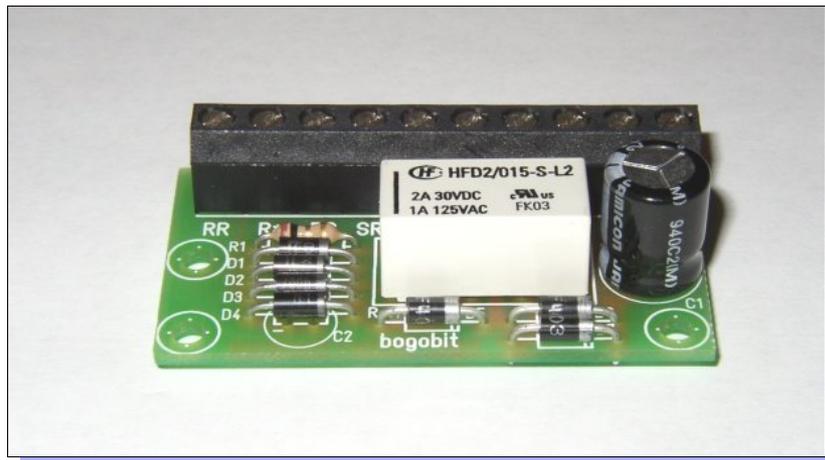


Bogobit Standard-Bremsmodul – Manual



1 Introduction

Please read the instructions completely before using the product. Observe all operating and safety instructions!

The names of companies and products are trademarks of the respective owners. All rights reserved.

2 Intended Use

The Bogobit Standard-Bremsmodul is a brake module for digitally controlled model railways. The module generates a "brake voltage". This lets locos brake smoothly if they are equipped with a suitable decoder. It can be used on model layouts with center stud tracks (Märklin H0). It can be used on digitally controlled model railways using the Märklin/Motorola/mfx protocol.

This product is no toy. It is not suitable for children up to 14 years of age.

Any use other than that described before is not permitted.

The product may not be modified or reassembled.

3 Safety Instructions

3.1 General

In case of damage incurred by disregarding these operating instructions, the warranty claim is void. Liability for any and all consequential damage is excluded!

We do not assume any liability for damage to property or personal injury caused by improper use or the failure to observe the safety instructions! The warranty is voided in these cases.

- For safety and licensing reasons (CE), it is not permitted to change or modify the product. Only use original or equivalent replacement parts for repair.
- Ensure that all electrical connections and connection cables conform to regulations and comply with the operating instructions.
- Upon sudden change of climatic conditions (e. g. transfer from a cold place to a warm room) water may condense on the device, which may lead to damage. Allow approx. 2 hours to acclimate before powering on the device.
- Do not operate the device near easily inflammable objects, liquids or gases. Danger of explosion!
- Do not expose the device to high temperatures, strong vibrations, high humidity or chemically aggressive environment.
- Operate the device only in dry indoor rooms (below 80 % humidity, non condensing) and at normal room temperature (0 °C to 40 °C).
- Do not operate the device unattended.
- When in doubt about safety, or the connection or operation of the device, which is not explained in these operating instructions, please contact us or a recognized expert.

3.2 Electrical Safety

- Operate the module only with low voltage according to the specifications in the technical data chapter. Only use power supplies, such as transformers or digital control stations, that are certified for use in model railway applications. Connection of higher voltages (e.g. 230 V mains voltage) is not permitted, also not on relay contacts. There is danger to life through an electric shock and a risk of fire!
- Adhere to the limits on maximum allowable current according to the specifications in the technical data chapter. Exceeding the limits leads to overload and destruction of the device and bears the risk of fire or electric shock.
- Switch off the power supply before working on the electrical connections.
- Pay attention to appropriate wire cross sections (rule of thumb: 0,1 mm² per 1 A maximum possible current, e. g. 0,5 mm² cross section for 5 A maximum current).

3.3 Heat Generation

Electronic components on the product may heat up during operation.

- When mounting the product, ensure sufficient air circulation around the device to prevent heat build-up and overheating. This especially applies when installing the board in a housing.

4 Function of the bogobit Bremsmodul

4.1 General Function

The Bogobit Bremsmodul Classic is a brake module for digitally controlled model railways. The module generates a “brake voltage”. This brake voltage, when applied to the track, lets locos brake smoothly if they are equipped with a suitable decoder. It can be used on model layouts with center stud tracks (Märklin H0). It can be used on digitally controlled model railways using the Märklin/Motorola/mfx protocol.

The brake voltage is basically just negative DC voltage. This working principle is known to märklin users as the “märklin brake module”. Locos with digital decoders for the Märklin/Motorola/mfx protocol brake, if the voltage on the center studs is not the digital voltage, but a dc voltage. The polarity of the center studs is negative with respect to the rails. Some old or simple decoders, such as Delta and 6080 decoders, may stop in the brake section abruptly, but the vast majority of modern decoders brake smoothly.

Thus, to brake a digital controlled loco smoothly, an isolated track section is required, whose center studs are either connected to digital voltage (the “proceed” state), or to dc voltage (the “brake” state). However, if dc voltage is applied, and a loco travels over the track isolation, the pickup shoe will cause a short circuit between the digital voltage outside, and the dc voltage inside the brake section. Such a short is avoided by additional track sections, a so-called transition track section be-

fore the brake section, and a stop section (or a transition track section alternatively) after the brake section.

The Bogobit Standard-Bremsmodul has the following features:

1. The brake module can be connected in parallel to a turnout or a signal (equipped with a double solenoid drive).
2. In the proceed state, full digital voltage is applied to all track sections. (no jerky drive on the transition track)
3. Long life of relay contacts, because the dc brake voltage is generated permanently without current flow through the relay contact.

5 Connection and Operation

5.1 Handling

The product consists of sensitive electronic components. Improper handling may destroy them. Prior to handling the board, please discharge yourself from electrostatic charge. To do this, touch a metal object (earthed), e.g. a metal PC casing. Try to touch the board only at the edges and avoid touching any electronic components or copper routes on the board.

5.2 Mounting

Mount the module properly to the model railway framework. The module has holes with 3 mm diameter for mounting. Use of wood screws with 3 mm diameter and a flat pan head is recommended. Use spacers (little plastic tubes) between circuit board and mounting surface. Tighten the screws carefully, so that the circuit board does not warp. Also consider the instructions related to heat generation in chapter 3.3.

5.3 Electrical Connections

5.3.1 Wiring Terminals

The external connections of the brake module are labelled on the board and explained in the table below:

Label	Meaning	Connection
0	0	to digital control station "0" / track rails
B	B	to digital control station "B" / track center studs
Ü#	transition track	to center studs of the isolated transition track section
B#	brake track	to center studs of the isolated brake track section
S*	switch contact common	if stop section required: connect to "B"
SG	switch contact green	if stop section required: connect to center studs of stop section
SR	switch contact red	if stop section required: no connection

Label	Meaning	Connection
R*	relay common	to turnout decoder, yellow wire connection
RG	relay green	to turnout decoder, blue/green wire connection
RR	relay red	to turnout decoder, blue/red wire connection

5.3.2 Notes on Wiring

Note for the connections:

- "B" has to be connected with the center stud terminal ("B") of the digital control unit.
- "0" has to be connected with the rails terminal ("0") of the digital control unit.

The center studs of the track have to be isolated into three consecutive track sections. Note:

- The first section, the transition section, has a length longer than the longest pickup shoe. Connect the center studs of this section to "Ü#".
- The middle section, the brake section, has a length greater than the longest braking distance of all trains. Connect the center studs of this section to "B#".
- The third section must be either a transition section or a stop section.
 - If it is a transition section, it has a length longer than the longest pickup shoe. Connect the center studs of this section to "Ü#" like the first section.
 - If it is a stop section, it has a length so that every loco comes to a halt reliably. Connect the center studs of this section to "SG", and connect "S*" with "B"

A stop section is recommended, if you cannot be sure that any loco will brake down to a stop within the brake section. If all locos stop within the brake section, then the third section can be a transition section.

The brake module is switched between the two states "brake" and "proceed" using the control inputs "R*", "RR" and "RG". Connect these to a manually operated control box, or to a märklin digital turnout decoder.

For the polarity of the control inputs please note:

- "R*" is the common positive pole
- "RR" and "RG" are the individual negative poles. "RR" is for brake, and "RG" is for proceed.
- this polarity is compatible with märklin digital turnout decoders and Viessmann 5211 decoders. Turnout decoders of other manufacturers usually have opposite polarity and thus cannot be used easily¹.

If the third track section is wired as a transition track, the relay contact terminals "S*", "SG" and "SR" are available for free usage. They may be used, for example, to control a light signal. In the proceed state, "S*" is connected with "SG"; in the brake state, "S*" is connected with "SR".

Graphical wiring diagrams can be found in a separate document.

¹ Their use is possible after a modification on the brake module: diodes D2 and D4 are removed completely, and diodes D1 and D3 are replaced by a direct wire bridge. After this conversion, it is not possible any more to connect the brake module in parallel with a turnout or signal.

6 Maintenance and Care

The product does not require maintenance. If cleaning is necessary, the product should only be cleaned with a dry cloth or a brush to remove dust etc. Do not use aggressive cleaning agents or chemical solutions.

7 Technical Data

The power supply (connections B and 0) of the device shall be the digital track voltage generated by a digital control unit that is supplied from a transformer of max. 18 V AC or from a power supply with max. 25 V DC.

The max. allowed current on any track section is 2 A.

The maximum relay switching capacity is 2 A current and 30 V DC or AC voltage.

The control voltage applied to the input R* and RR, or to R* and RG, may be DC voltage (properly polarized) or AC voltage. The voltage must be within an allowed range. If the voltage is too low, proper function is not reliable or not possible. If the voltage is too high, the relay may be destroyed due to overload and overheating. For the control voltage applies:

- min. voltage: 12 V DC (or equivalently approx. 8.5 V AC)
- max. voltage if applied for a short time (few seconds) only: 30 V DC or AC
- max. voltage if applied for an extended period of time: 22 V DC or AC

To have effect it is sufficient to apply the control voltage only for a very short time (20 ms). A permanently applied control voltage is acceptable, but will lead to a certain rise of temperature in the relay. For a permanently applied control voltage thus a lower limit for the maximum voltage applies.

Under no circumstances apply a control voltage to both control inputs simultaneously.

8 Further Notes

8.1 CE Marking

The following declaration only applies to products that are manufactured by Bogobit.

The product Bogobit Standard-Bremsmodul complies with the following directives:



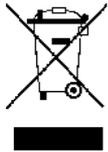
- EC Directive 2004/108/EC on electromagnetic compatibility
- EU Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment

For the evaluation of the compliance with EC Directive 2004/108/EC, the following harmonised standards are applied:

- EN 55014-1:2006
- EN 55014-2:1997 + A1:2001

The manufacturer keeps the EC declaration of conformity and corresponding technical documentation and provides this to a competent national authority upon a reasoned request.

8.2 Hazardous Substances, Disposal



The product – if manufactured by Bogobit – complies with the Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment, implemented in Germany through the Elektro- und Elektronikgerätegesetz (ElektroG).

The manufacturer complies with the Directive 2002/96/EC on waste electrical and electronic equipment (WEEE), implemented in Germany through the Elektro- und Elektronikgerätegesetz (ElektroG).

Electrical and electronic devices must not be disposed of with domestic waste. Please dispose of the device at the end of its service life in accordance with legal regulations, e. g. return the device to public collection points.

8.3 Address of Manufacturer

For technical enquiries please contact:

bogobit – Siegfried Grob
Burgstr. 8
89192 Rammingen
Germany

E-Mail: anfrage@bogobit.de

9 References

The following documents have further information on putting into service:

- [1] Wiring schemes (German: Anschlussbeispiele) Bogobit Standard-Bremsmodul, see: <http://bogobit.de/bremsmodul/standard> chapter “Weiterführende Informationen”
- [2] Website on recommended decoder settings: <http://bogobit.de/bremsmodul/decodereinstellung>