**Manuals+** — User Manuals Simplified.



# mxion EKW/EKWs Switch Decoder User Manual

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**mxion EKW EKWs Switch Decoder**
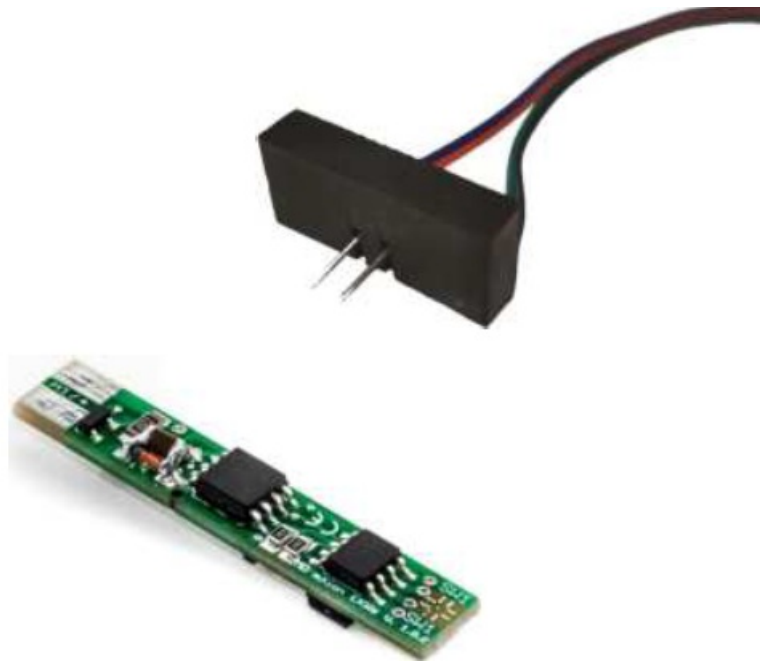
## Introduction

Dear customer, we strongly recommend that you read these manuals and the warning notes thoroughly before installing and operating your device. The device is not a toy (15+).
**NOTE:** Make sure that the outputs are set to appropriate value before hooking up any other device. We can't be responsible For any damage if this is disregarded.
**NOTE:** The switch address is by CV120/121! For addresses < 256 you need only write to CV121!

## General information

We recommend studying this manual thoroughly before installing and operating your new device.
**NOTE:** Some functions are only available with the latest firmware. Please make sure that your device is programmed with the latest firmware.

## Summary of Functions

- DCC NMRA digital operation
- Very small outlet
- Compatible NMRA-DCC module
- 1 reinforced function output
- 1 Switch output
- Implemented function for decoupler tracks
- Defined start switching position
- Pairwised flasher for SW1
- Heart polarisation
- Outputs invertable
- Automatic switch back functions
- Function outputs dimmable
- Reset function for all CV values
- Easy function mapping
- Multiple programming options

- (Bitwise, CV, POM accessories decoder, register) Needs no programming load

**2 available versions**

- EKW shed (plastic housing)
- EKWs for mounting under ramp e.g.

## Scope of supply

- Manual
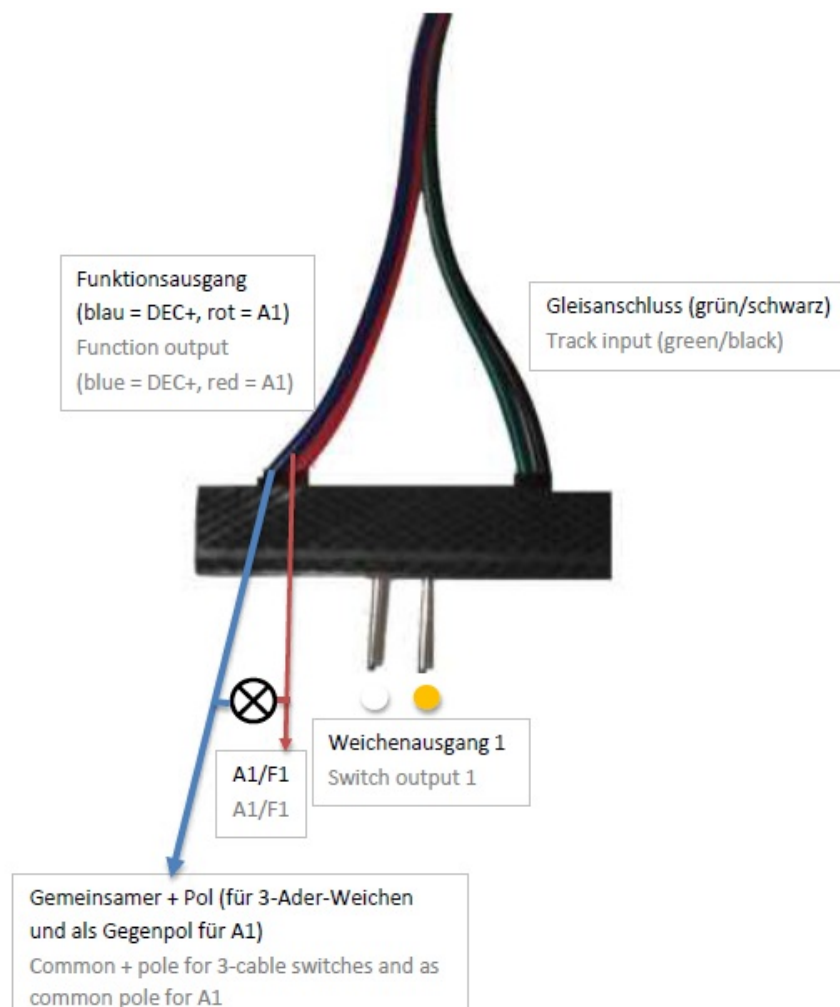- mXion EKW or EKWs

## 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 EKW

- Switch loads between A1 and common + pole. Use with 3-wire switches the common + pole as the center line.
  Not use 3 pole LGB drives!



Funktionsausgang
(blau = DEC+, rot = A1)
Function output
(blue = DEC+, red = A1)

Gleisanschluss (grün/schwarz)
Track input (green/black)

A1/F1
A1/F1

Weichenausgang 1
Switch output 1

Gemeinsamer + Pol (für 3-Ader-Weichen und als Gegenpol für A1)
Common + pole for 3-cable switches and as common pole for A1

- The properties of the EKWs are in accordance with function and wiring exactly the normal EKW. The only difference is the something other construction. This allows the EKWs in many housings can be installed directly (EPL) as well as directly under a railway track become. Here it is optimally protected and carries.



Gleisanschluss (Eingang)
Track input

A1/F1
A1/F1

Gemeinsamer + Pol (für 3-Ader-Weichen und als Gegenpol für A1)
Common + pole for 3-cable switches and as common pole for A1

Weichenausgang 1
Switch output 1

## Product description

The mXion EKW(s) is a small 1 channel switch decoder with 1 function output for switch lanterns or signal lighting.
The two points are also independently of one another and freely addressable. For this purpose, dimming and time units.
Highlight of the EWK(s) is the setting for decoupling tracks. Here you can create a corresponding function output CV 49 Bit 0/1 and automatically with of the switch.
The advantage ist hat the luminous "E" of the LGB® decoupling track as the decouple is active. Now, weather the decouple is still disengaged or coupling.
Ideally, the mode, complement each other with the mode for defined position of SW1. The output of the switched switch automatically to „stop" or „branch".
This hast he advantage that signals on red, decoupling tracks to normal and turn switches to „branch" after the system has been switched on.
So you always have a defined starting position (invertible).
The EKW can be plugged directly to LGB and PIKO as also to our mXion AWA switch drives. The EKW has an weatherproof plastic housing.

## 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 = 235

**Programming options**

This decoder supports the following programming types: bitwise, POM and CV read & write and register-mode and programming switch.
There will be no extra load for programming.
In POM (programming on main track) 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. The 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.

**Programming switch address**

Switch addresses consist of 2 values.
For addresses < 256 the value can be directly in address low. The high address is 0. If the address is > 255 this is as follows (for example address 2000):

- 2000 / 256 = 7,81, address high is 7
- 2000 – (7 x 256) = 208, address low is then 208.

Program these values into the SW1 CVs CV120/121 and A2 (CV127/128).

## 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 (switch outputs)

## Function output features

| Funktion | A1 | SW1 | Timevalue |
|---|---|---|---|
| On/Off | X | X | |
| Deactivated | X | | |
| Permanent-On | X | | |
| Forwards only | | | |
| Backwards only | | | |
| Standing only | | | |
| Driving only | | | |
| Timer sym. flash | | | X |
| Timer asym. short | | | X |
| Timer asym. long | | | X |
| Monoflop | | | X |
| Switch on delay | | | X |
| Firebox | | | |
| TV flickering | | | |
| Photographer flash | | | X |
| Petroleum flickering | | | |
| Flourescent tube | | | |
| Pairwise alternating | | | X |
| Autom. switch back | | X | X |
| Dimmable | X | X | |

## CV-Table

S = Default, L = Loco address, S = Switch address, LS = Loco and switch address usable

| CV | Description | S | L/S | Range | Note |
|---|---|---|---|---|---|
| 7 | Software version | – | | – | read only (10 = 1.1) |
| | **Decoder reset functions** | | | | |
| 7 | 3 ranges available | | | 11<br>16<br>33 | basic settings (CV 1,11-13,17-19,29-119) programming lock (CV 15/16) function- & Switch outputs (CV 120-139) |
| | | | | | |

| CV | Name | Value | | Range | | Description |
|---|---|---|---|---|---|---|
| 8 | Manufacturer ID | 160 | | – | | read only |
| | **Register programming mode** | | | | | |
| 7+8 | Reg8 = CV-Address Reg7 = CV-Value | | | | | CV 7/8 don't changes his real value<br>CV 8 write first with cv-number, then CV 7 write with value or read (e.g.: CV 49 should have 3)<br>è CV 8 = 49, CV 7 = 3 writing |
| 15 | Programming lock (key) | 235 | | LS | 0 – 255 | to lock only change this value |
| 16 | Programming lock (lock) | 235 | | LS | 0 – 255 | changes in CV 16 will change CV 15 |
| 48 | Switch address calculation | 0 | | S | 0/1 | 0 = Switch address like norm<br>1 = Switch address like Roco, Fleischmann |
| 49 | **mXion configuration** | **0** | | **LS** | | **bitwise programming** |

| Bit | Value | OFF (Value 0) | ON |
|---|---|---|---|
| 0 | 1 | A1 normal function | A1 for decouple track lamp |
| 1 | 2 | SW1 no defined position | SW1 defined position |
| 2 | 4 | SW1 def. position „straight" | SW1 def. position „turned" |
| 3 | 8 | SW1 normal output | SW1 inverted output |
| 4 | 16 | A1 normal output | A1 inverted output |
| 5 | 32 | A1 normal output | A1 permanent switched-on |
| 6 | 64 | SW1 normal function | SW1 pairwise flashing |
| 7 | 128 | A1 normal function | A1 heart polarization |

| CV | Name | Value | | Range | Description |
|---|---|---|---|---|---|
| 120 | switch address 1 (SW1) high | 0 | S | 1 – 2048 | switch output 1, if address smaller 256 easy program CV121 = desired address! |
| 121 | switch address 1 (SW1) low | 1 | S | | |
| 122 | switch dimming value | 100 | S | 1 – 100 | dimming value in % (1 % approx. 0,2 V) |

| | | | | | |
|---|---|---|---|---|---|
| 123 | switch time for automatic switch back function | 0 | S | 0 – 255 | 0 = off<br>1 – 255 = time base 0,25 sec. each value |
| 124 | switch switch off time | 10 | S | 0 – 255 | 0 = permanent on<br>1 – 255 = time base 0,25 sec. each value |
| 126 | A1 dimming value | 100 | LS | 1 – 100 | dimming value in % (1 % ca. 0,2 V) |
| 127 | A1 switch address high | 0 | S | 1 – 2048 | function output 1, if address smaller 256 easy program CV128 = desired address! |
| 128 | A1 switch address low | 2 | S | | |
| 129 | A1 time for special function | 10 | LS | 1 – 255 | 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        0.1 Amps.
  - SW1        1.5 Amps. (2 LGB EPL Drives)
- Maximum current: 1.5 Amps.
- Temperature range: -40 up to 85°C
- Dimensions L*B*H (cm):
  - EKW:   3.8*0.8*1.6
  - EKWs:  4*0.7*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.
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## Documents / Resources



**mxion EKW/EKWs Switch Decoder** [pdf] User Manual
EKW EKWs Switch Decoder, EKW, EKWs, EKW Switch Decoder, EKWs Switch Decoder, Switch Decoder, Decoder

## References

- ▱ **Top Fahrradbekleidung für Damen & Herren - Ride your Style**
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