

WIB-5



Innenbeleuchtung
für Faller* Car-System
und Modellbahn-Fahrzeuge

Interior Lighting
compatible to Faller* Car-System
and Model Railway Carriages

Eclairage intérieur
pour Faller* Car-System
et véhicules ferroviaires

Binnenverlichting
voor Faller* Car-System
en modelspoorvoertuigen

Art.-Nr. 22-01-076

Anleitung

Manual

Mode d'emploi

Handleiding



© 08/2005 Tams Elektronik GmbH

Alle Rechte, insbesondere das Recht der Vervielfältigung und Verbreitung sowie der Übersetzung vorbehalten. Vervielfältigungen und Reproduktionen in jeglicher Form bedürfen der schriftlichen Genehmigung durch die Tams Elektronik GmbH.

Technische Änderungen vorbehalten.

© 08/2005 Tams Elektronik GmbH

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, without prior permission in writing from Tams Elektronik GmbH.

Subject to technical modification.

© 08/2005 Tams Elektronik GmbH

Tout droits réservés, en particulier les droits de reproduction et de diffusion ainsi que la traduction. Toute duplication ou reproduction sous quelque forme que ce soit nécessite l'accord écrit de la société Tams Elektronik GmbH.

Sous réserve de modifications techniques.

© 08/2005 Tams Elektronik GmbH

Alle rechten voorbehouden. Niets uit deze publicatie mag worden vermenigvuldigd opgeslagen of openbaar gemaakt, zonder voorafgaande schriftelijke toestemming van Tams Elektronik GmbH.

Technische wijzigingen voorbehouden.

■		
■		
■		
■	Deutsch	3
■	English	13
■	Français	23
■	Nederlands	33

■

■

■

■

■

■

■

■

■

Table of contents

How to use this manual	14
Intended use	14
Safety instructions	14
EMC declaration	16
Summary of operation	17
Technical specifications	17
Checking the package contents	18
Required tools and materials	18
Safe and correct soldering	19
Mounting the interior lighting	20
FAQ	21
Manufacturer's note	21
Certification	21
Conditional warranty	22
 Shortening the PCB (Fig. 1)	 I
Mounting in a vehicle compatible to the Faller* Car System (Fig. 2)	II
Mounting in a model railway vehicle (Fig. 3)	III
Circuit Diagram (Fig. 4)	IV
(Pages I to IV in the centre of this handbook are removeable.)	

How to use this manual

If you have no specialist technical training, this manual gives step-by-step instructions for safe and correct fitting of the module, and operation. Before you start, we advise you to read the whole manual, particularly the chapter on safety instructions and the FAQ chapter. 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 can be used according to the specifications in this manual as interior lighting for a model vehicle (e.g. bus compatible to the Faller* Car-System, model railway carriage).

The module is not suitable for children under the age of 14. Reading, understanding and following the instructions in this manual are mandatory for the user. Any other use is inappropriate and invalidates any guarantees.

Safety instructions

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,
- connecting the circuit to another voltage than specified,

- impermissibly high humidity,
- 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.
- Mounting the module 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 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.

Fire risk

Touching flammable material with a hot soldering iron can cause fire, which can result in injury or death through burns or suffocation. Connect your soldering iron or soldering station only when actually needed. Always keep the soldering iron away from inflammable materials. Use a suitable soldering iron stand. Never leave a hot soldering iron or station unattended.

Thermal danger

A hot soldering iron or liquid solder accidentally touching your skin can cause skin burns. As a precaution:

- use a heat-resistant mat during soldering,
- always put the hot soldering iron in the soldering iron stand,
- point the soldering iron tip carefully when soldering, and
- remove liquid solder with a thick wet rag or wet sponge from the soldering tip.

Dangerous environments

A working area that is too small or cramped is unsuitable and can cause accidents, fires and injury. Prevent this by working in a clean, dry room with enough freedom of movement.

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 work with this module.

Little children can swallow small components with sharp edges, with fatal results! Do not allow components to reach small children.

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.

EMC declaration

This product is developed in accordance with the European standards EN 55014 and EN 50082-1, tested corresponding to the EC - directive 89/336/EEG (EMVG of 09/11/1992, electromagnetic tolerance) and meets legal requirements.

To guarantee the electromagnetic tolerance 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, circuit diagram and connections diagrams included with this manual.
- Use only original spare parts if you have to repair module.

Summary of operation

You can adapt the module to different carriage sizes by shortening the PCB. The following partitioning of the PCB is possible:

- 1 piece with a length of 75 mm and 4 LEDs (= complete length)
- 1 piece with a length of 60 mm and 3 LEDs
- 1 piece with a length of 52 mm and 3 LEDs
- 1 piece with a length of 38 mm and 2 LEDs

A LED constant current source is integrated into the module to reduce brightness fluctuations of the LEDs due to voltage variations.

The module is particularly designed for the use in vehicles compatible to the Faller* car system, that are run with two accumulator batteries (e.g. as interior lighting for busses).

When mounted in model railway carriages, a rectifier has to be connected in series, as the module should be run with direct voltage only. This applies to model railways that are run with direct voltage (2-rail systems), too, as in these systems the polarity changes with the direction of motion. In order to shunt short current interruptions you can mount an additional electrolytic capacitor.

Technical specifications

Supply voltage	2 to 20 Volt D.C.
Current consumption	approx. 30 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	approx. 76 x 6,8 x 2 mm
Weight	approx. 0,5 g

Checking the package contents

Check the contents of the package for completeness after unpacking:

- one module,
- one manual.

Required tools and materials

Make sure you have the following tools and materials ready for use:

- an electronic soldering iron (max. 30 Watt) with a fine tip,
- a soldering iron stand,
- a tip-cleaning sponge and a heat-resistant mat,
- a small side cutter and wire stripper,
- a pair of tweezers,
- tin solder (0,5 mm. diameter),
- enamelled copper wire or thin connecting wire,
- a rectifier (if mounted in model railway carriages),
- if necessary an electrolytic capacitor (to shunt short voltage interruptions).

Safe and correct soldering



Caution:

Incorrect soldering can cause dangers through fires and heat. Avoid these dangers by reading and following the directions given in the chapter **Safety instructions**. If you have had training in soldering you can skip this chapter.

- Use a small soldering iron with max. 30 Watt. Keep the soldering tip clean so the heat of the soldering iron is applied to the solder point effectively.
- Only use electronic tin solder with flux.
- When soldering electronic circuits never use soldering-water or soldering grease. They contain acids that can corrode components and copper tracks.
- Solder quickly: holding the iron on the joints longer than necessary can destroy components and can damage copper tracks or soldering eyes.
- Apply the soldering tip to the soldering spot in such a way that the wire and the soldering eye are heated at the same time. Simultaneously add solder (not too much). As soon as the solder becomes liquid take it away. Hold the soldering tip at the spot for a few seconds so that the solder flows into the joint, then remove the soldering iron.
- The joint should be held still for about 5 seconds after soldering.
- To make a good soldering joint you should use a clean and unoxidised soldering tip. Clean the soldering tip with a damp piece of cloth, a damp sponge or a piece of silicon cloth.
- After soldering check (preferably with a magnifying glass) tracks for accidental solder bridges and short circuits. This would cause faulty operation or, in the worst case, permanent damage. You can remove excess solder by putting a clean soldering tip on the spot. The solder will become liquid again and flow from the soldering spot to the soldering tip.

Mounting the interior lighting

If necessary you have to adapt the length of the PCB to size of the carriage first. You can saw through the PCB at the places shown in fig. 1.



Pay attention not to damage the connection pads, the parts and the connecting lines on the PCB when sawing.

Next solder the two connecting wires to the connection pads of the PCB.

Mounting in a vehicle compatible with the Faller* Car System

Follow the connections diagram fig 2. Connect the connecting wires to the accumulator batteries of the vehicle. Take into account the polarity of the connections!

Mounting in a model railway vehicle



Caution:

If mounting the interior lighting in a model railway vehicle you have to mount a rectifier in series, otherwise the module will be damaged. This applies to model railways, that run with direct voltage (2-rail systems), as well, as in these systems the polarity changes with the direction of motion.

Follow the connections diagram fig 3. Connect the rectifier to the voltage supply and the interior lighting. Take into account the polarity of the connections!

A LED constant current source is integrated into the module to reduce brightness fluctuations of the LEDs due to voltage variations. Additionally you can mount an electrolytic capacitor which supplies the voltage for running the module when the voltage is interrupted for a short time (e.g. in areas with bad contacts). Use an electrolytic capacitor with a capacity of at least 100 μF and a voltage sustaining capability of at least 25 V. Follow the connections diagram fig. 3 when mounting the capacitor.

Fixing the interior lighting

After completing the connections, secure the lighting in place (eg. with double sided adhesive tape).

FAQ

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



Disconnect the system from the mains immediately!

Possible cause: The module has been mounted without taking into account the polarity. → Check the connections. Possibly the module is irreparably damaged.

Possible cause: The module has been mounted in a model railway carriage without mounting a rectifier in series. → Mount a rectifier. Possibly the module is irreparably damaged.

- The interior lighting does not work.

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

Possible cause: The power supply to the vehicle is interrupted. → Check the power supply.

If you cannot find the problem, please return the module for repair (address on the cover page).

Manufacturer's note

According to DIN VDE 0869, the person who assembles and/or mounts a circuit in its' casing is the manufacturer of the product. If he sells the product to another person he is responsible for passing on all the relevant papers and his name and address.

Certification

This product conforms with the EC- directive 89/336/EEG on electromagnetic radiation and is therefore CE certified.

Conditions of warranty

This product is guaranteed for two years. The warranty includes the correction of faults which can be proved to be due to material failure or factory flaw. We guarantee the function of the parts according to the parameters in not mounted state as well as the adherence to the technical specifications of the circuit when assembled and connected according to the manual.

Other claims are excluded. By law, we are not responsible for damages or secondary damages in connection with this product. We retain the right to repair, make improvements, supply spare parts or return the purchase price.

The following invalidate the warranty:

- using an unsuitable soldering iron, solder containing liquid acids or similar,
- if damage is caused by not following the instructions in this manual or the connection diagram(s)
- if the module has been altered and repair attempts have failed,
- if arbitrary changes in the circuit are made,
- if additional components are added which are not described in the manual,
- if the copper tracks or soldering eyes are damaged,
- if damage occurs due to an overload of the module,
- if connected to a incorrect voltage or current,
- if damaged by other persons,
- if damaged by faulty operation or if damaged by careless use or abuse.

* **"Faller"** is a registered and protected trade mark of Gebrueder Faller GmbH, Guetenbach, Germany.

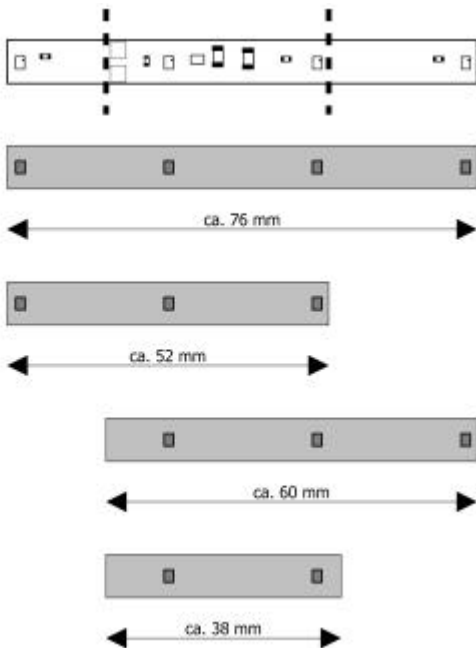
Kürzen der Platine

Shortening the PCB

Raccourcissement de la platine

Inkorten van de print

■ Fig. 1



An den markierten Stellen kann die Platine gekürzt werden!

You can shorten the print at the marked spots!

La platine peut être raccourcie aux endroit marqués!

Op de gemarkeerde plaatsen kan de print ingekort worden!

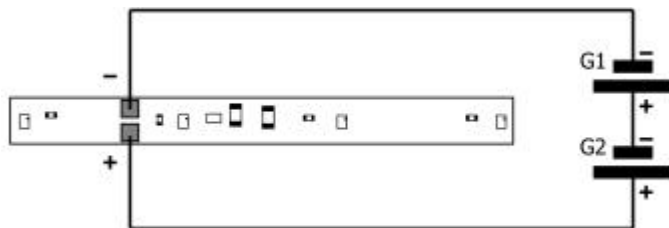
Einbau in ein Fahrzeug für das Faller* Car System

Mounting in a vehicle compatible to the Faller* Car System

Montage dans un véhicule du Faller* Car System

Inbouwen in een auto van het Faller* Car System

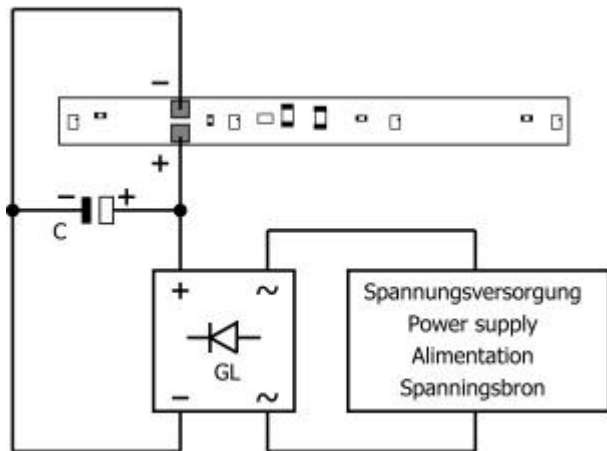
■ Fig. 2



G1 / G2 = Vorhandene Akkus
 Existing accumulator batteries
 Accus existants
 Ingebouwde accu's

Einbau in ein Modellbahn-Fahrzeug
Mounting in a model railway vehicle
Montage dans un véhicule ferroviaire
Inbouwen in een modelspoorvoertuig

■ Fig. 3



C = Zusätzlicher Elko ($\geq 100 \mu\text{F} / 25 \text{ V}$)
 Additional electrolytic capacitor ($\geq 100 \mu\text{F} / 25 \text{ V}$)
 Condensateur supplémentaire ($\geq 100 \mu\text{F} / 25 \text{ V}$)
 Extra elco ($\geq 100 \mu\text{F} / 25 \text{ V}$)

GL = Gleichrichter
 Rectifier
 Cellule redresseuse
 Gelijkrichter

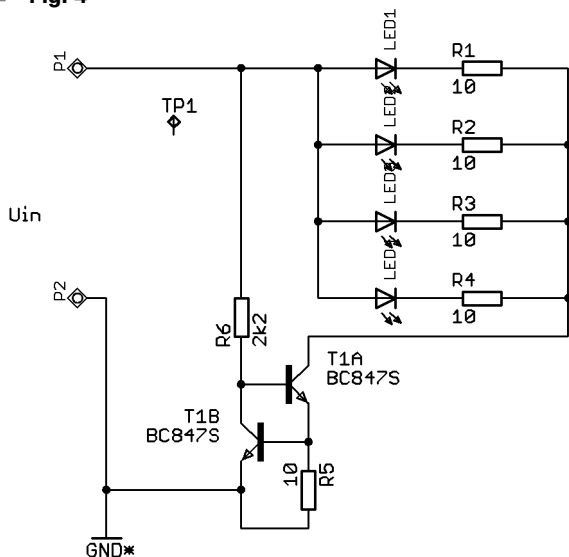
Schaltplan

Circuit diagram

Schéma de principe

Schakelschema

■ Fig. 4



Aktuelle Informationen und Tipps:

Information and tips:

Informations et conseils:

Actuele informatie en tips:

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

Garantie und Service:

Warranty and service:

Garantie et service:

Garantie en service:

Tams Elektronik GmbH

Rupsteinstraße 10

D-30625 Hannover

fon: +49 (0)511 / 55 60 60

fax: +49 (0)511 / 55 61 61

e-mail: modellbahn@tams-online.de