



Beijer ELECTRONICS M Series Distributed Input or Output Modules User Guide

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*Beijer ELECTRONICS M Series Distributed Input or
Output Modules User Guide*



Common User Guide
Hotswap functionality and warnings

Specification document

DOCUMENT CHANGE SUMMARY				
REV.	PAGES	REMARKS	DATE	Editor
1.00		Preliminary	2020/12/07	SJ LIM
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1.02		Update Beijer brand and minor adjustments etc.	2022-03-07	MCO
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1 Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment.

Safety Guidelines for the Application, Installation and Maintenance of Solid-State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.

Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Beijer Electronics be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Beijer Electronics cannot assume responsibility or liability for actual use based on the examples and diagrams.

Warning!

✓ If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion

- Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous

locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.

- Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction.
- Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

Caution!

✓ If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.

- Check the rated voltage and terminal array before wiring. Avoid the circumstances over 50 of temperature. Avoid placing it directly in the sunlight.
- Avoid the place under circumstances over 85% of humidity.
- Do not place Modules near by the inflammable material. Else it may cause a fire.
- Do not permit any vibration approaching it directly.
- Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.
- Use Product under pollution degree 2 environment.

1. 1 Safety Instruction

1. 1. 1 Symbols



DANGER

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death property damage, or economic loss Identifies information that is critical for successful application and understanding of the product.



ATTENTION

Identifies information about practices or circumstances that can lead to personal injury, property damage, or economic loss. Attentions help you to identity a hazard, avoid a hazard, and recognize the consequences.

1. 1. 2 Safety Notes



DANGER

The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, M-bus and Hot swap-bus pin.

1. 1. 3 Certification

Note! Correct information about the certification of this module type, see the separate certification document summary.

In general, the certificates relevant for the M-series are following:

- CE compliance

- FCC compliance
- Marine certificates: DNV GL, ABS, BV, LR, CCS and KR
- UL / cUL Listed Industrial Control Equipment, certified for U.S. and Canada See UL File E496087
- ATEX Zone2 (UL 22 ATEX 2690X) & ATEX Zone22 (UL 22 ATEX 2691X)
- HAZLOC Class 1 Div 2, certified for U.S. and Canada. See UL File E522453
- Industrial Emissions Reach, RoHS (EU, CHINA)

2 Environment specification

Environmental specification	
Operating Temperature	-25°C~60°C
UL Temperature	-25°C~60°C
Storage Temperature	-40°C~85°C
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 DNVGL-CG-0339 (Vibration Class B, 4g)
Industrial Emissions	EN 61000-6-4/A11 : 2011
Industrial Immunity	EN 61000-6-2 : 2011
Installation Position	Vertical and horizontal installation is available.
Product Certifications	See the separate certification document summary.

3 FnIO M-Series Caution (Before using the unit)

We appreciate you for purchasing Beijer Electronics Products. To use the units more effectively, please read this quick guide and refer to the respective user manual for further details.

Cautions for your Safety

If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion. **Warning !**

Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.

Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction. Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

If you disobey the instructions, there may be possibility of personal injury, **Caution !** damage to equipment or explosion. Please follow below instructions. Check the rated voltage and terminal array before wiring.

Do not place Modules near by the inflammable material. Else it may cause a fire.

Do not permit any vibration approaching it directly.

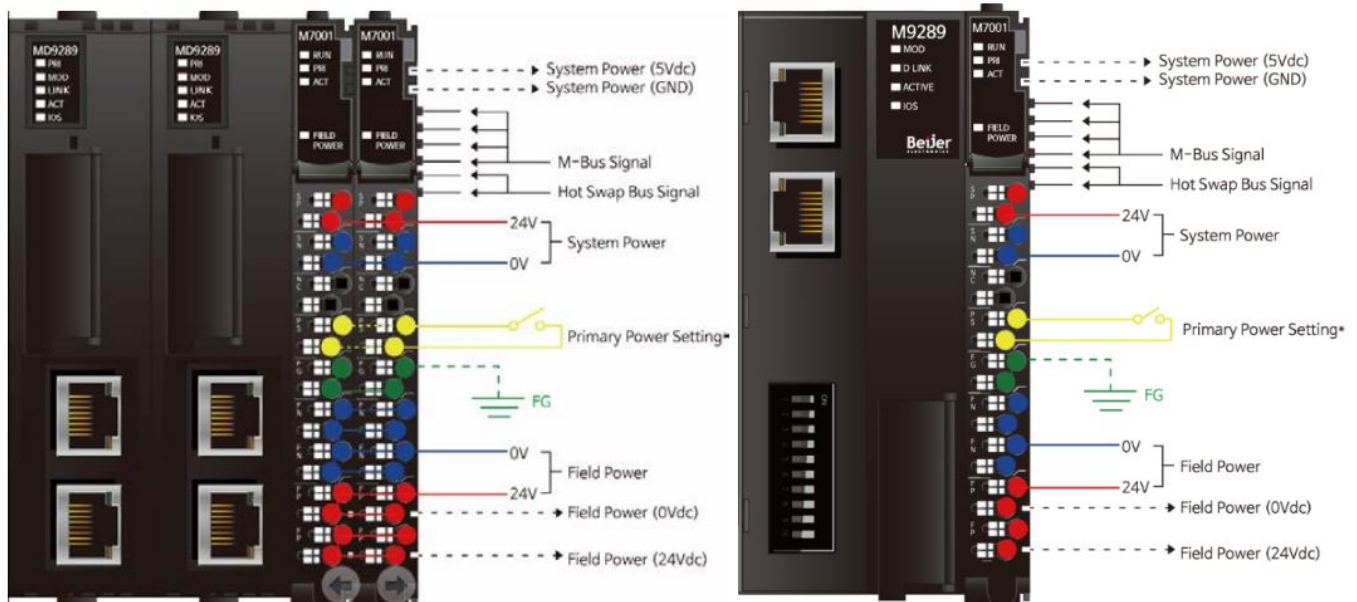
Go through module specification carefully, ensure inputs, output connections are made with the specifications.

Use standard cables for wiring. Use Product under pollution degree 2 environment.

These devices are open type devices which have to be installed in an enclosure with door or cover which is tool accessible only suitable for use in Class I, Zone 2 / Zone 22, Groups A,B,C and D hazardous locations, or non-hazardous location only.

3. 1 How to wire communication & Power

3.1.1 Wiring of communication & System power line for network adapters



* Primary Power Setting (P.S pin) – Short the P.S pin to set one of the two M7001 as the primary power module

Notice for Wiring of communication and Field power

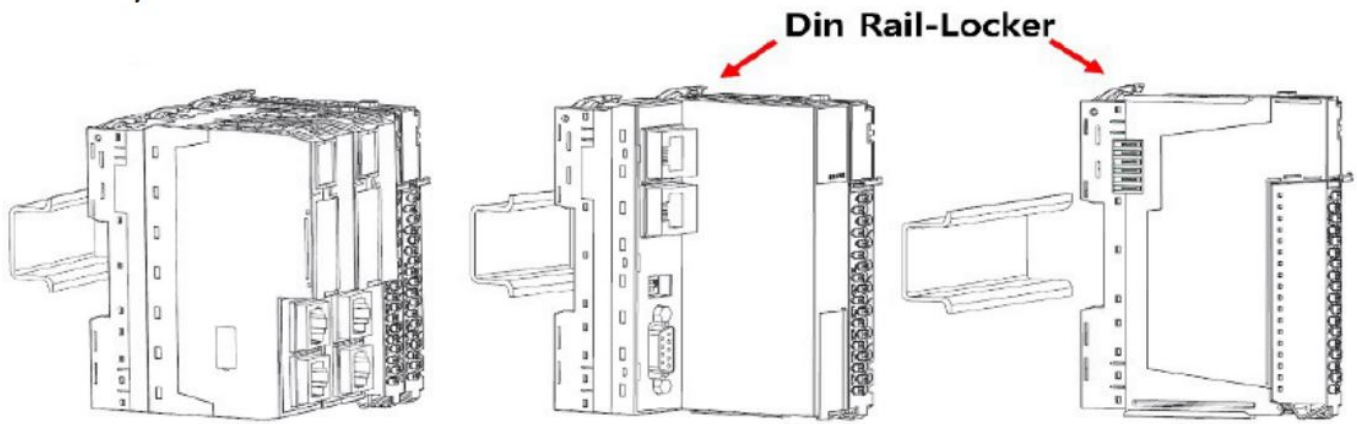
1. The communication power and Field power respectively are supplied to each network adapter.
 1. Communication Power : Power for System and MODBUS TCP connection.
 2. Field Power : Power for I/O Connection
2. Separate Field power and System power must be used.
3. To avoid a short circuit, tape the un-shield wire.
4. Do not insert any other devices such as converter into the connector besides products.

Note! The power module M7001 or M7002 can be used with M9*** (Single Network), MD9*** (Dual type Network) and I/O as power module.

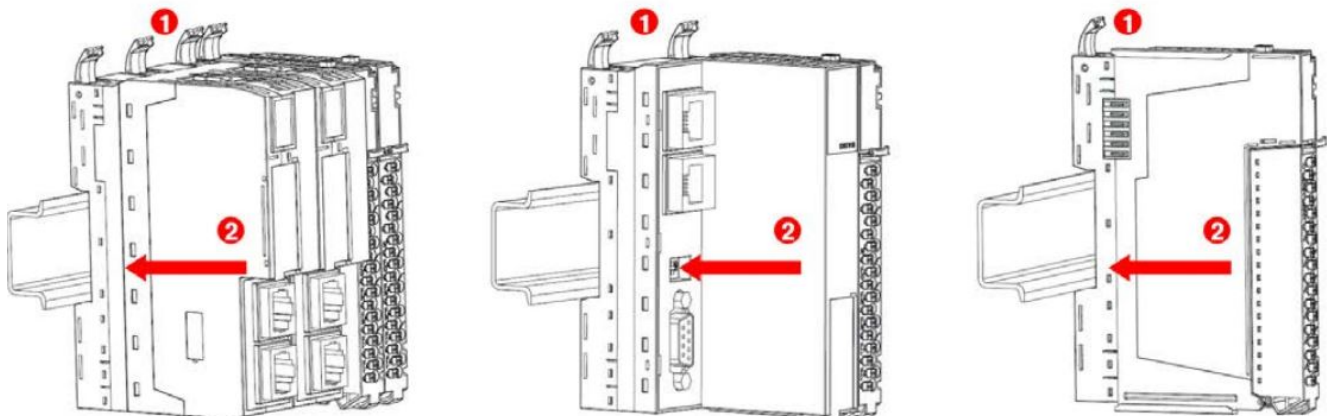
3. 2 Module Mounting

3.2.1 How to mount & dismount M-Series Modules on Din-Rail

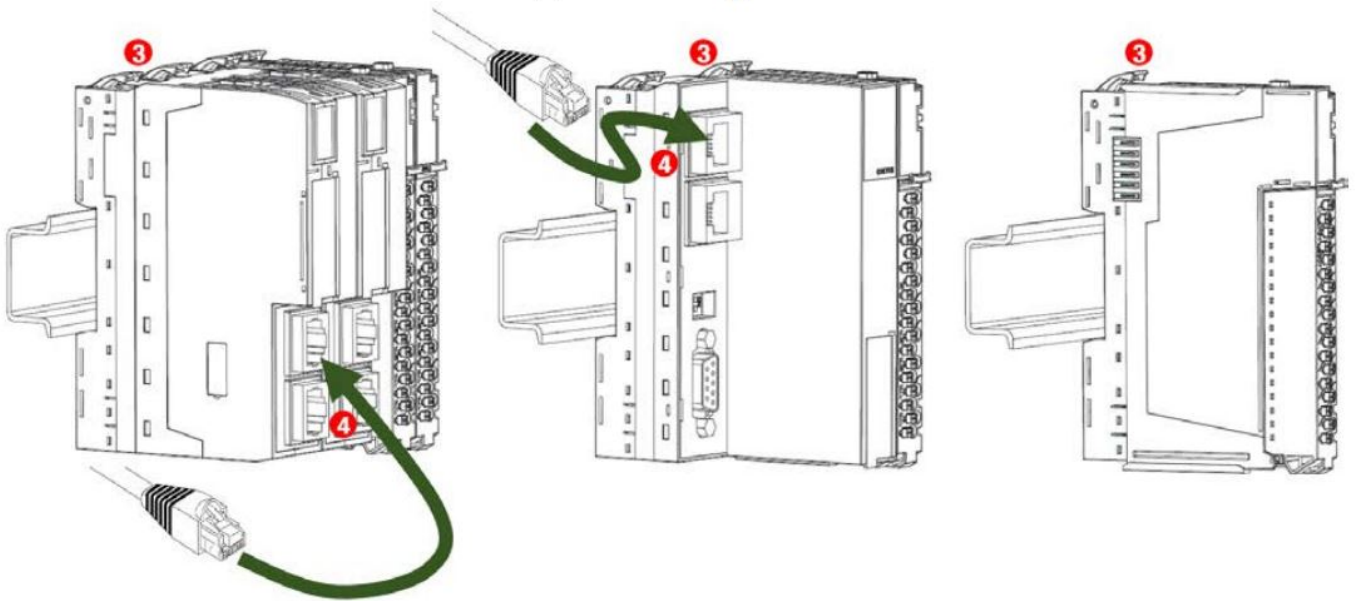
➤ Ready



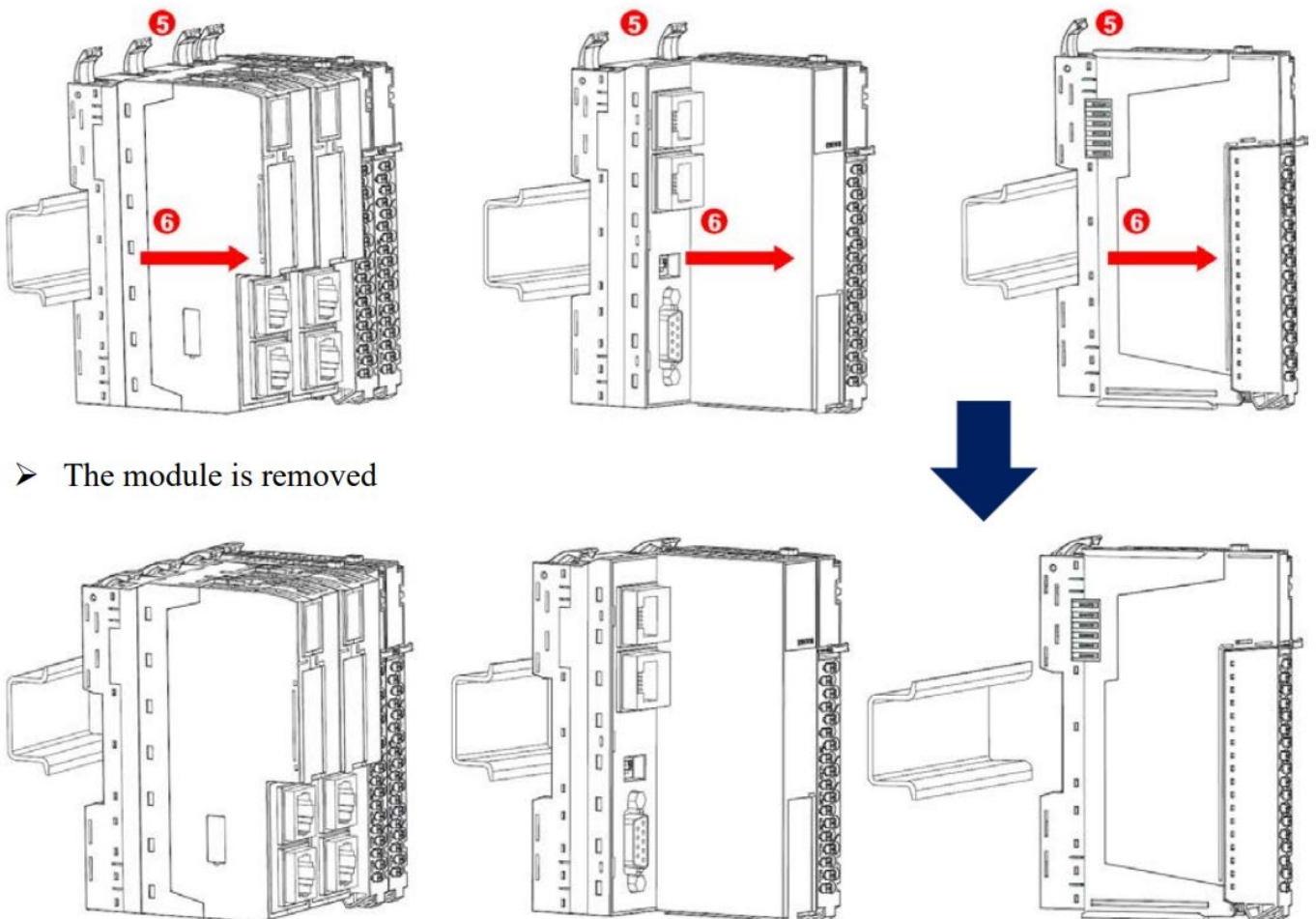
- Unlock the 'Din Rail-Locker' like number (1).
- Push the module to the din-rail (2).



- Lock the 'Din Rail-Locker' like number (3) to fix the module on the din rail.
- Connect the communication cable (4) after locking the 'Din Rail-Locker'.



- To remove the module on the din-rail, first unlock the 'Din-Rail Locker' like Number (5).
- Pull the module from the din-rail.



- The module is removed

3. 3 Use in Maritime environment

Caution!

- When FnIO M-Series are mounted on ships, the noise filters are required separately at power supply.

- The noise filter used for M-Series is NBH-06-432-D(N). The noise filter in this case is manufactured by Cosel and should be connected between the power terminals and the power supply in accordance with the DNV GL Type Approval certificate.

We don't provide noise filters. And If you use other noise filters, we don't guarantee the product. **Warning !**

3. 4 Replacing Module and Hot-Swap Function

The M-Series has hot-swap capability to protect your system. Hot-swap is a technology developed to replace new module without powering off the main system. There are six steps to hot-swap a module in M-Series.

3.4.1 Procedure to replacing an I/O or Power module

1. Unlock the remote terminal block (RTB) frame
2. Open the RTB as far as possible, at least to an angle of 90°



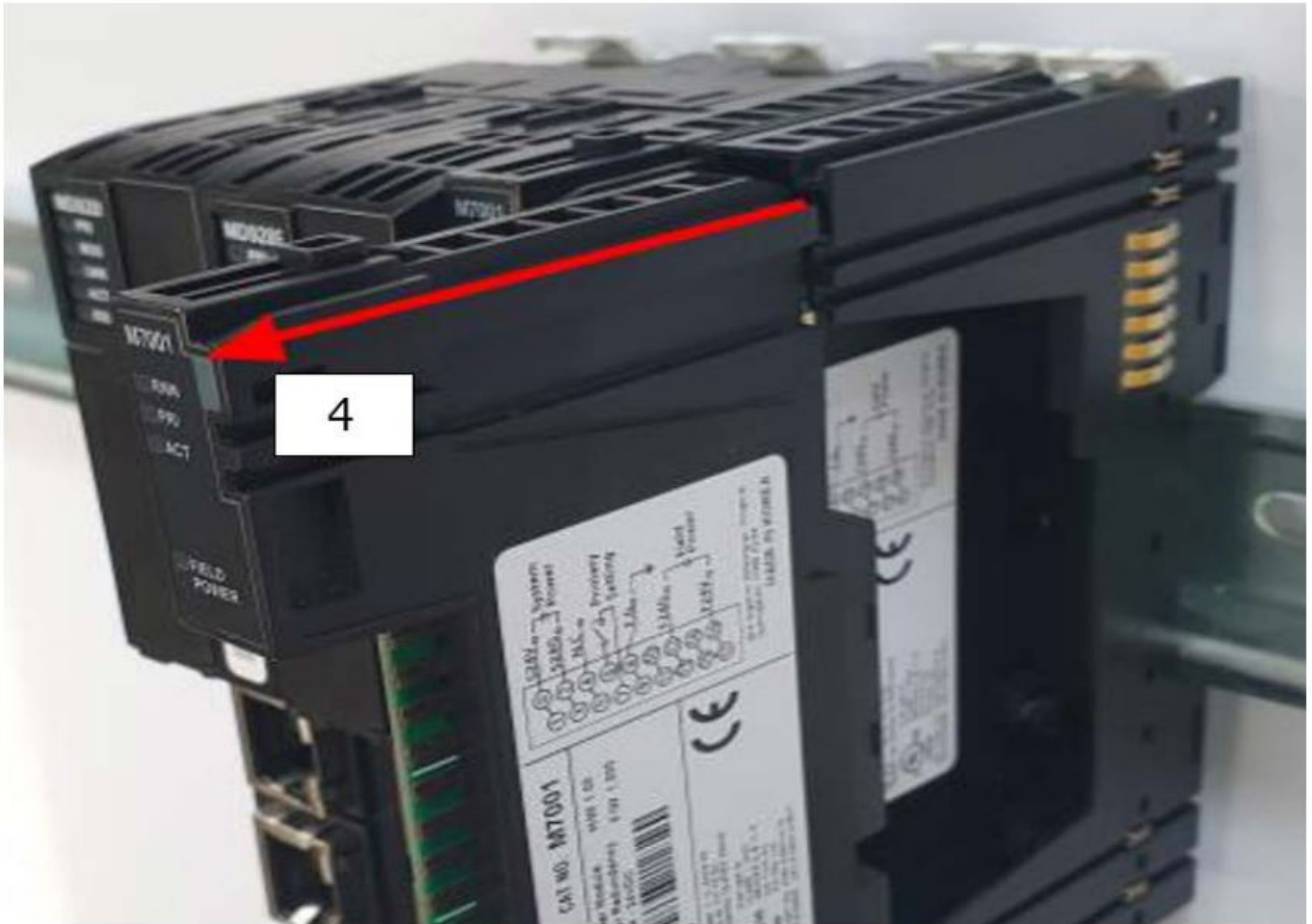
Remote terminal block (RTB) unlock and open

3. Push on top of the power module or I/O module frame



Module frame push

4. Pull out the module from frame in a straight move

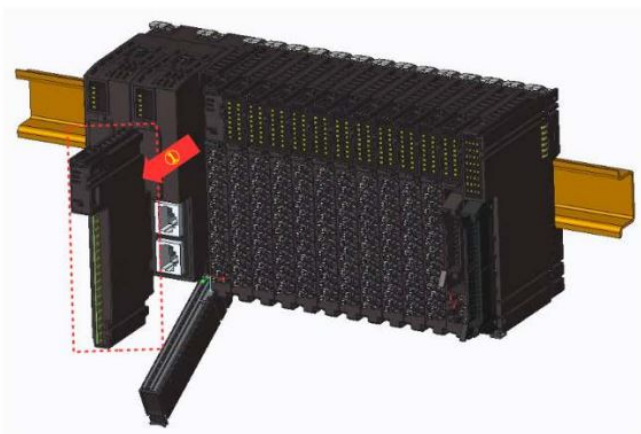


Pull the module from frame

5. To insert a module, hold it by the head and carefully slide it into the backplane.
6. Then reconnect the remote terminal block.

3.4.2 Hot-swap Power module

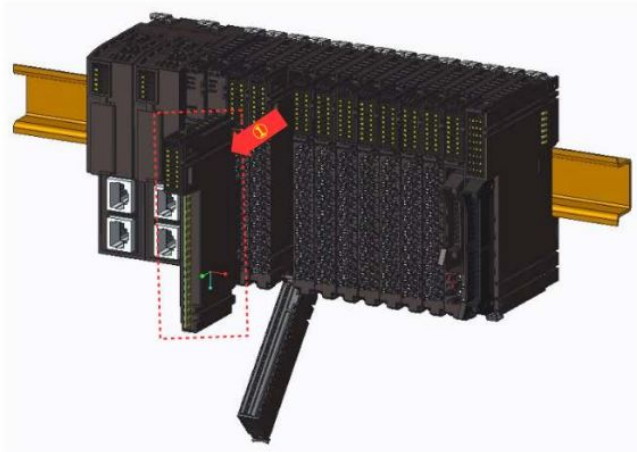
If one of the power modules fails(), the remaining power modules perform normal operation(). For the hot swap function of the power module, the main and auxiliary power must be set. Refer to Power Module Specifications for related contents.



3.4.3 Hot-swap I/O Module

Even if a problem occurs in the IO module(), the remaining modules except for the problem module can communicate normally(). If the problematic module is restored, normal communication can be performed again.

And each module must be replaced one by one.



Warning !

- Pulling out the module may generate sparks. Make sure that there is not a potentially explosive atmosphere.
- Pulling or inserting of a module might bring all other modules temporarily into an undefined condition!
- Dangerous contact voltage! The modules must be completely de-energized power before removing them.
- In the event of the machine/system being put into a dangerous state as a result of the removal of a RTB, a replacement can only be made once the machine/system is disconnected from the power.

Caution !

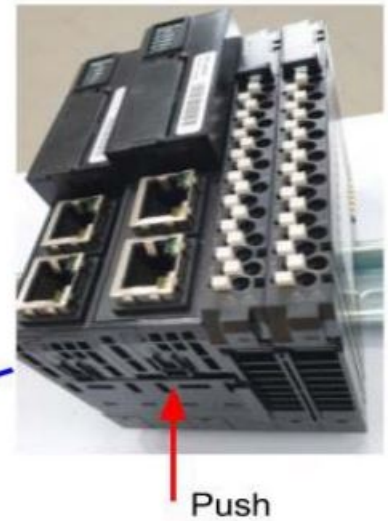
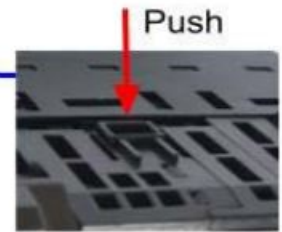
- If you remove multiple IO modules by mistake, you must connect IO modules one by one, starting with the lower slot number.

Attention !

- The module can be destroyed by electrostatic discharge. Please make sure that work equipment is connected to earthed adequately.

3.4.4 Procedure to replacing Dual Network Adapter

- Push on top and bottom of the MD9xxx network adapter module frame
- Then pulling it out in a straight move



Dual Network Adapter frame push

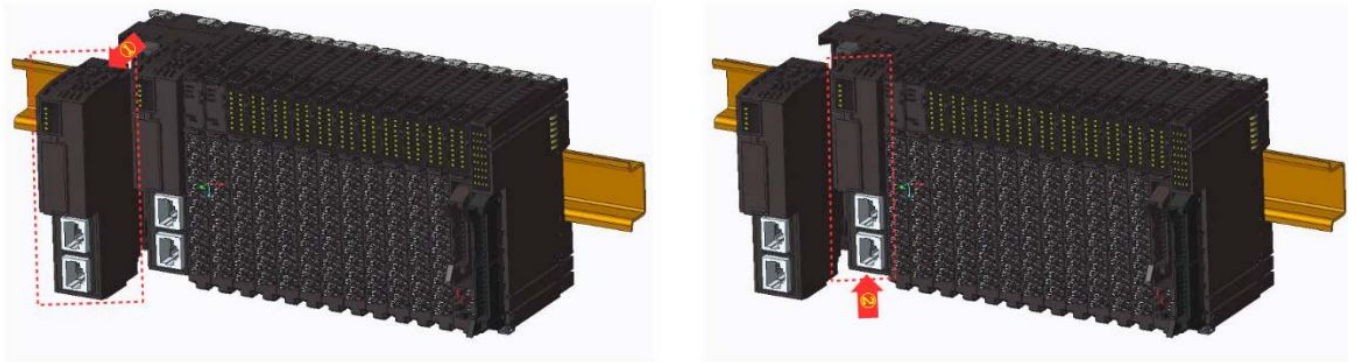


Network Adapter Remove

- To insert, hold the new MD9xxx by the top and bottom, and carefully slide it into the base module.

3.4.5 Hot-swap Dual Network Adapter

If one of the network adapters fails(), the rest of the network adapters() function normally to protect the system.



Warning !

- Pulling out the module may generate sparks. Make sure that there is not a potentially explosive atmosphere.
- Pulling or inserting of a module might bring the all other modules temporarily into an undefined condition!
- Dangerous contact voltage! The modules must be completely de-energized power before removing them.


Attention !

- The module can be destroyed by electrostatic discharge. Please make sure that work equipment is connected to earth adequately.

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Documents / Resources

 <small>Customer User Guide</small> <small>Beijer Electronics AB</small>	Beijer ELECTRONICS M Series Distributed Input or Output Modules [pdf] User Guide M Series, Distributed Input or Output Modules, M Series Distributed Input or Output Modules
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References

- [Beijer Electronics](#)