# EUCHNER

## Application

**Replacement of an MGB System Without Programming Device**

# Contents

# 1. About this document

## 1.1. Version

| Version | Date | Change/addition | Chapter |
|---|---|---|---|
| 01-05/19 | 16.05.2019 | Prepared | All |
| | | | |
| | | | |

## 1.2. Scope

This document is used to replace an MGB/MGB2 *Modular* PROFINET system without a programming device.

## 1.3. Target group

Setup and servicing staff possessing special expertise in handling safety components.

## 1.4. Requirements

The following conditions must be met to replace an MGB system without a programming device:

‣ The PROFINET master must support the automatic replacement of PROFINET subscribers.

‣ Your PROFINET topology must be correctly configured.

‣ The replacement device must be connected to the same port as its predecessor.

‣ There must be no device name in the MGB system to be installed.
This field is empty in the as-delivered state. Systems that already contain a name must first be reset to the factory settings.

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# 2. Replacement of the MGB-PN

## 2.1. Modification of the system and DIP switch settings

1. Disconnect the supply of power from the plug connectors X1 and X2.

2. Disconnect the network cable/s. If labeling of the network cable/s is incorrect or missing, please mark the network cable/s related to plug connector X3 or X4.

3. Remove the MGB.

4. Transfer the setting of F_DEST_ADD (DIP switches) to the replacement system. For this purpose, open the side cover on the MGB-PN (figure 1) and set the DIP switches on the replacement system to the value set on the original system.
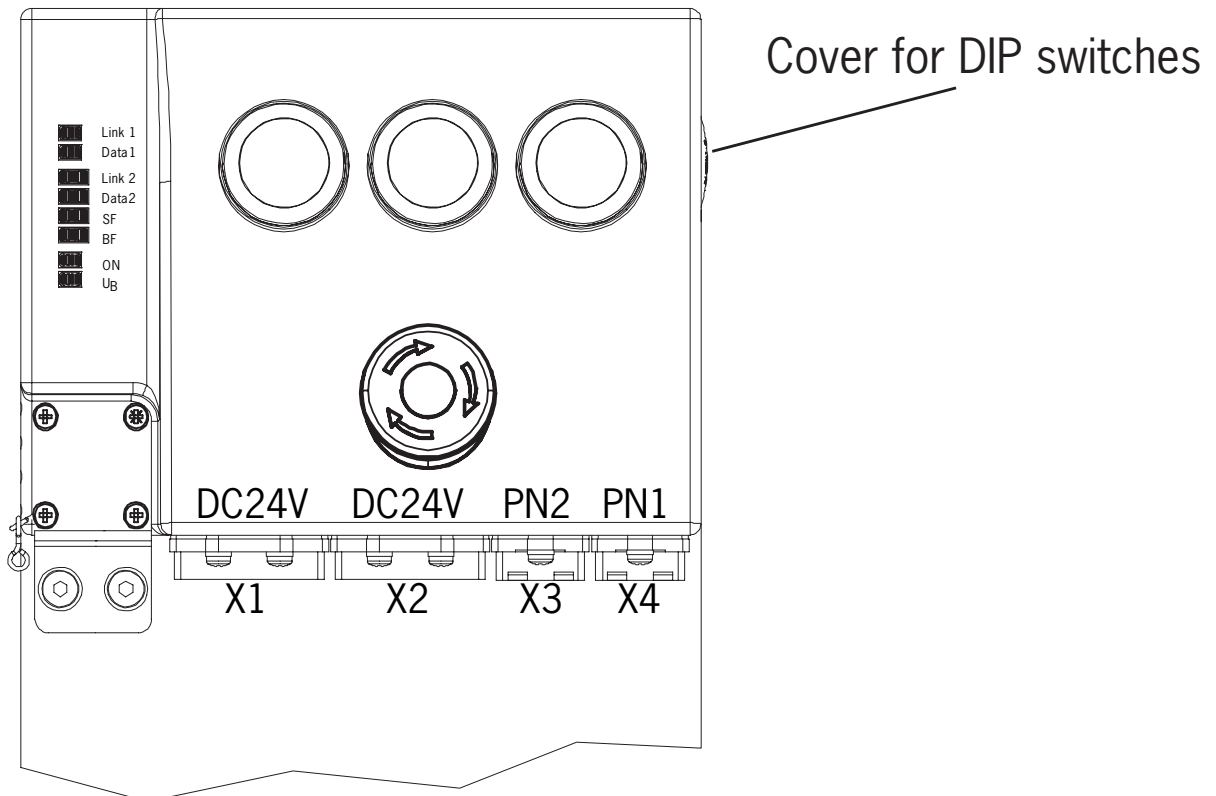
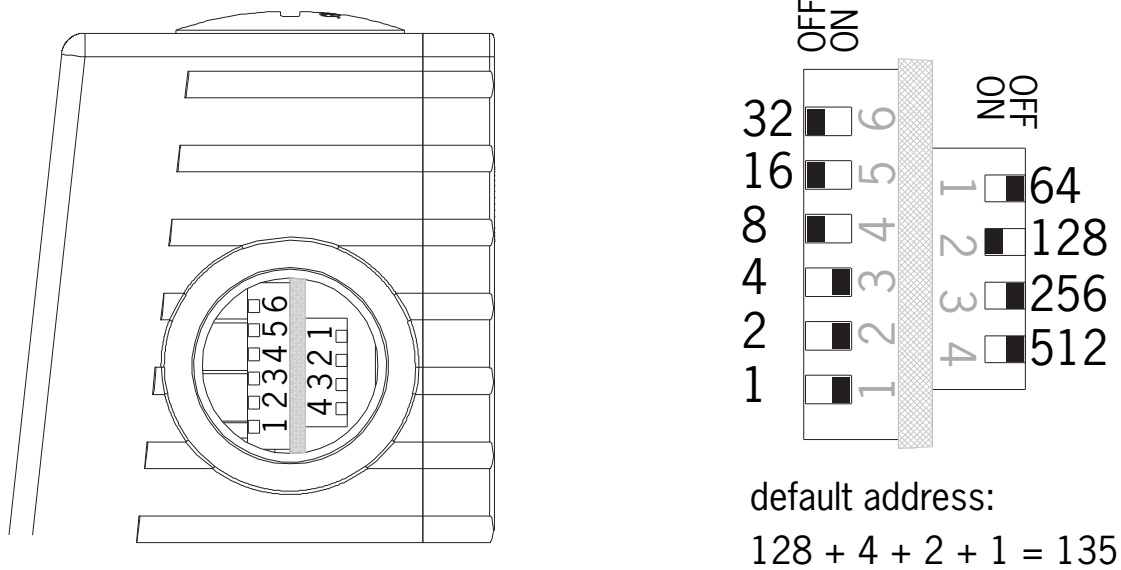Figure 1:     Position of DIP switches

default address:

128 + 4 + 2 + 1 = 135

Figure 2:    DIP switches MGB-PN

> **ℹ Important!**
>
> Do not change the DIP switch settings (F_DEST_ADD) on the original system until all steps of the MGB replacement have been undertaken.

5. Fit the replacement system and connect the network cable/s as per the labeling.

6. Restore the supply of power. The replacement system now starts to communicate and receives the device name from the control system. During the assignment of the device name by the control system, the bus error LED (BF LED) illuminates. Once the process is complete, the BF LED extinguishes.

> **ℹ Tip!**
>
> If the assignment process has not been completed successfully and the BF LED is still illuminated, the network plug connectors may have been mixed up or the safety address may be set incorrectly. Rectification: swap the plug connectors on X3 ◄► X4 or set the DIP switches to the required value and restart the MGB by disconnecting and reconnecting the supply of power.

7. Reintegration of the PROFINET subscriber.

If these steps are not successful, the network topology planned for the control system may be erroneous or may be missing. In this situation the automatic replacement of the MGB system is not possible. The replacement system must be integrated manually using the configuration tools for the PROFINET system.

## 2.2.    Checking the MGB-PN functionality

If the MGB system is functioning without errors, the $U_B$ and ON LED illuminate continuously, BF and SF are off.

Check the electrical and mechanical function of the MGB system.

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## 3. Replacement of the MGB2 *Modular* bus module

### 3.1. Modification of the system and DIP switch settings

1. Disconnect the supply of power from the plug connectors XD1 and XD2.

2. Disconnect the network cable/s. If labeling of the network cable/s is incorrect or missing, please mark the network cable/s related to plug connector XF1 or XF2.

3. Remove the MGB2 bus module.

4. Transfer the setting of F_DEST_ADD (DIP switches) to the replacement system. For this purpose, open the cover on the bus module (TX10, figure 3) and set the DIP switches on the replacement system to the value set on the original system.
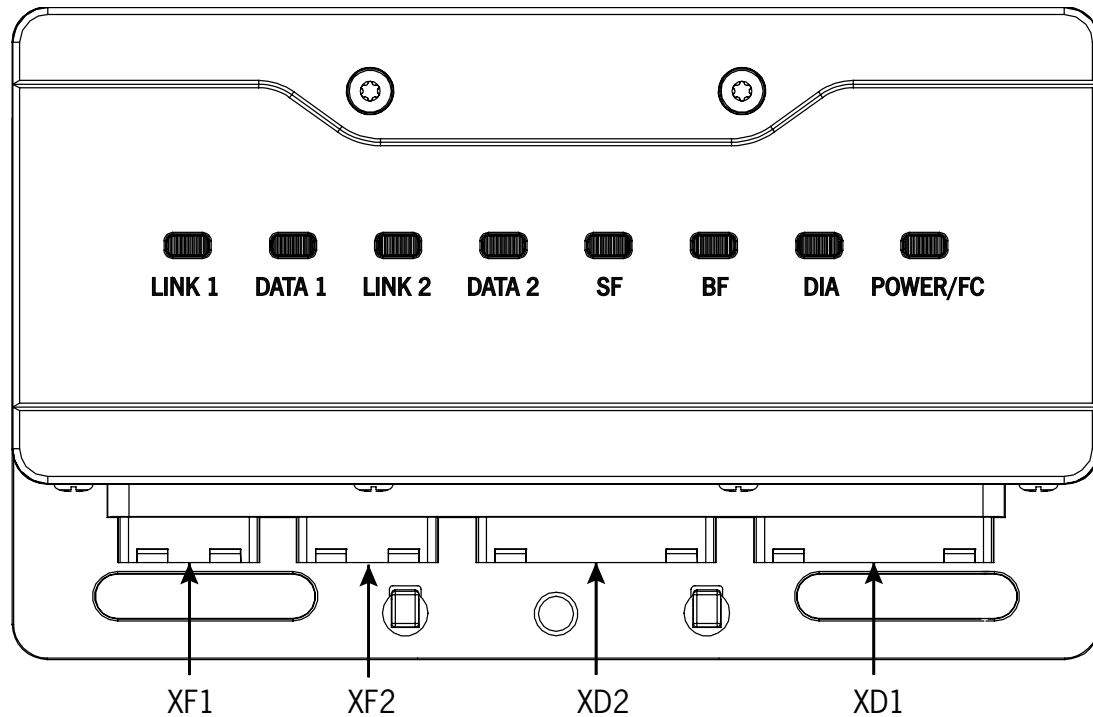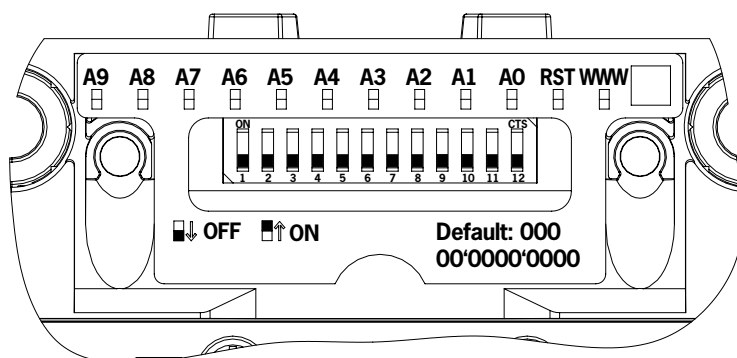


Figure 3:     Bus module plug connector



Figure 4:     Bus module DIP switches

| Switch | A9 | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 |
|---|---|---|---|---|---|---|---|---|---|---|
| DIP switch position MBM | off | off | off | off | off | off | off | off | off | off |
| Significance | $2^9$ | $2^8$ | $2^7$ | $2^6$ | $2^5$ | $2^4$ | $2^3$ | $2^2$ | $2^1$ | $2^0$ |
| Decimal value | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |

Table 1:   Bus module DIP switches: value assignments

> **Important!**
>
> Do not change the DIP switch settings (F_DEST_ADD) on the original system until all steps of the module replacement have been undertaken.

5. Fit the replacement system and connect the network cable/s as per the labeling.

6. Restore the supply of power. The replacement system now starts to communicate and receives the device name from the control system. During the assignment of the device name by the control system, the bus error LED (BF LED) and the Power/FC LED flash alternately. Once the process is complete, the alternating illumination stops.

> **Tip!**
>
> If the assignment process has not been completed successfully and the BF LED/Power/FC LED is still illuminated, the network plug connectors may have been mixed up or the safety address may be set incorrectly. Rectification: swap the plug connectors on XF1 ◄► XF2 or set the DIP switches to the required value and restart the MGB by disconnecting and reconnecting the supply of power.

7. Reintegration of the PROFINET subscriber.

If these steps are not successful, the network topology planned may be erroneous or may be missing. In this situation the automatic replacement of the MGB system is not possible. The replacement system must be integrated manually using the configuration tools for the PROFINET system.

## 3.2.    Checking the MGB-PN functionality

If the MGB system is functioning without errors, the Power/FC LED illuminates continuously, BF, SF and DIA are off.

Check the electrical and mechanical function of the MGB system.

# 4. Important note – please observe carefully!

This document is intended for a design engineer who possesses the requisite knowledge in safety engineering and knows the applicable standards, e.g. through training for qualification as a safety engineer. Only with the appropriate qualification is it possible to integrate the example provided into a complete safety chain.

The example represents only part of a complete safety chain and does not fulfill any safety function on its own. In order to fulfill a safety function, the energy switch-off function for the danger zone and the software within the safety evaluation must also be considered, for example.

The applications provided are only examples for solving certain safety tasks for protecting safety doors. The examples cannot be comprehensive due to the application-dependent and individual protection goals within a machine/installation.

**If questions concerning this example remain open, please contact us directly.**

According to the Machinery Directive 2006/42/EC, the design engineer of a machine or installation has the obligation to perform a risk assessment and take measures to reduce the risk. While doing this, the engineer must comply with the applicable national and international safety standards. Standards generally represent the current state-of-the-art. Therefore, the design engineer should continuously inform himself about changes in the standards and adapt his considerations to them. Relevant standards include EN ISO 13849 and EN 62061. This application must be regarded only as assistance for the considerations about safety measures.

The design engineer of a machine/installation has the obligation to assess the safety technology him/herself. The examples must not be used for an assessment, because only a small excerpt of a complete safety function was considered in terms of safety engineering here.

In order to be able to use the safety switch applications correctly on safety doors, it is indispensable to observe the standards EN ISO 13849-1, EN ISO 14119 and all relevant C-standards for the respective machine type. Under no circumstances does this document replace the engineer's own risk assessment, and it cannot serve as the basis for a fault assessment.

In particular in relation to a fault exclusion, it must be noted that a fault can only be excluded by the machine's or installation's design engineer and this action requires justification. A general fault exclusion is not possible. More information about fault exclusion can be found in EN ISO 13849-2.

Changes to products or within assemblies from third-party suppliers used in this example can lead to the function no longer being ensured or the safety assessment having to be adapted. In any event, the information in the operating instructions on the part of EUCHNER, as well as on the part of third-party suppliers, must be used as the basis before this application is integrated into an overall safety function. If contradictions should arise between the operating instructions and this document, please contact us directly.

**Use of brand names and company names**

All brand names and company names stated are the property of the related manufacturer. They are used only for the clear identification of compatible peripheral devices and operating environments in relation to our products.