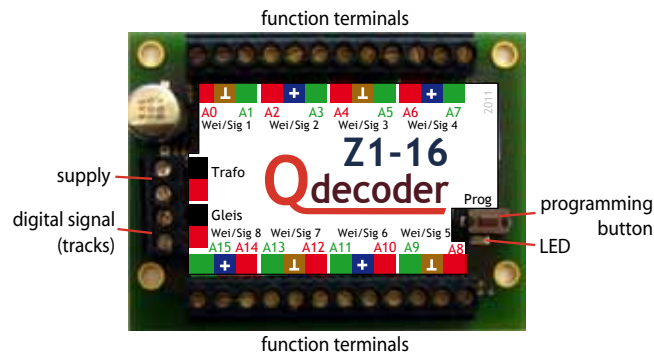


We congratulate you for choosing our Qdecoder to fill your model railway with life. Besides this quick start guide you'll find more information on our web site [www.qdecoder.com](http://www.qdecoder.com).

Please read this manual carefully prior installing your decoder. If **Qdecoder** are used or applied differently than described in this guide the warranty is lost. Do not exceed the maximum current or voltage values given on the rear page of this guide. Do not expose the decoders to direct sunlight or high humidity.

## A Qdecoder in Detail



**Qdecoder** are absolutely flat on the bottom. There are no parts that could scratch the mounting surface. Thus it can be screwed directly on the model railway layout or fixed using a self adhesive tape. Please use appropriate tools for mounting.

## Restoring Factory Settings

Restoring factory settings of a **Qdecoder** is quite simple: Just press the programming button for 10 seconds. What you see is:

- After one second the decoder enters the programming mode and the LED lights - keep pressing the button
- After about 5 seconds the LED starts to flash. This flashing gets faster and faster and after 10 seconds the factory settings are restored - now release the button.

Please keep this guide for later reference!

## Features

|                           |  |
|---------------------------|--|
| size                      | 60 x 45 mm   |
| voltage                   | 9 – 18 V (DC or AC)  |
| rail voltage              | 9 – 27 V (programming track 12 - 18 V)                                       |
| current carrying capacity | 2 A constant current<br>Integrated over current and short circuit protection |
| terminals                 | 16 outputs for e.g. 8 turnouts   |
| protocols                 | DCC or Märklin (Motorola)  |

## Z1-16 series

|  | Z1-16++ | Z1-16+ | Z1-16 | Z1-16N |
|--|---------|--------|-------|--------|
| CV programming                               | ✓       | ✓      | ✓     | ✗      |
| flashing / alternately flashing / pulse mode | ✓       | ✓      | ✓     | ✗      |
| independent dimming                          | ✓       | ✓      | ✓     | ✗      |
| independent fading                           | ✓       | ✓      | ✓     | ✗      |
| independent address configuration            | ✓       | ✓      | ✓     | ✗      |
| sequence programming                         | ✓       | ✓      | ✗     | ✗      |
| freely programmable signal aspect generator  | ✓       | ✓      | ✗     | ✗      |
| predefined signal aspects                    | ✓       | ✗      | ✗     | ✗      |
| simplified sequence programming              | ✓       | ✗      | ✗     | ✗      |

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[www.qdecoder.com](http://www.qdecoder.com)

# Qdecoder

...the all-in-one decoder

## Quick start guide

## Z1-16N

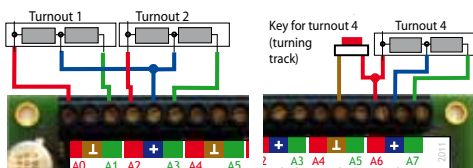
## decoder for 8 turnout drives

## Decoder setup

- Connect the terminals **Gleis** to the digital signal (tracks). Use twisted-pair cables.



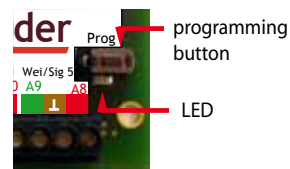
- The terminals labeled **Trafo** supply energy to the decoder. These terminals are either connected to the digital signal as well (as shown on the right) or to an external AC or DC voltage between 12 and 18 V (left).
- The turnout drives are connected to the decoder outputs in pairs. The pairs are labeled **Weiche 1 to 8**. Usually the ■-output switches the turning track of the turnout, while the straight track is switch with the ■-output. With semaphore signal drives the wire for the „stop“ signal aspect is connected to the ■-output. The common return conductor of the coils is connected to the +-terminal. Two output pairs share one common return (shown on the left).



- There is no short circuit protection between the decoder outputs and the track signal! Short circuits can destroy the decoder.
- The brown ground terminals can be used to switch turnouts by a key button additionally (right).
- Attach extra key buttons only to the ground terminals ■.

- Now you are ready to configure digital addresses and the switching duration:
  - Choose an address for the turnouts or signals which should be switched with your decoder. Using the programming button you can select addresses like 1,5,9 and so on for the first pair of outputs. The other output pairs will be set automatically to the following addresses.
  - Select the duration of the output pulse. For most electromagnetic devices  $\frac{1}{4}$  second is enough. Turnouts with auto shut off can be operated in continuous mode.
  - Now press the programming button for one second, until the LED lights. Release it afterwards. The decoder entered programming mode.

Pressing the button again briefly finishes the programming mode.



| address                             | duration of pulse    | command                                      |
|-------------------------------------|----------------------|--|
| 1st turnout configured to address 1 | $\frac{1}{4}$ second | address 1 <span style="color:red">■</span>   |
|                                     | $\frac{1}{2}$ second | address 1 <span style="color:green">■</span> |
|                                     | 1 second             | address 2 <span style="color:red">■</span>   |
|                                     | 2 seconds            | address 2 <span style="color:green">■</span> |
|                                     | continuous mode      | address 3 <span style="color:red">■</span>   |
| 1st turnout configured to address 5 | $\frac{1}{4}$ second | address 5 <span style="color:red">■</span>   |
|                                     | $\frac{1}{2}$ second | address 5 <span style="color:green">■</span> |
|                                     | 1 second             | address 6 <span style="color:red">■</span>   |
|                                     | 2 seconds            | address 6 <span style="color:green">■</span> |
|                                     | continuous mode      | address 7 <span style="color:red">■</span>   |

- Send a digital command using your digital control according to the previous table. Higher accessories addresses can be configured by a programming command to the „appropriate“ address group.

*Example:* To configure the first turnout to address 201 and switching with 1 second pulses send the command „Address 202 ■“.

- If the decoder accepted a valid digital command the LED will switch off. The decoder is now in the normal operation mode.

The Z1-16N is factory programmed to accept DCC commands and switches the outputs with the addresses 1-8 with a duration of  $\frac{1}{4}$  seconds. You can change to Motorola format sending a corresponding command.

In pulse mode only one output will be switched at a time to avoid high current spikes. Multiple switching commands are always processed successively waiting for the configured pulse time to expire.

## Overload and Short Circuits

Decoders are protected against short circuit and over current at the outputs. If the current rises above 2 A the outputs of the decoder will be switched off and can only be reactivated after resetting the decoder.

In case of an over current the LED flashes once for each function output (A0 to A15) and afterwards stops flashing. Short flash pulses show non-critical outputs, while long flash pulses indicate an output, which should be checked.

In this case do the following:

- Check and remove the cause of the short circuit.
- Press the programming button briefly or use the stop button on your digital control to restart it. The configuration of the decoder will not be changed.