NanoPixx DMX-Controller

User Manual

DMX 4 ALL ®

Description

The **NanoPixx DMX-Controller** ist he smallest DMX controller for digital LED stripes. Via DMX 170 single Pixel (RGB) can be controlled easily. Running lights, color gradients up to rainbow effects can be generated.

Compatible with several LED Types
The used LED-Chip in the connected digital LED-Stripe can be selected.
Thus the usage with several digital LED-Stripes is possible, e.g.: WS2811, WS2812(B), TM1804, TM1812, TM1829, DycoLED, LPD6803, LPD1101, APA101, APA102, APA104, UCS2912,…

Adjustable color reproduction
The RGB-Color sequence is adjustable to allow an universal operation. Furthermore a SingleColor-Option is chooseable. With this option each pixel reserves only one channel.

Adjustable Pixel groups
The NanoPixx DMX-Controller supports pixel groups with adjustable lengths. Each pixel group acts like a single pixel which is controlled for RGB with 3 DMX-Channels. So, in case of longer installations channels can be saved.

High quality and compact design
Die Elektronik des NanoPixx DMX-Controller ist in einem 3-poligen XLR-Stecker in Metallausführung untergebracht.
Dadurch ergibt sich eine extrem kleine Bauform.

Easy Configuration
Für die Konfiguration des NanoPixx DMX-Controller wird einfach ein DMX-Signal mit speziellen Werten beim Einschalten angelegt.
Nach erkennen der DMX-Werte wird die Konfiguration im internen Speicher des NanoPixx DMX-Controller abgelegt.

Data Sheet

Power supply:	5V from connected LED-Stripe
Connections:	XLR 3 Male for DMX JST SM 4 Male to connect digital LED-Stripes Adapter JST SM 4 Female to JST SM 3 Female included
Protocol:	DMX512
Output protocol: (adjustable)	APA-101, APA-102, APA-104, DycoLED PB3, DycoLED PC5, INK1002, INK1003, LPD1101, LPD6803, LPD8803, LPD1886 8Bit, LPD 1886 12Bit (8bit controlled), LPD 1886 12 Bit (12bit controlled), LPD8806, MagiarLED III flex, SK6812, SK9822, TM1804, TM1812, TM1829 (Low speed), UCS1903, UCS2903, UCS2912, UCS9812 (8bit controlled), UCS9812 (16bit controlled), WS2801, WS2811, WS2812, WS2812B !!! 170 Pixel individually controllable !!!
Color sequence:	RGB adjustable / SingleColor red, green, blue, white
Pixel groups:	adjustable, 1 – 127 Pixel

Max. number Pixel/Pixel groups:

Demo programs:	170 Pixel	
DMX-Mode:	170 Pixel	(RGB-Stripe)
	128 Pixel	(RGBW-Stripe)
	512 Pixel	(SingleColor-Stripe)

Dimensions:	Diameter:	19mm
	Length:	~25cm
	Length-Adapter:	~5cm

Default-Settings:	WS2811 / WS2812(B) / APA-104 / INK1002 / INK1003	
	Color sequence:	R-G-B
	Pixel groups:	1
	DMX-Start address:	1

Delivery:	NanoPixx DMX-Controller Adapter JST SM 4 Female to JST SM 3 Female Quick guide (german and english)

Connection

It is allowed only to run the **NanoPixx DMX-Controller** exclusively with digital LED-Stripes with 5V power supply!

The NanoPixx DMX-Controller uses for the connection to a DMX-signal a 3pin XLR-connector.

XLR Pin	Description
1	GND
2	DMX-
3	DMX+

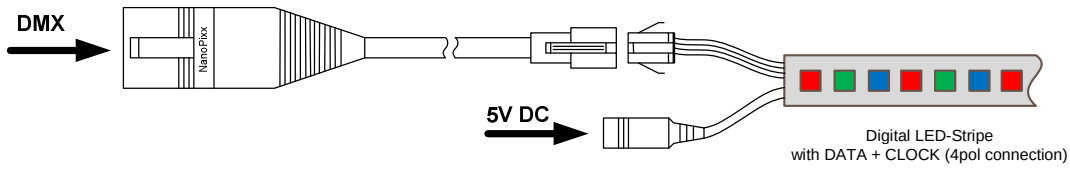
The controlling signal for the digital LED-stripe is lead out via a 4pin JST-SM connector.

JST-SM Pin	Description	
1	Power supply 5V	(red)
2	CLOCK	(blue)
3	DATA	(green)
4	GND	(black)

The following presentations refer to the offered digital LED-Stripes from DMX4ALL. For other LED-Stripes the pin assignment can differ!

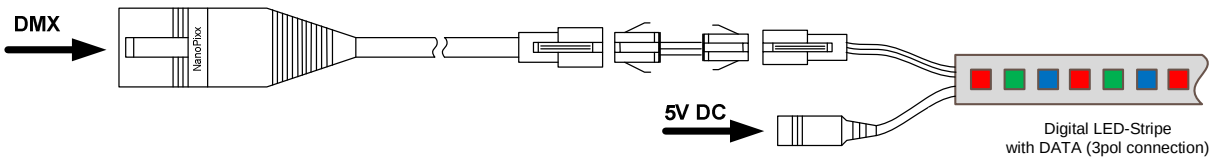
Connection for Stripes with two controlling signals (CLK+DATA)

For the connection of digital LED-Stripes with 4pin connections the attached adapter doesn't have to be used.



Connections for Stripes with one controlling signal (DATA)

For the connection of digital LED-Stripes with 3pin connections the attached adapter has to be used.



Settings

The **NanoPixx DMX-Controller** settings will be done via the DMX-values by starting the power supply.

To assume and store the settings after starting the power supply, the DMX-values must be adjusted exactly. A deviation of the values leads to not accepting the settings!

Please follow for adjusting the NanoPixx DMX-Controller the following steps:

- Connect the LED-Stripe, the power supply and the NanoPixx DMX-Controller
- Connect the DMX-signal with the NanoPixx DMX-Controller
- Adjust the DMX-values according to the following scale
- Start the LED-Stripes power supply
- Please wait ca. 10 seconds until the settings are stored
- Shut down the power supply

DMX-Channel	Value	Description
1	55	
2	77	
3	10 20 30 40 50 60 70 80 90 100 150 160 170 180 190 200	WS2811 / WS2812(B) / APA-104 / INK1002 / INK1003 / SK6812 TM1804 TM1812 TM1829 LPD1886 - 8Bit LPD1886 - 12Bit UCS1903 UCS9812 - 8Bit UCS9812 - 16Bit UCS2912 – RGBW* MagiarLED III flex LPD6803 / DycoLED PB3 / APA-101 LPD8806 WS2801 APA-102 / SK9822 DycoLED PC5
4	10 20 30 40 50 60 70 80 90 100	R-G-B / RGBW* R-B-G G-R-B G-B-R B-R-G B-G-R Single Color WHITE Single Color RED Single Color GREEN Single Color BLUE
5	1-127	Pixel group length
6	22 222	Mode-Channel OFF Mode-Channel ON
7 8	0-255 0-255	DMX-Start L DMX-Start H DMX-Startaddress = DMX-Start L + (DMX-Start H * 256) DMX-Startaddress must be located in the range 1-511

* - By using the RGBW LED-Stripes please note the chapter RGBW-LED-Stripes – Additional Settings

Examples:

LED-Stripe: APA-104
Color sequence: R-G-B
Pixel group length: 2
Mode-Channel: OFF
DMX-Start address: 1

Adjusted DMX-values: 55 77 10 10 2 22 1 0

LED-Stripe: WS2801
Color sequence: R-G-B
Pixel group length: 1
Mode-Channel: ON
DMX- Start address: 1

Adjusted DMX-values: 55 77 180 10 2 222 1 0

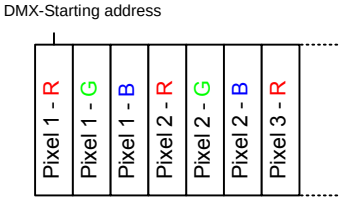
LED-Stripe: SK6812
Color sequence: R-G-B
Pixel group length: 1
Mode-Channel: OFF
DMX- Start address: 100

Adjusted DMX-values: 55 77 10 10 2 22 100 0

RGB-Pixel controlling

The **NanoPixx DMX-Controller** controls each RGB-Pixel with 3 DMX-Channels. Always one DMX-channel for red, green and blue is used.

Starting at the DMX-starting address the DMX-channels will be assigned automatically to the pixel:

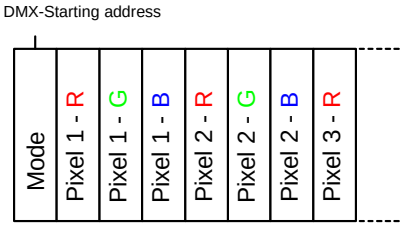


DMX MODE-Channel

An additional MODE-Channel can be activated to build pixel groups (pixel sections) and to call demo programs via DMX.

The MODE-Channel can be activated via the settings.
Please take further details from the chapter *settings*.

With the activated MODE-Channel the first DMX-Channel determines the pixel sections length with the same color (DMX-value 1-127). Thereby the maximum length is 127 pixel. The following DMX-addresses are destined for the color settings:



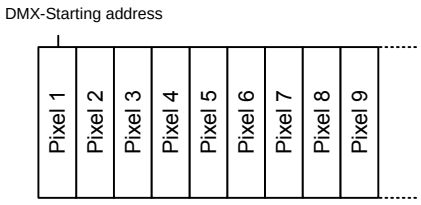
Channel	Function	Value	
1	Mode	0	Pixel section length = All Pixel
		1-127	DMX-Value = Length of a pixel section
		128-255	see demo programs via DMX
2	Color	0-255	Pixel 1 red
3		0-255	Pixel 1 green
4		0-255	Pixel 1 blue
:::		:::	::: red/green/blue for each pixel

SingleColor-Pixel controlling

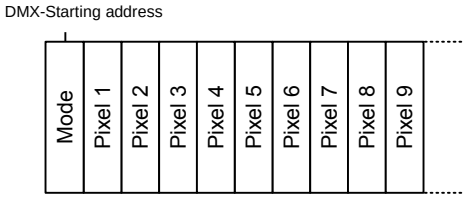
The **NanoPixx DMX-Controller** can control each pixel uni colored too, so that only 1 DMX-Channel is need for each pixel.

Thereby the controlling for white, red, green or blue are available.

Starting by the DMX-starting address the DMX-Channels will be assigned automatically to the pixel:



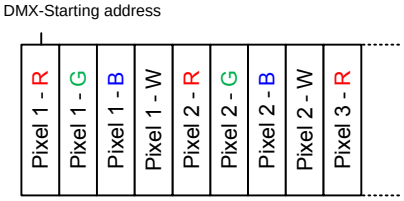
With the activated MODE-Channel the first DMX-Channel determines the pixel sections length with the same color (DMX-value 1-127). Thereby the maximum length is 127 pixel. The following DMX-addresses are destined for the color settings:



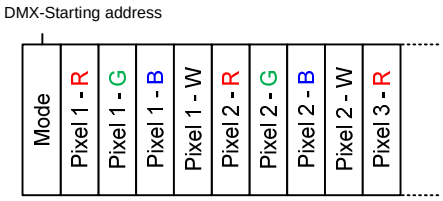
RGBW-Pixel controlling

The **NanoPixx DMX-Controller** controls each RGBW-Pixel with 4 DMX-Channels. Always one DMX-Channel will be used for red, green, blue and white.

Starting by the DMX-starting address the DMX-Channels will be assigned automatically to the pixel:



With the activated MODE-Channel the first DMX-Channel determines the pixel sections length with the same color (DMX-value 1-127). Thereby the maximum length is 127 pixel. The following DMX-addresses are destined for the color settings:



Additional settings:

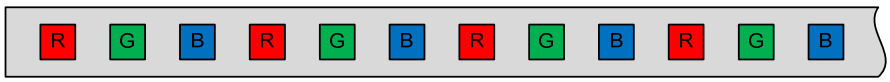
For the RGBW-control there are additional Offset-adjustments necessary. Because several stripe-types are available there must be 12 Offset-value specified according to the following scale:

DMX-Channel	Value	Description	Value for Art.: 52-0669	Value for Art.: 52-0670
10	0-11	Offset for Pixel 1 RED	0	0
11	0-11	Offset for Pixel 1 GREEN	1	1
12	0-11	Offset for Pixel 1 BLUE	2	2
13	0-11	Offset for Pixel 1 WHITE	9	3
14	0-11	Offset for Pixel 2 RED	3	4
15	0-11	Offset for Pixel 2 GREEN	4	5
16	0-11	Offset for Pixel 2 BLUE	5	6
17	0-11	Offset for Pixel 2 WHITE	10	7
18	0-11	Offset for Pixel 3 RED	6	8
19	0-11	Offset for Pixel 3 GREEN	7	9
20	0-11	Offset for Pixel 3 BLUE	8	10
21	0-11	Offset for Pixel 3 WHITE	11	11

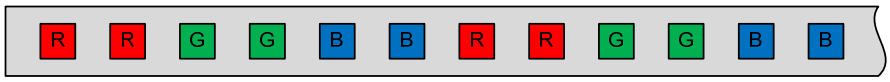
Pixel groups

The **NanoPixx DMX-Controller** supports pixel groups with an adjustable length of 1 pixel up to 127 pixel. Thereby each pixel behaves like a single pixel.

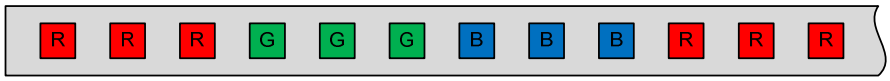
Pixel group length = 1



Pixel group length = 2



Pixel group length = 3



Please take the configuration informations for the pixel group length from chapter *Settings*.

In accordance with the chosen LED-protocol a different number of pixel can be connected to the output (controlled pixel):

LED-Protocol	max. Pixel/Pixel group RGB	max. controlled Pixel Single Color	max. controlled Pixel
APA-101	170x RGB	512	2048
APA-102	170x RGB	512	1024
APA-104	170x RGB	341	341
DycoLED PB3	170x RGB	512	2048
DycoLED PC5	170x RGB	512	557
INK1002 / INK1003	170x RGB	341	341
LPD1101 / LPD6803	170x RGB	512	2048
LPD8803	170x RGB	512	2047
LPD1886 8Bit	170x RGB	512	682
LPD1886 12Bit	170x RGB	512	512
MagiarLED III	170x RGB	512	1024
SK6812	170x RGB	341	341
SK9822	170x RGB	512	1024
TM1804	170x RGB	341	341
TM1812	170x RGB	341	341
TM1829	170x RGB	341	341
UCS1903 / UCS2903 / UCS2912	170x RGB	170	170
UCS9812 (8Bit controlled)	170x RGB	195	195
UCS9812 (16Bit controlled)	170x RGB	195	195
WS2801	170x RGB	512	1366
WS2811 / WS2812(B)	170x RGB	341	341
UCS2912 (RGBW)	128x RGBW		256
SK6812 (RGBW)	128x RGBW		256

(Firmware V1.01)

Demo programs

For this function the MODE-Channel must be activated.
Please take further details from chapter *Settings*.

The predefined demo programs in the **NanoPixx DMX-Controller** will be called via the DMX-channel 1(MODE-channel) from the DMX-value 128. The speed can be adjusted via DMX-channel 3.

Channel	Function	Value	
1	Mode	0-127	See Pixel control via DMX
		128-135	8 color mix
		136-143	R-G-B
		144-151	RGB color star
		152-165	Single color star
		166-177	Wave 1
		178-189	Wave 2
		190-203	Snake
		204-217	Fecher
		218-231	Running Point 1
		232-239	Running point 2
		240-246	Blink
		247-255	Rainbow
2	Color	0-31	White
		32-63	Red
3		64-95	Green
3		96-127	Blue
3		128-159	Yellow
3		160-191	Pink
3		192-223	Cyan
3		224-255	(Out)
3	Speed	0-255	Fast → Slow

Risk-Notes

You purchased a technical product. Conformable to the best available technology the following risks should not 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 depend on this device.

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