

Manual

BiDi-Power

Item no. 46-09016 | 46-09017



Power Supply
for BiDiB-Devices



tams elektronik



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Subject to technical modification.

1. Getting started

Notes on BiDiB®

The BiDiB devices described in this manual comply with the standards of the BiDiB specification (status V0.7). The BiDiB specification has been published on: www.bidib.org.

BiDiB® is a registered trademark. Copyrights and trademarks to BiDiB are held by Wolfgang Kufer, OpenDCC.de.

In order to increase the readability of this text, we have refrained from referring to it whenever the term BiDiB is used.

How to use this manual

This manual gives step-by-step instructions for safe and correct connecting of the module, and operation. Before you start, we advise you to read the whole manual, particularly the chapter on safety instructions and the checklist for trouble shooting. You will then know where to take care and how to prevent mistakes which take a lot of effort to correct.

Keep this manual safely so that you can solve problems in the future. If you pass the module on to another person, please pass on the manual with it.

Intended use

The module is designed to be operated according to the instructions in this manual in BiDiB-controlled model railway layouts. Any other use is inappropriate and invalidates any guarantees.

The module should not be mounted by children under the age of 14.

Reading, understanding and following the instructions in this manual are mandatory for the user.

Package contents

- a module BiDi-Power, depending on the model
ready-built module, item number 46- 09016 or
ready-built module in a housing, item number 46- 09017
- an Ethernet patch cable with RJ-45 connectors (length: 0.5 m)
- a CD (containing the manual and further information)

Required materials

As a power supply you need a power pack (e.g. a.c. power pack item no. 70-09110-01):

Voltage	12 V a.c. voltage or 16 – 18 V d.c. voltage
Current	min. 600 mA
Connection to BiDi-Power	Coaxial power connector (DC power connector) external / internal diameter of the plug: 5.5 / 2.1 mm

2. Safety instructions



Caution:

The module contains integrated circuits. These are very sensitive to static electricity. Do not touch components without first discharging yourself. Touching a radiator or other grounded metal part will discharge you.

Mechanical hazards

Cut wires can have sharp ends and can cause serious injuries. Watch out for sharp edges when you pick up the PCB.

Visibly damaged parts can cause unpredictable danger. Do not use damaged parts: recycle and replace them with new ones.

Electrical hazards

- Touching powered, live components,
 - touching conducting components which are live due to malfunction,
 - short circuits and connecting the circuit to another voltage than specified,
 - impermissibly high humidity and condensation build up
- can cause serious injury due to electrical shock. Take the following precautions to prevent this danger:
- Never perform wiring on a powered module.
 - Assembling and mounting the kit should only be done in closed, clean, dry rooms. Beware of humidity.
 - Only use low power for this module as described in this manual and only use certified transformers.
 - Connect transformers and soldering irons only in approved mains sockets installed by an authorised electrician.
 - Observe cable diameter requirements.

- After condensation build up, allow a minimum of 2 hours for dispersion.
- Use only original spare parts if you have to repair the kit or the ready-built module.

Other dangers

Children can cause any of the accidents mentioned above because they are inattentive and not responsible enough. Children under the age of 14 should not be allowed to mount this module.

In schools, training centres, clubs and workshops, assembly must be supervised by qualified personnel.

In industrial institutions, health and safety regulations applying to electronic work must be adhered to.

3. Operation overview

According to the BiDiB-specification devices (so-called "nodes") without need for additional current for their basic functions (e.g. feedback modules) get the current they need via the bus line.

As a power supplier you can use:

- BiDiB-devices connected directly to a power supply (e.g. digital central unit, accessory decoders), which are designed to feed current into the bus line
- specific BiDiB-power supplies

The BiDi-Power module is designed as a power supply for BiDiB-nodes and can provide up to 500 mA current. For the connection of the PCB to the BiDiBus Ethernet patch cable with RJ-45 connectors are used – as usual with BiDiB-devices.

4. Technical specifications

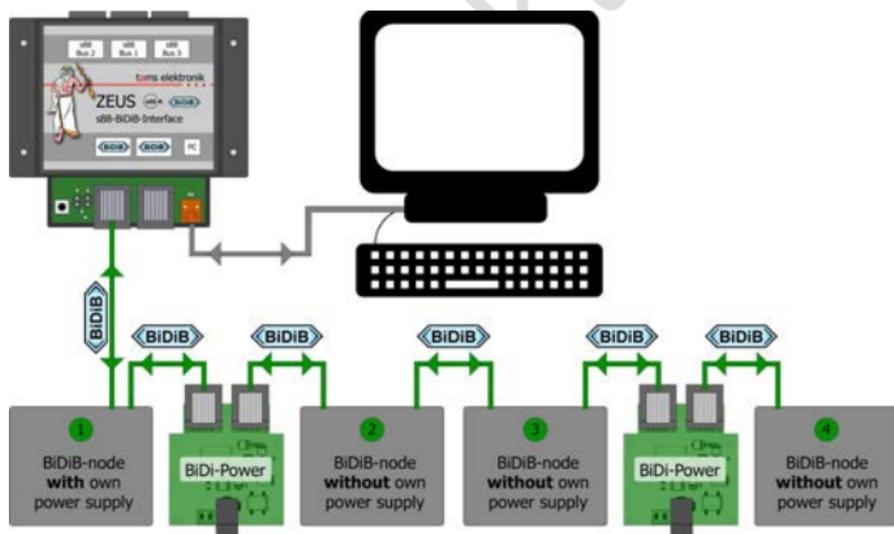
Voltage supply	12 V a.c. voltage oder 16 – 18 V d.c. voltage
Connection of supply voltage	Socket for coaxial power connector (DC power connector) external / internal diameter: 5.5 / 2.1 mm
Connection to BiDiB	2 RJ 45 connection sockets
Max. output current	500 mA
Protected to	IP 00
Ambient temperature in use	0 ... +60 °C
Ambient temperature in storage	-10 ... +80 °C
Comparative humidity allowed	max. 85 %
Dimensions of the PCB / including housing	approx. 48 x 52 mm approx. 70 x 60 x 25 mm
Weight of the assembled board / including housing	approx. 20 g approx. 37 g

5. Connections

Arrangement in the bus line

The BiDi-Power module can only supply BiDiB components that are subsequently connected to the bus line (viewed from the direction of the interface). In order to be able to make optimal use of the current provided by the BiDi-Power, you must install the BiDi-Power **directly** in front of the BiDiB component(s) to be supplied in the bus line (viewed from the interface).

If one BiDi-Power is not sufficient to supply all BiDiB components on one bus line, you can connect further BiDi-Power modules. Insert these **directly** in front of the node or nodes to be supplied in the bus line.



In the example, a BiDi-Power module supplies nodes 2 and 3 and another BiDi-Power node 4. Before the first BiDi-Power module, a node with its own power supply is connected to the BiDiBus.

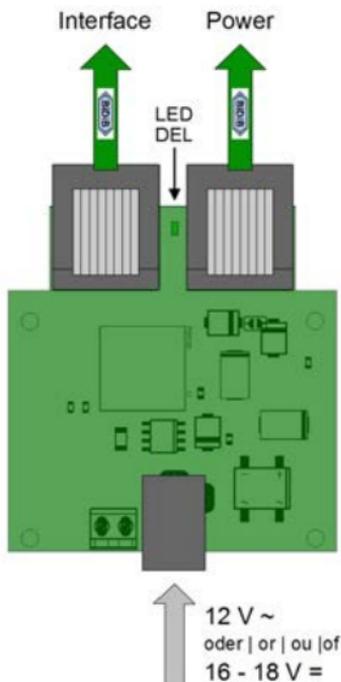
Connection to the BiDiBus

In order to connect the module BiDi-Power to the BiDiBus you use Ethernet patch cables with RJ-45 connectors.

Connect the two Ethernet-cables according to the connection diagram to the RJ 45 connection sockets

- Interface
- Power

Observe the correct assignment of the cables to the two sockets.



! Attention:

An interchanged connection of the two Ethernet-cables to the sockets "Interface" and "Power" possibly causes serious damage to BiDi-Power and other current suppliers connected to the bus line. In case you discover a wrong connection, disconnect the power supply for the BiDi-Power module **immediately!**

Connection to the voltage supply

As a voltage source you can use a power pack with

- 12 V a.c. voltage (~) or
- 16 – 18 V d.c. voltage (–)

in each case with a current of at least 600 mA.

The connection of the power pack to BiDi-Power is made via a coaxial power connector (DC power connector) 5.5 / 2.1 mm



Attention:

Do not use a power pack with a higher nominal voltage than specified. The resulting surplus power has to be dissipated as heat by BiDi-Power. With a too high power, there is a **risk of fire!**

Displaying operational readiness

As soon as the LED between the two RJ 45 connection sockets lights, BiDi-Power is connected to the voltage supply and ready for use.

6. Check list for troubleshooting

- Parts are getting too hot and/or start to smoke.



Disconnect the system from the mains **immediately!**

Possible cause: The two connections "Interface" and "Power" are interchanged on the BiDiBus. Thus the current flows into the wrong direction.

Possible cause: The power pack provides a too high voltage.

Possibly the module BiDiPower and/or other current suppliers connected to the BiDiBus line have been damaged.

- There is no voltage applied to the BiDiB-nodes intended to be supplied by BiDi-Power.

Possible cause: The two connections "Interface" and "Power" are interchanged on the BiDiBus. → Disconnect the power supply for the BiDi-Power **immediately!** Otherwise, the module BiDiPower and/or other current suppliers connected to the BiDiBus line possibly are damaged.

Possible cause: The connection to the power supply has been interrupted. → Check the connections.

Possible cause: The current of all connected BiDiB-nodes exceeds 500 mA. → Check the current of the nodes and connect additional modules BiDi-Power, if required.

Hotline

If problems with your module occur, our hotline is pleased to help you (mail address on the last page).

Repairs

You can send in a defective module for repair (address on the last page). In case of guarantee the repair is free of charge for you. With damages not covered by guarantee, the maximum fee for the repair is 50 % of the current sales price according to our valid price list. We reserve the right to reject the repairing of a module when the repair is impossible for technical or economic reasons.

Please do not send in decoders for repair charged to us. In case of warranty we will reimburse the forwarding expenses up to the flat rate we charge according to our valid price list for the delivery of the product. With repairs not covered by guarantee you have to bear the expenses for sending back and forth.

7. Guarantee bond

For this product we issue voluntarily a guarantee of 2 years from the date of purchase by the first customer, but in maximum 3 years after the end of series production. The first customer is the consumer first purchasing the product from us, a dealer or another natural or juristic person reselling or mounting the product on the basis of self-employment. The guarantee exists supplementary to the legal warranty of merchantability due to the consumer by the seller.

The warranty includes the free correction of faults which can be proved to be due to material failure or factory flaw. With kits we guarantee the completeness and quality of the components as well as the function of the parts according to the parameters in not mounted state. We guarantee the adherence to the technical specifications when the kit has been assembled and the ready-built circuit connected according to the manual and when start and mode of operation follow the instructions.

We retain the right to repair, make improvements, to deliver spares or to return the purchase price. Other claims are excluded. Claims for secondary damages or product liability consist only according to legal requirements.

Condition for this guarantee to be valid, is the adherence to the manual. In addition, the guarantee claim is excluded in the following cases:

- if arbitrary changes in the circuit are made,
- if repair attempts have failed with a ready-built module or device,
- if damaged by other persons,
- if damaged by faulty operation or by careless use or abuse.

8. EU declaration of conformity

CE This product conforms with the EC-directives mentioned below and is therefore CE certified.

2004/108/EG on electromagnetic. Underlying standards: EN 55014-1 and EN 61000-6-3. To guarantee the electromagnetic tolerance in operation you must take the following precautions:

- Connect the transformer only to an approved mains socket installed by an authorised electrician.
- Make no changes to the original parts and accurately follow the instructions, connection diagrams and PCB layout included with this manual.
- Use only original spare parts for repairs.

2011/65/EG on the restriction of the use of certain hazardous substances in electrical and electronic equipment (ROHS). Underlying standard: EN 50581.

9. Declarations conforming to the WEEE directive



This product conforms with the EC-directive 2012/19/EG on waste electrical and electronic equipment (WEEE).

Don't dispose of this product in the house refuse, bring it to the next recycling bay.

Information and tips:

<http://www.tams-online.de>

Warranty and service:

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