DREHZAHLREGLER
12/24VDC 10A

Art.- Nr. 1 19 15 10

H TRONIC

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INHALT

D BEDIENUNGSANLEITUNG DEUTSCH

GB ENGLISH MANUAL (page 14)

MOTOR SPEED REGULATOR 12/24VDC 10A

GB

Art.- No. 1 19 15 10

THIS SPEED CONTROL WAS SPECIALLY DESIGNED FOR LOW VOLTAGE ELECTRIC MOTORS. The main use is infinitely variable rate control of electric DC motors, model cars, windscreen wiper motors as well as electric tools. Due to the pulse width modulation of 20 Hz, the power dissipation stays low. By using a MOSFET transistor the outgoing power can be set between 0 A and 10 A. The electronics of the device are protected, even if the motor should stop unexpectedly. By using a second, additional potentiometer, you have the possibility of stabilizing the revs per minute, independent of the load connected.

HIGHLIGHTS

– High modulation frequency (approx. 20 kHz), low noise.
– High efficiency by using a power MOSFET.
– External control possible by voltage (0–5V DC/0–10 V DC) or an external potentiometer.
– Maximum output current can be adjusted.
– Adjustable "Rxl" – compensation (load compensation)
– Electronic short-circuit and overload protection.
– Cap Rail mount.
– Compact dimensions.

TECHNICAL DATA

– Power supply:
  12 to 24 VDC (10 to 28 VDC)
– Max. Output: 10 A
– Heat sink temperature:
  12 V/10 A: 40°C; 24 V/10 A: 65°C
– Output control: 0.2 – 10 A
– Rev. control: 0%–100%
– Dimensions: 68 x 93 x 35 mm
  (without cap rail housing)

SAFETY INSTRUCTIONS

The following safety instructions are not only for the safety and protection of the device, but also for the protection of your own safety and health. Please read and follow them carefully. This user guide contains information about the installation, service and maintenance of your device. If you should pass the device to another person, do not forget to include this user guide.
In no event will liabilities be taken for consequential, incidental, direct or indirect damages resulting from improper use of the device according to the user guide. The warranty expires, if the instructions in the user guide are not followed or the device is used in any other way as intended.

All persons using, handling, installing, servicing and maintaining this device must be trained and qualified for handling, installing and repairing this device and follow this user guide. This device may only be opened or repaired by a person authorized and qualified to do so and/or who has the knowledge of electrical safety regulations. If the device is opened there is a risk of electric shock. Disconnect the device from the mains before opening the device.

Do not leave the packaging material lying around. Children might play with the plastic bags and risk suffocation. This product is not a toy and not suitable for infants and children. Infants and children cannot assess the risks involved, when dealing with electrical devices.

DANGER! The unit should only be opened by a specialist. Detach the device from the mains before opening it. Opening the device will reveal components which have a live current and can be hazardous to your health when touched.

1. DESIGNATED USE

The designated use of this device is the speed control of electric DC motors with a voltage of 12 to 24V and maximum power consumption of 10A. Any other use is prohibited.

This device has been manufactured and checked according to the general safety standards. The user is obligated to follow the instruction manual and safety instructions carefully.

2. OPERATING CONDITIONS

- The device may only be used in combination with the designated voltage range.
- Connecting a device with a power consumption of more than 10A can cause damage to the unit and be hazardous for your health.
- Be sure to use a cable with sufficient gauge when installing the control unit.
- Be sure to install fuses within the setup.
- The device should not be installed in close vicinity of magnets or HF fields as these can influence the performance.
- The surrounding temperature should be between –20°C and 40°C.
- This device has been designed for indoor use only. Make sure that the alarm unit is not subjected to high humidity or water.
- If the device has been subjected to colder temperatures and is taken into a warm surrounding, then first let it adapt to the surrounding temperature, so that condensation cannot cause damage.
- Make sure that there are no inflammable liquids, gases or dust sources in the near vicinity of the device during use.

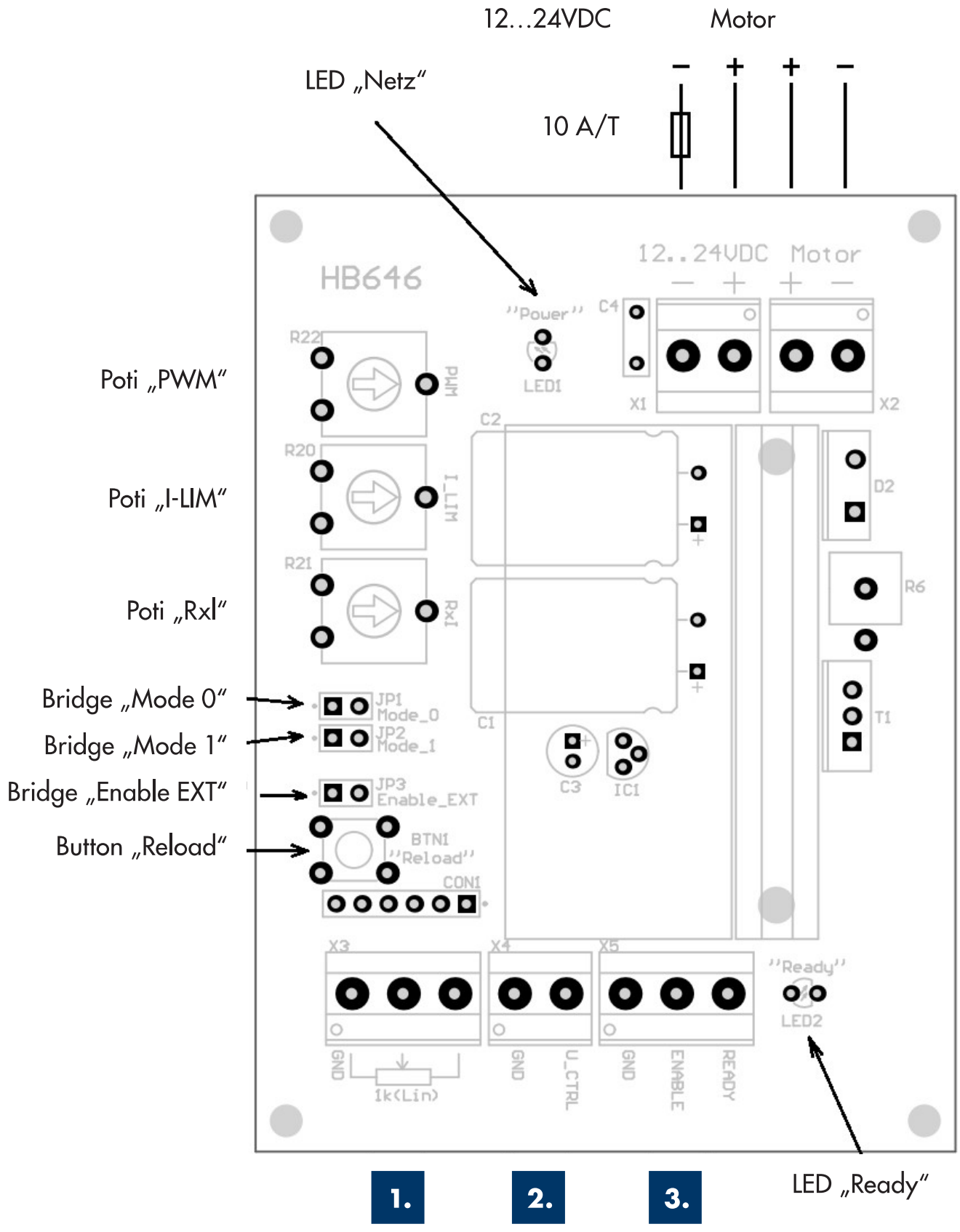
– This device is not a toy and should not be handled by infants and children under 14.
– This device should only be operated by an expert or a person who is qualified to do so.
– When installed in public buildings all rules and regulations referring to public installation need to be followed.
– If a device needs to be repaired at any time, it may only be repaired with original components. The use of different components can lead to serious damages and has a danger of electrocution.
– If you have doubts on the function or questions, please contact your local dealer or our service center.
– No liabilities will be taken for damages or claims resulting out of not reading and/or not following the user guide and/or any form of modification on or in the product. Under these circumstances, no warranty services will be given.
– Liability cannot be taken for consequential damages.

3. DIRECTIONS ON THE CONTROL CARD PCB

These are directions for the use of the Control Card PCB with electric motors and drive systems according to the current EG Machinery Directives, EMV Directives and Low Voltage Directories.

The PCB may only be installed and operated by an expert or a person who is qualified to do so. All VDE-Regulations must be followed accordingly. The Control Card PCB cannot be used as a stand-alone unit. CE marking is only required for fully assembled, fully functioning devices. The Control Card PCB or and electronic motor are only components of a complete system and do not therefore fall under the rule of individual CE approval.

This controller is designed for controlling the DC power output and can be used to control the speed of connected electric motors or the brightness of low voltage lamps. The user is obliged that the device and the connected devices are assembled and mounted according to be applicable regulations.



1. Connector for external potentiometer
2. Connector for external power control
3. “Enable” – input indicator
   “Ready” – output indicator

4. POTENTIOMETER AND FUNCTION

LED

LED "Power": the power supply is connected and working.

LED "Ready": indicates that the device is ready for use.

R20 "I LIM": adjusts the power output between 0.2 A-10A.

R22 "PWM": adjusts the revs per minute of the connected motor from 0% to 100%.

R8 "RxI": adjusts the "RxI"-compensation. The trimmer is adjusted in such a way that the speed deviation is adjusted to minimum at the lowest possible speed. Should the speed vary, then the "RxI" needs to be turned to the left.

JUMPER

Jumper JP1 "Mode 0" and JP 2 "Mode 1" define how the device is controlled:

JP1	JP2	Function
Open	**Open**	The device is controlled by the internal potentiometer (R22)
Close	**Open**	The device is controlled by an external potentiometer (socket X3, 1 kOhm, linear)
Open	**Close**	The device is controlled by an external voltage (0...5V) (socket X4) input resistance approx. 25 kOhm
Close	**Close**	The device is controlled by an external voltage (0...10V) (socket X4) Eingangswiderstand approx. 25 kOhm

Jumper JP 3 „Enable EXT" defines from which source the controller can be enabled.

JP 3 is open: the controller is automatically enabled by internal control.

JP 3 is closed: the controller is enabled by an external source. In this case the controller requires a voltage between 5 and 30 V DC at the socket X 5. (Socket „Enable EXT" input resistance approx. 22 kOhm). If the signals is recognized, the controller will answer with the input power voltage at the socket X 5. (Socket „Ready" input resistance approx. 2,2 kOhm). The controller is then ready to be used.

BUTTONS

Button BTN1: the jumper settings are registered on the device is connected to the power. If changes are made to the settings, pressing BTN1 will reset the device and register the new settings.

5. OPERATING THE CONTROLLER

The power supply required needs a DC voltage of 10-28 V. The fluctuation should be less than 20% at maximum load. The connecting wires to „Netzteil – Gerät" and „Gerät – Motor" should be kept as short as possible and have a sufficient thickness. An external fuse is recommended, as a reverse voltage will damage the device.

The potentiometer R21 should first be set to full left (0).

The adjustment should be done in the following steps:

1. Turn the potentiometer R21 to the full left. RxI compensation is switched off.
2. Turn the potentiometer R20 to the position required for use.
3. Set the potentiometer R22 to 30-50%.
4. Begin adding RxI compensation by turning the potentiometer R8 to the right and at the same time adding the load to the electric motor. If the motor starts stuttering or running at different speeds, then lessen the RxI compensation until the motor is running stable again, by turning to the left.

6. TROUBLE SHOOTING

Only use the device if it is functioning without disturbance. If there is any malfunction, switch off the device immediately and consult a specialist. The device may only be reinstalled after it has been checked thoroughly. Signs of malfunction are if:

– The device is visibly damaged.
– The device is malfunctioning.
– Attached cables or the housing has come loose.

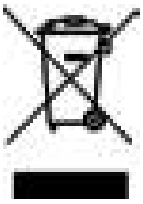
Repairs may only be done by a qualified person or a specialist using original components and parts. There is the danger of electrocution.

7. GUARANTEE

The dealer/manufacturer from which you have purchased this device gives a guarantee for material and function of the device for two years. Should functional defect occur, then the dealer/manufacturer has the right to repair or exchange the device. All exchanged devices are property of the dealer/manufacturer. The customer is committed to indicating any defects immediately together with the purchasing invoice.
The dealer/manufacturer cannot be made liable for defects or malfunctions that occur due to incorrect handling, incorrect mounting, incorrect assembly, the use of non-authorized components or unauthorized changes applied to the device. He can also not be made liable if the instruction manual has not been read and followed. In this case also all rights for guarantee will be void.
The dealer/manufacturer cannot be made liable for any costs and risks occurring through transport, mounting, assembly or any consequential repairs and/or costs.

The guarantee is void and the device will be returned to you at your cost if:
– Changes have been made to the device.
– Unauthorized repairs have been made to the device.
– The layout has been changed without consulting the manufacturer.
– Original components have not been used.
– The instruction manual has not been followed.
– The device has been subjected to overload for power surge.
– The device has been connected to an incorrect power source.
– Incorrect and negligent handling.

8. ENVIRONMENT



Consumers are legally obligated and responsible for the proper disposal of electronic and electrical devices by returning them to collecting sites designated for the recycling of electrical and electronic equipment waste. This device and/or components within the device can be recycled. For more information concerning disposal sites, please contact your local authority or waste management company.