



Operating Instructions

For the following types:

1.017.010.24 Socket package watertight 24 mm for relay type HFV4

1.017.010.25 Socket package watertight 25 mm for relay type CB1

1.017.010.30 Socket package watertight 30 mm

1.017.010.40 Socket package watertight 40 mm

1.017.010.50 Socket package watertight 50 mm

1.017.055 Socket 12-pin MicroPlex® / ISO 280

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Product

Product designation: Watertight Sockets

Types: 1.017.010.24 Socket package watertight 24 mm for relay type HFV4
1.017.010.25 Socket package watertight 25 mm for relay type CB1
1.017.010.30 Socket package watertight 30 mm
1.017.010.40 Socket package watertight 40 mm
1.017.010.50 Socket package watertight 50 mm
1.017.055 Socket 12-pin MicroPlex® / ISO 280

Serial Number: see type plate



Document

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The original operating instructions were composed in German.

MRS Electronic GmbH & Co. KG compiled this document with the utmost diligence and based on the current state of technology. MRS Electronic GmbH & Co. KG will not assume any liability or responsibility for errors in content or form, missing updates as well as any possibly resulting damages or drawbacks.

Our products are developed according to European norms and standards. Therefore, the use of these products is currently limited to the area of the European Economic Area (EEA). If products are to be used in another area, market access research must be carried out beforehand. You can do this yourself as the market introducer or you are welcome to contact us and we will discuss how to proceed together.

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1. User Information

1.1. About These Operating Instructions

The manufacturer MRS Electronic GmbH & Co. KG (hereinafter referred to as MRS) delivered this product to you in its entirety and functionally sound. The operating instructions provide information about how to:

- Install the product
- Service the product (cleaning)
- Uninstall the product
- Dispose of the product

It is essential to read these operating instructions thoroughly and completely before working with the product. We strive to compile all the information for safe and complete operation. However, should you have any questions not answered by these instructions, please contact MRS.

Storage and transfer of the operating instructions

These instructions as well as all other product-related documentation relevant for different applications must always be kept on hand and be available in the vicinity of the product.

Target group of the operating instructions

These instructions address trained experts who are familiar with handling electronic assemblies. Trained experts are those persons who can assess the tasks assigned to her/him and recognize possible dangers due to her/his expert training, knowledge and experience as well as her/his knowledge of the relevant standards and regulations.

Validity of the operating instructions

The validity of these instructions goes into effect with the transfer of the product from MRS to the operator. The version number and approval date of the instructions are included in the footer. Changes to these operating instructions are possible any time and without the specification of any reasons.

INFORMATION



The current version of the operating instructions replaces all previous versions.

Warning information in the operating instructions

The operating instructions contain warning information before a call to action which includes the risk of property damage or personal injury. The measures for averting risks described in the instructions must be implemented. Warning information is structured as follows:

DANGER!



SOURCE AND CONSEQUENCE

Plus explanation, where needed.

► Prevention.

- Warning symbol: (Warning triangle) indicates the danger.
- Signal word: Specifies the seriousness of the danger.
- Source: Designates the type or source of the danger.
- Consequence: Specifies the consequences in case of noncompliance.
- Prevention: Informs how to avert the danger.

DANGER!



Designates an immediate, serious threat which will with certainty lead to serious injury or even death if the danger is not averted.

WARNING!



Designates a possible threat which may lead to serious injury or even death if the danger is not averted.

CAUTION!



Designates a potentially dangerous situation which may lead to mild or medium property damage or physical injury if the danger is not averted.

INFORMATION



Sections with this symbol provide important information about the product or how to handle the product.

Symbols used in the operating instructions



General warning sign.



Beware of electrical current.



Beware of hot surface.

1.2. **Copyright**

These operating instructions contain information protected by copyright. The contents or excerpts of the contents may not be copied or reproduced in any other way without prior consent from the manufacturer.

1.3. **Warranty Conditions**

See the General Terms and Conditions MRS Electronic GmbH & Co. KG at <https://www.mrs-electronic.com/en/terms>

2. Safety

This chapter includes all the information you should know in order to safely install and operate the product.

2.1. Hazards

The watertight socket has been constructed with the newest technology and recognized safety-relevant regulations. Danger for persons and/or property may arise in case of improper use. Lack of compliance with the rules for work safety may result in damages. This section describes all the possible hazards which may be relevant during the assembly, installation and commissioning of the watertight socket.

Inappropriate operation

The control unit may only be operated as instructed in the data sheet.
The control unit may only be operated by battery, not by mains supply.

 **WARNING!**



DANGER DUE TO MALFUNCTION OF THE COMPLETE SYSTEM

Unforeseen reactions or malfunctions of the complete system may endanger the safety of people and machine.

- ▶ Please make sure that the control unit is only operated as instructed in the data sheet, and that it is only operated by battery.
-

Moving components

The complete system may create unforeseen dangers when commissioning and servicing the watertight socket.

 **WARNING!**



SUDDEN MOVEMENTS OF COMPLETE SYSTEM OR OF COMPONENTS

Danger due to unprotected moving components.

- ▶ Before performing any work, shut down the complete system and secure it against unintended restart.
 - ▶ Before commissioning the system, please make sure that the complete system and all parts of the system are in a safe state.
-

Elevated temperature

 **CAUTION!****DANGER OF BURNS!**

The watertight socket may exhibit an elevated temperature.

- ▶ Please do not touch the socket and let all system components cool down before working on the system.

2.2. Staff Qualifications

These operating instructions repeatedly refer to the qualifications of the employees who can be trusted to perform various tasks for installation and maintenance. The three groups are:

- Specialists/Experts
- Skilled persons
- Authorized persons

This product is not suitable for use by persons (incl. children) who are mentally or physically disabled or do not have enough experience or sufficient knowledge of the product unless supervised or having attended a detailed training regarding the use of the watertight socket by a person who is responsible for the safety of this person.

Specialists/Experts

Specialists and experts are, for example, fitters or electrician who are capable of assuming different tasks, such as transport, assembly and installation of the product with the instructions of an authorized person. The people in question must be experienced in handling the product.

Skilled persons

Skilled persons are those persons who have sufficient knowledge of the subject in question due to their specialist training and are familiar with the relevant national occupational protection provisions, accident prevention regulations, guidelines and generally recognized rules of technology. Skilled persons must be capable of securely assessing the results of their work and familiarize themselves with the contents of these operating instructions.

Authorized persons

Authorized persons are those persons who are permitted to perform the work due to legal regulations or who have been approved to perform certain tasks by MRS.

2.3. Obligations of the Manufacturer of Complete Systems

- Tasks for system development, installation and commissioning of electric systems may only be performed by trained and experienced staff, see Chapter 2.2 Staff Qualifications.
- The manufacturer of the complete system must ensure that no defective watertight sockets are used.
- The manufacturer of the complete system is responsible for the correct connection of all the peripherals (such as cable profiles, protection against touching, plugs, crimps, correct selection/connection of sensors/actuators).
- No changes and/or repairs may be performed on the watertight socket.
- If the watertight socket falls down and exhibits any damage, it may no longer be used.
- The manufacturer of the complete system must inform the end customer about all potential dangers.

The manufacturer must also take the following aspects into consideration when using the watertight socket:

- Watertight sockets with wiring suggestions provided by MRS do not constitute a systematic responsibility for complete systems.

The risk of accidents is reduced if the manufacturer of the complete systems observes the following points:

- Adherence to the statutory regulations regarding accident prevention, occupational safety and environmental protection.
- Provision of all documents required for installation and maintenance.
- Monitoring of the cleanliness of the watertight socket and of the complete system.
- The responsibilities for the assembly of the watertight socket must be clearly specified by the manufacturer of the complete system. The assembly and maintenance staff must be regularly instructed.
- Any work and maintenance performed on electric energy sources is always associated with possible dangers. Persons not familiar with these kinds of devices and systems may cause harm to themselves and others.
- The installation and maintenance staff of a system with electric devices must be instructed by the manufacturer regarding potential dangers, required safety measures and applicable safety provisions before beginning work.

3. Product Description

These compact and easy-to-mount sockets by MRS Electronic are perfect to use with our modules. They also allow you to integrate flat receptacles and then fix them with cables very easily.

4. Transport and Storage

4.1. Transport

The product must be packed in suitable transport packaging and secured against sliding around. During transport, the statutory provisions regarding securing loads must be observed.

If the watertight socket falls down and exhibits any damage, it may no longer be used.

4.2. Storage

Store the product in a dry place (no dew), dark (no direct sunlight) in a clean room which can be locked. Please observe the permissible environmental conditions in the data sheet.

5. Intended Use

Socket package watertight (modules 1.017.010.24, 1.017.010.25, 1.017.010.30, 1.017.010.40, and 1.017.010.50) can be used with MRS relays. The clamping bracket, sealing pad and individual wire seals ensure impermeability to water.

The Socket 12-pin MicroPlex® / ISO 280 is perfect for your application in use with our patented MicroPlex® or two ISO 280 relays. Thanks to the practical snap-in principle, the socket can be assembled without tools. Due to the lateral guides, several sockets can be plugged together and thus also easily combined with other MRS sockets.

You are within regulations:

- If the watertight socket is used within the operating ranges specified and approved in the corresponding data sheet.
- If you strictly adhere to the information and sequence of tasks described in these operating instructions and do not engage in unauthorized actions which may risk your safety and the functionality of the watertight socket.
- If you comply with all specified safety instructions.

WARNING!



DANGER DUE TO UNINTENDED USE!

The watertight socket is only intended to be used in vehicles and self-propelled work machines.

- ▶ An application in safety-relevant system parts for functional safety is not permitted.
- ▶ Please do not use the watertight socket in explosive areas.

Misuse

- Use of the product in conditions and requirements differing from those specified by the manufacturer in technical documentation, data sheets and operating instructions.
- Non-compliance with the safety information and information regarding assembly, commissioning, maintenance and disposal specified in the operating instructions.
- Conversions and changes of the watertight socket.
- Use of the watertight socket or parts thereof which are damaged or corroded. The same goes for seals and cables.
- Operation in a condition with access to live parts.
- Operation without the safety measures intended and provided by the manufacturer.

MRS only guarantees/is liable for the watertight socket corresponding to the published specifications. If the product is used in a way not described in these operation instructions or in the data sheet of the watertight socket in question, the protection of the watertight socket will be impaired, and the warranty claim is void.

6. Assembly

Assembly work may only be performed by qualified staff (see Chapter 2.2 Staff Qualifications). The watertight socket may only be used after having installed in a fixed location.

INFORMATION



If the watertight socket falls down and exhibits any damage, it may no longer be used.

6.1. Mounting Location

The mounting location must be selected as such that the watertight socket is subjected to as low a mechanical and thermal load as possible. The watertight socket may not be exposed to chemicals (except the chemicals mentioned in the corresponding data sheet).

INFORMATION



Please observe the permissible environmental conditions in the data sheet.

6.2. Mounting of the Watertight Socket

- Mount the watertight socket in such a way that the cable harness points vertically downwards. Individual seals of the cables/wires ensure that no water can enter the watertight socket. Compliance with the IP protection class and protection against touching must be ensured by using the appropriate accessories in accordance with the accessories list in the data sheet.
- Select the appropriate crimps (according to the accessories list in the data sheet) and the appropriate wire cross-sections for mounting the watertight socket.
- Select the appropriate single wire seals for the wire cross-sections.
- The crimps with cable must be inserted into the socket from below until they click into place.
- The single wire seals must be inserted into the socket from below so that they are flush with the edge of the socket.
- The lower fixing screw (cylinder head screw or pan head screw with minimum strength class 4.6 in size M5) must be screwed into the fixing plate/baseplate at a distance of 2 mm between the screw head and the fixing plate/baseplate.
- The watertight socket is pushed onto the lower fixing screw from above.
- The upper fastening screw (cylinder head screw or pan head screw with minimum strength class 4.6 in size M5) must be screwed in through the upper fastening hole (tightening torque: 1.6 Nm to 2 Nm).

- The sealing pad must be inserted into the watertight socket from above so that the position of the slots in the sealing pad matches the position of the slots in the socket.
- A module matching the watertight socket is then inserted into the socket until flush with the sealing pad.
- See also Figure 1 and Figure 2.
- If you want to use the cables again after removing the watertight socket (see chapter 11.1 Disassembly), check the crimps and the individual wire seals/blind plugs for cleanliness and proper function.

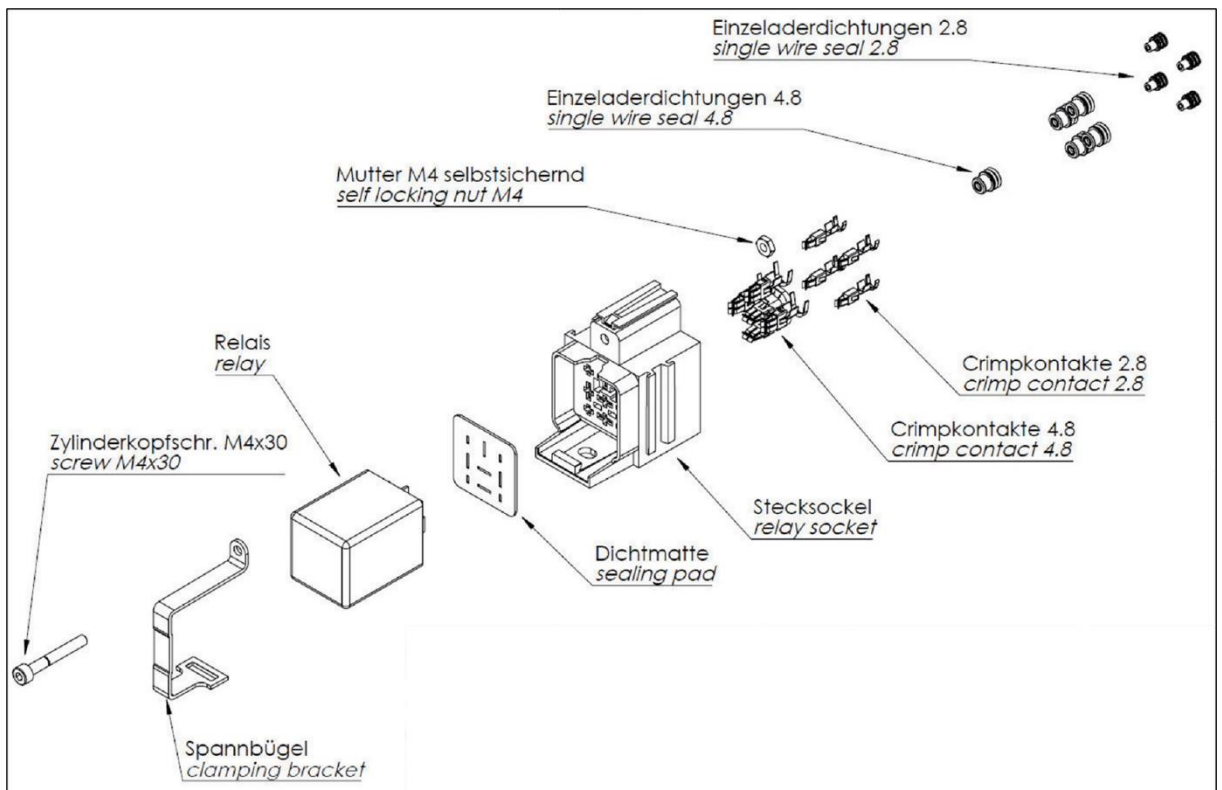


Figure 1: Exploded assembly drawing of the watertight socket (for modules 1.017.010.24, 1.017.010.25, 1.017.010.30, 1.017.010.40, and 1.017.010.50).

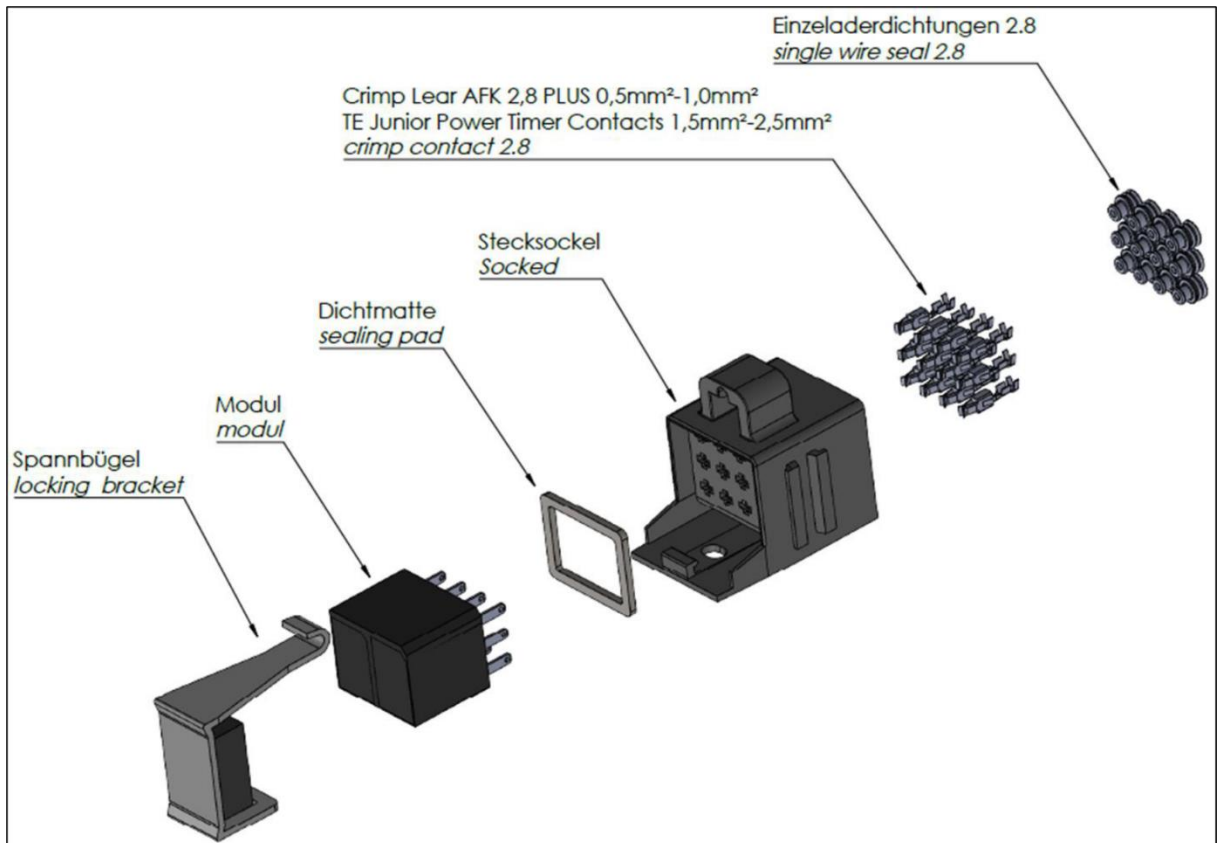


Figure 2: Exploded assembly drawing for the watertight socket (for module 1.017.055).

6.3. Mounting of the Bracket

Mounting of the metal clamping bracket

- Insert the corresponding module into the watertight socket until flush with the sealing pad.
- Insert the nut included in the accessories into the socket from below (see Figure 3a).
- Insert the metal clamping bracket to the lug of the watertight socket (Figure 3b).
- Insert the mounting screw through the matching hole in the clamping bracket and in the watertight socket and screw it in with the nut (tightening torque: 1.6 Nm to 2 Nm) (see Figure 3c).

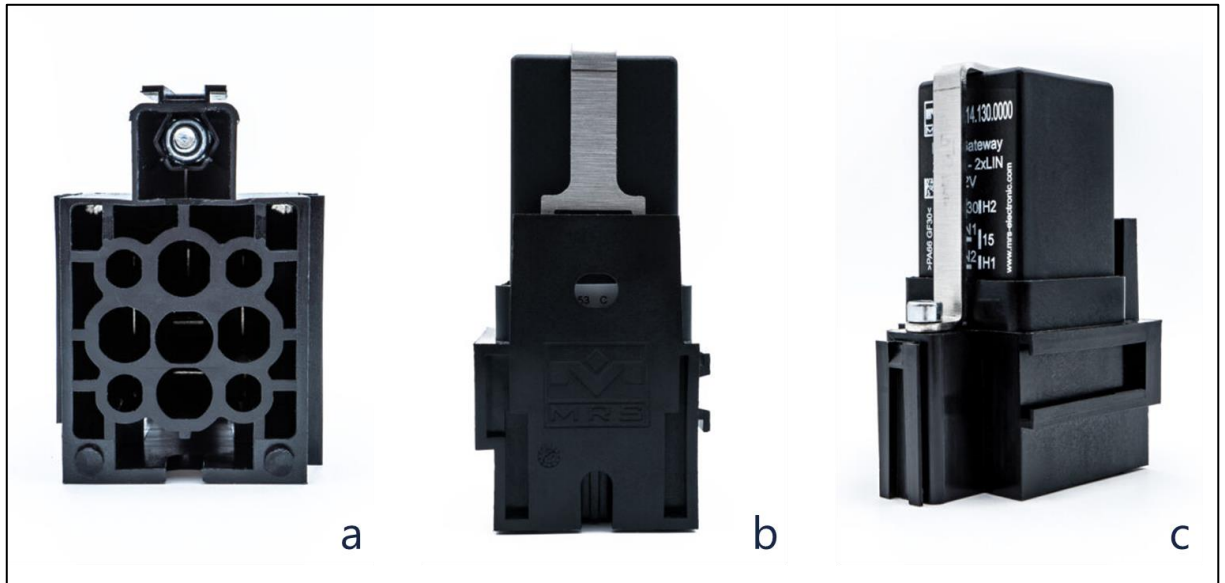


Figure 3: Mounting of the metal clamping bracket (example).

a – Position of the nut in the socket (view from below); b – Metal clamping bracket in the lug of the watertight socket; c - Screw connection of the metal clamping bracket to the watertight socket.

Mounting of the plastic locking bracket

- Insert the corresponding module into the watertight socket until flush with the sealing pad.
- Insert the plastic locking bracket to the lug of the watertight socket.
- Press the bracket into the opening at the front until it clicks into place (Figure 4).

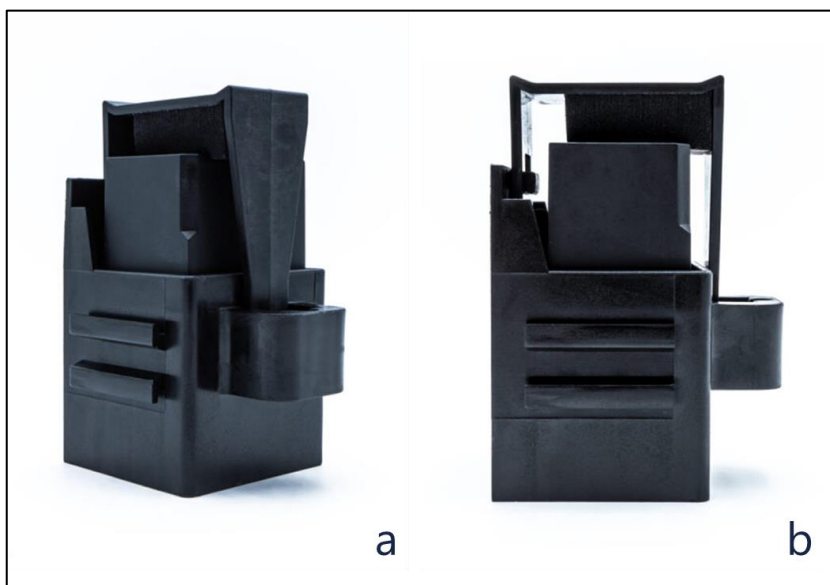


Figure 4: Mounting of the plastic locking bracket (example).

a – Angled view; b – Side view.

7. Electric Installation and Wiring

7.1. Electric Installation

Electric installation work may only be performed by qualified staff (see Chapter 2.2 Staff Qualifications). The electric installation of the unit may only be performed in idle condition. Before installing a module, make sure that the watertight socket is free of dirt and moisture.

 **WARNING!**



SUDDEN MOVEMENTS OF COMPLETE SYSTEM OR OF COMPONENTS

Danger due to unprotected moving components.

- ▶ Before performing any work, shut down the complete system and secure it against unintended restart.
- ▶ Please make sure that the complete system and all parts of the system are in a safe state.

7.2. Wiring

- The wiring must be connected with the utmost diligence.
- All cables and the way they are laid must comply with applicable regulations.
- The connected cables must be suitable for temperatures min. 10 °C above the max. permitted environmental temperature.
- The cables must comply with the requirements and wire cross-sections specified in the technical data.
- When laying cables, the possibility of mechanical damages of the wire insulation on sharp edges or moving metal parts must be excluded.
- Cables must be laid so they are strain-relieved and friction-free.
- The cable routing must be selected in such a way that the cable harness only moves identically to the direction of movement of the controller/plug. (Attachment controller/cable/strain relief on the same underground). A strain relief is necessary (see Figure 5).

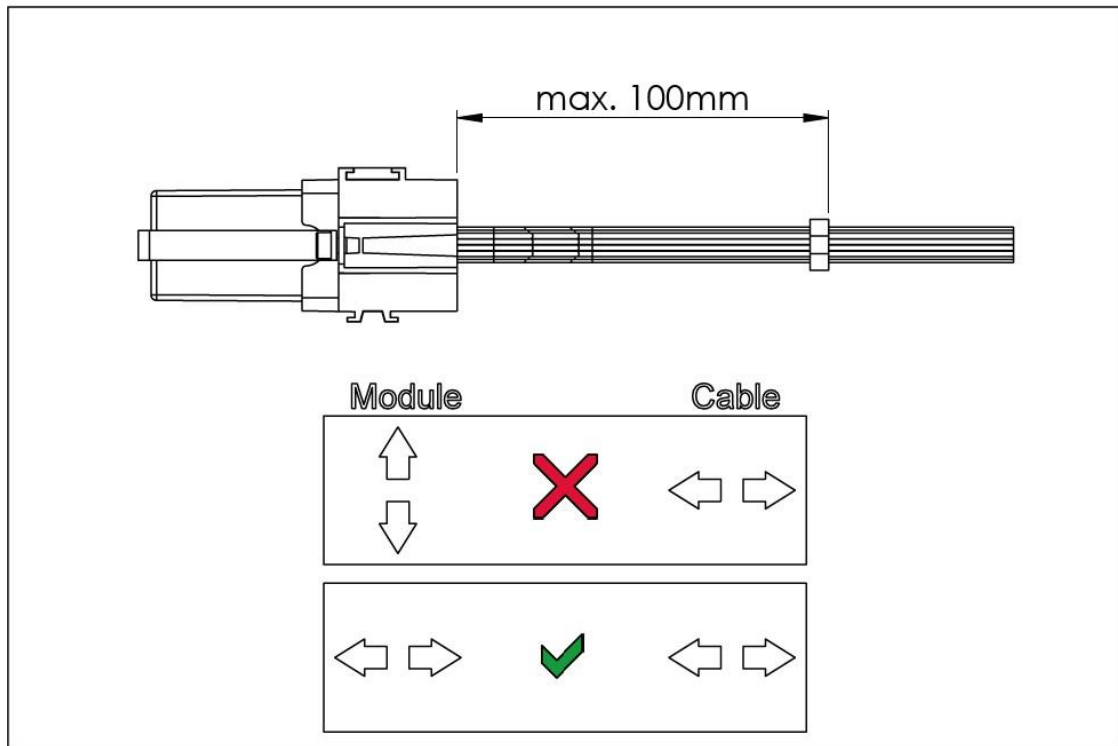


Figure 5: Strain relief of the cable harness (example). 100 mm (max.) are mandatory.

8. Commissioning

This section is not applicable here.

9. Software

This section is not applicable here.

10. Fault Removal and Maintenance

INFORMATION



If the watertight socket exhibits any damage, the watertight socket must be replaced.

Cleaning work may only be performed by qualified staff (see Chapter 2.2 Staff Qualifications).

CAUTION!



DANGER OF BURNS!

The watertight socket may exhibit an elevated temperature.

- ▶ Please do not touch the socket and let all system components cool down before working on the system.

CAUTION!



DAMAGE OR SYSTEM FAILURE DUE TO IMPROPER CLEANING!

The watertight socket may be damaged due to improper cleaning processes and cause unintended reactions throughout the complete system.

- ▶ The watertight socket should not be cleaned with a high-pressure cleaner or a steam jet.

10.1. Cleaning

INFORMATION



Damages due to improper cleaning agents!

The watertight socket may be damaged when cleaning it with high-pressure cleaners, steam jets, aggressive solvents or scouring agents.

- ▶ Do not clean the watertight socket with high-pressure cleaners or steam jets. Do not use any aggressive solvents or scouring agents.

If possible, clean the watertight socket in a clean environment free of dust.

1. Please follow all safety instructions and deenergize the complete system.
2. Do not use any aggressive solvents or scouring agents.
3. Let the watertight socket dry.

10.2. Fault Removal

1. In the event of defects or damage, the watertight socket must be replaced.
2. Please follow all safety instructions and deenergize the complete system.
3. Check that the housing is intact.
 - ▶ Remove damaged watertight sockets and dispose of in accordance with national environmental regulations.
4. Remove the watertight socket and remove the plugged-in module from the socket.
5. Check the watertight socket for mechanical damages due to overheating, insulation damage and corrosion.
 - ▶ Damaged watertight sockets must be removed and disposed of in accordance with national environmental regulations.
 - ▶ Dry watertight sockets in case of moisture.

 **CAUTION!**



DAMAGE OR SYSTEM FAILURE DUE TO IMPROPER FAULT REMOVAL!

When replacing the inserted module, the sealing pads (in module 1.017.010.24, 1.017.010.25, 1.017.010.30, 1.017.010.40, 1.017.010.50, and 1.017.055) and the plastic locking bracket (on module 1.017.055) must also be replaced and renewed.

11. Disassembly and Disposal

11.1. Disassembly

Disassembly and disposal may only be performed by qualified staff (see Chapter 2.2 Staff Qualifications). Disassembly of the unit may only be performed in idle condition.

WARNING!



SUDDEN MOVEMENTS OF COMPLETE SYSTEM OR OF COMPONENTS

Danger due to unprotected moving components.

- ▶ Before performing any work, shut down the complete system and secure it against unintended restart.
- ▶ Before disassembling the system, please make sure that the complete system and all parts of the system are in a safe state.

CAUTION!



DANGER OF BURNS!

The watertight socket may exhibit an elevated temperature.

- ▶ Please do not touch the socket and let all system components cool down before working on the system.

Watertight sockets with metal or plastic brackets

1. Loosen the metal bracket by loosening the screw connection of the bracket or loosen the plastic bracket by inserting a suitable wedge-shaped object into the hole in the housing by the bracket tab until the tab is released.
2. Remove the bracket from the watertight socket.
3. Remove the inserted module from the watertight socket.
4. Remove the watertight socket from the surface on which it was mounted by loosening the relevant screws.
5. Remove the cable harness from the watertight socket by loosening the crimps using a suitable crimp contact removal tool.

11.2. Disposal

Once the product is disused, it must be disposed of in accordance with the national environmental regulations for vehicles and work machines