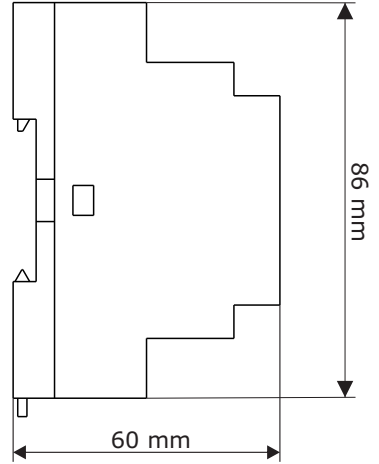
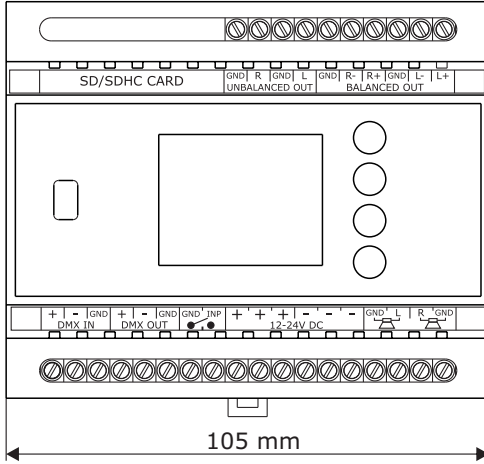
b) amplifier connection diagram (balanced output)



c) speakers connection diagram



16. DIMENSIONS



16. TECHNICAL SPECIFICATIONS

- Control	DMX-512 protocol
- DMX Channels	4 or 7
- Supported file formats	WAV
- Supported sampling frequencies	48 kHz; 44,1 kHz; 32 kHz; 22,05 kHz; 16 kHz; 11,025 kHz; 8 kHz
- Power supply	12-24 V DC*
- Power consumption	max. 1,3 A
- Power amplifier output degree	class D
- Amplification	20 dB
- Transmitted frequency band	42 Hz - 21kHz
- Load impedance	4 or 8 Ohms
- Max. amplifier power	2 x 12W (for 4Ohms load and 24V DC)
- Dimensions	
Width:	105 mm (6 DIN rail modules)
Height:	86 mm
Depth:	60 mm

* Recommended supply voltage: 24V DC.





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DECLARATION OF CONFORMITY according to guide lines 2004/108/EC

Name of producer: PXM Marek Żupnik sp. k.

Manufacturer's address: ul. Przemysłowa 12
30-701 Kraków, Poland

We declare that our product:

Product name: **Audio DMX Player**

Product code: **PX249**

complies with the following standards:

EMC:
PN-EN 55103-1:2012
PN-EN 55103-2:2012
PN-EN 61000-4-2:2011

Additional information: The DMX signal connection must be shielded. The shielded cable must be connected to the GND pin.



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