

# mXion PWD 2-Channel Function Decoder User Manual

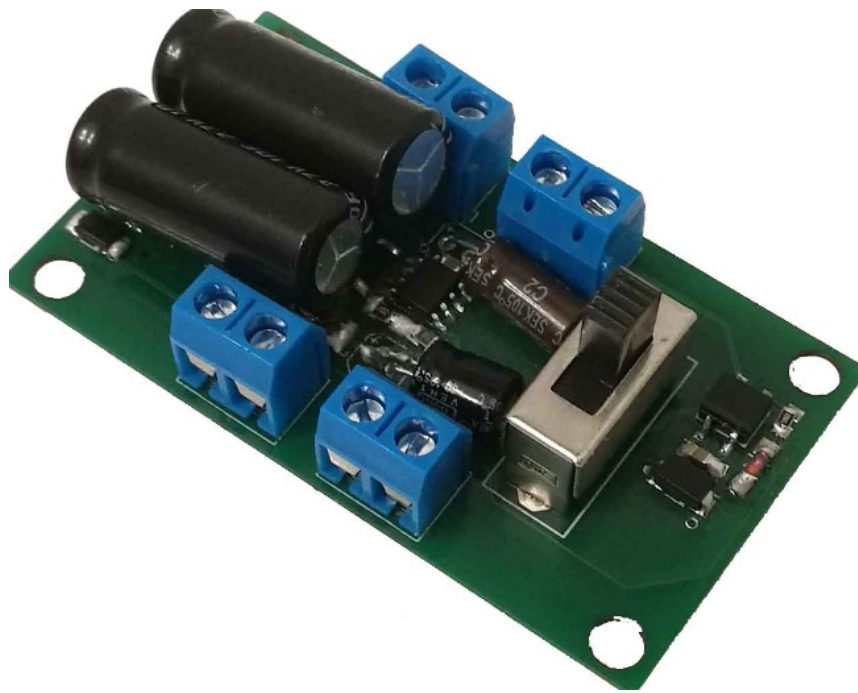
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mXion PWD 2-Channel Function Decoder



## General information

We recommend studying this manual thoroughly before installing and operating your new device. Place the decoder in a protected location. The unit must not be exposed to moisture.

**NOTE:** Some functions are only available with the latest firmware. Please make sure that your device is programmed with the latest firmware.

## Summary of Funktionen

DC/AC/DCC operation

Analog & digital

Compatible NMRA-DCC module Very small module

Buffer build-in for 3 min.

- LGB® DB Car (3x31x)
- LGB® RhB Car EW I, II, III, IV (3x67x)
- LGB® RhB Dinercar (3x68x)
- LGB® RhB Controlcar (3x90x)
- LGB® RhB Baggagecar (3x69x)
- LGB® RhB Panoramacar (3x66x)
- LGB® RhB Salon/Pullmancar (3x65x)
- LGB® RhB Gourmino (3x52x)
- LGB® US Streamliner (3x57x and 3x59x) 2 reinforced function outputs Integrated 5V generator.  
Random generator (e.g. toilet light)

Conditions (forward, backward, etc...)

Lot of special and time functions available Function outputs dimmable

Reset function for all CV values

Easy function mapping 14, 28, 128 speed steps (automaticly) Multiple programming options (Bitwise, CV, POM)

Needs no programming load Controllable with switch addresses (V. 1.1)

## Scope of supply

- Manual
- mXion PWD

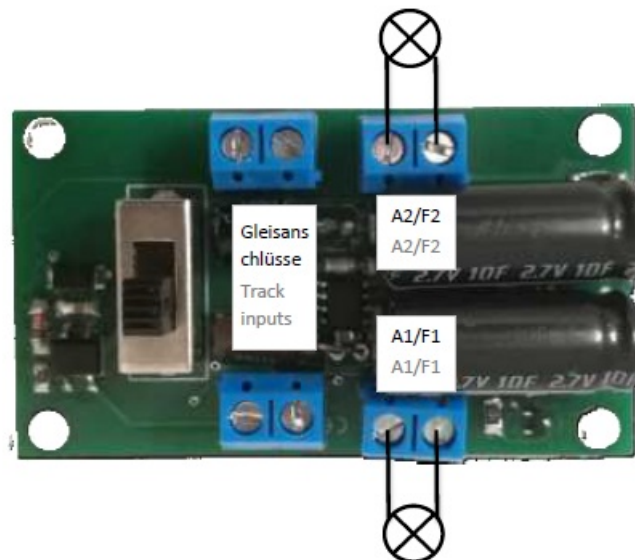
## Hook-Up

Install your device in compliance with the connecting diagrams in this manual. The device is protected against shorts and excessive loads. However, in case of a connection error e.g. a short this safety feature can't work and the device will be destroyed subsequently. Make sure that there is no short circuit caused by the mounting screws or metal.

**NOTE:** Please note the CV basic settings in the delivery state.

## Connectors

The switch is analog and digital functional. Connect consumers to A1 and A2 (see pic). A1 is ideal for ceiling light, A2 for toilet or table lamps. Random control as well as inversion as well as continuous operation is possible, as well as effects.



## Product description

The mXion PWD is 2 ch. function decoder.

It is ideal for all factory-lit-cars from LGB® suitable and can the existing electronics replace 1:1. The electronics are in the ground (for RhB cars) or in the toilet (for DB cars like IC, D-Train). The PWD also has a switch as a big puffer, so a trouble free operation is possible.

It is due the high functionality and performance. Due to the small dimensions, the module (also multiple) in locomotives, cars, or buildings will. With its high power output from to 1 Amps per channel it is ideally suited to even larger loads. Furthermore, the module supports a series of lighting and switching effects configured and freely customizable.

It is ideal for passenger cars to suit these to light up and with light effects to be equipped. The two channels can, for example, compartments separately lit. Train closing lamps. In analog mode, both outputs are full functionality also usable. In addition, both outputs can be dimmed.

The following picture shows the PWD installed into a RhB car, so that the old, fault-prone is replaced.

The connection can be screwed or soldered.

## Programming lock

To prevent accidental programming to prevent CV 15/16 one programming lock. Only if CV 15 = CV 16 is a programming possible. Changing CV 16 changes automatically also CV 15.

With CV 7 = 16 can the programming lock reset.

STANDARD VALUE CV 15/16 = 245

## Programming options

This decoder supports the following programming types: bitwise, POM and CV read & write and register-mode. There will be no extra load for programming.

In POM (programming on maintrack) the programming lock is also supported. The decoder can also be on the main track programmed without the other decoder to be influenced. Thus, when programming the decoder can not be removed.

**NOTE:** To use POM without others decoder must affect your digital center POM to specific decoder addresses

## Programming binary values

Some CV's (e.g. 29) consist of so-called binary values. This means that several settings in a value. Each function has a bit position and a value. For

programming such a CV must have all the significances can be added. A disabled function has always the value 0.

EXAMPLE: You want 28 drive steps and long loco address. To do this, you must set the value in CV 29  $2 + 32 = 34$  programmed.

## Buffer control

A big buffer for several minutes is already integrated and is integrated by the also current is 500 mA, load current up to 2A.

## Programming loco address

Locomotives up to 127 are programmed directly to CV 1. For this, you need CV 29 Bit 5 „off“ (will set automatically). If larger addresses are used, CV 29 – Bit 5 must be „on“ (automatically if change CV 17/18). The address is now in CV 17 and CV 18 stored. The address is then like follows (e.g. loco address 3000):  $3000 / 256 = 11,72$ ; CV 17 is  $192 + 11 = 203$ .  $3000 - (11 \times 256) = 184$ ; CV 18 is then 184.

## Reset functions

The decoder can be reset via CV 7. Various areas can be used for this purpose. Write with the following values:

- 11 (basic functions)
- 16 (programming lock CV 15/16)
- 33 (function outputs)

## Function output features

Funktion	A1	A2	Timevalue
On/Off	X	X	
Deactivated	X	X	
Permanent-On	X	X	
Forwards only			
Backwards only			
Standing only			
Driving only			
Timer sym. flash	X	X	X
Timer asym. short	X	X	X
Timer asym. long	X	X	X
Monoflop	X	X	X
Switch on delay	X	X	X
Firebox	X	X	
TV flickering	X	X	
Photographer flash	X	X	X
Petroleum flickering	X	X	
Flourescent tube	X	X	
defective flour. tube	X	X	
US strobe light	X	X	X
US double strobe	X	X	X
Pairwise alternating	X	X	X
Fade in/out			
Autom. switch back			X
Dimmable	X	X	

C V	Description	S	A	Range	Note
1	Loco address	3		1 – 127	if CV 29 Bit 5 = 0 (automatically reset)
7	Software version	–		–	read only (10 = 1.0)
	<b>Decoder reset functions</b>				

7	3 ranges available				11 16 33	basic settings (CV 1,11-13,17-19,29-119) programming lock (CV 15/16)  function outputs (CV 120-129)	
8	Manufacturer ID		16 0		–	read only	
7+ 8	Register programming mode						
	Reg8 = CV-Address Reg7 = CV-Value					CV 7/8 don't changes his real value  CV 8 write first with cv-number, then CV 7 write with value or read  (e.g.: CV 49 should have 3)  è CV 8 = 49, CV 7 = 3 writing	
11	Analog timeout		30		30 – 255	1ms each value	
13	Function outputs in analog mode (on if value is set)		3		0 – 3	add the values to the desired function!  A1 = 1, A2 = 2	
15	Programming lock (key)		24 5		0 – 255	to lock only change this value	
16	Programming lock (lock)		24 5		0 – 255	changes in CV 16 will change CV 15	
17	Long loco address (high)		12 8		128 – 10239	activ only if CV 29 Bit 5 = 1 (automatically set if change CV 17/18)	
18	Long loco address (low)						
19	Traction address		0		1 – 127/255	loco address for multi traction  0 = deactive, +128 = invers	
29	NMRA configuration		6	√		bitwise programming	
	Bit	Value		OFF (Value 0)		ON	
	1	2		14 speed steps		28/128 speed steps	
	2	4		only digital operation		digital + analog operation	
	5	32		short loco address (CV 1)		long loco address (CV 17/18)	
	7	128		loco address		switch address (from V. 1.1)	

48	Switch address calculation (V. 1.1)		0	S	0/1	0 = Switch adress like norm 1 = Switch adress like Roco, Fleischmann
49	<b>mXion configuration</b>		<b>0</b>	√		<b>bitwise programming</b>
	<b>Bit</b>	<b>Value</b>	<b>OFF (Value 0)</b>		<b>ON</b>	
	4	16	A1 normal		A1 fading in/out (ab. V. 1.4)	
	5	32	A2 normal		A2 fading in/out (ab. V. 1.4)	
	6	64	A1 normal		A1 invers (from V. 1.1)	
	7	128	A2 normal		A2 invers (from V. 1.1)	
98	Random generator		0	√	0 – 3	Add for function, +1 = A1, +2 = A2 (V. 1.1)
19						PWD

CV	Description	S	A	Range	Note
120	A1 command allocation	1			see attachment 1 (if CV 29 Bit 7 = 1, switch address up to 255 (from V. 1.1))
121	A1 dimming value	255	√		see attachment 2
122	A1 condition	0	√		see attachment 3 (from V. 1.1)
123	A1 special function	0	√		see attachment 4
124	A1 time for special function	5	√	1 – 255	time base (0,1s / value)
125	A2 command allocation	2			see attachment 1 (if CV 29 Bit 7 = 1, switch address up to 255 (from V. 1.1))
126	A2 dimming value	255	√		see attachment 2
127	A2 condition	0	√		see attachment 3 (from V. 1.1)
128	A2 special function	0	√		see attachment 4
129	A2 time for special function	5	√	1 – 255	time base (0,1s / value)

**ATTACHMENT 1 – Command allocation**

Value	Application	Note
0 – 28	0 = Switch with light key 1 – 28 = Switch with F-key	Only if CV 29 Bit 7 = 0
+64	permanent off	
+128	permanent on	

**ATTACHMENT 2 – Dimming value**

Value	Application	Note
0 – 255	dimming value	in % (1 % is around 0,2 V)

**ATTACHMENT 3 – Condition**

Value	Application	Note
0	permanent (normal function)	
1	forward only	
2	backward only	
3	standing only	
4	standing „forward“ only	
5	standing „backward“ only	
6	driving only	
7	driving „forward“ only	
8	driving „backward“ only	



ATTACHMENT 4 – Special function		
Value	Application	Note
0	no special function (normal output)	
1	flash symetric	time base (0,1s / value)
2	flash asymetric short ON (1:4)	time base (0,1s / Value) is for the long value
3	flash a symetric long ON (4:1)	
4	Photographer flash	time base (0,25s / value)
5	monoflop (automatic switch off)	time base (0,1s / value)
6	switch on delayed	time base (0,1s / value)
7	firebox	
8	TV flickering	
9	petroleum flickering	
10	flourescent tube	
11	defective flourescent tube	
12	alternating flash to paired output	in combination A1 & A2
13	US strobe light	time base (0,1s / value)
14	US double strobe light	time base (0,1s / value)

## Technical data

- Power supply: 7-27V DC/DCC 5-18V AC
- Current: 5mA (with out functions)
- Maximum function current:
- A1 1 Amps.
- A2 1 Amps.
- Maximum current: 1 Amps.
- Temperature range: -20 up to 65°C
- Dimensions L\*B\*H (cm): 2\*1.5\*0.5

**NOTE:** In case you intend to utilize this device below freezing temperatures, make sure it was stored in a heated environment before operation to prevent the generation of condensed water. During operation is sufficient to prevent condensed water.

## Warranty, Service, Support

micron-dynamics warrants this product against defects in materials and workmanship for one year from the original date of purchase. Other countries might have different legal warranty situations. Normal wear and tear, consumer modifications as well as improper use or installation are not covered. Peripheral component damage is not covered by this warranty. Valid warrants claims will be serviced without charge within the warranty period. For warranty service please return the product to the manufacturer. Return shipping charges are not covered by


micron-dynamics. Please include your proof of purchase with the returned good. Please check our website for up to date brochures, product information, documentation and software updates. Software updates you can do with our updater or you can send us the product, we update for you free.  
Errors and changes excepted.

## Hotline

For technical support and schematics for application examples contact:

- micron-dynamics
- [info@micron-dynamics.de](mailto:info@micron-dynamics.de)
- [service@micron-dynamics.de](mailto:service@micron-dynamics.de)

## Documents / Resources

 <p>mXion PWD Bedienungsanleitung PWD User manual</p>	<p><a href="#">mXion PWD 2-Channel Function Decoder</a> [pdf] User Manual PWD 2-Channel Function Decoder, PWD, 2-Channel Function Decoder, Function Decoder, Decoder</p>
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## References

- [Top Fahrradbekleidung für Damen & Herren - Ride your Style](#)
- [micron-dynamics](#)
- [micron-dynamics](#)