BAUMÜLLER

be in motion be in motion

# BM4-O-CAN-06

**CANsync-Master Option Module for BM4-O-PLC Operating Instructions**

| | |
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| **E** | 5.02056.01A |

| | |
|---|---|
| Title | Operating Instructions |
| Product | CANsync-Master Option Module for BM4-O-PLC BM4-O-CAN-06 |
| Last Revision | May 28, 2003 |



Binding nature

These Operating Instructions are a part of the unit/machine. These Operating Instructions must always be available to operators and be legible. If the unit/machine is sold, the owner must pass on these Operating Instructions together with the unit/machine.
After selling the unit/machine you must pass on this original and all the copies that you made to the purchaser. After disposing of the machine in any way, you must destroy this original and all the copies that you made.

When you pass on these Operating Instructions, all earlier revisions of the corresponding Operating Instructions are invalidated.
Note that all the data/numbers/information that are quoted are **current values at the time of printing.** This information is **not legally binding** for dimensioning, calculation and costing.
Within the scope of further-development of our products, Baumüller Nürnberg Electronic GmbH & Co. KG reserve the right to change their technical data and handling.

We cannot guarantee these Operating Instructions are completely error-free unless this is expressly indicated in our General Conditions of Business and Delivery.


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Hiermit zeigen wir an, dass die Baumüller Nürnberg Electronic GmbH & Co. KG im Wege der Verschmelzung mit Wirkung zum 01.12.2004 in der Baumüller Nürnberg GmbH aufgegangen ist. Ihr zukünftiger Ansprechpartner ist damit die

**Baumüller Nürnberg GmbH, Ostendstrasse 80-90, 90482 Nürnberg.**

Please notify that with effect from 01-12-2004 Baumüller Nürnberg Electronic GmbH & Co. KG merged with Baumüller Nürnberg GmbH. Your future business partner will be

**Baumüller Nürnberg GmbH, Ostendstrasse 80-90, 90482 Nürnberg.**

Par la présente, nous vous signalons qu'en voie de la fusion, la Baumüller Nürnberg Electronic GmbH & Co. KG a été intégrée à la Baumüller Nürnberg GmbH avec effet au 1 décembre 2004. Votre interlocuteur sera par conséquent la

**Baumüller Nürnberg GmbH, Ostendstrasse 80 – 90, 90482 Nürnberg.**

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# INTRODUCTION

These operating instructions are an important component of your b maXX 4400; this means that you must thoroughly read this document, not least to ensure your own safety.

In this chapter, we will describe the first steps that you should carry out after getting this module. We will define terms that are used in this documentation on a consistent basis and will inform you about the topics that you must consider when using this option module.

For more detailed information on operating and using the modules, refer to the documentation entitled "Operating Instructions b maXX 4400", "Application Manual b maXX 4400" and "Application Manual CANsync".

## 1.1 First Steps

1. Check the shipment see ▹Packaging and transportation ◃ from page 15 onward.
2. Pass on all the documentation that was supplied with the plug-in module to the appropriate departments in your company.
3. Deploy suitable personnel for assembly and commissioning.
4. Pass on these operating instructions to this personnel and ensure that they have read and understood the safety instructions and that they are following them.

## 1.2 Terms Used

In this documentation, we will also refer to Baumüller's "CANsync-Master Option Module for BM4-O-PLC " product as "option module", "plug-in module" or "CANsync-Master option module".

We will also refer to the "BM4-O-PLC-01" Baumüller product as "b maXX PLC" or "BM4-O-PLC" and we will use the term "b maXX" for the "b maXX 4400 basic unit".

The controller in the basic unit is also referred to as the "b maXX controller".

For a list of the abbreviations that are used, refer to ▹Appendix A - Abbreviations◃ from page 45 onward.

## 1.2 Terms Used

2

# BASIC SAFETY INSTRUCTIONS

We have designed and manufactured each Baumüller plug-in module in accordance with the strictest safety regulations. Despite this, working with the plug-in module can be dangerous for you.

In this chapter, we will describe the risks that can occur when working with a Baumüller plug-in module. Risks are illustrated by icons. All the symbols that are used in this documentation are listed and explained.

In this chapter, we cannot explain how you can protect yourself from specific risks in individual cases. This chapter contains only general protective measures. We will go into concrete protective measures in subsequent chapters directly after information about the individual risk.

## 2.1 Hazard information and instructions

**WARNING**

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

The hazard information is showing you the hazards which can lead to injury or even to death.

**Always observe the hazard information given in this documentation.**

Hazards are always divided into three danger classifications. Each danger classification is identified by one of the following words:

**DANGER**

- Considerable damage to property
- Serious personal injury
- Death **will** occur

**WARNING**

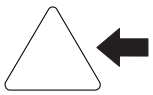
- Considerable damage to property
- Serious personal injury
- Death **can** occur

**CAUTION**

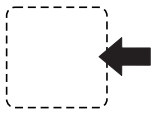
- Damage to property
- Slight to medium personal injury **can** occur

### 2.1.1 Structure of hazard information

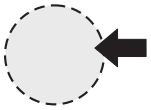
The following two examples show how hazard information is structured in principle. A triangle is used to warn you about danger to living things. If there is no triangle, the hazard information refers exclusively to damage to property.



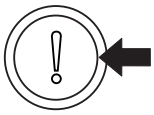
A triangle indicates that there is danger to living things.
The color of the border shows how severe the hazard is: the darker the color, the more severe the hazard is.



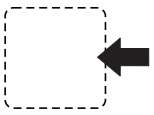
The icon in the rectangle represents the hazard.
The color of the border shows how severe the hazard is: the darker the color, the more severe the hazard is.



The icon in the circle represents an instruction. Users must follow this instruction.
(The circle is shown dashed, since an instruction is not available as an icon for each hazard advisory).



The circle shows that there is a risk of damage to property.



The icon in the rectangle represents the hazard.
The color of the border shows how severe the hazard is: the darker the color, the more severe the hazard is. (The rectangle is shown dashed, since the danger is not represented as an icon with every hazard advisory)

The text next to the icons is structured as follows:

**THE SIGNAL WORD IS HERE THAT SHOWS THE DEGREE OF RISK**

Here we indicate whether one or more of the results below occurs if you do not observe this warning.

- Here, we describe the possible results. The worst result is always at the extreme right.

*Here, we describe the hazard.*

Here, we describe what you can do to avoid the hazard.

### 2.1.2 Hazard advisories that are used

If a signal word is preceded by one of the following danger signs: ⚠ or ⚠ or ⚠, the safety information refers to injury to people.

If a signal word is preceded by a round danger sign: Ⓘ, the safety information refers to damage to property.

#### 2.1.2.1 Hazard advisories about injuries to people

To be able to differentiate visually, we use a separate border for each class of hazard information with the triangular and rectangular pictograms.

For danger classification **DANGER,** we use the ⚠ danger sign. The following hazard information of this danger classification is used in this documentation.

**DANGER**

The following **will occur**, if you do not observe this danger information:

- serious personal injury
- death

*Danger from: **electricity.** The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

**DANGER**

The following **will occur**, if you do not observe this danger information:

- serious personal injury
- death

*Danger from: **mechanical effects.** The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

For danger classification **WARNING,** we use the ⚠ danger sign. The following hazard information of this danger classification is used in this documentation.

**WARNING**

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

*Danger from: **electricity.**The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

For danger classification **CAUTION,** we use the ⚠ danger sign. The following hazard information of this danger classification is used in this documentation.

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- minor to medium personal injury.

*Danger from: **sharp edges.** The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

**CAUTION**

The following **may occur**, if you do not observe this danger information:

- environmental pollution.

*Danger from: **incorrect disposal.** The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

### 2.1.2.2 Hazard advisories about damage to property

If a signal word is preceded by a round danger sign: ⓘ, the safety information refers to damage to property.

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- property damage.

*Danger from: **electrostatic discharge.** The hazard may be described in more detail here.*

Here, we describe what you can do to avoid the hazard.

### 2.1.2.3 Instruction signs that are used

carry safety gloves

carry safety shoes

## 2.2 Information signs

**NOTE**

This indicates particularly important information.

## 2.3 Legal information

This documentation is intended for technically qualified personnel that has been specially trained and is completely familiar with all warnings and maintenance measures.

The equipment is manufactured to the state of the art and is safe in operation. It can be put into operation and function without problems if you ensure that the information in the documentation is complied with.

Operators are responsible for carrying out servicing and commissioning in accordance with the safety regulations, applicable standards and any and all other relevant national or local regulations with regard to cable rating and protection, grounding, isolators, overcurrent protection, etc.

Operators are legally responsible for any damage that occurs during assembly or connection.

## 2.4 Appropriate Use

You must always use the plug-in module appropriately. Some important information is listed below. The information below should give you an idea of what is meant by appropriate use of the plug-in module. The information below has no claim to being complete; always observe all the information that is given in these operating instructions.

- You must only install the plug-in module in series b maXX 4400 units.
- Configure the application such that the plug-in module is always operating within its specifications.
- Ensure that only qualified personnel works with this plug-in module.
- Mount the plug-in module only in the specified slot/slots.
- Install the plug-in module as specified in this documentation.
- Ensure that connections always comply with the stipulated specifications.
- Operate the plug-in module only when it is in technically perfect condition.
- Always operate the plug-in module in an environment that is specified in the technical data.
- Always operate the plug-in module in a standard condition.
  For safety reasons, you must not make any changes to the plug-in module.
- Observe all the information on this topic if you intend to store the plug-in module.

You will be using the plug-in module in an appropriate way if you observe all the comments and information in these operating instructions.

## 2.5 Inappropriate Use

Below, we will list some examples of inappropriate use. The information below should give you an idea of what is meant by inappropriate use of the plug-in module. We cannon, however, list all possible cases of inappropriate use here. Any and all applications in which you ignore the information in this documentation are inappropriate; particularly, in the following cases:

- You installed the plug-in module in units that are not Series b maXX 4400.
- You ignored information in these operating instructions.
- You did not use the plug-in module as intended.
- You handled the plug-in module as follows
  - you mounted it incorrectly,
  - you connected it incorrectly,
  - you commissioned it incorrectly,
  - you operated it incorrectly,
  - you allowed non-qualified or insufficiently qualified personnel to mount the module, commission it and operate it,
  - you overloaded it,
  - You operated the module
    - with defective safety devices,
    - with incorrectly mounted guards or without guards at all,
    - with non-functional safety devices and guards
    - outside the specified environmental operating conditions
- You modified the plug-in module without written permission from Baumüller Nürnberg Electronic GmbH & Co. KG.
- You ignored the maintenance instructions in the component descriptions.
- You incorrectly combined the plug-in module with third-party products.
- You combined the drive system with faulty and/or incorrectly documented third-party products.
- Your self-written PLC software contains programming errors that lead to a malfunction.

Version 1.1 of Baumüller Nürnberg Electronic GmbH & Co. KG's General Conditions of Sale and Conditions of Delivery dated 2/15/02 or the respective latest version applies in all cases. These will have been available to you since the conclusion of the contract at the latest.

## 2.6 Protective equipment

In transit, the plug-in modules are protected by their packaging. Do not remove the plug-in module from its packaging until just before you intend to mount it.

The cover on the b maXX units' controller sections provides IP20 protection to the plug-in modules from dirt and damage due to static discharges from contact. This means that you must replace the cover after successfully mounting the plug-in module.

## 2.7 Personnel training

**WARNING**

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

Only qualified personnel are allowed to mount, install, operate and maintain equipment made by Baumüller Nürnberg Electronic GmbH & Co. KG.

Qualified personnel (specialists) are defined as follows:

**Qualified Personnel**

Electrical engineers and electricians of the customer or of third parties who are authorized by Baumüller Nürnberg Electronic GmbH & Co. KG and who have been trained in installing and commissioning Baumüller drive systems and who are authorized to commission, ground and mark circuits and equipment in accordance with recognized safety standards.

Qualified personnel has been trained or instructed in accordance with recognized safety standards in the care and use of appropriate safety equipment.

**Requirements of the operating staff**

The drive system may only be operated by persons who have been trained and are authorized.

Only trained personnel are allowed to eliminate disturbances, carry out preventive maintenance, cleaning, maintenance and to replace parts. These persons must be familiar with the Operating Instructions and act in accordance with them.

Commissioning and instruction must only be carried out by qualified personnel.

## 2.8 Safety measures in normal operation

- At the unit's place of installation, observe the applicable safety regulations for the plant in which this unit is installed.
- Provide the unit with additional monitoring and protective equipment if the safety regulations demand this.
- Observe the safety measures for the unit in which the plug-in module is installed.

## 2.9 Responsibility and liability

To be able to work with this CANsync-Master option module in accordance with the safety requirements, you must be familiar with and observe the hazard information and safety instructions in this documentation.

### 2.9.1 Observing the hazard information and safety instructions

In these operating instructions, we use visually consistent safety instructions that are intended to prevent injury to people or damage to property.

**WARNING**

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

Any and all persons who work on and with Series b maXX units must always have available these Operating Instructions and must observe the instructions and information they contain – this applies in particular to the safety instructions.

Apart from this, any and all persons who work on this unit must be familiar with and observe all the rules and regulations that apply at the place of use.

### 2.9.2 Danger arising from using this module

The CANsync-Master option module has been developed and manufactured to the state of the art and complies with applicable guidelines and standards. It is still possible that hazards can arise during use. For an overview of possible hazards, refer to the chapter entitled ▹Basic Safety Instructions ◃ from page 7 onward and to ▹Figure3 on page 19. We will also warn you of acute hazards at the appropriate locations in this documentation.

### 2.9.3 Warranty and Liability

All the information in this documentation is non-binding customer information; it is subject to ongoing further development and is updated on a continuous basis by our permanent change management system.

Warranty and liability claims against Baumüller Nürnberg Electronic GmbH & Co. KG are excluded; this applies in particular if one or more of the causes listed in ▹Inappropriate Use ◃ from page 12 onward or below caused the fault:

- Disaster due to the influence of foreign bodies or force majeure.

# 3

# PACKAGING AND TRANSPORTATION

We package every Baumüller plug-in module before shipping such that it is highly unlikely that it will be damaged in transit.

## 3.1 Transportation

The plug-in modules are packed at the factory in accordance with the order.

- Avoid vibrations during transportation and hard jolts.(Max. 1 *g*).
- Avoid static discharges to the plug-in modules' electronic components.
- Do not remove the plug-in module from its protective packaging until just before you intend to mount it.

## 3.2 Unpacking

After receiving the plug-in module while it is still packaged:

- Check whether there is visible damage to the packaging!

If there is:

- Complain to the delivery company. Have your complaint confirmed in writing and contact immediately your nearest Baumüller Nürnberg Electronic GmbH & Co. KG subsidiary.

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- property damage.

*Danger from:* ***electrostatic discharge.*** *If you touch the plug-in module, and especially its electronic components, and subject them to electrostatic discharges, the module can be damaged or even totally destroyed.*

When handling the plug-in module, always observe the regulations and information on handling electrostaticaly sensitive components.

If no damage is visible:

- Open the module's packaging.
- Check the scope of supply against the delivery note.

The scope of supply is:

- **CANsync-Master Option Module for BM4-O-PLC (BM4-O-CAN-06)**
- these Operating Instructions including the declaration of conformity/manufacturer declaration
- additional material

- return the module to its packaging for transportation.
- complain to your local Baumüller subsidiary if you find damage or if the delivery is not complete.

## 3.3 Disposing of the packaging

The packaging consists of cardboard and plastic.

- Observe local disposal regulations if you intend to dispose of the packaging.

## 3.4 Observe during transportation

The module was packaged at the manufacturer's plant for initial transportation. If you have to transport the module at a later date, please note the following points:

- Use the original packaging material

or

- Use packaging that is suitable for electrostatic sensitive devices.

Ensure that the following conditions always apply during transportation:

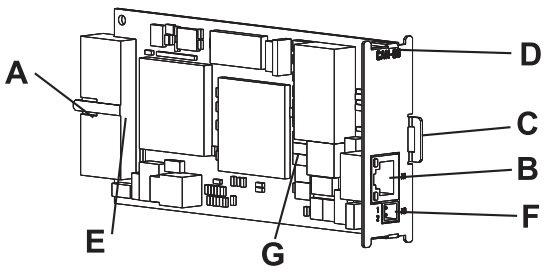
- 2 K 3 (Climatic category)
- - 30 °C to + 70 °C (temperature range)
- Max. 1 *g* (Vibration, shock, repetitive shock)

# 4

# DESCRIPTION OF THE CANSYNC-MASTER OPTION MODULE

In this chapter, we will describe the CANsync-Master Option Module for BM4-O-PLC option module and explain the type code on the plug-in module.

## 4.1 Structure

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A = Plug connector (back-mounted)
B = Socket RJ45 (front)
C = Grip
D = Type code
E = Serial number
F = 2-pin connector (24 V)
G = Plug-in jumpers

Figure 1: BM4-O-CAN-06 plug-in module

### 4.1.1 Slot for CANsync-Master option module

Slot **G** is provided for the CANsync-Master option module for BM4-O-PLC (BM4-O-CAN-06).

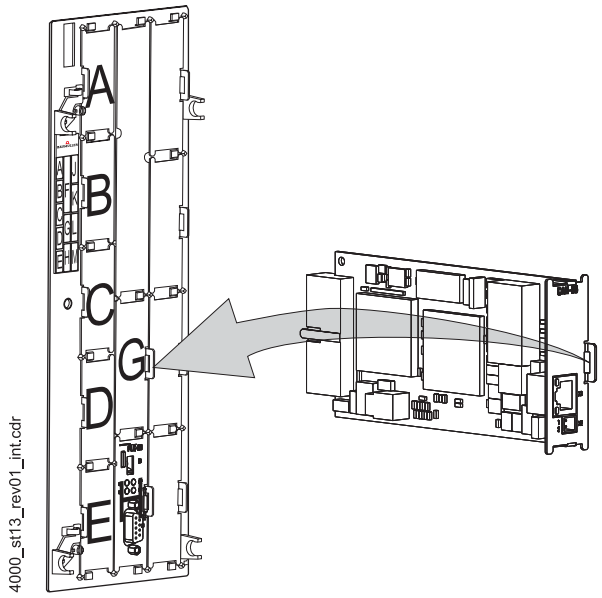



Figure 2: CANsync-Master option module, slot G
with BM4-O-PLC option module in slot H

**NOTE**

if you plug a plug-in module into an unsuitable slot, it does not function. We have taken measures to ensure that the plug-in module is not damaged if you do this.

## 4.2 Danger zones

The b maXX 4400 basic unit that is plugged into this module represents the greatest hazard. Observe all the safety instructions of the b maXX 4400 basic unit. The illustration below gives you an overview of the danger zones in the plug-in module.

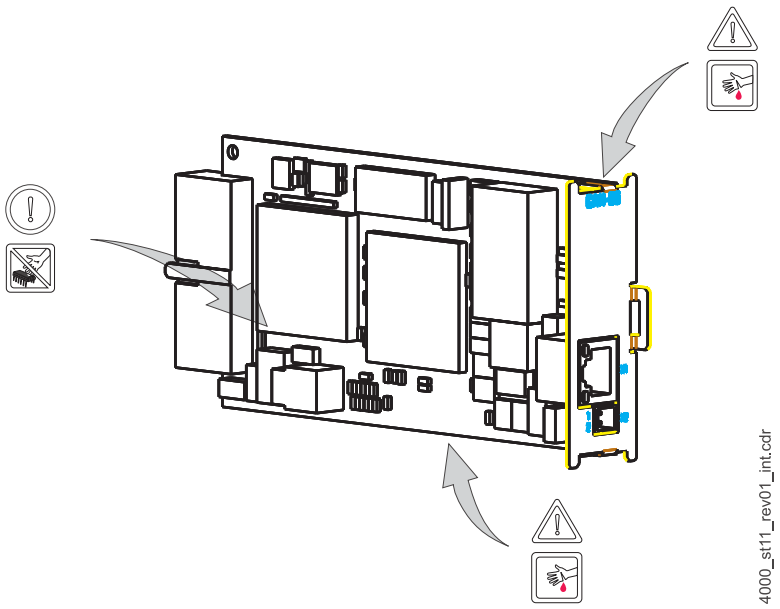



Figure 3: Danger zones

## 4.3 Marking of the CANsync-Master option module type code

On the front panel, you will find the type code ("D" in ▹Figure1 on page 17) and on the label ("E" in ▹Figure1 on page 17), there is the plug-in module's serial number.

**NOTE**

This type code applies only to the CANsync-Master option modules of series b maXX 4400. Other plug-in modules have their own type codes.

| | |
|---|---|
| BM4 - O - CAN - XX | Device generation in which you can install the plug-in module |
| BM4 - O - CAN - XX | Option module |
| BM4 - O - CAN - XX | Plug-in module type (b maXX CAN) |
| BM4 - O - CAN - XX | Version<br>05: CANsync-Slave<br>06: CANsync-Master for b maXX PLC |

This type code is located on the front of the front panel and on the label. The type code contains the plug-in module's basic data. On the basis of the type code, you will be able to find more data in the chapter entitled "Technical Data". For a list of all the technical data, refer to ▹Appendix D - Technical Data◃ from page 53 onward.

## 4.3 Marking of the CANsync-Master option module type code

5

# ASSEMBLY AND INSTALLATION

In this chapter, we will describe mechanical assembly and electrical installation of a CAN-sync-Master option module for b maXX PLC.

Assembly/installation consists of the following steps:

1 Mount the plug-in module.

2 Connect the plug-in module to the signal cables and the power supply.

## 5.1 General safety regulations

- Observe the information in chapters ▹Basic Safety Instructions ◃ from page 7 onward.
- Observe all areas on the b maXX unit that could be dangerous when you are carrying out assembly.

The figure below gives you an overview of the danger zones on the plug-in module.

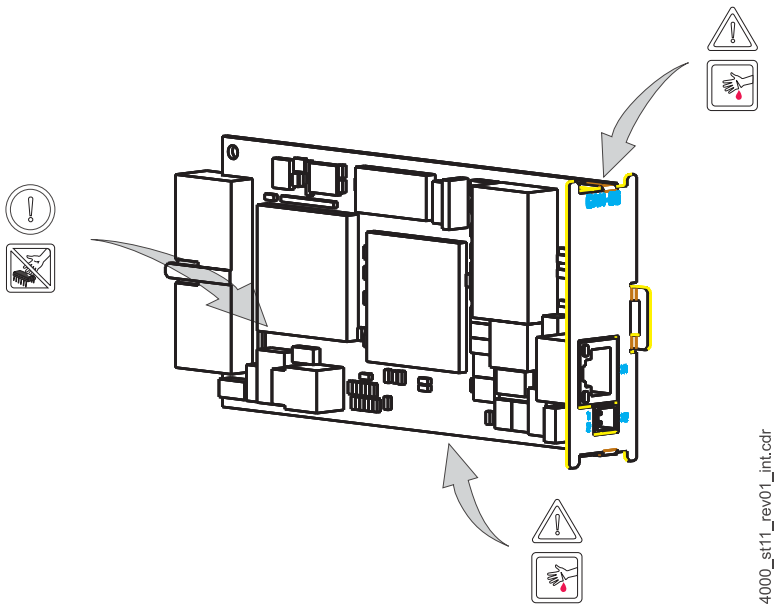



Figure 4: Danger zones

## 5.2 Requirements of the personnel carrying out work

**DANGER**

The following **will occur**, if you do not observe this danger information:

- serious personal injury
- death

*Danger from: **electricity.** The unit and the vicinity of the control cabinet may carry dangerous voltages.*

Before starting any work, ensure that the unit and its vicinity are free of voltage.

Observe the relevant safety regulations when handling current-carrying units.

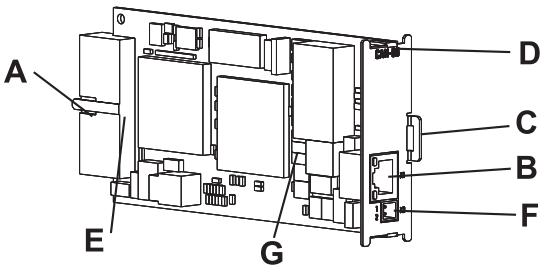
Ensure that only qualified personnel assembles and installs this plug-in module.

Qualified personnel is considered to be people whose training, experience and knowledge of relevant standards and regulations, accident prevention regulations and conditions in the plant has led to their being authorized by the plant safety manager to carry out activities that are needed in each case while recognizing and avoiding any possible hazards that might arise. The qualifications that are necessary for working with the unit include, for example:

- Trained or instructed in accordance with recognized safety standards in the care and use of appropriate safety equipment

## 5.3 Preparation

➲ Consult the type code (see "D" in ▹Figure5 on page 22) to ensure that you have the correct plug-in module.

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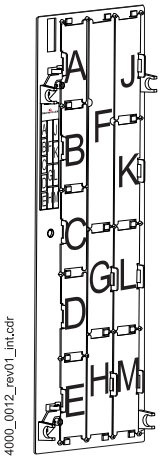
A = Plug connector (back-mounted)
B = Socket RJ45 (front)
C = Grip
D = Type code
E = Serial number
F = 2-pin connector (24 V)
G = Plug-in jumpers

4000_st14_rev01_int.cdr

Figure 5: : CANsync-Master for b maXX PLC

➲ Determine the correct slot (see ▹Figure6 on page 23).




| | Function modules | | | | | | Option modules | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BM4-F-ENC-XX (encoder 1 for motor management) | BM4-F-ENC-XX (encoder 2) | BM4-F-AIO-XX (analog I/O) | BM4-F-DIO-XX (digital I/O) | BM4-F-IEE-XX (incremental encoder emulation) | BM4-F-CAN-01 (CANsync-Slave) | BM4-O-SER-XX (Sercos-Slave) **in preparation** | BM4-O-ETH-XX* (Ethernet Slave) | BM4-O-CAN-05 (CANsync-Slave) | BM4-O-PRO-01 (Profibus-Slave) **in preparation** | BM4-O-CAN-03 (CANopen-Slave) | BM4-O-PLC-XX (PLC) | BM4-O-CAN-06* (CANsync-Master) | BM4-O-PRO-02* (Profibus-Master) **in preparation** | BM4-O-CAN-04* (CANopen-Master) | BM4-O-IEI-XX* (incremental counter module) | BM4-O-MFM-XX* (digital and analog I/O module) **in preparation** |
| **A** | X | - | - | o | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **B** | - | X | - | o | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **C** | - | - | - | o | X | X | - | - | - | - | - | - | - | - | - | - | - |
| **D** | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **E** | - | - | X | o | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **F** Controller section permanently installed | | | | | | | | | | | | | | | | | |
| **G** | - | - | - | - | - | - | o | X | o | o | o | - | X | X | X | X | X |
| **H** | - | - | - | - | - | - | X | - | X | X | X | X | - | - | - | - | - |
| **J** | - | - | - | - | - | - | o | o | o | o | o | - | o | o | o | o | o |
| **K** | - | - | - | - | - | - | o | o | o | o | o | - | o | o | o | o | o |
| **L** | - | - | - | - | - | - | o | o | o | o | o | - | o | o | o | o | o |
| **M** | - | - | - | - | - | - | o | o | o | o | o | - | o | o | o | o | o |

**X**: Preferred slot
Baumüller Nürnberg Electronic GmbH & Co. KG recommends plugging the plug-in modules into this slot.

o: Possible slot
Baumüller recommends fitting the plug-in modules in this slot only if the preferred slot is already assigned

-: Not possible – the board does not function in this slot.

* The condition for these boards is that a PLC module is fitted.

Figure 6: Combinations of slots

- Check the plug-in jumpers on the PCB (G in ▹Figure5 on page 22). The two plug-in jumpers must be fitted if the CANsync-Master is at the start or the end of the bus. This terminates the CANsync bus.

Figure 7: Plug-in jumpers W701 and W702

## 5.4 Assembly

1 Switch off the b maXX 4400 unit and secure it from being unintentionally restarted during assembly.

**DANGER**

The following **will occur**, if you do not observe this danger information:

- serious personal injury
- death

*Danger from: **electricity.** The unit and the vicinity of the control cabinet may carry dangerous voltages.*

Before starting any work, ensure that the unit and its vicinity are free of voltage. Observe the relevant safety regulations when handling current-carrying units.

2 Pull the cover forward from the controller section: you can now see the slots.

3 Look for the intended slot (**G**) on the controller section.

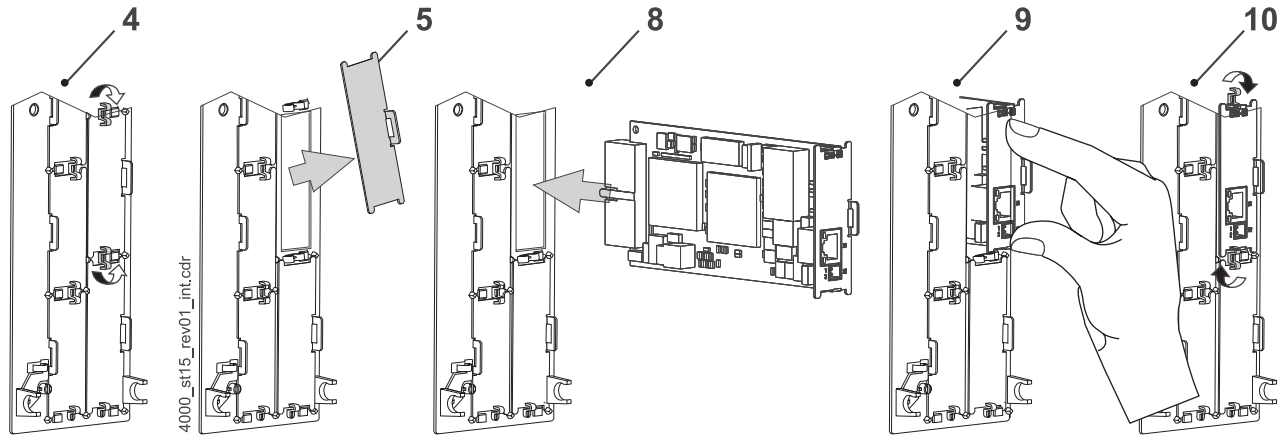



Figure 8: Assembly

4 Turn the spagnolet locks above and below this slot by 90°. The spagnolet locks are now horizontal.

5 Take out the front panel cover forward. Keep this cover. If you remove plug-in cards, you must close the unit again using the cover.

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- property damage.

*Danger from: **electrostatic discharge.** The CANsync-Master option module for b maXX PLC contains ESD components.*

Observe the described ESD measures when handling the plug-in module.

Only hold the plug-in module by the gripping piece (see "C" in ▹Figure5 on page 22).

6 Observe the described ESD measures when handling the modules.

7 Remove the CANsync-Master option module for b maXX PLC from the transportation packaging: Avoid contact with the plug-in module's electronic components.

8 Plug the CANsync-Master option module for b maXX PLC into the slot's guide rails. The gripping piece must face the same way as the other gripping pieces in this slot rail slot rail (in the case: the right-hand side).

9 Keep pressing two fingers on the front panel until you feel the card engage in the end position inside the unit.

10 Turn the spagnolet locks above and below this slot by 90° to the vertical position (locked position).

11 Remount the cover on the unit.

**NOTE**

If you only want to replace the CANsync-Master option module for b maXX PLC within the scope of repairs with a card of the same type, the rest of the procedure is considerably shorter. In this case, you only need to restore the connections to the module, put the front cover back on and switch the unit on again.

This completes assembly of the CANsync-Master option module for b maXX PLC. Connecting lines and commissioning is shown in the following sections.

## 5.5 Installation

At installation, you wire the CANsync-Master option module for b maXX PLC.

### 5.5.1 Connection diagram

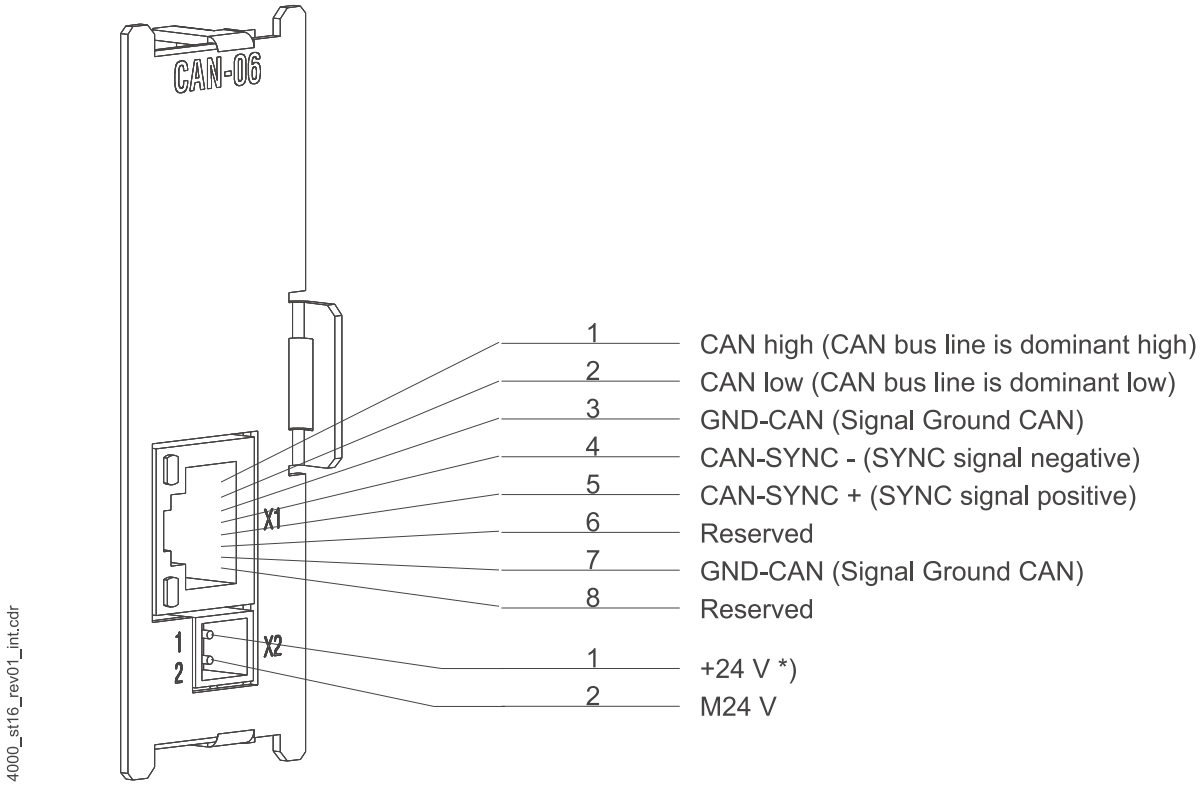



Figure 9: Connection diagram of CANsync-Master option module for b maXX PLC

**NOTE**

*) If you are taking into account UL 508 C: limit the current to 4 A.

### 5.5.2 Requirements of electrical connection

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- property damage.

Danger from: **electrical voltage.** *If you are not able to ensure the plug-in module's requirements of the electrical connection, the plug-in module can be damaged or destroyed.*

Ensure that you comply with the connection values that are specified in the technical data and that the connections were made in accordance with the stipulations.

Prevent short-circuits between inputs/outputs. In the case of a short-circuit between inputs/outputs, the plug-in module can be destroyed.

To be able to comply with Standard EN 60 204-1 (Electrical Equipment of Machines), you must use the cables that are suggested in the standard. The connectors must not drop; otherwise, there is a risk of short-circuits or external voltages, etc.

- Ensure EMC-appropriate laying of the connection cables.

### 5.5.3 Requirements of the connection cable

Baumüller has released the following cables for use:

- CANsync communication cables BM4-CAN-K-31-xx, BM4-CAN-K-32-xx, BM4-CAN-K-33-xx (see ▹List of all accessories ◃ from page 47 onward)
- Power supply cable with maximum cross-section of 0.5 $mm^2$; for more information, refer to ▹Technical Data ◃ from page 53 onward.

### 5.5.4 Sequence of installation

- Ensure that the b maXX unit is deenergized
- Remove the front cover from the unit.
- The CANsync-Master option module for b maXX PLC is in slot G, see ▹Figure6 on page 23.
- Connect the 8-pin RJ45 female connector on the CANsync-Master option module for b maXX PLC's front panel to the CANsync communication cable, for the connection assignment, see ▹Pin assignment of RJ45 female connector ◃ on page 54.
- Plug in a terminating resistor connector (see ▹Terminating resistor connector ◃ on page 48) to the last node of the CANsync bus if the CANsync-Master is the start of the bus and the plug-in jumpers are fitted (see ▹Preparation ◃ from page 22 onward).
- Connect the 2-pin male connector on the front panel to a 24-V power supply, for the connection assignment, see ▹Pin assignment of 2-pin male connector ◃ on page 54.
- Remount the cover on the unit.
- Lay the connecting lines as stipulated in the control cabinet

This completes installation.

# 6

# COMMISSIONING

In this chapter, we will describe how you commission the CANsync-Master for b maXX PLC option module that you just assembled and installed (see ▹Assembly and installation ◃ from page 21 onward). Commissioning ensures that the CANsync-Master option module functions correctly. For more information on programming refer to the "b maXX PLC Application Manual" and the "CANsync-Master Option Module for b maXX Application Manual".

Before starting commissioning, ensure that the following conditions have been met:

**1** The plug-in module has been assembled correctly.

**2** The plug-in module has been installed correctly.

**3** All the safety equipment has been commissioned.

**4** The b maXX unit is ready for use.

## 6.1 General safety regulations

➲ Observe the ▹Basic Safety Instructions ◃ from page 7 onward.

**GEFAHR** (DANGER)

Folgendes **wird eintreffen**, wenn Sie diesen Warnhinweis nicht beachten:

- schwere Körperverletzung
- Tod

Danger from: **mechanical effects.** *At commissioning, the drive can rotate.*

Keep far enough the rotating parts. Note that when drives are starting up machine parts can be set in motion. In all cases, activate the machine's safety devices.

## 6.2 Requirements of the personnel carrying out work

Commissioning work must only be carried out by trained specialists who have understood the safety regulations and information and can implement them.

## 6.3 Description/inspection of the safety and monitoring systems

Before you commission the CANsync-Master option module for b maXX, you must eliminate any errors/error messages that may be present on the b maXX 4400 unit. These errors may be due to faulty assembly (e.g. defective cables) or faulty installation (e.g. no power supply). You must not continue with commissioning until you have eliminated the errors.

## 6.4 Description and inspection of the controls and displays

### 6.4.1 Sample Configuration

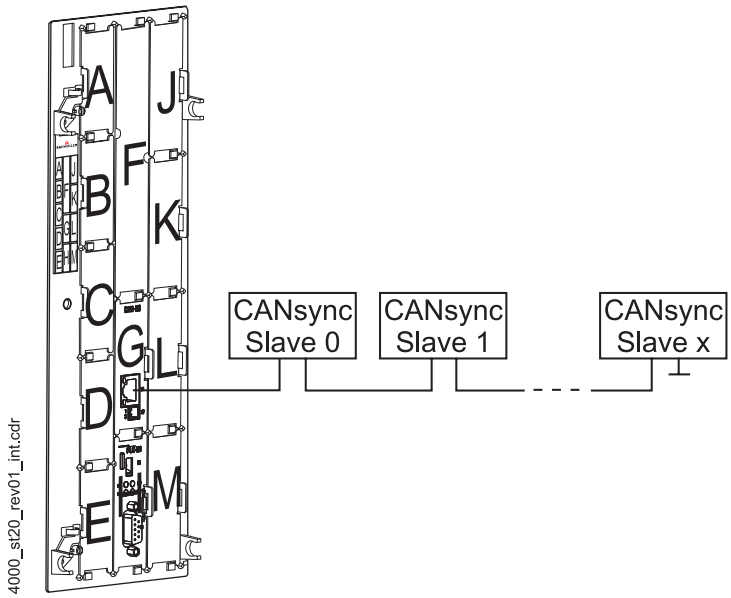



Figure 10: b maXX with CANsync-Master in option slot G and PLC in option slot H

### 6.4.2 LEDs

RJ45 socket X1 has two LEDs (one green and one red); from now on, they will be referred to as H1 and H2. The LEDs have different meanings during initialization and during operation.

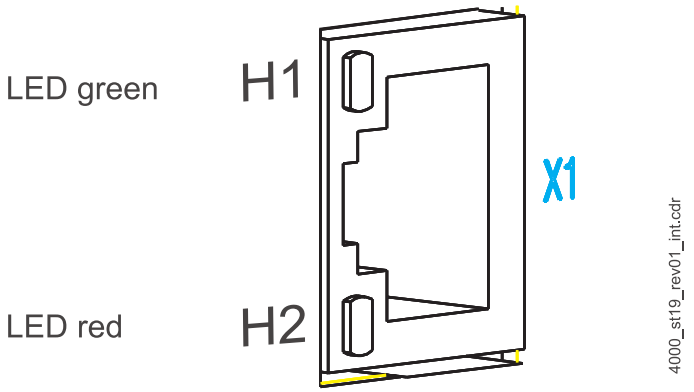



Figure 11: Magnified representation of the LEDs on the front panel

### 6.4.2.1 Activating and initializing

After switching on, the LEDs flash briefly one after the other: first the green one and then the red one.

After this, the CANsync-Master option module is initialized. When doing this, the system displays the following pattern:

| | |
|---|---|
| Start of initialization | H1 on, H2 off |
| Initialization running | H1 and H2 on |
| End of initialization | H1 on, H2 off |
| Initialization completed | H1 and H2 off |

This completes initialization of the CANsync-Master option module.

If an error occurred at initialization, LED H2 flashes.

To find out how to eliminate the cause of the error, refer to ▹Finding and eliminating disturbances ◃ from page 35 onward.

### 6.4.2.2 Operation

After initializing the CANsync-Master option module, an application program on the b maXX PLC can configure the option module.

Now, the CANsync-Master option module shows H1 = ON to indicate that is waiting to be configured by the PLC. In the case of the b maXX PLC option module, we also refer to configuration of the CANsync-Master option module as "initializing the CANsync-Master adapter on the CANsync-Master option module for b maXX PLC".

For configuration, see the "b maXX PLC Operating Instructions", the "b maXX PLC Application Manual" and the "CANsync Application Manual“.

After an application program on the b maXX PLC has configured the option module, the LEDs have the following meanings:

H1 (green) shows message frames being received and sent to the CANsync-Bus an.

H2 (red) is normally off and only flashes in the case of a fault.

To find out how to eliminate the cause of the error, refer to ▹Finding and eliminating disturbances ◃ from page 35 onward.

## 6.5 Commissioning sequence

Commissioning is divided into the following procedures:

**1** Activation.

**2** Testing the function.

### 6.5.1 Activation.

- Read and observe the ▹General safety regulations ◃ from page 29 onward.
- You must have carried out correctly section "Assembly and Installation".
- Switch on the b maXX 4400 basic unit.

**NOTE**

You must not remove or plug in the CANsync-Master option module while the b maXX 4400 basic unit is switched on. Switch the unit off first.

### 6.5.2 Testing the function

After activation, the LEDs flash one after the other (as described in ▹Activating and initializing ◃ on page 31).

If a complete application is present, LED H1 then shows receiving and sending of message frames on the CANsync bus.

# 7

# OPERATION

For a guide to operating the CANsync-Master option module for b maXX PLC, refer to the CANsync-Master for b maXX Application Manual and to the b maXX PLC Application Manual as well as to the PROPROG wt II Programming Manual.

8

# FINDING AND ELIMINATING DISTURBANCES

In this chapter, we will describe disturbance displays on the CANsync-Master option module for b maXX PLC. We explain the meanings of each disturbance display and how you can respond to them.

## 8.1 Safety regulations

- Observe the ▹Basic Safety Instructions ◃ from page 7 onward.

## 8.2 Requirements of the personnel carrying out work

The personnel who work with the b maXX basic unit must have been instructed in operating the unit and be familiar with correctly operating it. Responding to error displays and status conditions in particular requires special knowledge that operators must demonstrate. Below, we will inform you about the various disturbances and the error messages that result from them. These disturbances can have mechanical or electrical causes.

## 8.3 Error messages (error list) responses to errors

The CANsync-Master option module for b maXX PLC indicates errors by a flashing (red) LED H2.

| Pattern | Meaning | Response |
|---|---|---|
| One flash then a pause | The hardware is defective or there is no CANsync hardware on the option module | Send the module back to the manufacturer |
| Two flashes then a pause | No CANsync software on the CANsync-Master option module | Send the module back to the manufacturer |
| Three flashes then a pause | You need a newer version of the CANsync software-on the CANsync-Master option module | Send the module back to the manufacturer |
| Four flashes then a pause | Hardware fault on the b maXX 4400 basic unit | Send the unit back to the manufacturer |

**NOTE**

For more details, refer to the "b maXX PLC Operating Instructions" and the "CANsync Master Application Manual".

# 9

# MAINTENANCE

If you comply with the environmental operating conditions specified in ▹Appendix D - Technical Data◃ from page 53 onward, the CANsync-Master option module for b maXX PLC is maintenance-free. If you find a defect in your CANsync-Master option module or think that it is defective, contact Baumüller Nürnberg Electronic GmbH & Co. KG.

# 10

# OVERHAUL

You cannot overhaul a defective b CANsync-Master option module for b maXX PLC; contact Baumüller Nürnberg Electronic GmbH & Co. KG to obtain a replacement unit.

11

# DISMANTLING, STORAGE

In this chapter, we will describe how you decommission the CANsync-Master option module for b maXX PLC and store it.

## 11.1 Safety regulations

➲ Observe the ▹Basic Safety Instructions ◃ from page 7 onward.

**WARNING**

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

*Danger from: **electricity.** The unit carries dangerous voltage and current and residual charges in the intermediate circuit.*

Ensure that all the electrical connections have been deenergized and are secured against re-starting.

Wait until the intermediate circuit has discharged before starting any dismantling work. The capacitors that are used in the unit have discharged automatically **10 min.** after the supply voltage is switched off such that you can dismount the connections without any risk.

Before starting work on the electrical connections, use appropriate measuring equipment to ensure that the connections are dead.

Do not dismount the connections until you are certain that they are dead.

## 11.2 Requirements of the personnel carrying out work

The personnel that carries out dismantling must have the necessary knowledge and have been trained appropriately to carry out this work. Choose these persons such that they understand and can apply the safety instructions printed on the unit and parts of it and on the connections.

## 11.3 Dismantling

➲ Make available the following material before starting dismantling:

- Suitable packaging for the CANsync-Master option module; if possible, the original packaging.
- Cover plate to cover the slot.
- Suitable tools for pulling out the board (e.g.pointed electronic pliers)

Carry out dismantling in the following sequence:

1 Deenergize the b maXX 4400 basic unit and secure it from unintentional switch-on.
2 Wait ten minutes (the capacitors discharge).
3 Open the switching cabinet.
4 Remove the b maXX 4400 basic unit's cover.
5 Remove the male connectors from the sockets.
6 Turn the spagnolet locks above and below the CANsync-Master option module's front panel slot by 90° (in the horizontal position, they are unlocked).

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- property damage.

*Danger from: **electrostatic discharge.** The electronic components on the PCB can be damaged or destroyed if you touch them with your hands.*

Only touch the CANsync-Master option module by the handle on the front panel.

7 Pull the CANsync-Master option module by the handle forwards out of the b maXX basic unit.
8 Place the module in the prepared packaging – when doing this, only touch the plug-in module by the handle.
9 Now fit a cover (or a new CANsync-Master option module for b maXX PLC) in the open slot (the handle must be pointing toward the right-hand side of the unit).
10 Turn the spagnolet locks by 90° (in the vertical position the locks are fastened).
11 Remount the cover on the unit.
12 Close the switching cabinet.
13 Document in writing dismantling (or replacing) the CANsync-Master option module.

You can now switch the unit back on. If you want to dispose of the module, refer to chapter ▹Disposal ◃ from page 43 onward for more information.

## 11.4 Storage conditions

Store the CANsync-Master option module for b maXX PLC in suitable packaging according to the storage conditions in ▹Technical Data ◃ from page 53 onward.

## 11.5 Recommissioning

If you want to recommission the CANsync-Master option module for b maXX PLC, observe the storage conditions in ▹Technical Data ◃ from page 53 onward. Then, carry out commissioning again.

# 12

# DISPOSAL

In this chapter we will describe how you can correctly and safely dispose of the CANsync-Master option module for b maXX PLC (BM4-O-CAN-06). For the most part, you must dispose of electronic scrap.

## 12.1 Safety regulations

➲ Observe the ▹Basic Safety Instructions ◃ from page 7 onward.

**CAUTION**

The following **may occur**, if you do not observe this caution information:

- minor to medium personal injury.

*Danger from: **sharp edges.** The components of the CANsync-Master option module sheet steel parts, etc. can have sharp edges! If you do not hold a CANsync-Master option module by the handle, you can cut your fingers or the palm of your hand.*

You must only ever hold the CANsync-Master option module by the handle on the front panel.

**CAUTION**

The following **may occur**, if you do not observe this danger information:

- environmental pollution.

*Danger from: **incorrect disposal.***

You must only carry out disposal in accordance with the safety regulations. If necessary, you must also comply with any local regulations. If you cannot safely dispose of the unit yourself, commission a suitable disposal company to carry it out on your behalf.

*In case of fire, dangerous compounds may result or hazardous materials may be released.*

Do not subject electronic components to high temperatures.

*Some high-performance semi-conductors, for example, use beryllium oxide as the internal insulation. The beryllium dust that results on opening is a health risk.*

Do not open the electronic components.

## 12.2 Requirements of the personnel carrying out work

The personnel that carries out disposal/dismantling must have the necessary knowledge and have been trained appropriately to carry out this work. Choose these persons such that they understand and can apply the safety instructions printed on the b maXX 4400 basic unit and parts of it.

## 12.3 Disposal guide

**Conditions**

- The CANsync-Master option module has already been correctly dismantled.
- All the necessary technical aids for dismantling are ready for use and are in perfect technical condition.

**Sheet steel** The front panel is made of galvanized sheet steel. Dispose of the sheet steel in your local reusable ferrous metal system.

**Electronic scrap** You must dispose of the electronic scrap (PCB) that cannot be further dismantled as special waste. When doing this, observe the applicable regulations.

## 12.4 Disposal locations/official bodies

Ensure that you carry out disposal in accordance with your company's guidelines and with the regulations of the responsible disposal locations and official bodies. If in doubt, contact the Trade Supervisory Authority that is responsible for your company or the Environmental Protection Authorities.

# APPENDIX A - ABBREVIATIONS

| | |
|---|---|
| **BACI** | Baumüller Component Interface |
| **BUB** | Ballast unit |
| **BUC** | Baumüller feed/return feed unit |
| **BUG** | Baumüller converter basic feed unit |
| **BUM** | Baumüller individual power unit |
| **BUS** | Baumüller power module |
| **CAN** | Controller Area Network |
| **CANsync** | Synchronized CAN |
| **CPU** | Central Processing Unit |
| **DC** | d.c. current |
| **DP-RAM** | Dual-port RAM |
| **DIN** | Deutsches Institut für Normung e.V. (German Standards Institute) |
| **EMC** | Electromagnetic compatibility |
| **EN** | European standard |
| **EPROM** | Erasable Programmable Read-Only Memory |
| **ESD** | Electrostatic sensitive devices |
| **I/O** | Input/Output |
| **ISO** | International Organization for Standardization |
| **LED** | Light Emitting Diode |
| **16#** | Prefix for hexadecimal numbers |
| **RAM** | Random Access Memory |
| **RJ** | Registered Jack (Western jack) |
| **UL** | Underwriter Laboratories Inc. |
| **USS** | USS protocol function module |
| **USS®** | Trademark of Siemens, universal serial interface |
| **VDE** | Verband deutscher Elektrotechniker (German Association of Electrical Engineers) |

B

# APPENDIX B - ACCESSORIES

In this appendix, you will find a list of all the accessories that are available for Baumüller Nürnberg Electronic GmbH & Co. KG's CANsync-Master option module for b maXX PLC.

If you have any queries about accessories or suggestions for improvements, Baumüller's Product Management will be pleased to hear from you.

## B.1 List of all accessories

### B.1.1 Available CANsync communication cables

Line type: BM4-CAN-K-33-xx (RJ male connector, RJ male connector):

| Type | Length [m] | Article Number |
|---|---|---|
| BM4-CAN-K-33-0,5 | 0,5 | 353315 |
| BM4-CAN-K-33-01 | 1 | 346577 |
| BM4-CAN-K-33-02 | 2 | 353317 |
| BM4-CAN-K-33-03 | 3 | 353321 |
| BM4-CAN-K-33-04 | 4 | 353327 |
| BM4-CAN-K-33-05 | 5 | 351766 |
| BM4-CAN-K-33-10 | 10 | 353329 |

Line type: BM4-CAN-K-31-xx (RJ male connector, SUB-D male connector):

| Type | Length [m] | Article Number |
|---|---|---|
| BM4-CAN-K-31-0,5 | 0,5 | 353334 |
| BM4-CAN-K-31-01 | 1 | 346568 |
| BM4-CAN-K-31-02 | 2 | 353335 |
| BM4-CAN-K-31-03 | 3 | 346571 |

| Type | Length [m] | Article Number |
|---|---|---|
| BM4-CAN-K-31-04 | 4 | 353337 |
| BM4-CAN-K-31-05 | 5 | 351764 |
| BM4-CAN-K-31-10 | 10 | 353339 |

Line type: BM4-CAN-K-32-xx (RJ male connector, SUB-D female connector):

| Type | Length [m] | Article Number |
|---|---|---|
| BM4-CAN-K-32-0,5 | 0,5 | 353330 |
| BM4-CAN-K-32-01 | 1 | 346572 |
| BM4-CAN-K-32-02 | 2 | 353331 |
| BM4-CAN-K-32-03 | 3 | 346573 |
| BM4-CAN-K-32-04 | 4 | 353332 |
| BM4-CAN-K-32-05 | 5 | 351765 |
| BM4-CAN-K-32-10 | 10 | 353333 |

### B.1.2 Terminating resistor connector

CAN terminating resistor connector for RJ45 and Sub-D

| Type | | Article Number |
|---|---|---|
| BM4-CAN-T01 | RJ45 | 346408 |
| K-CAN-T1-O | 9-pin SUB-D male connector | 313910 |
| K-CAN-T2-O | 9-pin SUB-D female connector | 313911 |

### B.1.3 Power supply connector

| Order designation | Article number |
|---|---|
| 2-pin plug-in connector | 312630 |

C

# APPENDIX C - DECLARATION OF CONFORMITY/MANUFACTURER DECLARATION

In this section we provide general information about EC directives, the CE symbol and the Declaration of Conformity/by Manufacturer.

## C.1 What is an EC directive?

EC directives specify requirements. The directives are written by the relevant bodies within the EU (which used to be called the EC, and the EEC before that, hence the now illogical term EC directive), and are implemented by all the member countries of the EU in national law. In this way the EC directives guarantee free trade within the EU.

An EC directive only contains essential minimum requirements. You will find detailed requirements in standards, to which references are made in the directive.

## C.2 What the CE symbol indicates

*a) The CE marking symbolizes conformity to all the obligations incumbent on manufacturers for the product by virtue of the Community directives providing for its affixing.*

…

*b) The CE marking affixed to industrial products symbolizes the fact that the natural or legal person having affixed or been responsible for the affixing of the said marking has verified that the product conforms to all the Community total harmonization provisions which apply to it and has been the subject of the appropriate conformity evaluation procedures.*

…

*Council Decision 93/465/EEC, Annex I B. a) + c)*

We affix the CE mark to the equipment and to the documentation as soon as we have established that we have satisfied the requirements of the relevant directives.

All converters and control systems supplied by the Baumüller Nürnberg Electronic GmbH & Co. KG satisfy the requirements of 73/23/EEC (Low Voltage Directive).

Provide this Baumüller equipment is subjected to normal use in your machinery you can assume that the equipment satisfies the requirements of 73/23/EEC.

Compliance with 89/336/EEC (EMC Directive) depends on how the equipment is installed. Since you are performing installation yourself, it is you who are responsible for complying with 89/336/EEC.
We will provide you with support in the form of EMC information. You will find this information in the operating instructions of the b maXX 4400 basic unit. When you have complied with all the requirements we impose in this documentation, you can assume that the drive satisfies the requirements of the EMC Directive.

To enable you to market your machine within the EU, you must be in possession of the following:

- Conformity mark (CE mark)
- Declaration(s) of Conformity regarding the directive(s) relevant to the machine

## C.3 Definition of the term Declaration of Conformity

A Declaration of Conformity as defined by this documentation is a declaration that the electrical equipment brought into circulation conforms to all the relevant fundamental safety and health requirements.

By issuing the Declaration of Conformity in this section the Baumüller Nürnberg Electronic GmbH & Co. KG declares that the equipment conforms to the relevant fundamental safety and health requirements resulting from the directives and standards which are listed in the Declaration of Conformity.

## C.4 Definition of the term Declaration by Manufacturer

A Declaration by Manufacturer as defined by this documentation is a declaration that the machine/safety component brought into circulation conforms to all the relevant fundamental safety and health requirements.

By issuing the Declaration by Manufacturer in this section the Baumüller Nürnberg Electronic GmbH & Co. KG declares that the equipment conforms to the relevant fundamental safety and health requirements resulting from the directives and standards which are listed in the Declaration by Manufacturer.

The Baumüller equipment is integrated into a machine. For health and safety, of the users for example, it is important for the entire machine to conform to all the relevant fundamental safety and health requirements. For this reason the Baumüller Nürnberg Electronic GmbH & Co. KG draws attention in the Declaration by Manufacturer to the fact that it is prohibited to put the machine as a whole into operation before it has been declared that the machine conforms to the provisions of the Machinery Directive.

## C.5 Declaration of Conformity

# EG-Konformitätserklärung 2002

**Declaration of Conformity 2002**

gemäß EG-Richtlinie 73/23/EG (Niederspannung) vom 19.02.1973
geändert durch: 93/68/EWG vom 22.07.1993

in accordance with EC directive 73/23/EG (low voltage) dated 19.02.1973
changed by: 93/68/EWG dated 22.07.1993

**Optionsmodul CANsync-Master für b maXX PLC BM4-O-CAN-06**

Das obige Gerät wurde entwickelt und konstruiert sowie anschließend gefertigt in Übereinstimmung mit o. g. EG-Richtlinie und u. g. Normen in alleiniger Verantwortung von:
the unit specified above was developed and constructed as well as manufactured in accordance with the above mentioned directive and the standards mentioned below under liability of:

**Baumüller Nürnberg Electronic GmbH & Co. KG, Ostendstr. 80 - 90, D-90482 Nürnberg**

Berücksichtigte Normen - standards complied with:

| Norm / standard | |
|---|---|
| EN 50178 | Ausrüstung von Starkstromanlagen mit elektrischen Betriebsmitteln<br>Electronic equipment for use in power installations |
| EN 60204-1 | Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen<br>Safety of machinery - Electrical equipment of machines |
| EN 60529 | Schutzarten durch Gehäuse (IP Code)<br>Degrees of protection provided by enclosures (IP Code) |
| HD 625.1 51 | Isolationskoordination für elektrische Betriebsmittel in Niederspannungsanlagen<br>Insulation coordination for equipment within low-voltage systems |

Nürnberg, 16.05 2003

Dr. Peter Kreisfeld
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Entwicklungsleiter
Head of development

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C.6 Manufacturer Declaration

# EG-Herstellererklärung 2002

**Declaration by Manufacturer 2002**

gemäß EG-Richtlinie 98/37/EG (Maschinen) vom 22.06.1998
geändert durch: 98/79/EG vom 27.10.1998

in accordance with EC directive 98/37/EG (machinery) dated 22.06.1998
changed by: 98/79/EC dated 27.10.1998

**Optionsmodul CANsync-Master für b maXX PLC BM4-O-CAN-06**

Das obige Gerät wurde entwickelt und konstruiert sowie anschließend gefertigt in Übereinstimmung mit o. g. EG-Richtlinie und u. g. Normen in alleiniger Verantwortung von:
The unit specified above was developed and constructed as well as manufactured in accordance with the above mentioned directive and the standards mentioned below under liability of:

**Baumüller Nürnberg Electronic GmbH & Co. KG, Ostendstr. 80 - 90, D- 90482 Nürnberg**

Berücksichtigte Normen - standards complied with:

| Norm / standard | |
|---|---|
| EN 60204-1 | Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen<br>Safety of machinery - Electrical equipment of machines |

Die Inbetriebnahme der Maschine, in die dieses Gerät eingebaut wird, ist untersagt bis die Konformität der Maschine mit der obengenannten Richtlinie erklärt ist.
The machinery into which this unit is to be incorporated must not be put into service until the machinery has been declared in conformity with the provisions of the directive mentioned above.

Nürnberg, 16.05.2003

Dr. Peter Kreisfeld
Geschäftsführer
Head Division

i.A. Dr. Peter Heidrich
Entwicklungsleiter
Head of development

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D

# APPENDIX D - TECHNICAL DATA

In this appendix, you will find the technical data for Baumüller Nürnberg Electronic GmbH & Co. KG's CANsync-Master.

## D.1 Connection values

| | |
|---|---|
| Baud Rate | 1 Mbps, 500 kbps, 250 kbps, 125 kbps |
| Physical layer | ISO 11898 |
| Potential separation | Optocoupler, DC/DC converter |
| Plug-in connector | RJ45 female connector |
| Power supply | +5 V internal<br>+24 V, external |
| Current consumption | 380 mA internal<br>max. 100 mA external |
| Ambient conditions | Same as b maXX 4400 basic unit |
| Storage conditions | Same as b maXX 4400 basic unit |

## D.2 Pin assignment of RJ45 female connector

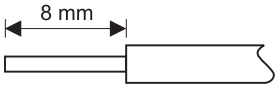
| Pin No. | Assignment |
|---|---|
| 1 | CAN high (CAN bus line is dominant high) |
| 2 | CAN low (CAN bus line is dominant low) |
| 3 | GND-CAN (Signal Ground CAN) |
| 4 | CAN-SYNC - (SYNC signal negative) |
| 5 | CAN-SYNC + (SYNC signal positive) |
| 6 | Reserved |
| 7 | GND-CAN (Signal Ground CAN) |
| 8 | Reserved |

## D.3 Pin assignment of 2-pin male connector

| Pin No. | Assignment |
|---|---|
| 1 | +24 V |
| 2 | M24V |

Supplied plug-in connector:

| Max. cable cross-section | Connection technology | Load carrying capacity |
|---|---|---|
| 0.5 mm² | Cage clamp | 4A |




4000_st31_rev01_int.cdr

Figure 12: Strip the 8-mm cable

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**be in motion**

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