

Operating Instructions

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be in motion **be in motion**

The logo for BAUMÜLLER, featuring a red stylized Greek letter Omega symbol above the word "BAUMÜLLER" in a bold, black, sans-serif font. The logo is centered between two vertical barcode-like lines.

b maXX[®] Systems

**Power Supply Unit for
b maXX controller / safe PLC**

BMC-M-PSB-01/-02

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Read the Operating Instructions before beginning

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DOCUMENT HISTORY

Revision	Date	Remarks
	16.06.2004	New Document
5.04015.02	17.10.2005	Chapter 4.5 Labeling of the controller – type code: wrap connections between power supply, PLC and field bus modules were changed (new hardware version BMC-M-PSB-01-10-00)
5.04015.03	21.02.2006	Chapter 5.4 Installation space Note inserted Chapter 5.6.4 Sequence of installation Cable routing changed
5.04015.04	28.01.2009	PSB-02 added
5.04015.05	12.04.2010	Changes according to review by Plüsch
5.04015.06	01.02.2011	Appendix C4: new declaration of conformity
5.04015.07	06.07.2015	CBP bus, current supply, ferrite



2

PREFACE

2.1 Information on the Operation Manual

This Operation Manual provides important information on handling the device. Compliance with all safety instructions operation instructions specified is a prerequisite for work safety.

Furthermore, it is also necessary to comply with the local accident prevention legislation and general safety regulations applying to the device's field of application.

Read the Operation Manual completely, in particular the chapter on safety instructions, before beginning any work on the device. The Operation Manual is a component of the product and must be kept accessible to personnel in the immediate vicinity of the device at all times.

2.2 Legend

Warning notices

Warning notices are indicated by symbols in this Operation Manual. The notices are introduced by signal words which express the extent of the hazard.

Comply with the notices under all circumstances and act with caution in order to avoid accidents, personal injury and property damage.



DANGER!

...notifies of an imminent dangerous situation which will lead to death or serious injuries if not avoided.



WARNING!

...notifies of a potentially dangerous situation which can lead to death or serious injuries if not avoided.



CAUTION!

...notifies of a potentially dangerous situation which can lead to minor or slight injuries if not avoided.



CAUTION!

...notifies of a potentially dangerous situation which can lead to property damage if not avoided.

Recommendations



NOTICE!

...draws attention to useful tips and recommendations as well as information for efficient and trouble-free operation.

2.3 Limitation of liability

All statements and instructions in this Operation Manual have been compiled in compliance with the applicable standards and legislation while taking the current level of technology and our long-term experience and findings into account.

The manufacturer assumes no liability for damages resulting from:

- failure to observe the Operation Manual
- application for purposes other than those intended
- use by untrained personnel

The actual scope of materials delivered may vary from the explanations and illustrations described here in cases involving custom designs or the use of additional ordering options, or as a result of the most recent changes in technology.

The user assumes the responsibility of conducting maintenance and commissioning in accordance with the safety regulations of the applicable standards and all other relevant national or regional legislation relating to conductor dimensioning and protection, grounding, circuit breakers, overvoltage protection, etc.

The person who conducted the assembly or installation shall be accountable for damages occurring during assembly or connection.

2.4 Preliminary information



CAUTION!

The following shall apply if the document you are reading is designated as preliminary information:

This version pertains to preliminary technical information which the user of the described devices and functions should receive ahead of time, in order to be able to adjust to potential changes and/or functional expansions.

This information is to be considered preliminary since it has not yet been subjected to the Baumüller internal review process. In particular, this information is still subject to changes, meaning that this preliminary information cannot be construed as legally binding. Baumüller assumes no liability for damages resulting from this potentially incorrect or incomplete version.

Should you detect or suspect content-related and/or serious formal errors in this preliminary information, please contact the contact person assigned to you and inform us of your findings and comments, so that they can be taken into account and potentially incorporated during the transition from the preliminary information to the final (reviewed by Baumüller) information. The obligations specified in the following section under "Obligations" do not apply to preliminary information.

2.5 Copyright

Treat the Operation Manual as confidential. It is intended exclusively for those working with the device. It is not permissible to transfer the Operation Manual to third parties without the written approval of the manufacturer.

2.6 Further applicable documents



NOTICE!

The content-related statements, texts, diagrams, images and other illustrations are copyright protected and subject to industrial property rights. Any improper use is liable to prosecution.

b maXX[®] is a registered trademark of Baumüller Nürnberg GmbH
Cage Clamp[®] is a registered trademark of the company WAGO Kontakttechnik



NOTICE!

Please note, that BAUMÜLLER is not responsible to examine whether any (industrial property) rights of third parties are infringed by the application-specific use of the BAUMÜLLER products/components or the execution.

2.6 Further applicable documents

Components from other manufacturers are built into the device. Hazard evaluations for these bought-in parts have been conducted by the applicable manufacturers. The conformity of the designs with the applicable European and national legislation has been declared by the respective component manufacturers.

2.7 Replacement parts



WARNING!

Improper or defective replacement parts can lead to damage, malfunctions or total failure as well as jeopardize safety.

Therefore:

- Only use original replacement parts from the manufacturer

Procure replacement parts from authorized dealers or directly from the manufacturer.
See also [▶Appendix B - Accessories◀](#) from page 73 onward.

2.8 Disposal

If no return or disposal agreement has been made, dismantled components can be taken for recycling after proper disassembly.

See also [▶Disposal ◀](#) from page 69 onward.

2.9 Warranty conditions

The warranty conditions can be found as a separate document in the sales documentation.

The operation of the devices described here in accordance with the specified methods/procedures/requirements is permissible. Everything else, even the operation of devices in installation positions not depicted here, for instance, is not permissible and must be clarified with the factor on a case-by-case basis. The warranty will be rendered null and void if the devices are operated differently than described here.

2.10 Customer service

Our customer service is available for technical support.

Information on the contact person responsible can be found at any time via telephone, fax, E-mail or over the internet.

2.11 Terms used

The terms "Power Supply" or „PSB“ or "BMC-M-PSB-01/-02" are also used for the product **"Power Supply Unit for b maXX controller / safe PLC."**



NOTICE!

The power supply unit „BMC-M-PSB-01“ can be used only for b maXX controller PLC.

The power supply unit „BMC-M-PSB-02“ can be used for both b maXX safe PLC and b maXX controller PLC.

The term "PLC" is also used in this documentation for the Baumüller product "b maXX controller / safe PLC."

The term "b maXX System" is also used for the product consisting of "power supply for b maXX controller / safe PLC," "b maXX safe PLC" and further system components.

A list of the abbreviations used can be found in [▶Appendix A - Abbreviations◀](#) from page 71 onward.

2.12 Certification

The power supply unit „BMC-M-PSB-02“ is a component of a system which consists of b maXX safe PLC, power supply unit and other system components.

The power supply unit „BMC-M-PSB-02“ does not command an own certification.

The programmable safety controller b maXX safe PLC from Baumüller Nürnberg GmbH has been developed in accordance with the standards specified in [▶Chapter 2.12.1◀](#) and certified by TÜV Rheinland.

Approval no. 968/EZ 358.00/09

Test report: 968/EZ 358.00/09

2.12.1 Approvals, directives and standards

Safety engineering standards and directives	Area of application	Approvals
	Functional safety of security-related electric, electronic and programmable electronic systems	up to SIL 3
DIN EN ISO 13849-1	Safety-related components of control units	up to performance level E
EN 954-1	Safety-related components of control units	up to category 4
IEC 62061 Appendix E	Functional safety of security-related electric, electronic and programmable electronic systems Fulfilment of increased stability requirements in accordance with Appendix E	
Additional standards	Area of application	
	General device requirements and tests for control systems	
EN 50178	Equipping of high voltage equipment with electronic utilities Use of ventilation and leakage paths	
EN 60204	Electrical machine equipment	

3

SAFETY

This section provides an overview of all important safety aspects for the optimum protection of the personnel as well as for safe and trouble-free operation.

3.1 Contents of the Operation Manual

All persons assigned to work on or with the device must have read and understood that Operation Manual before beginning work with the device. This also applies if the person concerned has already worked with such a device or similar device or has been trained by the manufacturer.

3.2 Alterations and rebuilding of the device

In order to avoid hazards and ensure optimum performance, neither alterations, additions nor rebuilding work may be conducted on the device unless explicitly authorized by the manufacturer.

3.3 Intended use

This device is exclusively designed and constructed for the intended purpose of use described here.

Your use of the device is considered to be compliant with its intended use if you have read all instructions and information in this Operation Manual.



WARNING!

Danger due to use other than intended!

Any use of the device different from and/or exceeding beyond the scope of the intended use can lead to dangerous situations.

Therefore:

- Only use the device as intended.
- Follow all specifications of this Operation Manual.
- Ensure that exclusively qualified personnel work on or with this device.
- Take care in project planning to see that the device is always used within its specifications.
- The device and/or mounting rail is mounted on a wall which is sufficiently sturdy.
- Ensure that the power supply meets the required specifications.
- Only operate the device if it is in technically faultless condition.
- Only use the device in combination with components approved by Baumüller Nürnberg GmbH.
- Only operate the device in type two environments. The device has been developed to meet the requirements of the category C3 according to IEC 61800-3:2005. The device is not intended to be connected to the public power grid. For operation of the device in a type one environment of the category C2/C1 (residential, business and commercial zone without an intermediate transformer directly to the low-voltage grid), special measures to reduce emitted interference (grid-bound and radiated) are to be arranged by a electrical cabinet engineer and must be demonstrated, since electromagnetic compatibility disturbances can occur unless additional measures are taken. It can not be guaranteed that a device described here will achieve category C2/C1 even with additional measures.

3.4 Operator responsibility

The device is implemented in an industrial zone. The operator of the device is thus subject to the legal work safety obligations.

In addition to the work safety instructions in this Operation Manual, the safety, accident prevention and environmental protection regulations applicable to the area of application of this device must also be complied with. In doing so, the following applies in particular:

- The operator must inform himself of the applicable work safety regulations and additionally ascertain hazards arise through the special work conditions at the place of use of the device in a risk assessment. The operator must implement this in the form of operation instructions for the operation of the device.
- This Operation Manual must be kept in the immediate vicinity of the device and be accessible to persons working on and with the device at all times.
- The statements of the Operation Manual are to be followed completely and absolutely!
- The device may only be operated in technically faultless condition and must be safe for operation.

3.5 Protective equipment

Protection category	
BMC-M-PSB-01/-02	IP 20

All BMC-M-xxx-xx devices must be built into a suitable electrical cabinet in order to comply with the protective categories (IP22) required in EN61800-5-1, Chapter 4.2.3.3.



DANGER!

Life-threatening danger through electric current!

Immediate life-threatening danger is present if contact with live parts is made.

Therefore:

- Operate the device in an electrical cabinet which provides protection from direct contact with the devices and meets the requirements of at least EN 61800-5-1, Chapter 4.2.3.3.

3.6 Personnel training



WARNING!

Risk of injury if operated by insufficiently qualified persons!

Improper handling can lead to severe personal injury and property damage.

Therefore:

- Only allow certain activities to be conducted by persons specified in the respective chapters of this Operation Manual.

The following qualifications for various areas of operation are specified in the Operation Manual:

- **Operating personnel**

The drive system may only be operated by persons who have been trained, instructed and authorized to do so.

Troubleshooting, repairs, cleaning, maintenance and exchange may only be conducted by trained or instructed personnel. These persons must be familiar with the Operation Manual and act according to it.

Commissioning and instruction may only be conducted by qualified personnel.

- **Qualified personnel**

Electrical engineers and specialist electricians of the customer or a third party who are authorized by Baumüller-Nürnberg GmbH, trained and certified in the installation and commissioning of Baumüller drive systems and commissioning, grounding and designating electrical systems and devices in accordance with the safety engineering standards.

Qualified personnel is educated or trained in the maintenance and use of suitable safety equipment in accordance with the respective local safety engineering standards.

3.7 Personnel protective equipment

Wearing the appropriate personal protective equipment when working is required in order to minimize hazards to the health.

- Always wear the respective protective equipment required for the respective task when working.
- Observe signs on personal safety in the work area!



Protective work clothes

denotes tight-fitting work clothing with low tear resistance, tight sleeves and no protruding parts. It primarily serves in protecting from...

Do not wear any rings and necklaces.



Protective helmet

for protection from falling and flying parts.



Safety shoes

for protection from heavy falling parts.



Safety gloves

to protect the hands from friction, abrasions, prick wounds or deeper injuries as well as from contact with hot objects.

To be worn during special work



Protective glasses

to protect the eyes from flying parts and spraying liquids

3.8 Special dangers

The residual risks arising as a result of the hazard analysis will be specified in the following section.

Observe the safety instructions described here and the warning notices in the following chapters in order to reduce health hazards and avoid dangerous situations.

Electric current



DANGER!

Live-threatening danger from electric current!

Immediate life-threatening danger is present if contact with live parts is made. Damage to the insulation or individual component can be life-threatening.

Therefore:

- Shut down immediately if the insulation on the power supply is damaged.
- Only allow the work to be conducted on the electrical system by qualified personnel.
- Turn the current off when conducting any work on the electrical system and secure it before turning it back on.

Dangers from residual energy



DANGER!

Live-threatening danger from electric current!

After the device has been disconnected from the mains, live parts such as line connectors may only be touched once the capacitors in the device have been discharged.

Therefore:

- Take the capacitors' discharge time into account and do not touch live parts beforehand.
- Follow commensurate instructions on the device.
- If you have connected additional capacitors to the intermediate circuit, it can also take considerably longer for the intermediate circuit to discharge. In such case, you will have to establish the necessary waiting period yourself or measure whether the device has been de-energized.

Moving parts



WARNING!

Risk of energy from moving parts!

Rotating and/or linear moving parts can cause severe injuries.

Therefore:

- Do not interfere with moving parts during operation.
- Do not open covers during operation.
- The mechanical residual energy depends on the application. Powered parts will also keep rotating/moving for a certain time after the power supply has been shut off. Make sure to provide suitable safety equipment.

3.9 Firefighting



DANGER!

Live-threatening danger from electric current!

Electric shock can occur if a conductive fire extinguishing medium is used.

Therefore:

- Use the following fire extinguishing medium:



ABC powder/CO₂

3.10 Electric safety

The safety control is designed for contamination level 2 in accordance with EN 50178. This means that only non-conductive contamination may appear during operating time. Short-term conductivity from condensation is only permissible if the control is not in operation.



WARNING!

Risk of injury from conductive contaminants!

No conductive contaminants may appear during operating time.

Therefore:

- Before installing the system, check that contamination degree 2 is not exceeded, and ensure so by additional measures, if necessary.

3.10.1 Notice on power supply



WARNING!

Risk of injury from electric current!

Only devices which have a safe disconnection to the 230 volt mains may be connected to the control.

The power supply for generation the 24-volt supply must meet the requirements for PELV/SELV in accordance with EN 50178.

3.11 Safety equipment



WARNING!

Live-threatening danger from inoperable safety equipment!

Safety equipment provides a maximum of safety during operation. Even if the safety equipment may make work processes more complicated, they may not be put out of operation under any circumstances. Safety is only ensured if the safety equipment is intact.

Therefore:

- Check to make sure that the safety equipment is functional and installed properly before beginning work.

3.12 Conduct in the event of danger and accidents

- Preventative measures**
- Always be prepared for accidents or fire!
 - Keep first aid equipment (first aid kits, blankets, etc.) and fire extinguishers readily available.
 - Instruct personnel in accident reporting, first aid and rescue equipment.

- In case of emergency: Act properly**
- Put the device out of operation immediately with the EMERGENCY STOP.
 - Introduce first aid measures.
 - Keep people out of the danger zone.
 - Inform the supervisors at the site.
 - Notify a doctor and/or fire department.
 - Clear access routes for rescue vehicles.

3.13 Signage

The following symbols and notification signs are found in the work area. They relate to the immediate environment in which they are placed.



WARNING!

Live-threatening danger from electric current!

In the course of time, stickers and symbols on the device can become dirty or otherwise illegible.

Therefore:

- Keep all safety, warning and operation signs on the device in easily legible condition at all times.



Electric current

Only qualified personnel may work in work spaces with this marking.

Unauthorized persons may not touch work equipment bearing this marking.



DANGER!

Live-threatening danger from electric current!

Discharge time > 1 minute

Saved electric charge.

Therefore:

- Keep the discharge time of the capacitors in mind and do not touch live parts beforehand.
- Follow the commensurate instructions on the device.
- If you have connected additional capacitors to the intermediate circuit, it can also take considerably longer for the intermediate circuit to discharge. In such case, you will have to establish the necessary waiting period yourself or measure whether the device has been de-energized.

PACKAGING AND TRANSPORTATION

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

4.1 Transportation

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

- ▶ Avoid severe vibrations and jolts in transit.
- ▶ Avoid static discharges to the modules' electronic components.
- ▶ Do not remove the module from its protective packaging until just before you intend to mount it.

4.2 Unpacking

After receiving the module while it is still packaged:

- ▶ Check whether there is any visible damage!

If there is:

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



CAUTION!

Danger from electrostatic discharge

The plug-in module (specifically its electronic components) can be damaged or totally destroyed if exposed to electrostatic discharges by being touched by hand.

Therefore

- Follow the rules and instructions on handling components sensitive to electrostatic discharge when handling the plug-in module.

4.3 Disposing of the packaging

If no damage is visible:

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

The scope of supply is:

- **Power Supply Unit for b maXX controller / safe PLC,**
- these Operating Instructions including the declaration of conformity/manufacturer declaration
- ▶ complain to your local Baumüller subsidiary if you find damage or if the delivery is not complete.

4.3 Disposing of the packaging

The packaging consists of cardboard and plastic.

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

4.4 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 transport conditions (see ▶ [Appendix D - Technical Data](#) ◀ from page 79 onward) always apply during transportation.

5

DESCRIPTION OF THE POWER SUPPLY UNIT FOR B MAXX CONTROLLER / SAFE PLC

In this chapter, we will describe the Power supply unit for b maXX controller / safe PLC and explain the type code on the module.

5.1 Preface

The power supply unit for b maXX controller / safe PLC energizes the b maXX controller PLC or the b maXX safe PLC and the other system components.

5.2 Structure



NOTICE!

If you doesn't plug the power supply unit to the b maXX controller PLC, the b maXX system does not function.

5.2 Structure

5.2.1 BMC-M-PSB-01

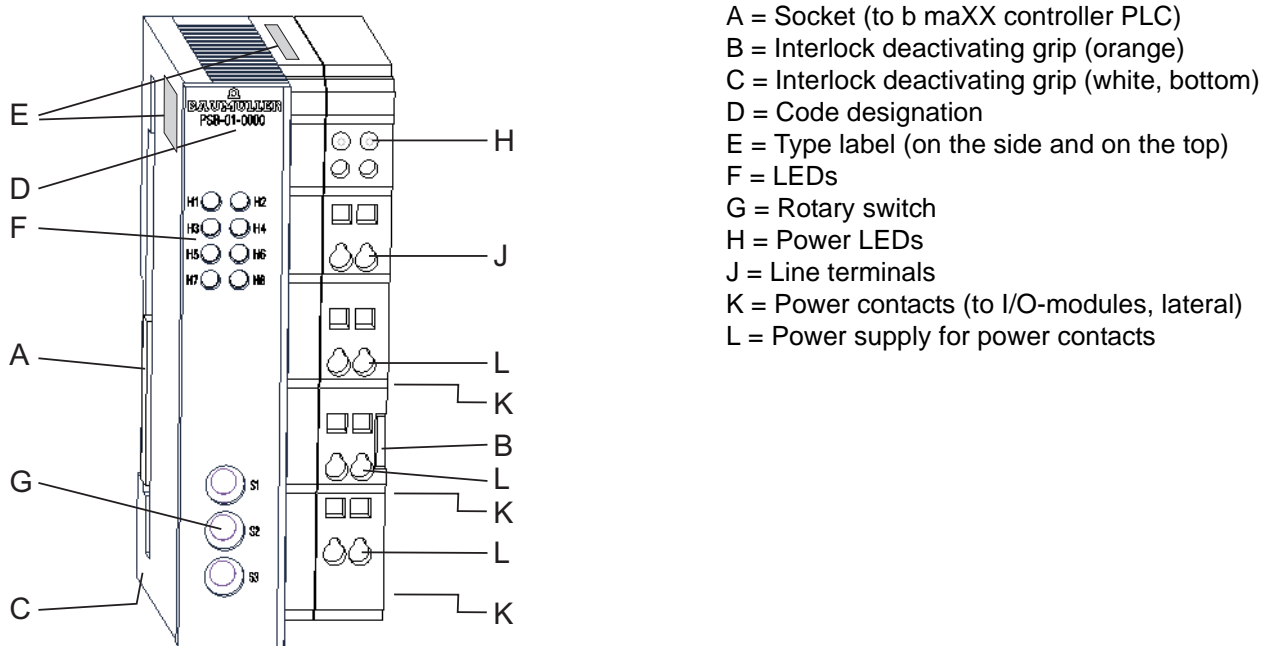


Figure 1: Power supply unit for b maXX controller PLC BMC-M-PSB-01

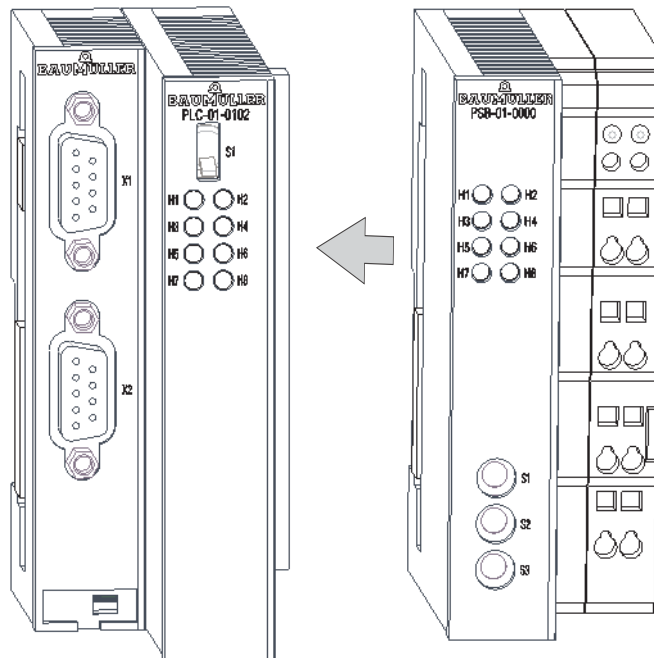
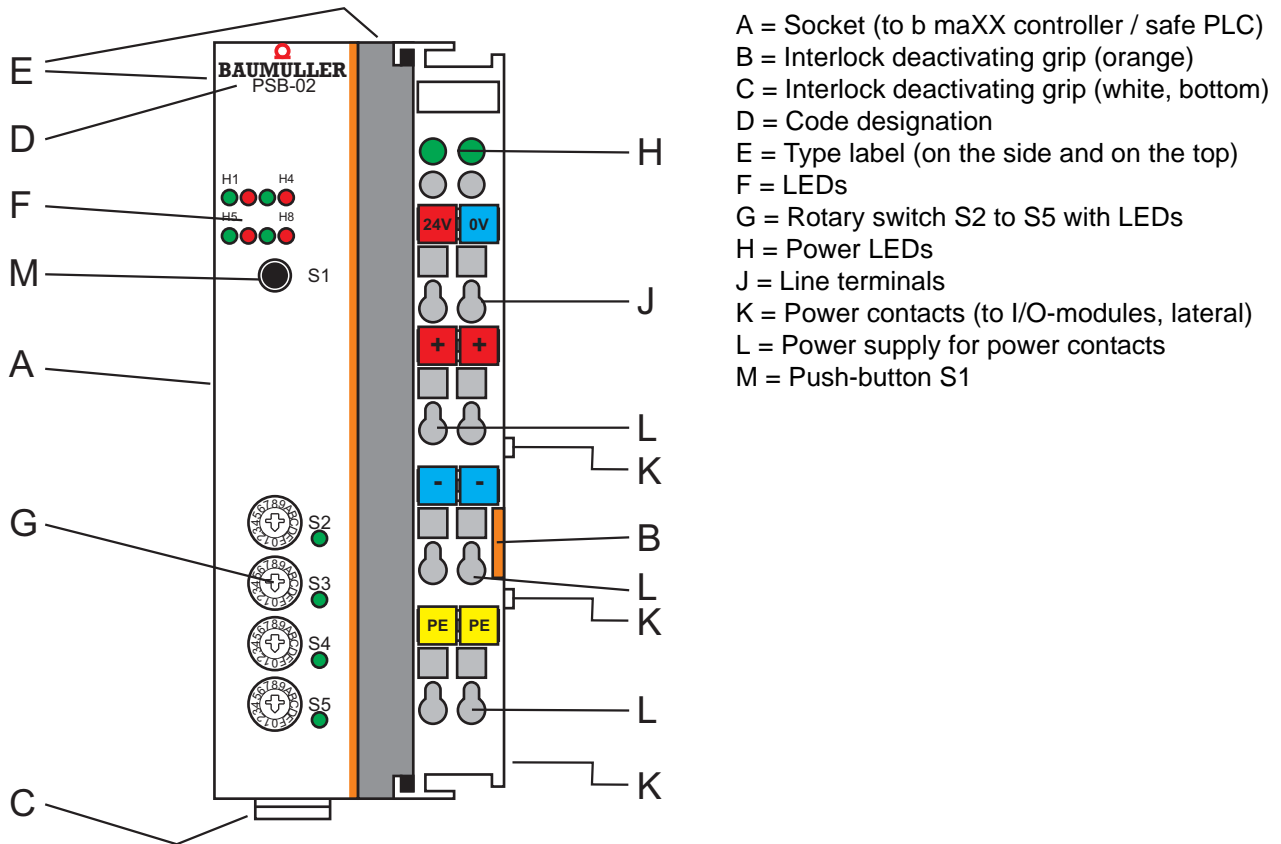


Figure 2: b maXX controller PLC with power supply unit BMC-M-PSB-01

5.2.2 BMC-M-PSB-02



- A = Socket (to b maXX controller / safe PLC)
- B = Interlock deactivating grip (orange)
- C = Interlock deactivating grip (white, bottom)
- D = Code designation
- E = Type label (on the side and on the top)
- F = LEDs
- G = Rotary switch S2 to S5 with LEDs
- H = Power LEDs
- J = Line terminals
- K = Power contacts (to I/O-modules, lateral)
- L = Power supply for power contacts
- M = Push-button S1

Figure 3: Power supply unit for b maXX controller / safe PLC BMC-M-PSB-02

5.3 Functionality

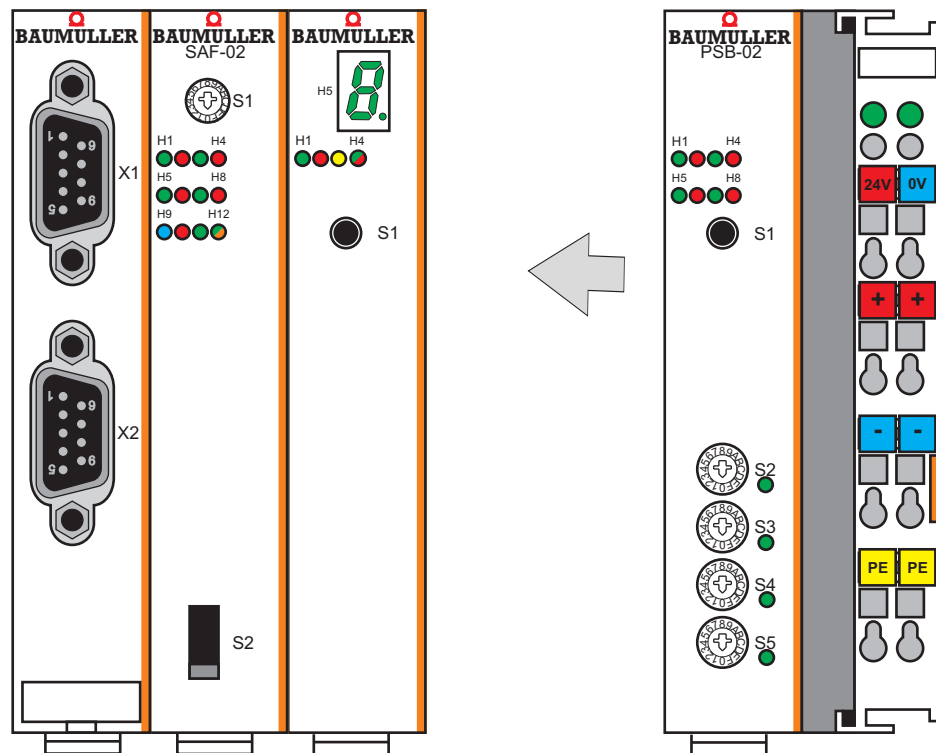


Figure 4: b maXX safe PLC with power supply unit BMC-M-PSB-02

5.3 Functionality

- +5 V power supply unit for the CBP bus and all modules connected to this (all modules which are plugged on left hand side of the power unit).
- +24 V power supply unit of other modules (e.g. I/O-modules) plugged on right hand side (via power contacts)
- +5 V power supply unit for the I/O-bus (bus between b maXX controller or safe PLC and the modules plugged on right hand side of the power unit).

5.4 Danger zones

The illustration below gives you an overview of the danger zones in the module.

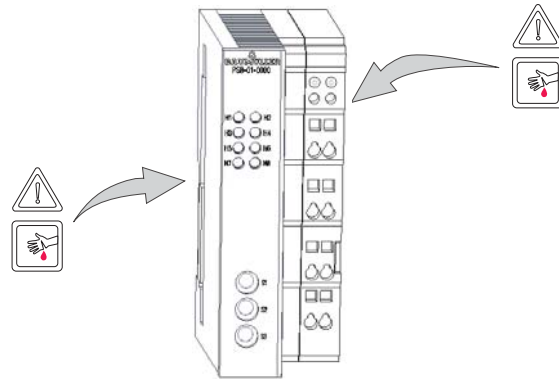


Figure 5: Danger zones

Further dangers from the module is as so far only existent, that a application program on the b maXX controller or safe PLC which is supplied by this module with voltage controls this machine or system and this machine or system enables wrong actions and therewith is a danger.

5.5 Labeling of the controller – type code

5.5 Labeling of the controller – type code

On the type label, you will find the type code ("E" in [▶Figure 1◀](#) on page 28 or "E" in [▶Figure 3◀](#) on page 29).



NOTICE!

This type code applies only to power supply unit for b maXX controller / safe PLC. Other modules have their own type codes.

<u>BMC</u> - M - PSB - XX - YY - ZZ	Device generation in which you use the module
BMC - <u>M</u> - PSB - XX - YY - ZZ	Module
BMC - M - <u>PSB</u> - XX - YY - ZZ	Modul type (Power supply board)
BMC - M - PSB - <u>XX</u> - YY - ZZ	Version module: 01: Standard version (only for b maXX controller PLC) 02: Extended version for b maXX safe PLC (also controller PLC) and with real time clock
BMC - M - PSB - XX - <u>YY</u> - ZZ	Version hardware 00: Standard version old no longer manufactured 10: Standard version (changed wrap connection between power supply, PLC and field bus modules)
BMC - M - PSB - XX - YY - <u>ZZ</u>	Version software 00: Standard version



NOTICE!

All modules in hardware version „-1x-“ are **incompatible** to the modules in the hardware version „-0x-“, because wrap connections between power supply, PLC and possible field bus modules were changed. Only modules in hardware version „-1x-“ can be stuck together.

Example: b maXX controller PLC BMC-M-PLC-01-11-02 and
power supply for b maXX controller PLC BMC-M-PSB-01-10-00

This type code is located on the type label of the module („E“ in [▶Figure 1◀](#) on page 28) or („E“ in [▶Figure 3◀](#) on page 29). The type code contains the module's basic data. For a list of all the technical data, refer to [▶ Appendix D - Technical Data ◀](#) from page 79 onward.

ASSEMBLY AND INSTALLATION

In this chapter, we will describe mechanical assembly and electrical installation of a power supply unit for b maXX controller / safe PLC.

Assembly/installation consists of the following steps:

- 1 Mount the module.
- 2 Connect the module to the power supply.

6.1 General safety regulations



CAUTION!

The "Installation checklist" reproduced in Appendix C.2 of the ▶b maXX safe PLC◀ operation instructions should be used (in conjunction with a safe PLC) during the assembly and installation phase.

- Make sure that the installation process is carried out entirely in accordance with the installation and wiring plan.
- Conduct a visual inspection and check all system components for visible damage.
- Check the system for wiring errors.
- Inspect the tightening torque and make sure that the electrical connection is not interrupted by insulation material.
- Inspect the tensile-load capacity of the electrical terminal and screw connections.
- Make sure that the installation and cable routing are carried out in accordance with applicable standards and guidelines.
- Make sure that the system's environmental properties specified in Appendix ▶D.2.1◀ on page 80 are not exceeded.
- Make sure that the design of the system's type of protection is sufficient.
- Make sure that the safety system is not damaged by moving parts or work in the area surrounding the installed safety components.
- Make sure that the system components do not come into contact with aggressive substances (such as acids, bases, transmission oil).

6.2 Anforderungen an das ausführende Personal

- Observe the information in chapters [▶Safety◀](#) from page 15 onward.
- Observe all areas on the b maXX system that could be dangerous when you are carrying out assembly.

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

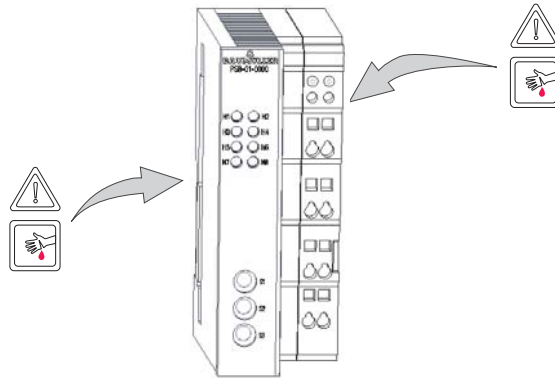


Figure 6: Danger zones

6.2 Anforderungen an das ausführende Personal



DANGER!

Life-threatening danger from electrical current!

The device and surrounding area in the electrical cabinet can carry life-threatening voltages.

Therefore:

- Make sure that power to the device and surrounding area is shut off before beginning work.
- Follow the applicable safety regulations when handling devices carrying high voltages.
- Ensure that this module is assembled and installed exclusively by qualified personnel.

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

6.3 Preparing assembly

With the configuring documents of the system you can prepare the assembly. With the required installation space (see [►Installation space ◄](#) on page 35) you determine the location of the 35 mm C profile (top-hat rail, see [►Appendix D - Technical Data◄](#) from page 79 onward) and determine the dimension for the fixing holes.



CAUTION!

Danger of eye injury due to flying particles!

Metal particles will be propelled into the air when drilling the holes and making the cutout.

Therefore:



Safety glasses

for protection the eyes from flying parts and spraying liquids

- Carry out the drillings and mount the 35 mm C profile

6.4 Installation space

The following drawings show you the height dimensions and the depth gauge of the modules of the b maXX system. Use these drawings in order to determine the required space in the control cabinet.

The module's width is variable. In order to determine the width of your b maXX system, you have got to add the width of the modules you want to use. If necessary, pay attention to the restrictions of the number of modules which can be used at one power supply unit (see [►b maXX safe PLC◄](#) operating instructions).

6.5 Assembly instructions

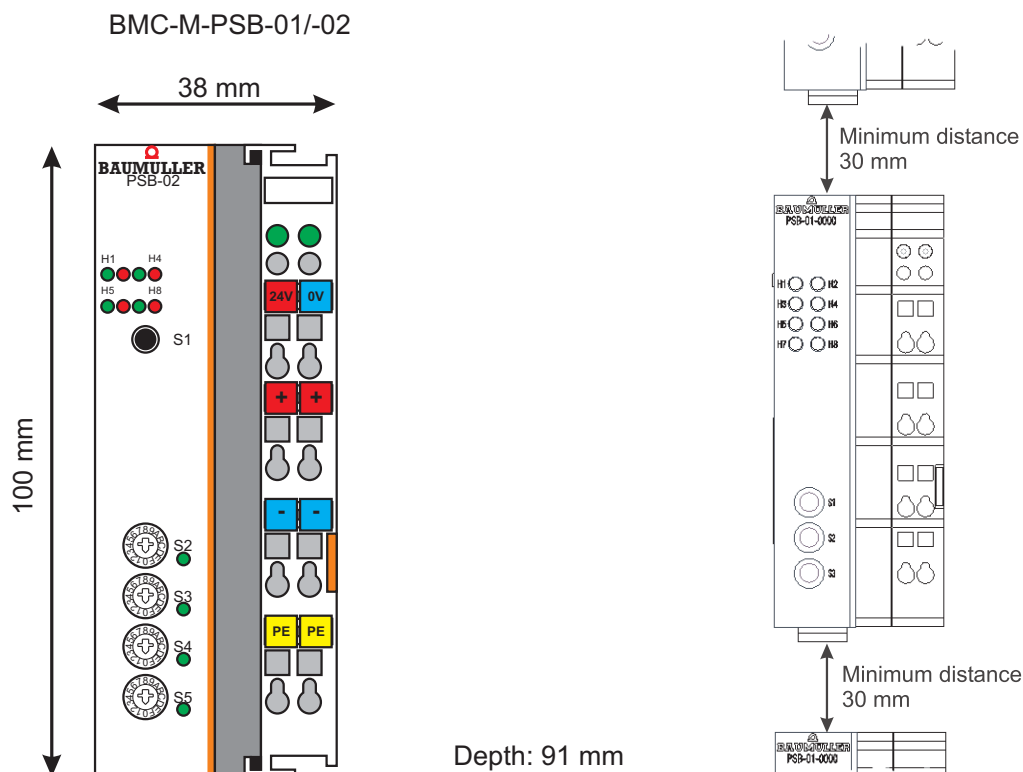


Figure 7: Installation space b maXX system

Two values for the width of the modules are stated. The bigger one is the width if the module is not implemented. The less one is the width after sticking together with the PLC.



NOTICE!

The b maXX safe PLC must be installed in the position shown in the illustrations. This means that the support rails must be fastened to the wall horizontally. Other installation positions are not possible.



NOTICE!

The indicated distances are minimum clearances. Due to the cable routing these distances may be greater than the minimum (see [Sequence of installation](#) from page 42 onward).

6.5 Assembly instructions

Please note that the power supply unit for b maXX controller / safe PLC can be assembled with the b maXX controller or safe PLC only (and if necessary with other system components at b maXX controller or safe PLC).

Therefore, for assembling keep ready the power supply unit, b maXX controller or safe PLC and if necessary other system components.



DANGER!

Life-threatening danger from electrical current!

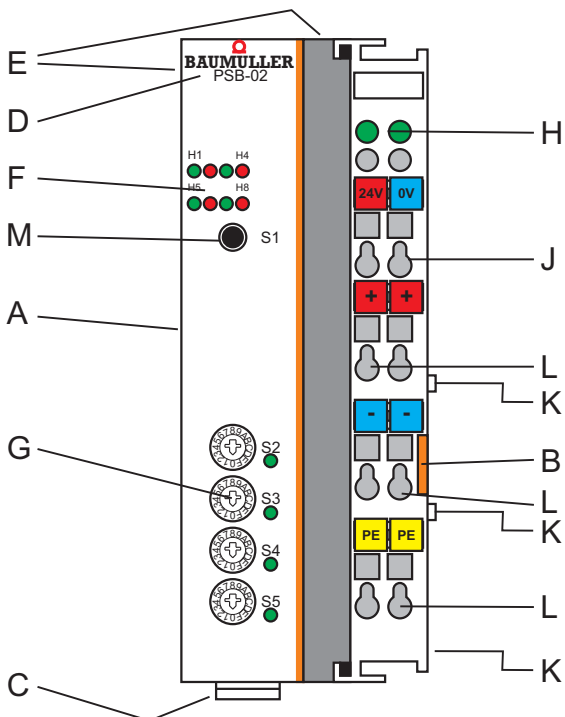
The device and surrounding area in the electrical cabinet can carry life-threatening voltages.

Therefore:

- Make sure that power to the device and surrounding area has been shut off before beginning work.
- Follow the applicable safety regulations when handling devices carrying high voltages.

The following materials are needed:

- Suitable tools for opening the spring energy clamp of the electrical terminal (2-mm wide screwdriver)
- Suitable tools for pulling out the white grip at the bottom of the module (e.g. pointed electronic pliers)
- Consult the type code (see "E" in [Figure 8](#) on page 37) to ensure that you have the correct module.



- A = Socket (to b maXX controller / safe PLC)
- B = Interlock deactivating grip (orange)
- C = Interlock deactivating grip (white, bottom)
- D = Code designation
- E = Type label (on the side and on the top)
- F = LEDs
- G = Rotary switch S2 to S5 with LEDs
- H = Power LEDs
- J = Line terminals
- K = Power contacts (to I/O-modules, lateral)
- L = Power supply for power contacts
- M = Push-button S1

Figure 8: Power supply unit for b maXX controller / safe PLC

- 1 Switch off the power supply of the power supply unit and secure it from being unintentionally restarted during assembly. If necessary dismantle already connected cables.
- 2 Open the control cabinet.
- 3 Stick the power supply unit together with the b maXX controller or safe PLC.

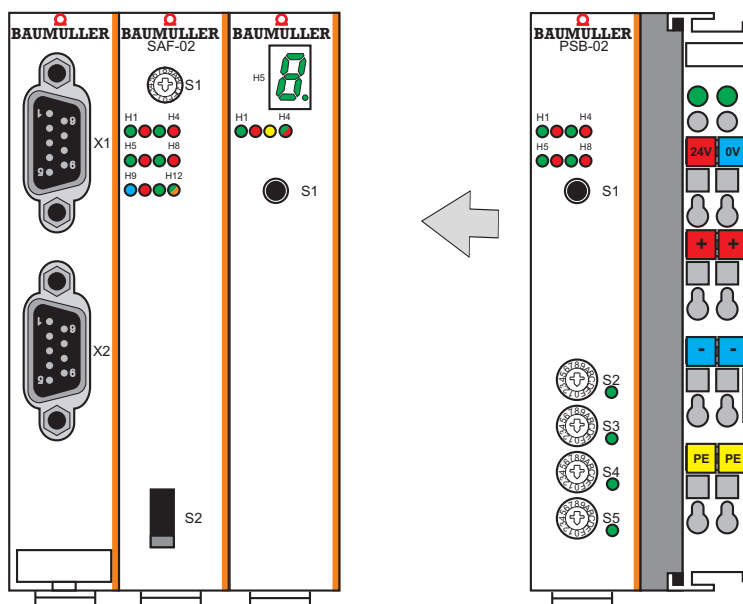


Figure 9: b maXX controller PLC with power supply unit BMC-M-PSB-02

If necessary mount more system components for the b maXX controller or safe PLC on the left hand of the b maXX controller / safe PLC.



NOTICE!

If you doesn't plug the power supply unit to the b maXX controller or safe PLC, but on other modules of the b maXX system the b maXX system does not function.

- 4 On the left hand of the bottom of the power supply unit a white grip is located. Pull this grip towards the bottom and then pull forward. The grip engages. Repeat this step at the b maXX controller PLC (two grips) or at the b maXX safe PLC (three grips). If necessary repeat this step at other system components for the b maXX controller or safe PLC (which have been put to the left hand of the b maXX controller or safe PLC).

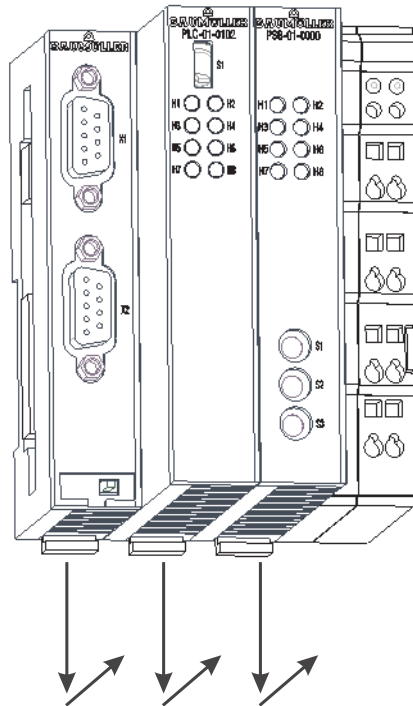


Figure 10: b maXX controller PLC with power supply unit

- 5 With a little screwdriver pull the orange grip on the right hand of the power supply unit forward so that the grip can be seized in a good manner.

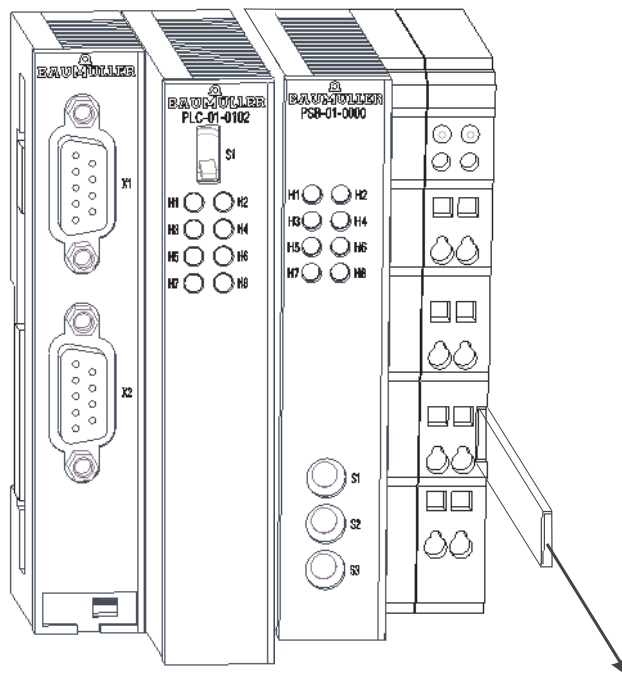


Figure 11: b maXX controller PLC (left hand) with power supply unit (right hand)

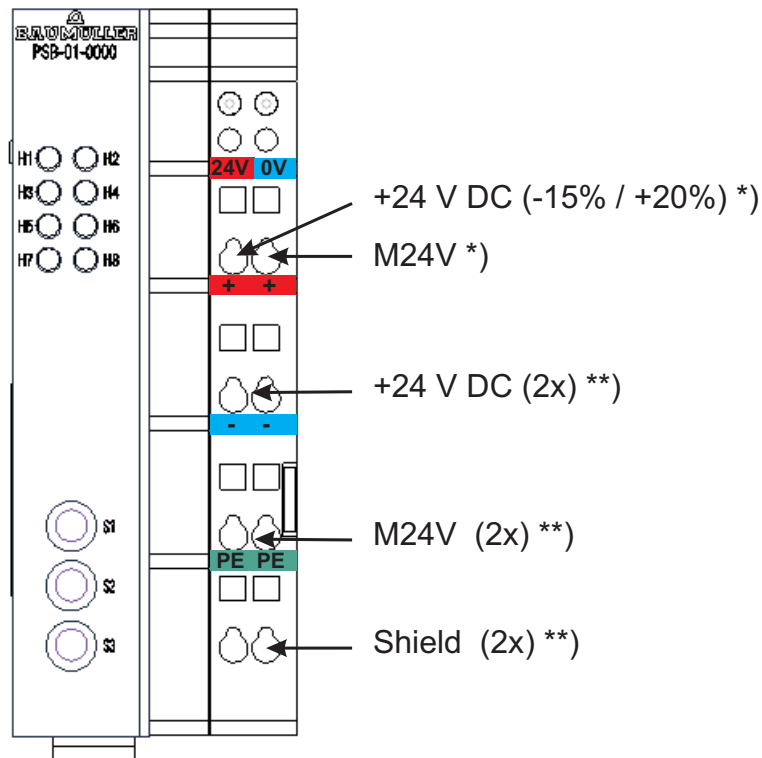
- 6 Now plug the module block in the 35 mm C profile and hold onto it.
- 7 Pull the orange grip on the right hand of power supply unit forward and press at the same time the module block backwards.
- 8 Unhand the orange grip. The right part of the power supply unit engages on the 35 mm C profile.
- 9 Shift the orange grip into the module. Thus an inadvertently breaking of the grip is prevented.
- 10 Press the white grip at the bottom of the left part of the power supply backwards. Thus the white grip jumps out and the left part of the power supply engages on the 35 mm C profile.
Repeat this step with the b maXX controller PLC (two grips) or with the b maXX safe PLC (three grips). Thus the b maXX controller or safe PLC engages on the 35 mm C profile.
If necessary repeat this step with other system components for b maXX controller or safe PLC (placed on the left hand of the b maXX controller or safe PLC). Thus the other system components engage on the 35 mm C profile.
- 11 Now you can mount other system components (maximum 64, e.g. I/O-modules) on the right hand of the power supply unit. Observe to the according operation instructions and to the maximum available current ([▶D.1 Connection values BMC-M-PSB-01/-02◀](#) from page 79 onward).

This completes assembly of the power supply unit for b maXX controller / safe PLC. Connecting lines and commissioning is shown in the following sections.

6.6 Installation

At installation, carry out cabling of the power supply unit for b maXX controller /safe PLC.

6.6.1 Connection diagram



*) Power supply of the power supply unit

***) Power supply of the power contacts,
no electrical isolation! The connections are
available twice. The assignment of one
connection is sufficient.

Figure 12: Connection diagram of the power supply unit for b maXX controller PLC



NOTICE!

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

6.6.2 Requirements of electrical connection



CAUTION!

Danger from electrical current!

The module can be damaged or destroyed if the requirements for the electrical connection of the module are not met.

Therefore:

- Make sure that the connection values specified in technical data are met and that the connections are carried out according to the specifications.
- Prevent a short circuit between inputs and outputs. A short circuit between inputs and outputs can destroy the plug-in module.

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.



NOTICE!

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

6.6.3 Requirements of the connection cable

Baumüller has released the following cables for use:

A power supply cable with cross section 1,0 ... 2,5 mm², you will find further informations in [►Appendix D - Technical Data◄](#) from page 79 onward.



NOTICE!

The climatic properties named in appendix [►D.2.1◄](#) on page 80 are also valid for the used cables.

6.6.4 Sequence of installation

- Ensure that the b maXX system is deenergized.
- Ensure that the external power supply unit is switched off and protected against re-start.
- Connect the contacts for the external power supply ("24V" and "0V") with the external power supply (see [►Requirements of the connection cable ◄](#) on page 42 and [►Appendix D - Technical Data◄](#) from page 79 onward).

- If necessary connect the power contacts with the external power supply (see [►Appendix D - Technical Data◄](#) from page 79 onward). For the external power supply you can use a common or a separated power supply.

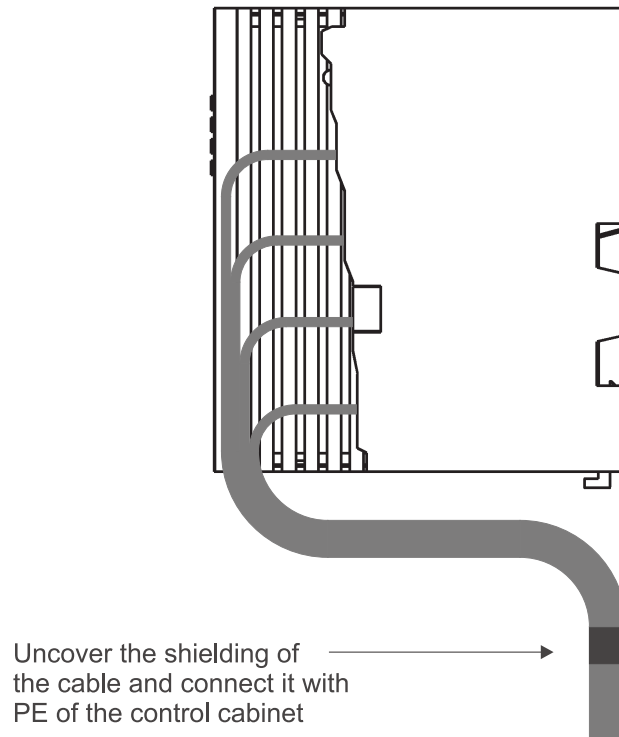


Figure 13: Cable routing

- Lay the connecting lines as stipulated in [►Figure 13◄](#). First the shielding of the cable must be uncovered. The length of the uncovered shielding should correspond to the width of the cable clamp. The cable is fastened with the clamp so that the shielding and the PE of the control cabinet are connected electrically.

Alternatively use a ferrite ring. The ferrite ring must be used as stipulated in [►Figure 14◄](#).

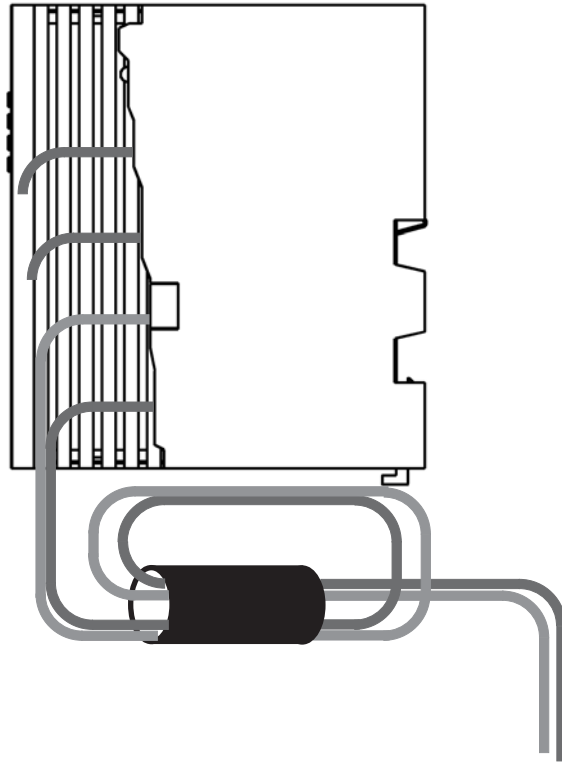


Figure 14: Cable routing when mounting a ferrite ring

- ▶ Pull the lines of the power supply in the form of a loop through the ferrite ring. The ferrite ring should be fixed near as possible to the module.
- ▶ Use a second ferrite ring, if you energize the power contacts separately.

This completes installation.

COMMISSIONING

In this chapter, we will describe how you commission the power supply unit for b maXX controller / safe PLC that you just assembled and installed (see [►Assembly and Installation◄](#) from page 33 onward). Commissioning ensures that the power supply unit for b maXX controller / safe PLC functions correctly.

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

- 1 The module has been assembled correctly.
- 2 The module has been installed correctly.
- 3 All the safety equipment has been commissioned.
- 4 The b maXX system is ready for use.



WARNING!

Danger of injury from electric current!

The [►Commissioning and validation checklist◄](#) reproduced in the Appendix C.3 of the [►b maXX safe PLC◄](#) operation instructions should be used (in conjunction with a safe PLC) during the commissioning phase.

Therefore:

- Make sure that the system is commissioned exclusively by qualified personnel.
- Make sure that there are no people in the danger zone during the initial commissioning. Always anticipate that a machine, system or safety device may not behave as it is intended to.
- Never leave the system unsupervised during commissioning with manually set variables in debug mode (forcing). The important safety functions may not be active in this form of operation. Make sure that no one enters the danger zone.
- If changes or expansions are conducted during the commissioning process, the effects on the behavior of the system will have to be inspected. To do this, it will be necessary to process the checklists for the planning and installation phase again.

7.1 General safety regulations

- ◉ Observe the chapter [►Safety◄](#) from page 15 onward.

7.2 Requirements of the personnel carrying out work



WARNING!

Danger of injury from moving parts!

Machine parts/line parts or the entire machine/line can move during commissioning.

Therefore:

- Maintain an adequate distance from moving machine parts/line parts or from the moving machine/line.
- Note that the machine parts/line parts or machine/line can be set in motion via additional modules connected to the b maXX controller or safe PLC.
- Activate the safety devices in any case.

7.2 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.

7.3 Description/inspection of the safety and monitoring systems

Before you commission the power supply unit for b maXX controller / safe PLC, you must ensure that the 24 V power supply is connected correctly to the power supply unit for b maXX controller/ safe PLC and that the power supply is in accordance with the specifications in [► Appendix D - Technical Data ◀](#) from page 79 onward. Not until you have checked and ensured this, you may continue commissioning.

Make sure that the power supplies of the power contacts are connected correctly.

Consider during commissioning that the power supply unit can be commissioned only together with the b maXX controller or safe PLC and if necessary other system components.

7.4 Description and inspection of the controls and displays at BMC-M-PSB-01

7.4.1 LEDs for displaying operating status conditions at BMC-M-PSB-01

The power supply unit for b maXX controller PLC has as display elements

- eight LEDs (four green ones (H1, H3, H5, H7) and four red ones (H2, H4, H6, H8)) on the left part and
- two power LEDs (A, C, green) on the right part (see „F“ and „H“ in [►Figure 1◀](#) on page 28).

The two power LEDs serve as diagnosis of the power supply.

The left LED signals the power supply of the power supply unit.

The right LED signals the power supply of the power contacts.

H1 (green), H2 (red), H4 (red), H7 (green) and H8 (red) are used from the eight LEDs. The green LEDs H3 and H5 and the red LED H6 are reserved.

During initialization and operation the LEDs H1 (green) and H2 (red) have different meanings.

LED H7 (green) lights if the 5 V internal power supply is alright.

LED H8 (red) flashes during power reset and during reset of the PLC.

LED H4 (red) lights until initialisation of all modules on left side of the power module is finished.

7.4.1.1 Switching on and initialisation

After switching on the LED H1 (green) flashes one time. If H1 (green) doesn't flash und H2 (red) flashes, an error has occurred. To remove the cause of errors see [▶Troubleshooting and eliminating errors◀](#) from page 55 onward.

7.4.1.2 Operation

After switching on the power supply unit (and the exiting of the initialization of the b maXX controller PLC) an application program can start the communication via I/O-bus on the b maXX controller PLC.

For commissioning of the b maXX controller PLC see [▶Operating Instructions b maXX controller PLC◀](#) and for programming the b maXX controller PLC see [▶Application Manual b maXX controller PLC◀](#).

After commissioning the b maXX controller PLC the LEDs have the following meanings:

H1 (green) shows the communication of the I/O-bus

If few I/O-modules are plugged on the right hand of the power supply unit, the intensity of H1 (green) can be very low, because few communication takes place on the I/O-bus.

H2 (red) is normally off and only flashes when errors appear.

To remove the cause of error see [▶Troubleshooting and eliminating errors◀](#) from page 55 onward.

7.4.2 Rotary switch for setting of an address

The module has the rotary switches S1, S2 and S3 for setting an address.

7.5 Description and inspection of the controls and displays at BMC-M-PSB-02



Figure 15: Rotary switches S1, S2, S3

In your application program you can read out this address and if necessary activate or deactivate parts of your unitized software (corresponding to your programming in the application software).



DANGER!

Danger of injury from moving parts!

At commissioning of the power supply unit and of the connected b maXX controller PLC (and other connected system components) with a complete application program can be started the machine/system or parts of the machine/system. Due to a wrong address on the power supply unit the machine/system or parts of the machine/system can behave unexpectedly.

Therefore:

- Maintain an adequate distance from moving machine parts/line parts or from the moving machine/line.
- Note that the machine parts/line parts or machine/line can be set in motion via additional modules connected to the b maXX controller or safe PLC.
- Activate the safety devices in any case.

7.5 Description and inspection of the controls and displays at BMC-M-PSB-02

7.5.1 LEDs for displaying operating status conditions at BMC-M-PSB-02

The power supply unit for b maXX controller/safe PLC has as display elements

- eight LEDs (four green ones (H1, H3, H5, H7) and four red ones (H2, H4, H6, H8)) on the left part and

- two power LEDs (A, C, green) on the right part
(see „F“ and „H“ in ►Figure 3◄ on page 29).

The two power LEDs serve as diagnosis of the power supply.
The left LED signals the power supply of the power supply unit.
The right LED signals the power supply of the power contacts.

H1 (green), H2 (red), H5 (green), H6 (red) and H8 (red) are used from the eight LEDs.
The green LEDs H3 and H7 and the red LED H4 are reserved.

LED H5 (green) lights if the 5 V internal power supply is alright.

During initialization and operation the LEDs H1 (green) and H2 (red) have different meanings.

LED H6 (red) flashes during power reset and during reset of the PLC.

LED H8 (red) lights until initialisation of all modules on left side of the power module is finished.

7.5.2 Push-button and rotary switch for setting of an address

The module has an push-button S1 (see „M“ in ►Figure 3◄ on page 29) and the four rotary switches S2, S3, S4 and S5 (see „G“ in ►Figure 3◄ on page 29) for setting an address.

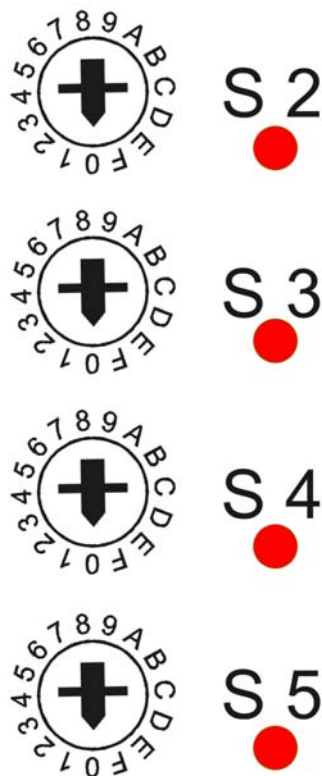


Figure 16: Rotary switches S2, S3, S4 and S5 on BMC-M-PSB-02

7.6 Commissioning sequence

The setting of the station address for the safety PLC in the b maXX safe PLC is described in [b maXX safe PLC](#) operation instructions.

In your application program of the standard PLC in the b maXX safe PLC and in your application program of the controller PLC you can read out this address, which can be set via the rotary switches S2 to S5, and if necessary activate or deactivate parts of your unitized software (corresponding to your programming in the application software).



DANGER!

Danger of injury from moving parts!

At commissioning of the power supply unit and of the connected b maXX controller PLC (and other connected system components) with a complete application program can be started the machine/system or parts of the machine/system. Due to a wrong address on the power supply unit the machine/system or parts of the machine/system can behave unexpectedly.

Therefore:

- Maintain an adequate distance from moving machine parts/line parts or from the moving machine/line.
- Note that the machine parts/line parts or machine/line can be set in motion via additional modules connected to the b maXX controller or safe PLC.
- Activate the safety devices in any case.

7.6 Commissioning sequence

Commissioning is divided into the following procedures:

- 1 Activation.
- 2 Testing the function.

7.6.1 Activation

- Read and observe the [b General safety regulations](#) from page 45 onward.
- You must have carried out correctly section "Assembly and Installation".
- Switch on the +24 V DC voltage of the power supply unit.
- Switch on the +24 V DC voltage of the power contacts.



NOTICE!

You must not connect the power supply unit for b maXX controller / safe PLC module with other system components or disconnect them, if the 24 V DC power supply is switched on. First switch off the 24 V DC voltage of the power supply unit.

You must not connect the power supply unit for b maXX controller / safe PLC module with other system components or disconnect them, if the 24 V DC power supply is switched on. First switch off the 24 V DC voltage of the power contacts.

7.6.2 Testing the function

After switch on the power LEDs show the power supply (see [▶LEDs for displaying operating status conditions at BMC-M-PSB-01](#) ◀ on page 46 or [▶LEDs for displaying operating status conditions at BMC-M-PSB-02](#) ◀ on page 48).

If a complete application is available (corresponding project on the b maXX controller or safe PLC plugged on left hand of power supply unit) the LED H1 (green) shows the communication on the I/O-bus.

8

OPERATION

The power supply unit for b maXX controller PLC (BMC-M-**PSB-01**) serves as power supply for the b maXX controller PLC (BMC-M-PLC-01/-02) and other system components, as e.g. field bus interface connection or I/O-modules.

How you can use the switches S1, S2, S3 and the adjusted address we will explain in the Application Manual b maXX controller PLC.

For guides to operating the b maXX controller PLC module (BMC-M-PLC-01/-02), refer to the b maXX controller PLC Application Manual and Operating Instructions and the PROPROG wt II Programming Manual.

The power supply unit for b maXX controller / safe PLC (BMC-M-**PSB-02**) serves as power supply for the b maXX safe PLC (BMC-M-SAF-02) and for the b maXX controller PLC (BMC-M-PLC-01/-02) and other system components, as e.g. field bus interface connection or I/O-modules.

How you can use the switches S2, S3, S4, S5 and the adjusted address we will explain in the Application Manual b maXX safe PLC or in the Application Manual b maXX controller PLC.

For guides to operating the b maXX safe PLC module (BMC-M-SAF-02), refer to the b maXX safe PLC Application Manual and Operating Instructions and in the Online help system of ProProg wt III.

In the according manuals and application manuals of these system components instructions for the operation of the b maXX controller or safe PLC connected system components are to be found.



TROUBLESHOOTING AND ELIMINATING ERRORS

In this chapter, we will describe fault indications of the power supply unit for b maXX controller PLC, the meanings of these indications and how you can respond to them.

9.1 Safety regulations

Observe the relevant safety regulations, see chapter [▶Safety◀](#) from page 15 onward.

9.2 Requirements of the personnel carrying out work

The personnel who work with the b maXX system, 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.

9.3 Troubleshooting

The power supply unit for b maXX controller / safe PLC has as display elements

- eight LEDs (four green ones (H1, H3, H5, H7) and four red ones (H2, H4, H6, H8)) on the left part and
- two power LEDs (A, C, green) on the right part.

See „F“ and „H“ in [▶Figure 1◀](#) on page 28 (PSB-01) and in [▶Figure 3◀](#) on page 29 (PSB-02) respectively.

The two power LEDs serve as diagnosis of the power supply.
The left LED signals the power supply of the power supply unit.
The right LED signals the power supply of the power contacts.

LED		Meaning
	On	+24V DC connected to "24V"/"0V"
	Off	No +24V DC connected to "24V"/"0V"
Right power LED(C; green)	On	+24V DC connected to the power contacts
	Off	No +24V DC connected to the power contacts

The eight LEDs on the left part of the power supply unit have different meanings during initialization and during operation.

Initialization of the module (PSB-01/PSB-02)

During initialization the LEDs have the following meaning:

- H1 (green) and H2 (red) serve the diagnosis of the I/O-bus (the I/O-bus is the bus between b maXX controller or safe PLC on the left hand side of the power supply unit and the I/O-modules on the right hand side)
- H7/H5 (green) LED lights if the 5 V internal power supply is alright.
- H8/H6 (red) lights up short at power reset.
- H4/H8 (red) lights until the initialization of all modules on the left hand side of the power supply is completed.
- H3/H3 (green), H7/H7 (green) and H6/H4 (red) are reserved.

H1 (green) flashes one time after switching on. If H1 (green) doesn't flash und H2 (red) flashes, an error has occurred.

H2 (red) is normally off and only flashes in a case of an error.
In this case send the module to the manufacturer.

Operation of the module

During operation the LEDs have the following meaning:

- H1 (green) and H2 (red) serve the diagnosis of the I/O-bus (the I/O-bus is the bus between b maXX controller or safe PLC on the left hand side of the power supply unit and the I/O-modules on the right hand side)
- H7/H5 (green) LED lights if the 5 V internal power supply is alright.
- H3/H3 (green), H6/H4 (red) and H5/H7 (green) are reserved.

H1 (green) shows the communication of the I/O-bus. If few I/O-modules are plugged on the right hand of the power supply unit, the intensity of H1 (green) can be very low, because few communication takes place on the I/O-bus. If H1 (green) is off, no communication takes place on the I/O-bus

H2 (red) is normally off and only flashes in case of an error. The flashing patterns, their meanings and corrective measures are illustrated in the following table.

Flashing patterns		Meaning	Remedial
Type of error	Fault position		
	0-times blinking	I/O-bus: mapping error (false offsets 0xFDC/0xFDE)	The modules of a group (digital input, digital output, analog input, analog output) use more than 512 bytes in the related data area (see b maXX controller PLC Application Manual or b maXX safe PLC Application Manual)
3-times blinking	0-times blinking	I/O-bus: command error	An I/O-module reacts faulty to an I/O-bus command: <ol style="list-style-type: none"> 1 The I/O-module is defective. Replace the I/O-module. 2 No I/O-module is plugged in. Plug in an I/O-module. 3 Only the end module is plugged in. Plug in an I/O-module.
4-times blinking	n-times blinking	I/O-bus: breakage after I/O-module n	Check the I/O-module behind the n-th I/O-module and replace it if necessary.
5-times blinking	n-times blinking	I/O-bus: error at communication with I/O-module n	Check the n-th I/O-module and replace it if necessary.
14-times blinking	n-times blinking	I/O-bus: bus error	Check the n-th I/O-module and replace it if necessary.
15-times blinking	n-times blinking	I/O-bus: bus error	Check the n-th I/O-module and replace it if necessary.

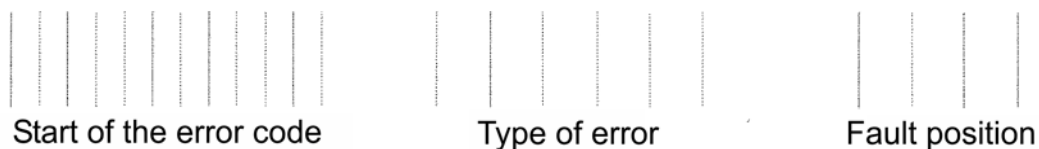


Abbildung 17: LED H2 (red) blink code

10

MAINTENANCE

If you comply with the specified environmental operating conditions, see ► [Appendix D - Technical Data](#) ◀ from page 79 onward), the power supply unit for b maXX controller / safe PLC is maintenance-free. If you find a defect in your power supply unit for b maXX controller / safe PLC or think that it is defective, contact Fa. Baumüller Nürnberg GmbH.





OVERHAUL

You cannot overhaul a defective power supply unit for b maXX controller / safe PLC; contact Fa. Baumüller Nürnberg GmbH to obtain a replacement unit.



DISMANTLING, STORAGE

In this chapter, we will describe how you decommission the power supply unit for b maXX controller / safe PLC and store it.

12.1 Safety regulations

- Observe the [▶Safety◀](#) from page 15 onward.



CAUTION!

Damage through electrical destruction.

The component assembly can be destroyed by electricity if it is removed when the power is turned on.

Therefore:

- Make sure that the power to all electrical connections is shut off and secured to prevent from being turned back on.
- Using suitable measuring equipment, check to make sure that none of the connections are carrying live current before beginning work on the electrical connections.
- Only disassemble the connections and remove the connection once you are completely certain that the component assembly is not under power.

12.2 Requirements of the personnel carrying out work



WARNING!

Danger of injury due to uncontrollable behavior of the machine/line.

The behavior of the machine/line can change as a result of removing the component assembly with the power source connected.

Therefore:

- Make sure that the power to all electrical connections is shut off and secured to prevent being turned back on.
- Using suitable measuring equipment, check to make sure that none of the connections are carrying live current before beginning work on the electrical connections.
- Only disassemble the connections and remove the connection once you are completely certain that the component assembly is not under power.

12.2 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.

12.3 Dismantling

The personnel who carry out dismantling must meet the requirements above.

The power supply unit is mounted with the b maXX controller or safe PLC module and if necessary other system components for b maXX controller or safe PLC.

At dismantling first the b maXX controller or safe PLC, the power supply unit and if necessary other system components for b maXX controller or safe PLC were disconnected from the 35 mm C profile (and from the I/O-modules right hand for the power supply unit).

Afterwards the power supply unit is disconnected from the b maXX controller or safe PLC module.

The following materials are needed:

- Suitable packing for the power supply unit; if possible, use the original packaging material
- If necessary suitable packing for the b maXX controller or safe PLC module; if possible, use the original packaging material
- If necessary suitable packing for other system components for b maXX controller or safe PLC; if possible, use the original packaging material

- Suitable tools for opening the spring energy clamp of the electrical terminal (2-mm wide screwdriver)
- Suitable tools for pulling out the white grip at the bottom of the module (e.g. pointed electronic pliers)

Carry out the dismantling in the following order:

- 1 Switching the unit free of voltage and securing it from unintended restarting
- 2 Open the control cabinet.
- 3 Remove the cables from the electrical connection.
Disconnect the spring-loaded terminal (e.g. with 2-mm wide screwdriver) and pull out the respective cable.
- 4 Remove the male connectors from the sockets of the b maXX controller or safe PLC (see ▶ b maXX controller PLC Operating Instructions ◀ or ▶ b maXX safe PLC Operating Instructions ◀).
- 5 If necessary remove the cables of the other system components mounted on the b maXX controller or safe PLC module (see the according Operating Instructions of these system components).
- 6 There is a white grip on the bottom of power supply unit. Pull the grip (e.g. with the pointed electronic pliers) first downwards and then forward.
The grip locks home.
Repeat this step with the b maXX controller PLC module (two grips) or three grips at the b maXX safe PLC.
If necessary repeat this step with the other system components for b maXX controller or safe PLC (placed on the left hand of the b maXX controller/safe PLC)

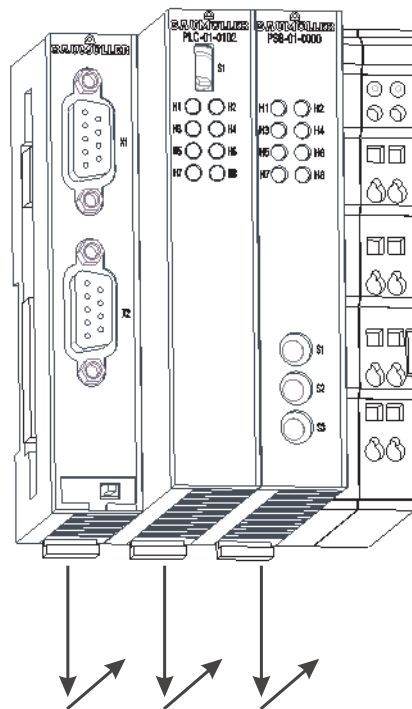


Figure 18: b maXX controller PLC with power supply unit

- 7 Pull the orange grip (e.g. with a screwdriver) on the right hand of the power supply unit forward, so that you can take hold of the grip well.

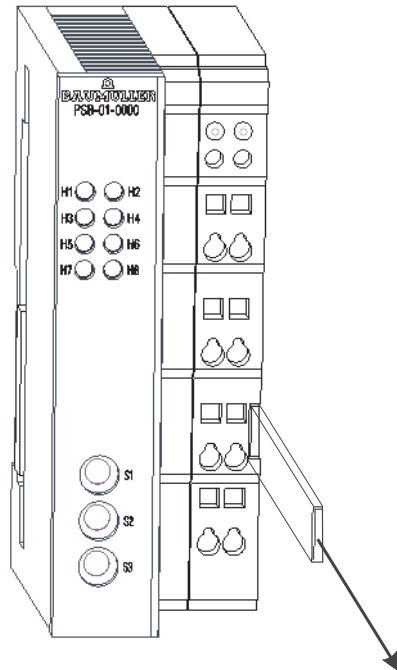


Figure 19: Power supply unit

- 8 Pull (manually) the orange grip on the right hand of the power supply unit forward and afterwards pull the module block forward from the 35 mm C profile away.
The module block includes the power supply unit, the b maXX controller or safe PLC and if necessary the other system components for b maXX controller/safe PLC.
- 9 To disconnect the b maXX controller or safe PLC module from the power supply unit press the extraction mechanism on the back of the b maXX controller or safe PLC with the screwdriver. Insert the screwdriver horizontal in the slot and then press it bottom-up. Now pull the power supply unit out of the b maXX controller or safe PLC module.
- 10 Place the power supply unit in the prepared packaging.
If necessary place the b maXX controller or safe PLC module in the prepared packaging.
If necessary place the other system components in the prepared packaging.
- 11 If you want to change the power supply unit, mount the new power supply unit now (see [▶Assembly instructions◀](#) from page 36 onward), as well as the other system components (see the according Operating Instructions).
- 12 Close the control cabinet.
- 13 Document the dismantling activities carried out (or replacement) of the power supply unit for b maXX controller /safe PLC.
If necessary document the dismantling activities carried out (or replacement) of the b maXX controller or safe PLC module.
If necessary document the dismantling activities carried out (or replacement) of the other system components.

If you changed the power supply unit for b maXX controller / safe PLC, switch the b maXX system now on.

If you want to dispose of the power supply unit for b maXX controller /safe PLC, refer to chapter [▶Disposal◀](#) from page 69 onward for more information.

12.4 Storage conditions

Store the power supply unit for b maXX controller / safe PLC in suitable packaging according to the storage conditions in [▶Technical Data◀](#) from page 79 onward.

12.5 Recommissioning

If you want to recommission the power supply unit for b maXX controller / safe PLC, observe the information in "Storage Conditions". Then, carry out [▶Commissioning◀](#) from page 45 onward again.

13

DISPOSAL

In this chapter we will describe how you can correctly and safely dispose of the power supply unit for b maXX controller / safe PLC (BMC-M-PSB-01/-02). Most of the waste is electronic scrap.

- The condition for dismantling has already been met, see [►Dismantling, storage◄](#) from page 63 onward.

13.1 Safety regulations

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.

13.2 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 system and parts of it.

13.3 Disposal guide

Conditions	<ul style="list-style-type: none">• The power supply unit for b maXX controller / safe PLC has already been correctly unplugged from the top-hat rail• 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.
Plastic material	The housing consists of plastic. Dispose of the plastic housing in your local reusable plastic system.

13.4 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

CBP-bus	Bus between b maXX controller or safe PLC, power unit and other system components as e.g. field-bus interface connection plugged on left hand side of the power unit
CPU	Central Processing Unit
EMC	Electromagnetic compatibility
EN	European standard
ESD	Electrostatic sensitive device
EXT, ext	External
I/O	Input / output
I/O-bus	Bus between b maXX controller or safe PLC and the modules right handed of the PLC or power supply unit
LED	Light Emitting Diode
PLC	Process loop control, Speicher programmierbare Steuerung, SPS
PROPROG wt II	Programming tool for the b maXX controller PLC
SW	Software



APPENDIX B - ACCESSORIES

In this appendix, you will find a list of all the accessories that are available for Baumüller Nürnberg GmbH's power supply unit for b maXX controller / safe 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

Type	Article Number
Ferrite ring	00308291



APPENDIX C - DECLARATION OF CONFORMITY

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

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 operating instructions as soon as we have established that we have satisfied the requirements of the relevant directives.

Control systems supplied by the Baumüller Nürnberg GmbH are not concerned of the Low Voltage Directive, because their operating voltage is less than 60 V DC or less than 75 V AC. Therefore a declaration of conformity to 2006/95/EC (Low Voltage Directive) cannot be issued.

C.3 Definition of the term Declaration of Conformity

The electrical safety and function of the control system will be checked with the harmonized standard EN 61131-2.

With specified application of this Baumüller equipment in your machinery, you can act on the assumption that the equipment satisfies the requirements of 2006/42/EC (machinery directive).

Therefore the equipment is developed and constructed in such a way, that the requirements of the harmonized standard EN 60204-1 can be met by the electrical installation.

Control systems supplied by the Baumüller Nürnberg GmbH satisfy the requirements of 2004/108/EC (EMC Directive) by satisfying the requirements of the harmonized standard EN 61131-2.

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 operating instruction 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 GmbH 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 Declaration of Conformity

be in motion be in motion be in motion



www.baumueller.com

Declaration of EC conformity**Doc.-Nr: 5.10069****Date: 01 Feb. 2011****according to machinery directive 2006/42/EC**

We the manufacturer: Baumüller Nürnberg GmbH
Ostendstraße 80-90
90482 Nürnberg, GERMANY

declare that our product

Name: Programmable Safety Controller b maXX safe PLC
Type: BMC-M-SAF-02/BMC-M-CFI-01/BMC-M-PSB-02
Date of manufacture: 20 January 2011

was developed, constructed and manufactured according to the machinery directive 2006/42/EC.
This product also applies to the EMC directive 2004/108/EC (Electromagnetic Compatibility directive).

Applied harmonized standards:

Standard	Title
EN 62061:2005	Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems
EN ISO 13849-1:2008	Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
EN ISO 13849-2:2008	Safety of machinery – Safety-related parts of control systems – Part 2: Validation
EN 61131-2:2007	Programmable controllers. Equipment requirements and tests
EN 60204-1:2006	Electrical equipment of machines - Part 1: General requirements

Authorized person for preserving relevant technical documents:

Name: Engelbert Meier, Baumüller Nürnberg GmbH
Address: Ostendstraße 80-90, 90482 Nürnberg, Germany

Notified body which has provided the EC type-Examination Certificate in accordance with the machinery directive mentioned above:

Name: TÜV Rheinland Industrie Service GmbH
Address: Am Grauen Stein, 51105 Köln / Germany
Notified body number: 0035
Registration number: 01/205/5093/11

The safety instructions in the manual must be observed. This product is designed for integration in a machine. The commissioning is not allowed until the entire machine, in which this product is integrated, is complying with the directives mentioned above.

Nürnberg / 01 February 2011

Location / Date

subject to change of this declaration of EC conformity without notice. Actual valid edition on request



APPENDIX D - TECHNICAL DATA

In this appendix, you will find the technical data for Baumüller Nürnberg GmbH's power supply unit for b maXX controller / safe PLC (BMC-M-PSB-01/-02).

D.1 Connection values BMC-M-PSB-01/-02

Connection technology	Spring-loaded system Cage Clamp ® ²⁾
Connection Cross-section	0,08 mm ² ... 2,5 mm ² , stranded wire, solid wire, AWG 28-14 Please note the maximum current of the respective cable cross-sectional area Stripped conductor end: 7 mm
Connected load power contacts („L“ in ▶Figure 1◀ on page 28 or ▶Figure 3◀ on page 29) <ul style="list-style-type: none">• power supply• current consumption	+24 V DC PE is connected with the 35 mm C profile max. 10 A ³⁾ (125 A short-circuit)
Connected load power supply unit („J“ in ▶Figure 1◀ on page 28 or ▶Figure 3◀ on page 29) <ul style="list-style-type: none">• power supply• power consumption	+24 V DC (-15% / +20%) ¹⁾ max. 34 W ³⁾ (at max. I _{I/O} and max. I _{CBPB})

D.2 Operational conditions

I/O bus current supply ($I_{I/O}$) to max.	2 A
CBP bus current supply (I_{CBPB}) to max.	<p>PSB-01:</p> <p>PSB-02: 4 A</p>

- 1) The control voltage must be consistent with PELV (EN 50178, Chap. 3.4.9) and SELV (EN 50178, Chap. 3.70) respectively. If you are taking UL 508 C into account: limit the current to 4 A.
Severity PS1 at break of the +24 V power supply direct at the line terminals („J“ in [▶Figure 1◀](#) on page 28 or [▶Figure 3◀](#) on page 29).
- 2) Cage Clamp ® is a registered trademark of WAGO Kontakttechnik
- 3) If you are taking UL 508 C into account: limit the current to 4 A.

D.2 Operational conditions

D.2.1 Climatic properties

Environmental conditions	0°C ... 55°C 95% relative humidity, no condensation
Storage conditions	-25°C ... 85°C 95% relative humidity, no condensation
Transport conditions	-25°C ... 85°C 95% relative humidity, no condensation



WARNING!

The operating conditions specified in the table above may not be exceeded at any time.

D.2.2 Mechanical properties

Dimensions (W x H x D)	40 mm x 100 mm x 91 mm
Weight	BMC-M-PSB-01: approx. 190 g BMC-M-PSB-02: approx. 180 g
Assembly	on 35 mm C mounting rail according to EN 50022 (named top-hat rail)
Installation position	as shown in ▶Figure 7◀ on page 36, other installation positions are not possible
Other system components (e.g. Ethernet with CANopen-Master) mounted side-by-side on the left hand side by means of	double slot and key connection
Labelling	standard terminal block marking and plain language slides (8 mm x 47 mm)
Protection class	IP 20
Vibration test	1 g (9 - 150 Hz sinusoidal) in accordance with DIN EN 60068-2-6
Shock resistance	15 g on the basis of DIN EN 60068-2-27

D.2.3 EMC properties

EMC resistance burst / ESD	according to EN 61131-2
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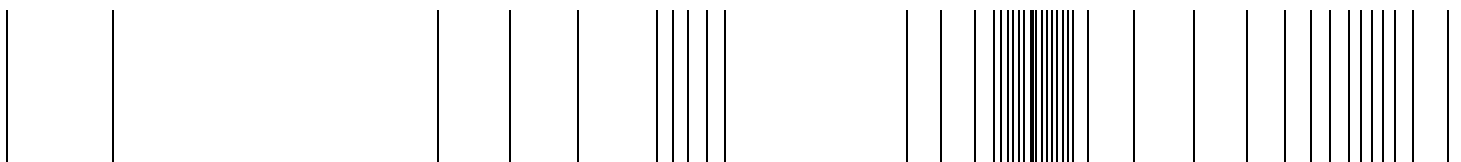
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