LED STRIP STUDIO

MR. DIMMER

THE ULTIMATE LED DIMMER

www.ledstripstudio.com
info@ledstripstudio.com

TABLE OF CONTENTS

GENERAL INFORMATION

This manual contains important instructions for the safe operation and installation of the unit. Read and follow the safety instructions and all other instructions. Keep this manual handy as a reference for operating procedures and safety information.

Specifications in this manual and design are subject to possible modifications without notice due to improvements.

PACKAGE CONTENT

The Mr. Dimmer package consists of:

- **Mr. Dimmer LED controller**
- **4x Pluggable Terminal blocks**
- **1x powerCON power cable**

SAFETY INSTRUCTIONS

- **Installation should be performed only by a competent person or professional electrician.**
- **Make sure that the installation complies with the standards and rules that apply in your country.**
- **Do not use the device if it seems to be damaged.**
- **Use the device only as described in this user manual. Any other use or use under other operating conditions is improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.**
- **Never open the controller and do not attempt repairs yourself.**
- **Do not place the device close to heat sources and always ensure enough ventilation.**
- **Do not place the unit on surfaces that are heat sensitive.**
- **This device has been designed for indoor use only. Do not expose the unit to direct sunlight. Do not allow this product to meet liquids. Electrical shock could result. Also, damage to the product, smoke, and overheating could result from contact with liquids.**

- **Clean the device components that are accessible from the outside regularly. The cleaning frequency depends on the operating environment: damp, smoky or particularly dirty environments can cause greater accumulation of dirt on the device components. Clean with a dry soft cloth.**
  Stubborn dirt can be removed with a slightly dampened cloth.
  Never use solvents or alcohol for cleaning.
- **Establish all connections when the unit is switched off.**
  Use the shortest possible high-quality cables for all connections.
  Make sure that cables cannot cause a trip hazard.
- **Never touch the plug contacts with sharp or metal objects.**
- **Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!**
- **Ensure that children do not detach any small parts (e.g. screws, connectors or the like) from the unit. They could swallow the pieces and choke!**
- **Never let children unattended use electrical devices.**

DISPOSAL OF YOUR OLD DEVICE

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

TRADEMARK CREDITS

Neutrik is a registered trademark of Neutrik AG. Also the product names opticalCON, neutriCON, miniCON, nanoCON, powerCON, Profi, speakON, silentPLUG, crystalCON, etherCON, rearTWIST, XIRIUM, DIWA are registered trademarkes of Neutrik AG.

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MR. DIMMER TECHNICAL DETAILS

- 4x 4CH (total 16 independed channels) PWM CV open-drain output (max 5A/CH), most practical for RGB or RGBW or White analog LED strips with common Anode (+) LED strips.
- PWM frequency >2kHz = flicker free on camera record
- User selectable 8bit or 16bit PWM (255 or 65535 grayscale)
- Output power max. 320W 24V
- Outputs over practical pluggable terminal blocks with pitch 5mm - fast connect/disconnect
- Practical real time LED indicators for every output channel
- Isolated DMX512 input/output
- Neutrik 3 pin XLR connectors for DMX input/output (5 pin on request)
- RJ-45 for DMX input/output
- Built in 2.4GHz DMX512 Wireless module (can be used as wireless transmitter or receiver)
- AC power input 88-250V AC (max 400VA)
- Neutrik powercon NAC3MPA and NAC3MPB for easy daisy chaining of several units
- Silent, intelligently controlled fan
- Heavy duty metal construction, easy to be mounted by cell clamps or screws
- Dimensions: 395 x 155 x 44 mm
- Weight: 3kg

WHAT YOU CAN CONTROL USING MR.DIMMER

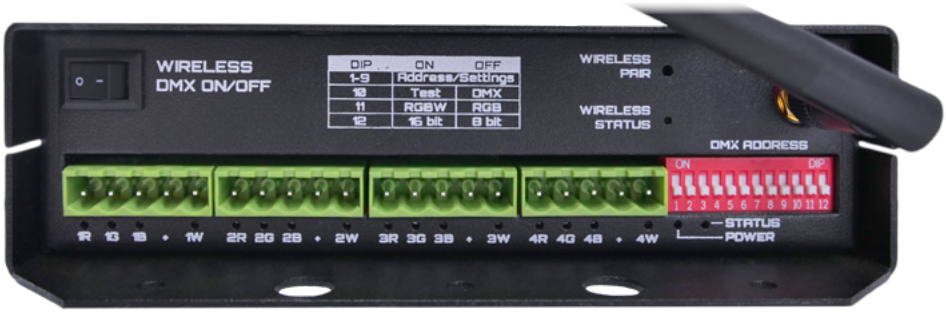
Mr. Dimmer is primary intended to be used with 24V Constant Voltage analog RGB or RGBW LED strips with common Anode (+), although you can use it for any kind of analog CV LED lights. In the text below we always use “LED strips” (not analog LED lights).

High quality 320 W 24V DC power supply is an inner part of Mr. Dimmer. You can typically use Mr. Dimmer to control and power about 50 meters of analog RGB LED Strips with 30LED/m or about 25 meters of analog RGB LED Strips with 60LED/m . Please note that the maximum current per each channel is 5A and total maximum current is 13A per whole Mr. Dimmer controller.

Mr. Dimmer is ideal solution for fast set-up time especially in rental where unit needs to be connected fast and in professional way.

CONNECTORS, INDICATORS AND SWITCHES

FRONT PANEL



Mr. Dimmer front view

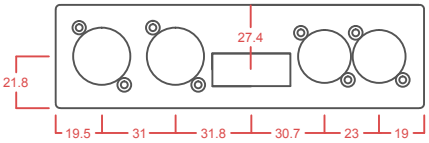
Pluggable Terminal blocks	4 independent channel outputs and common plus in each terminal block
16x Status LEDs (below terminal blocks)	Indicate real time output status of each channel
Green Power LED (below DIP switch)	• LED off – AC mains POWER not present • LED on – AC mains POWER present
Yellow Status LED (below DIP switch)	• **LED off** - DMX512 signal is not connected • **LED on** - DMX512 signal is connected • **Fast blink** – Current DMX512 address is partly out of range of count of channels sent by DMX console • **Slow blink** – Current DMX512 address is fully out of range of count of channels sent by DMX console
DMX Address DIP switch	DIP switch allows you to set DMX address, enable/disable and set test mode, set RGB or RGBW mode, sets 8 or 16bit resolution
Wireless DMX ON/OFF	Switch for enable/disable DMX512 Wireless module
Wireless Pair button (use paperclip to press)	Allows you to set DMX512 Wireless module ID
Wireless status LED	DMX512 Wireless module status
Antena	Antenna connector for DMX512 Wireless module

REAR PANEL

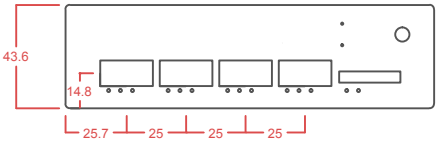
Mr. Dimmer rear view

Power IN	Neutrik powerCON mains AC power input 88-250V AC (max 400VA)
Power OUT	Neutrik powerCON mains AC power output (max 16A)
DMX RJ45	RJ45 connectors for DMX512, Pin 1 is Data +, Pin 2 is Data-, Pins 7+8 are GND, Pins 3-6 are not used.
DMX OUT	XLR connector DMX512 output, Pin 1 is GND, Pin 2 is Data -, Pin 3 is Data+
DMX IN	XLR connectors DMX512 input, Pin 1 is GND, Pin 2 is Data -, Pin 3 is Data+

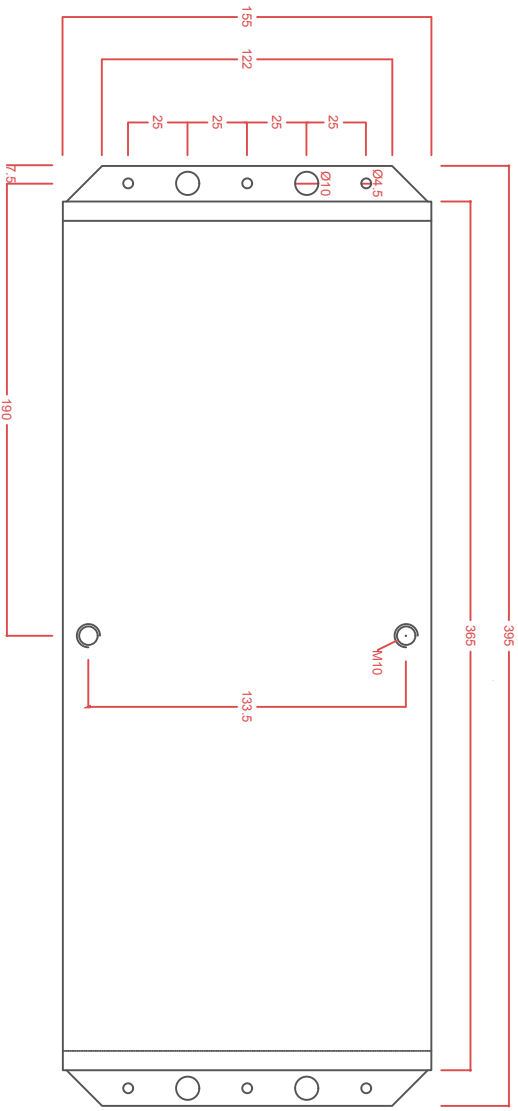
MR. DIMMER DIMENSIONS



Front View



Rear View

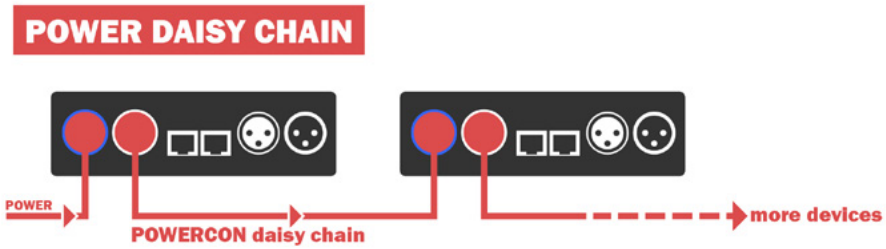


Bottom View

Holes on side ears can be use for mounting Mr. Dimmer by screws.
On bottom of Mr. Dimmer are 2pcs of M10 threads designed to mount cell clamps.
When mounted by cell clamps, holes on side ears should be used for safety wire hook up.

MR. DIMMER MAINS AC POWER CONNECTION

Following diagram describes typical mains AC power connection of Mr. Dimmer



Notes:

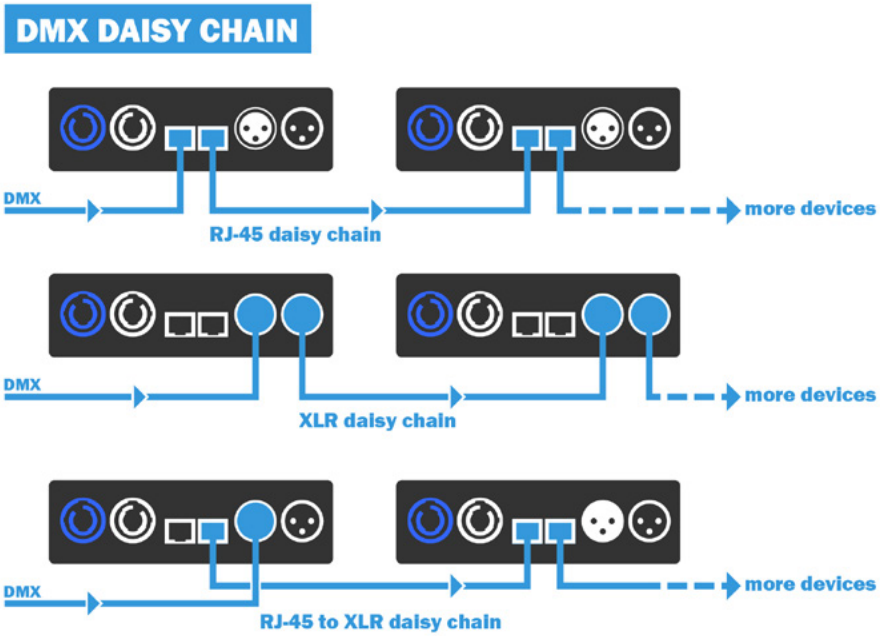
When mains AC power voltage is 230V it is recommended to not connect more than 6 Mr. Dimmer in power daisy chain.

When mains AC power voltage is 110V it is recommended to not connect more than 3 Mr. Dimmer in power daisy chain.

MR. DIMMER DMX512 CONNECTION

Following diagram describes typical DMX512 connection of Mr. Dimmer

For versatility and practical reasons there is several ways how to connect DMX512 from console to several Mr. Dimmer devices. RJ45 cables, XLR cables or combination can be used.



Notes:

Never use more than one DMX512 output from one device.
E.g. do not use XLR output and RJ-45 output at same time!

Total DMX512 line should not exceed 400m.

End-Terminator (120 Ohm resistor) should be always used on end of DMX512 line.

Typically if total distance of DMX512 line is less than 40m End-Terminator can be ommited.

Total DMX512 line should not contain more than 16 devices.
If more devices needs to be connected, use active DMX splitter.

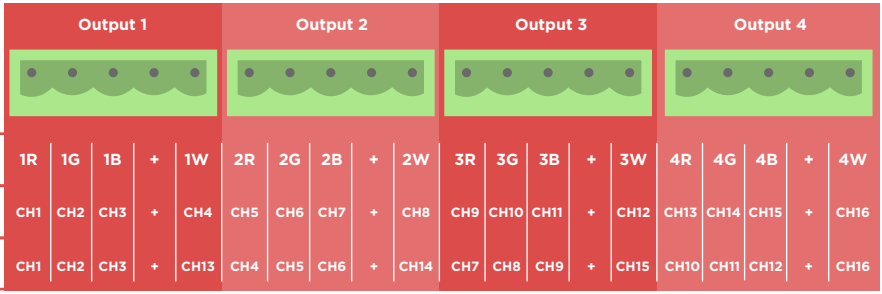
MR. DIMMER OUTPUT CONNECTION

For high versatility and practical reasons Mr. Dimmer has 2 different output connector mappings. One for RGB mode another for RGBW mode. Also common plus terminal is not on edge what is due to compatibility with other 4pin pluggable terminal blocks used for RGB controllers. So 4pin pluggable terminals can be also used with care.

General practical rule is that one output connector (pluggable terminal block) is designed to be used for one LED strip.

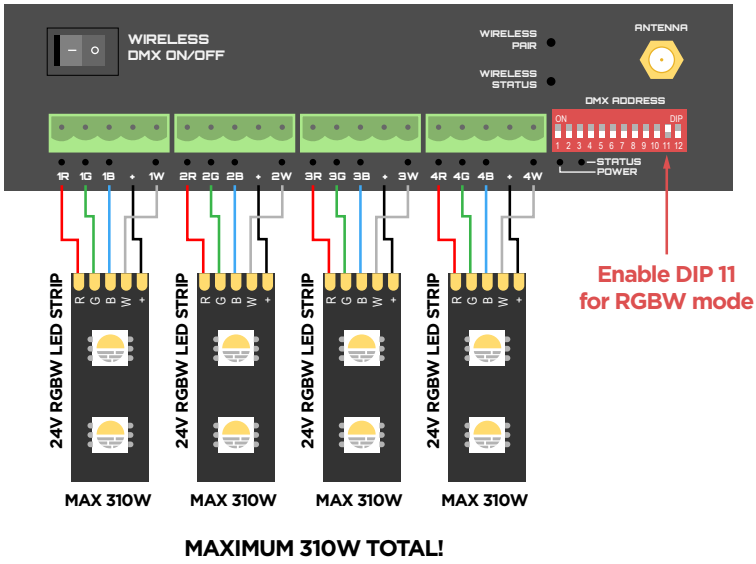
In case you use RGBW strips you can practically connect 1 RGBW strip to one pluggable terminal = 4 strips total (4Strips * 4Colors = 16Channels).
Therefore channels are assigned 1 to 16 from left to right.

In case you use RGB strips you can practically connect 1 RGB strip to one pluggable terminal = 4 strips total (4Strips * 3 colors = 12Channels).
As Mr. dimmer has 16 channels available then you have 4 extra channels available (marked as W = White, which you can use for one more extra RGB strip in case you really need. Therfore channels are assigned as RGB first and then rest 4 channels are shifted to W outputs.

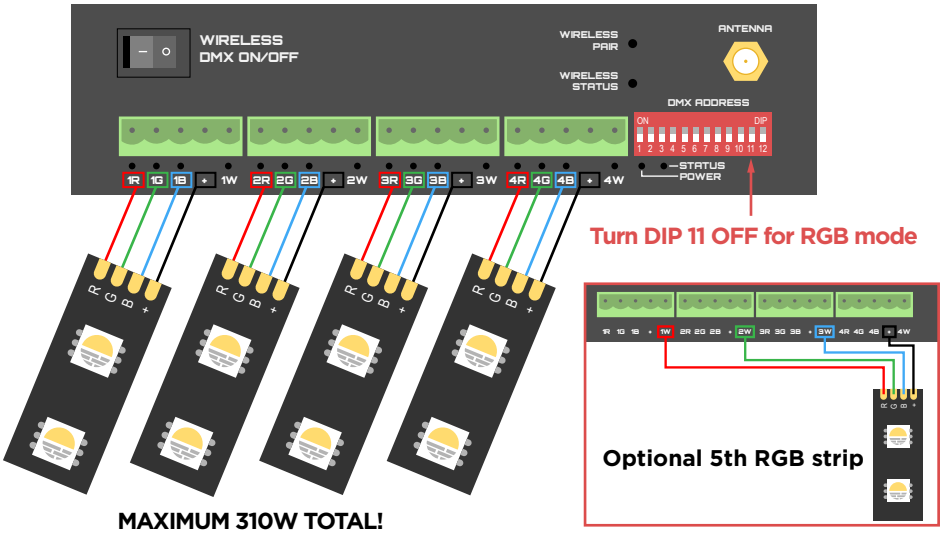


	Output 1					Output 2					Output 3					Output 4				
Terminal pins marking	1R	1G	1B	+	1W	2R	2G	2B	+	2W	3R	3G	3B	+	3W	4R	4G	4B	+	4W
RGBW mode pin mapping (DIP 11 ON)	CH1	CH2	CH3	+	CH4	CH5	CH6	CH7	+	CH8	CH9	CH10	CH11	+	CH12	CH13	CH14	CH15	+	CH16
RGB mode pin mapping (DIP 11 OFF)	CH1	CH2	CH3	+	CH13	CH4	CH5	CH6	+	CH14	CH7	CH8	CH9	+	CH15	CH10	CH11	CH12	+	CH16

Typical RGBW connection diagram



Typical RGB connection diagram



Note:
In case of usage Mr. Dimmer for other LED strips/lights (e.g. White LED strip) do not exceed maximum current 5A (120W @ 24V) per single Channel!

DIP SWITCH SETTINGS

DIP #	DMX512 mode (DIP 10 OFF)	TEST mode (DIP 10 ON)* in RGB mode (DIP 11 OFF)	TEST mode (DIP 10 ON)* in RGBW mode (DIP 11 ON)
1	DMX512 address value 1	RED value 1 (~15%)	RED value 1 (~33%)
2	DMX512 address value 2	RED value 2 (~30%)	RED value 2 (~66%)
3	DMX512 address value 4	RED value 4 (~55%)	GREEN value 1 (~33%)
4	DMX512 address value 8	GREEN value 1 (~15%)	GREEN value 2 (~66%)
5	DMX512 address value 16	GREEN value 2 (~30%)	BLUE value 1 (~33%)
6	DMX512 address value 32	GREEN value 4 (~55%)	BLUE value 2 (~66%)
7	DMX512 address value 64	BLUE value 1 (~15%)	WHITE value 1 (~15%)
8	DMX512 address value 128	BLUE value 2 (~30%)	WHITE value 2 (~30%)
9	DMX512 address value 256	BLUE value 4 (~55%)	WHITE value 3 (~55%)
10	KEEP OFF FOR DMX512 MODE	KEEP ON FOR TEST MODE	KEEP ON FOR TEST MODE
11	OFF = RGB MODE ON = RGBW MODE	KEEP OFF FOR RGB MODE	KEEP ON FOR RGBW MODE
12	OFF = 8bit (255 grayscale) ON = 16bit (65535 grayscale)	Don't care	Don't care

*In TEST mode, incoming DMX512 signal is ignored

Notes:

With DIP 1-9 OFF in TEST mode smooth gradual color change is applied to all outputs.

With DIP 1-9 OFF in DMX mode, DMX address is 1

Difference between RGB and RGBW mode is in output channel mapping.

In 16bit mode each output channel is controlled by two DMX channels with MSB first.

DMX CHANNEL LIST

DMX channel	RGB MODE 8bit	RGBW MODE 8bit	RGB MODE 16bit	RGBW MODE 16bit
CH1	DIMMER CH1 (1R)	DIMMER CH1 (1R)	DIMMER CH1 (1R) MSB	DIMMER CH1 (1R) MSB
CH2	DIMMER CH2 (1G)	DIMMER CH2 (1G)	DIMMER CH1 (1R) LSB	DIMMER CH1 (1R) LSB
CH3	DIMMER CH3 (1B)	DIMMER CH3 (1B)	DIMMER CH2 (1G) MSB	DIMMER CH2 (1G) MSB
CH4	DIMMER CH4 (2R)	DIMMER CH4 (1W)	DIMMER CH2 (1G) LSB	DIMMER CH2 (1G) LSB
CH5	DIMMER CH5 (2G)	DIMMER CH5 (2R)	DIMMER CH3 (1B) MSB	DIMMER CH3 (1B) MSB
CH6	DIMMER CH6 (2B)	DIMMER CH6 (2G)	DIMMER CH3 (1B) LSB	DIMMER CH3 (1B) LSB
CH7	DIMMER CH7 (3R)	DIMMER CH7 (2B)	DIMMER CH4 (2R) MSB	DIMMER CH4 (1W) MSB
CH8	DIMMER CH8 (3G)	DIMMER CH8 (2W)	DIMMER CH4 (2R) LSB	DIMMER CH4 (1W) LSB
CH9	DIMMER CH9 (3B)	DIMMER CH9 (3R)	DIMMER CH5 (2G) MSB	DIMMER CH5 (2R) MSB
CH10	DIMMER CH10 (4R)	DIMMER CH10 (3G)	DIMMER CH5 (2G) LSB	DIMMER CH5 (2R) LSB
CH11	DIMMER CH11 (4G)	DIMMER CH11 (3B)	DIMMER CH6 (2B) MSB	DIMMER CH6 (2G) MSB
CH12	DIMMER CH12 (4B)	DIMMER CH12 (3W)	DIMMER CH6 (2B) LSB	DIMMER CH6 (2G) LSB
CH13	DIMMER CH13 (1W)	DIMMER CH13 (4R)	DIMMER CH7 (3R) MSB	DIMMER CH7 (2B) MSB
CH14	DIMMER CH14 (2W)	DIMMER CH14 (4G)	DIMMER CH7 (3R) LSB	DIMMER CH7 (2B) LSB
CH15	DIMMER CH15 (3W)	DIMMER CH15 (4B)	DIMMER CH8 (3G) MSB	DIMMER CH8 (2W) MSB
CH16	DIMMER CH16 (4W)	DIMMER CH16 (4W)	DIMMER CH8 (3G) LSB	DIMMER CH8 (2W) LSB
CH17	Don‘t care	Don‘t care	DIMMER CH9 (3B) MSB	DIMMER CH9 (3R) MSB
CH18	Don‘t care	Don‘t care	DIMMER CH9 (3B) LSB	DIMMER CH9 (3R) LSB

CH19	Don‘t care	Don‘t care	DIMMER CH10 (4R) MSB	DIMMER CH10 (3G) MSB
CH20	Don‘t care	Don‘t care	DIMMER CH10 (4R) LSB	DIMMER CH10 (3G) LSB
CH21	Don‘t care	Don‘t care	DIMMER CH11 (4G) MSB	DIMMER CH11 (3B) MSB
CH22	Don‘t care	Don‘t care	DIMMER CH11 (4G) LSB	DIMMER CH11 (3B) LSB
CH23	Don‘t care	Don‘t care	DIMMER CH12 (4B) MSB	DIMMER CH12 (3W) MSB
CH24	Don‘t care	Don‘t care	DIMMER CH12 (4B) LSB	DIMMER CH12 (3W) LSB
CH25	Don‘t care	Don‘t care	DIMMER CH13 (1W) MSB	DIMMER CH13 (4R) MSB
CH26	Don‘t care	Don‘t care	DIMMER CH13 (1W) LSB	DIMMER CH13 (4R) LSB
CH27	Don‘t care	Don‘t care	DIMMER CH14 (2W) MSB	DIMMER CH14 (4G) MSB
CH28	Don‘t care	Don‘t care	DIMMER CH14 (2W) LSB	DIMMER CH14 (4G) LSB
CH29	Don‘t care	Don‘t care	DIMMER CH15 (3W) MSB	DIMMER CH15 (4B) MSB
CH30	Don‘t care	Don‘t care	DIMMER CH15 (3W) LSB	DIMMER CH15 (4B) LSB
CH31	Don‘t care	Don‘t care	DIMMER CH16 (4W) MSB	DIMMER CH16 (4W) MSB
CH32	Don‘t care	Don‘t care	DIMMER CH16 (4W) LSB	DIMMER CH16 (4W) LSB

DMX512 WIRELESS MODULE OPERATION

Mr.Dimmer is equipped with 3rd party DMX512 Wireless module.

DMX512 Wireless module is Transceiver which means it can be used for receiving DMX512 Wireless signal from air or can be used to transmit wired connected DMX512 to air. Switching between Transmitter and Receiver mode is automatic depending if DMX512 is presented by wired connection or valid signal is found on air.

In case you don't want to use DMX512 wireless feature SWITCH OFF Wireless ON/OFF switch.

DMX512 WIRELESS MODULE AS TRANSMITTER

If you want to use built in DMX512 Wireless module as **Transmitter** (wired DMX512 to air) follow this procedure:

1. **Attach Antenna to Antenna connector**
2. **Connect Mr. Dimmer to AC mains**
3. **Switch ON Wireless ON/OFF switch**
4. **Choose Wireless ID by pressing Wireless Pair button (use paper clip tip to reach hidden button). ID is represented by color of Wireless Status LED. There are 7IDs available (Red, Green, Yellow, Blue, Magenta, Cyan, White)**
5. **Connect Wired DMX512 signal to Mr Dimmer XLR or RJ45 port**

After this procedure Wireless status LED will **blink red** indicating that DMX512 is transmitted to air.

IMPORTANT NOTE WHEN IN TRANSMITTER MODE:
NEVER RUN DMX512 WIRELESS MODULE IN TRANSMITTER MODE WITHOUT ANTENNA ATTACHED !!!

DMX512 WIRELESS MODULE AS RECEIVER

If you want to use built in DMX512 Wireless module as **Receiver** (air to wired DMX512) follow this procedure:

1. **Attach Antenna to Antenna connector**
2. **Connect Mr. Dimmer to AC mains**
3. **Switch ON Wireless ON/OFF switch**
4. **Choose Wireless ID by pressing Wireless Pair button (use paper clip tip to reach hidden button). ID is represented by color color of Wireless Status LED. There are 7IDs available (Red, Green, Yellow, Blue, Magenta, Cyan, White)**

After this procedure within range of active transmitter on same ID, Wireless status LED will **blink green** indicating that DMX512 is received from air.

IMPORTANT NOTE WHEN IN RECEIVER MODE:

Wired DMX512 (XLR and RJ45) ports becomes to send DMX512 out from Mr. Dimmer when DMX512 Wireless module is in receiving mode.
Therefore you must not connect wired DMX512 from console to Mr. Dimmer when DMX512 Wireless Module is used as receiver at same time! Of course you can use DMX512 output to feed DMX512 to other devices by DMX512 received from air.

Every installation requires signal and power cables.
Here is list of typical cables to be used:

SIGNAL CABLES

Cable type	Where to use
DMX cable	For routing DMX512 signals
FTP Ethernet cable CAT.5E	For routing DMX512 signal

AC POWER CABLES

Cable type	Where to use
H05RR-F – 3Cx2.5, 3C1.5	110V-230V power distribution / power supplies

DC POWER CABLES/WIRES

Wire / Cable core	Where to use
H05V-K 0.5mm2	Power for LED strips/light (e.g. 24V) routing, for loads less than 4A
H05V-K 1.0mm2	Power for LED strips/light (e.g. 24V) routing, for loads less than 8A
H05V-K 1.5mm2	Power for LED strips/light (e.g. 24V) routing, for loads less than 12A
H05V-K 2.5mm2	Power for LED strips/light (e.g. 24V) routing, for loads less than 20A

IMPORTANT NOTE:
Cable types mentioned above are typical cable types for general use and are for reference only. Special situations may require different cable requirements.
E.g. In enviroment with higher ambient temperature, fire retardant requirements, high density cable structures with limited free air cooling may require other cable types to be used.