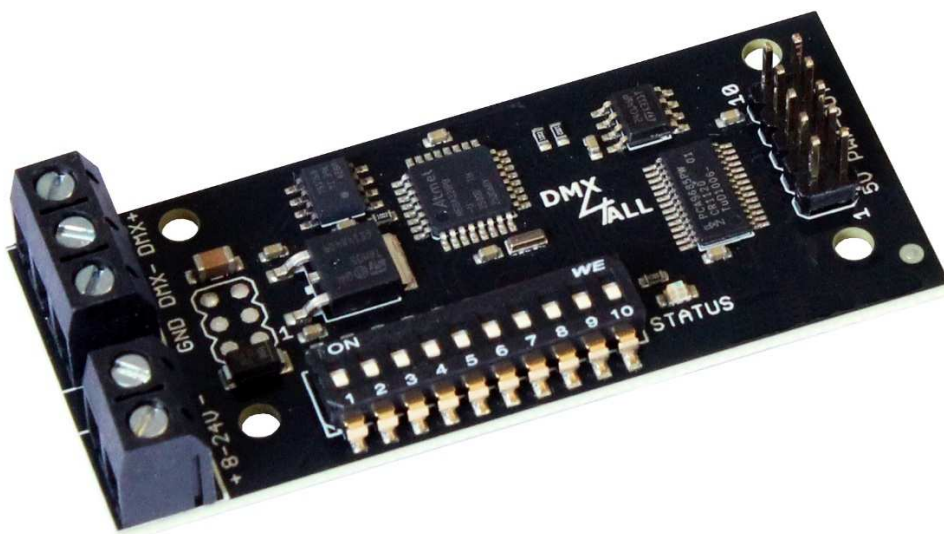


DMX-PWM 8

User Manual





For your own safety, please read this user manual and warnings carefully before installation.

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Description

The DMX-PWM 8 is a small PWM decoder providing 8 independent PWM signals with 5V amplitude to control several power levels.

8 PWM-Outputs

In total 8 independent PWM signals are available.

5V Amplitude

The PWM signals have a 5V amplitude (0V / 5V signal).

0% – 100% Pulse control factor

The pulse control factor of the outputs is between 0% up to 100% via DMX with a resolution of 8 Bit adjustable.

Outputs invertible

The *Personality* can invert the outputs, within the SubDevice-Mode even each output itself.

SubDevice-Mode

Within the SubDevice mode, each output has its own DMX address, operating mode (inverted/non-inverted) and DMX FAIL behavior via RDM.

Compact Design

The design and the compact structure allow an installation of this small assembly in areas with limited space.

LED-Display

The integrated LED is a multifunctional display to signal the current device state.

DMX Addressing

The DMX-Addressing occurs via RDM or prioritized via DIP switches.

RDM Support

With RDM via DMX the DMX-PWM 8 provides a device independent configuration.

Free RDM-Software

To set the RDM parameter our free software RDM-Configurator is on our website available as free download.

Lockable Device Settings

The RDM parameters *Lock Pin* and Lock State allow or avoid changes to stored RDM parameters in order to safe against unauthorized modifications.

Data Sheet

Power supply:	8-12V DC 50mA (without external load)
Protocol:	DMX512 RDM
DMX Channels:	8 Channels
PWM Amplitude:	5V
PWM Output Current:	max. 10mA @ 5V (Source) max. 25mA @ 0V (Sink)
PWM resolution:	256 steps (8-Bit), linear
PWM Pulse control factor:	0-100%
PWM Frequency:	100 Hz / 200 Hz / 1000 Hz / 1500 Hz
Connections:	1x Screw terminals / 2pin 1x Screw terminals / 3pin 1x Pin connector RM2,54 / 2x5pin
Dimension:	30mm x 70mm

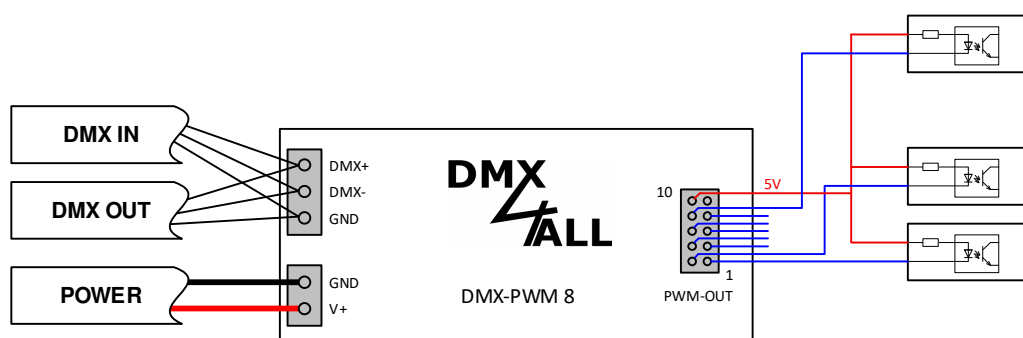
Content

- 1x DMX-PWM 8
- 1x Quick guide german and english

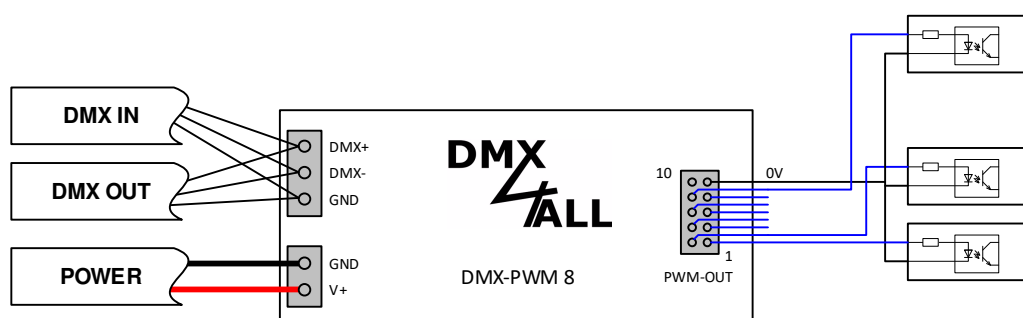
Connection

10	○ ○	9	1 PWM1
8	○ ○	7	2 PWM2
6	○ ○	5	3 PWM3
4	○ ○	3	4 PWM4
2	○ ○	1	5 PWM5
			6 PWM6
			7 PWM8
			9 0V (GND)
			10 5V

Connecting negative driven devices:



Connecting positive driven devices:



LED-Display

The integrated green LED is a multi-function display.

During to the normal operation mode the LED lights permanently. In this case the device is working.

Furthermore, the LED shows the current status. In this case the LED lights up in short pitches and then is missing for longer time.

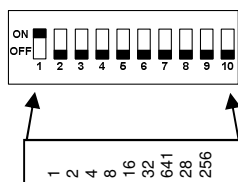
The number of the flashing lights is equal to the status number.

Status-Number	Error	Description
1	No DMX	No DMX signal detected ➔ Check DMX signal
2	Address error	No valid DMX start address is set ➔ Set DMX start-address

DMX-Addressing

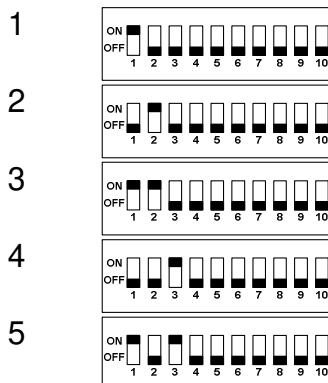
The starting address is adjustable via DIP switches.

Thereby switch 1 has the valency 2^0 (=1), switch 2 the valency 2^1 (=2) and so on until switch 9 has the valency 2^8 (=256).

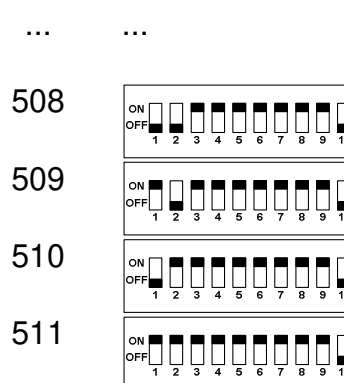


The switches showing ON represent in sum the starting address.

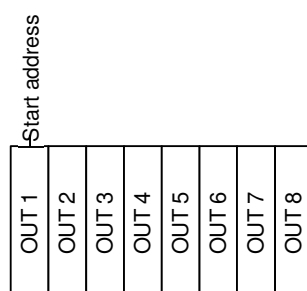
Address Switch



Address Switch



The DMX-Address assignment is as follows:



Switch 10 is reserved and must be OFF during the DMX operating mode.



The DMX start address can be also adjusted via the RDM parameter `DMX_STARTADDRESS`.

If the DMX start address is set via DIP switched, so it has priority over the RDM adjustable start address and the SubDevice-Mode is deactivated.

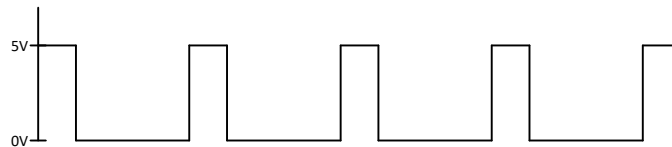
PWM-Output Signal

The signal which is outputted at the outputs consists of a high/low duty cycle that can be adjusted from 0% to 100% via DMX.

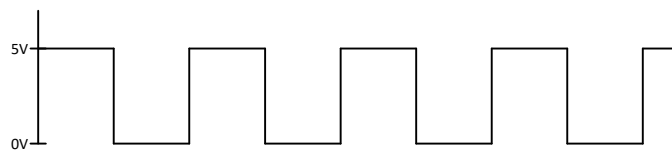
DMX = 0 $\Rightarrow$ Pulse control factor 0%:



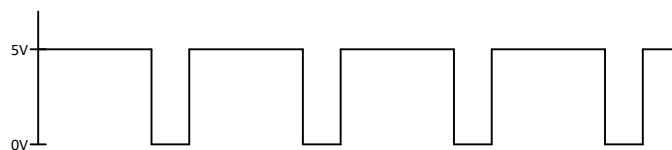
DMX = 64 $\Rightarrow$ Pulse control factor 25%:



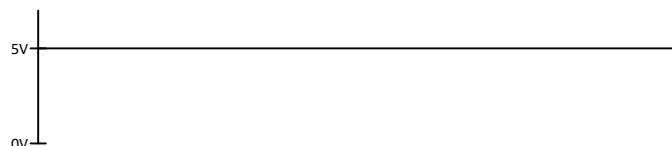
DMX = 128 $\Rightarrow$ Pulse control factor 50%:



DMX = 192 $\Rightarrow$ Pulse control factor 75%:



DMX = 255 $\Rightarrow$ Pulse control factor 100%:



Via the RDM-Parameter PERSONALITY the PWM output signal can be inverted.

The RDM parameter MODULATION_FREQUENCY sets the PWM frequency. The values 100 Hz, 200 Hz (default), 1000 Hz, and 1500 Hz are available.

RDM

RDM is the short form for **R**emote **D**evice **M**anagement.

As soon as the device is within the system, device-dependent settings occur remotely via RDM command due to the uniquely assigned UID. A direct access to the device is not necessary.



If the DMX start address is set via RDM, all address switches at DMX-PWM 8 must be set to OFF ! A DMX start address set by the address switches is always prior !

This device supports the following RDM commands:

Parameter ID	Discovery Command	SET Command	GET Command	ANSI/ PID
DISC_UNIQUE_BRANCH	✓			E1.20
DISC_MUTE	✓			E1.20
DISC_UN_MUTE	✓			E1.20
DEVICE_INFO			✓	E1.20
SUPPORTED_PARAMETERS			✓	E1.20
PARAMETER_DESCRIPTION			✓	E1.20
SOFTWARE_VERSION_LABEL			✓	E1.20
DMX_START_ADDRESS		✓	✓	E1.20
DEVICE_LABEL		✓	✓	E1.20
MANUFACTURER_LABEL			✓	E1.20
DEVICE_MODEL_DESCRIPTION			✓	E1.20
IDENTIFY_DEVICE		✓	✓	E1.20
FACTORY_DEFAULTS		✓	✓	E1.20
DMX_PERSONALITY		✓	✓	E1.20
DMX_PERSONALITY_DESCRIPTION			✓	E1.20
DISPLAY_LEVEL		✓	✓	E1.20
DMX_FAIL_MODE		✓	✓	E1.37
MODULATION_FREQUENCY		✓	✓	E1.37
MODULATION_FREQUENCY_DESC			✓	E1.37
LOCK_STATE		✓	✓	E1.37
LOCK_STATE_DESCRIPTION			✓	E1.37
LOCK_PIN		✓		E1.37

Parameter ID	Discovery Command	SET Command	GET Command	ANSI/ PID
SERIAL_NUMBER ¹⁾			✓	PID: 0xD400
SUBDEVICE_ENABLE ¹⁾		✓	✓	PID: 0xFF0F

1) Manufacturer depending RDM control commands (MSC - Manufacturer Specific Type)

Manufacturer depending RDM control commands:

SERIAL_NUMBER

PID: 0xD400

Outputs a text description (ASCII-Text) of the device serial number.

GET Send: PDL=0
 Receive: PDL=21 (21 Byte ASCII-Text)

SUBDEVICE_ENABLE

PID: 0xFF0F

Enable or disable the sub devices of the device.

GET Send: PDL=0
 Receive: PDL=1 (1 Byte SUBDEVICE_ENABLE_STATE)

SET Send: PDL=1 (1 Byte SUBDEVICE_ENABLE_STATE)
 Receive: PDL=0

SUBDEVICE_ENABLE_STATE	Function
0	SUB DEVICES DISABLED
1	SUB DEVICES ENABLED

DMX Fail Action

In case of a DMX lost (DMX-Fail), the DMX-PWM 8 can hold the LED outputs at their last value or use a set DMX value.

The behavior in the event of a DMX failure is set via the RDM parameter DMX_FAIL_MODE.



In case of a power failure the hold values are not restored via the function HOLD. In this case the values are set to 0.

Set Output Frequency

The DMX-PWM 8 can generate different output frequencies on the outputs.

The output frequency is to set via the RDM parameter MODULATION_FREQUENCY

The following output frequencies are available:

- 100 Hz
- 200 Hz
- 500 Hz
- 1000 Hz
- 1500 Hz

Lock device settings

The RDM parameters *Lock Pin* and *Lock State* allow or prohibit changing saved RDM parameters.

Lock Pin

The four-digit pin code number for the lock function can be set using the Lock Pin parameter.

After entering the correct currently used PIN (Old PIN) in the RDM software (e.g. RDM Configurator), the new, desired PIN can be entered in the New PIN field and saved by setting the parameter.

When delivered, the lock pin is always 0000.

Lock State

The device settings can be locked or unlocked using the Lock State parameter.

The following lock states can be selected:

Value	Name	Description
0	Unlocked	Parameters are editable
1	RDM Locked	Parameters cannot be edited via RDM

When delivered, the device is always *Unlocked*.

The Lock Pin (PIN Code) is required to change the Lock State parameter.



The RDM parameters Identify Device, Reset Device and Display Level can always be executed, regardless of the lock state.

SubDevice-Mode

The **DMX-PWM 8** has a standard-mode via a DMX start address, from which the DMX channels are used one after the other.

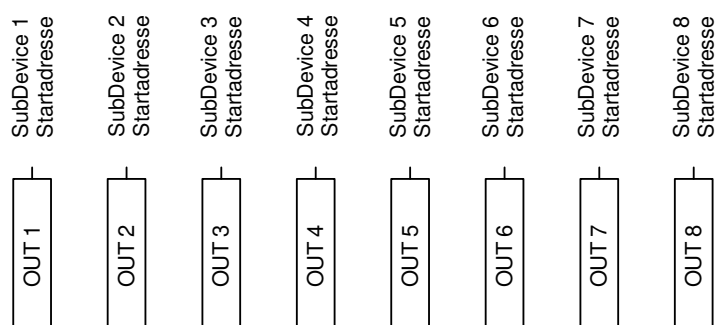
In SubDevice mode, each output is assigned its own DMX address and DMX FAIL behavior.

Im SubDevice-Mode wird jedem Ausgang eine eigene DMX-Adresse, die Betriebsart (Personality) und ein DMX-FAIL-Verhalten zugeordnet.

Für das Aktivieren und Deaktivieren des SubDevice-Mode muss per RDM der Parameter SUBDEVICE_ENABLE aktiviert werden.

Anschließend wird per RDM die Einstellung der DMX-Adresse, der Betriebsart (Personality) und das DMX-FAIL-Verhalten für jeden Ausgang ermöglicht.

Die Zuordnung der DMX-Adressen ist im SubDevice –Mode wie folgt:



Die Zuordnung der DMX-Adressen zu den Ausgängen ist im SubDevice - Mode frei möglich. Mehrere Ausgänge können auch die gleiche DMX-Adresse verwenden.

Factory Reset



Before performing the factory reset, read all the steps carefully.

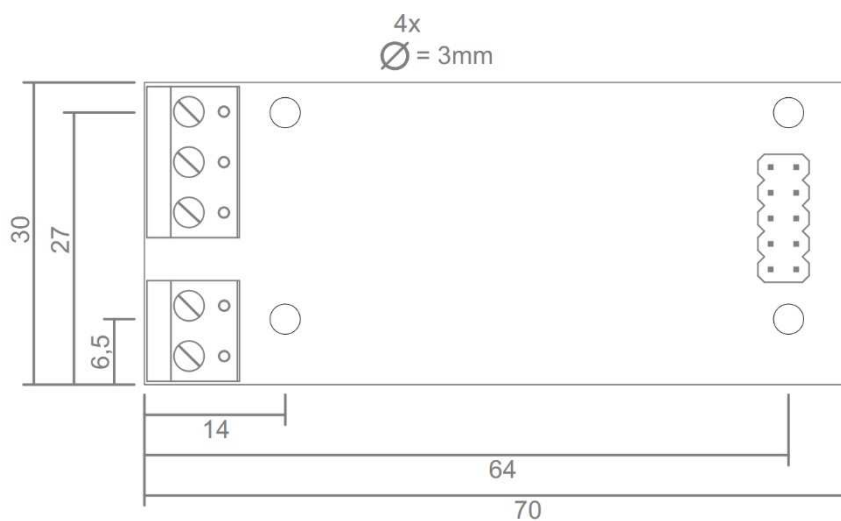
To reset the **DMX-PWM 8** to the delivery state proceed as follows:

- Turn off the device (Disconnect power supply !)
- Set address switch 1 to 10 on ON
- Turn on the device (Connect power supply !)
- Now, the LED flashes 20x within ca. 3 seconds
 - ➔ While the LED is flashing, set switch 10 to OFF
- The factory reset is now performed
 - ➔ Now, the LED flashes with event number 4
- Turn off the device (Disconnect power and USB supply !)
- Now, the device is ready for use



If another factory reset is necessary,
this procedure can be repeated.

Dimension



All details in mm

CE-Conformity



This assembly (board) is controlled by a microprocessor and uses high frequency. In order to maintain the properties of the module with regard to CE conformity, installation into a closed metal housing in accordance with the EMC directive 2014/30/EU is necessary.

Disposal



Electronical and electronic products must not be disposed in domestic waste. Dispose the product at the end of its service life in accordance with applicable legal regulations. Information on this can be obtained from your local waste disposal company.

Warning



This device is no toy. Keep out of the reach of children. Parents are liable for consequential damages caused by nonobservance for their children.

Risk-Notes



You purchased a technical product. Conformance to the best available technology the following risks should not be excluded:

Failure risk:

The device can drop out partially or completely at any time without warning. To reduce the probability of a failure a redundant system structure is necessary.

Initiation risk:

For the installation of the board, the board must be connected and adjusted to foreign components according to the device paperwork. This work can only be done by qualified personnel, which read the full device paperwork and understand it.

Operating risk:

The change or the operation under special conditions of the installed systems/components could as well as hidden defects cause to breakdown within the running time.

Misusage risk:

Any nonstandard use could cause incalculable risks and is not allowed.

Warning:

It is not allowed to use the device in an operation, where the safety of persons depends on this device.



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