Beijer ELECTRONICS GT-5424 PWM Output Module User Manual

Contents

Beijer ELECTRONICS GT-5424 PWM Output Module

Specifications

- Model: GT-5424 PWM Output Module
- Output Type: Source
- Terminal Type: Cage Clamp, 18 pt removable terminal
- Doc ID: 131848
- Date: 2024-07-13

Environmental Specifications

Operating temperature	-20°C – 60°C
UL temperature	-20°C – 60°C
Storage temperature	-40°C – 85°C
Relative humidity	5% – 90% non-condensing
Mounting	DIN rail
Shock operating	IEC 60068-2-27 (15G)
Vibration resistance	IEC 60068-2-6 (4 g)
Industrial emissions	EN 61000-6-4/A11: 2011
Industrial immunity	EN 61000-6-2: 2019
Installation position	Vertical and horizontal
Product certifications	CE, FCC, UL, cUL

General Specifications

Power dissipation	Max. 80 mA @ 5 VDC
Isolation	I/O to Logic: Photocoupler isolation Field power: Non-isolation
UL field power	Supply voltage: 24 VDC nominal, Class 2
Field power	Supply voltage: 24 VDC nominal Voltage range: 15-30 VDC Power dissipation: Max. 15 mA @ 24 VDC except load
Single wire	I/O Cable Max. 0.823mm² (AWG18)
Weight	63 g
Module size	12 mm x 109 mm x 70 mm

Product Usage Instructions

Installation and Setup

1. **Mounting:** Securely mount the module to a DIN rail following the provided guidelines.
2. **Terminal Block:** Mount and connect cables to the removable terminal block as per instructions.

About This Manual
This manual contains information on the software and hardware features of the Beijer Electronics GT-5424 PWM Output Module. It provides in-depth specifications, guidance on installation, setup, and usage of the product.

Symbols Used in This Manual
This publication includes Warning, Caution, Note and Important icons where appropriate, to point out safety-related, or other important information.

The corresponding symbols should be interpreted as follows:

 **WARNING**
The Warning icon indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and major damage to the product.

 **CAUTION**
The Caution icon indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, and moderate damage to the product.

 **NOTE**
The Note icon alerts the reader to relevant facts and conditions.

 **IMPORTANT**
The Important icon highlights important information.

Safety

Before using this product, please read this manual and other relevant manuals carefully. Pay full attention to safety instructions!
In no event will Beijer Electronics be responsible or liable for damages resulting from the use of this product. The images, examples and diagrams in this manual are included for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Beijer Electronics cannot take responsibility or liability for actual use based on the examples and diagrams.

Product Certifications
The product has the following product certifications.

General Safety Requirements

WARNING

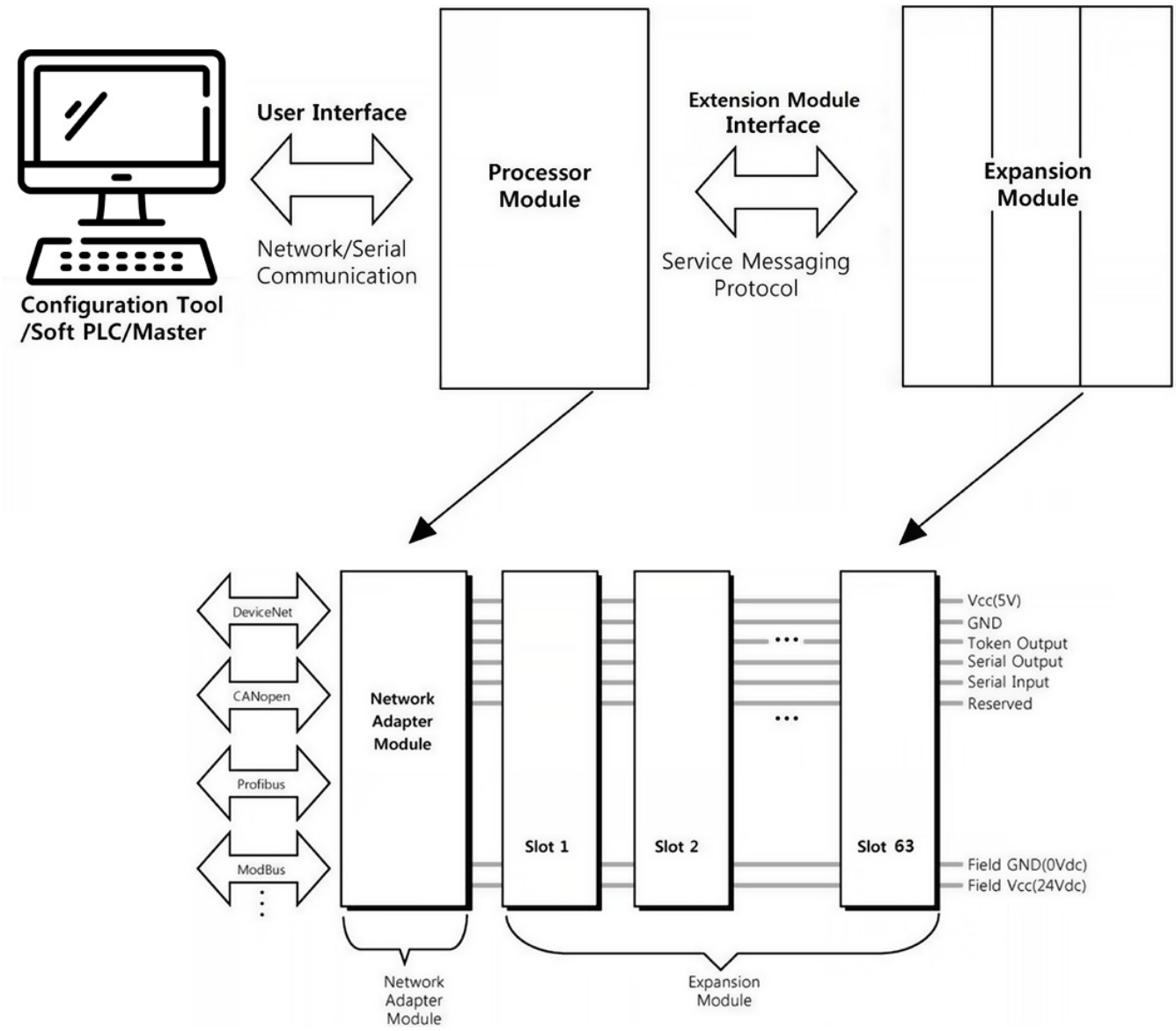
- Do not assemble the products and wires with power connected to the system. Doing so cause an “arc flash”, which can result in unexpected dangerous events (burns, fire, flying objects, blast pressure, sound blast, heat).
- Do not touch terminal blocks or IO modules when the system is running. Doing so may cause electric shock, short circuit or malfunction of the device.
- Never let external metallic objects touch the product when the system is running. Doing so may cause electric shock, short circuit or malfunction of the device.
- Do not place the product near inflammable material. Doing so may cause a fire.
- All wiring work should be performed by an electrical engineer.
- When handling the modules, ensure that all persons, the workplace and the packing are well grounded. Avoid touching conductive components, the modules contain electronic components that may be destroyed by electrostatic discharge.

CAUTION

- Never use the product in environments with temperature over 60°C. Avoid placing the product in direct sunlight.
- Never use the product in environments with over 90% humidity.
- Always use the product in environments with pollution degree 1 or 2.
- Use standard cables for wiring.

About the G-series System

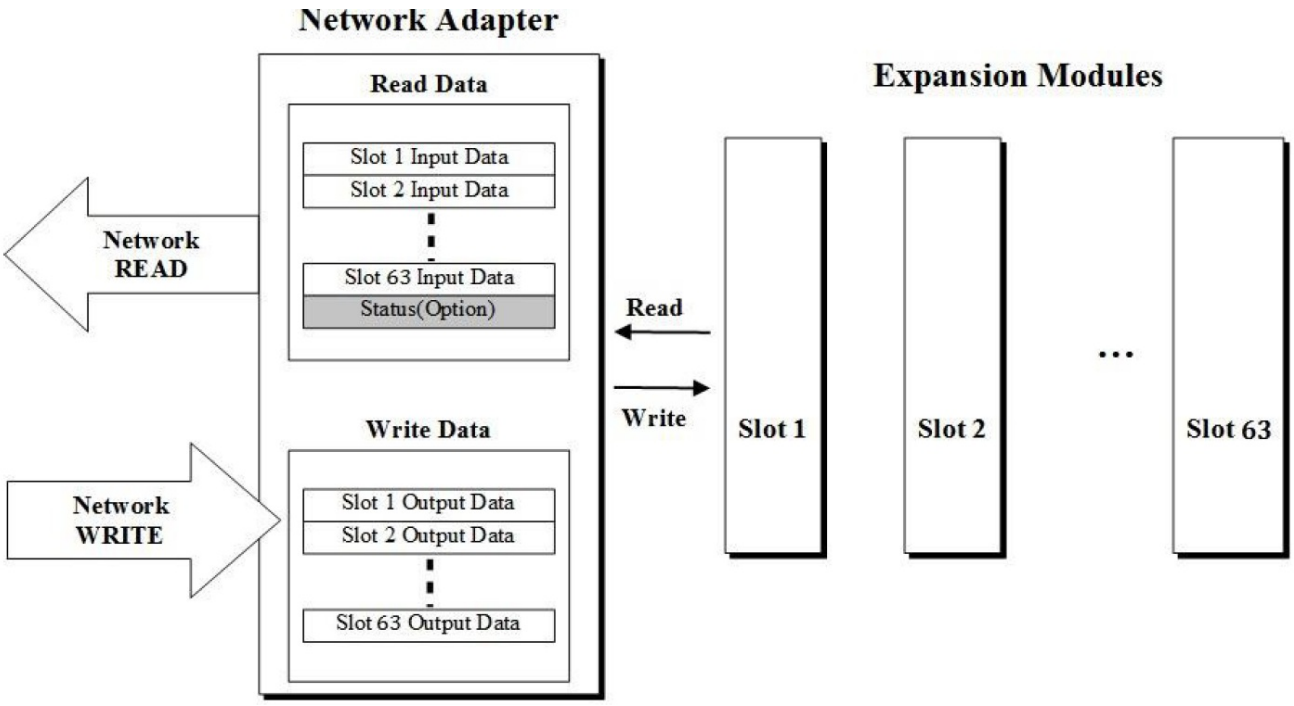
The GT-5424 PWM Output Module is designed to work seamlessly with the G-series system. Ensure proper IO process data mapping for efficient operation.



System overview

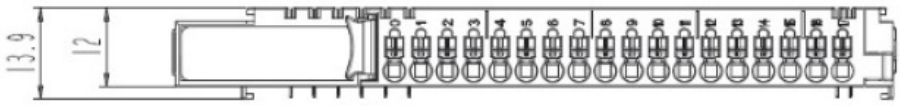
- Network Adapter Module – The network adapter module forms the link between the field bus and the field devices with the expansion modules. The connection to different field bus systems can be established by each of the corresponding network adapter module, e.g., for MODBUS TCP, Ethernet IP, EtherCAT, PROFINET, CC-Link IE Field, PROFIBUS, CANopen, DeviceNet, CC-Link, MODBUS/Serial etc.
- Expansion Module – Expansion module types: Digital IO, Analog IO, and Special modules.
- Messaging – The system uses two types of messaging: Service messaging and IO messaging.

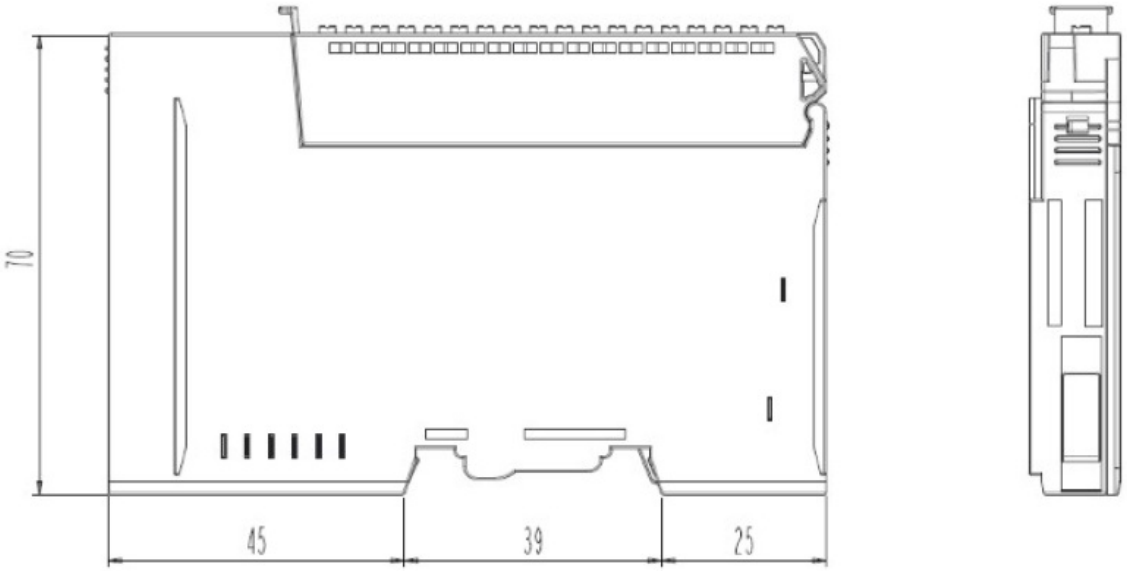
Process Data Mapping
An expansion module has three types of data: IO data, configuration parameter, and memory register. The data exchange between the network adapter and the expansion modules is made via IO process image data by internal protocol.



Data flow between network adapter (63 slots) and expansion modules The input and output image data depend on the slot position and the data type of the expansion slot. The ordering of input and output process image data is based on the expansion slot position. Calculations for this arrangement are included in the manuals for network adapter and programmable IO modules. Valid parameter data depends on the modules in use. For example, analog modules have settings of either 0-20 mA or 4-20 mA, and temperature modules have settings such as PT100, PT200, and PT500. The documentation for each module provides a description of the parameter data.

Dimensions



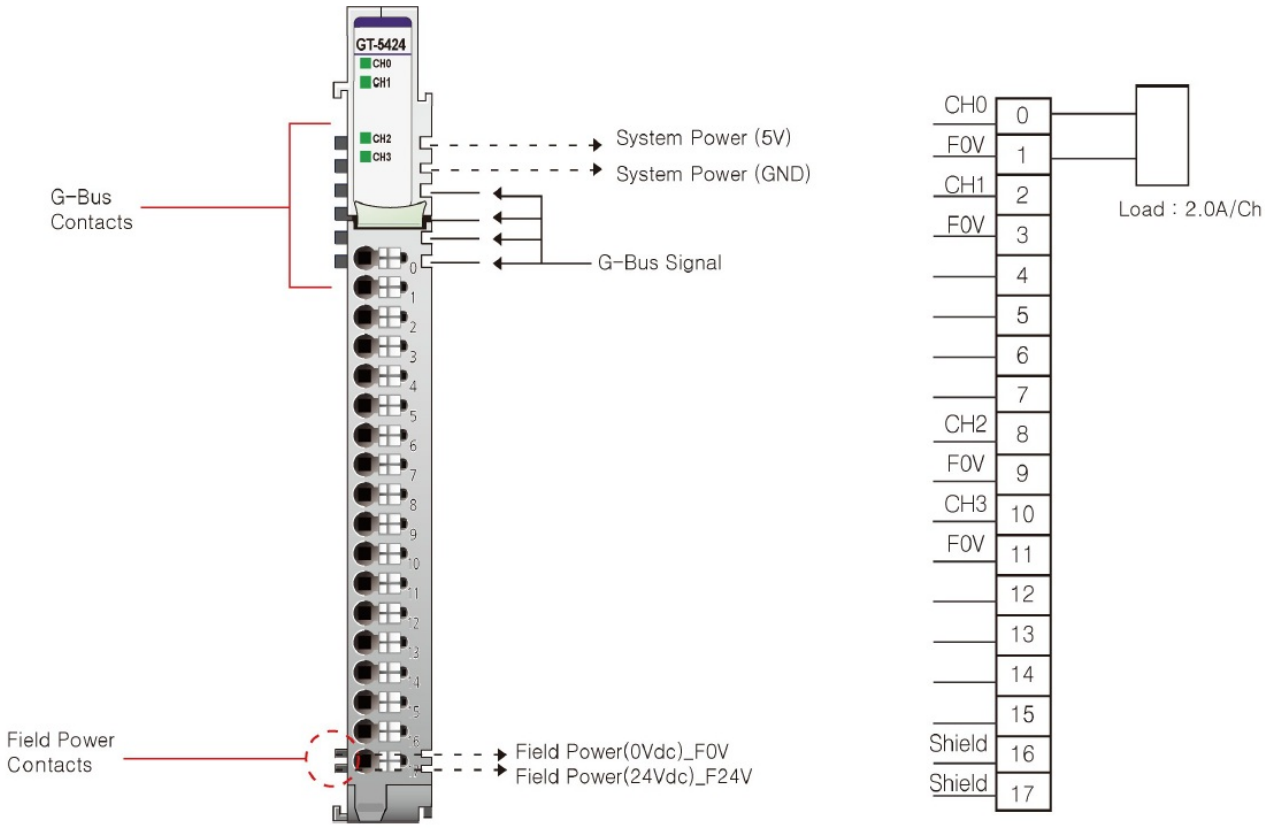


Module dimensions (mm)

Output Specifications

Number of channels	4 channels
Number of outputs	4 outputs, push-pull type
Indicators	4 green pulse output LEDs
Output voltage	Nominal 24 VDC (depends on field power)
Output current	2.0 A per channel, 8.0 A per module @ 25 °C Automatically switch current (sink/source) according to external load Ambient 50 – 60 °C: • 2CH 2.0 A duty 100 % possible *(one channel skip, example: CH0/CH2 or CH1/CH3)* • 4CH 1.0 A duty 100 % possible • 4CH 2.0 A duty 50 % possible
Pulse output frequency	1-5 kHz ± 0.5 %
Pulse output duty	0.0 – 100.0 % ±1.0 % (0.1 % / 1 LSB), Ton > 1 us, Toff > 1 us
Protection	Short protection
Common type	4 common (field power 0 V is common)

Wiring Diagram



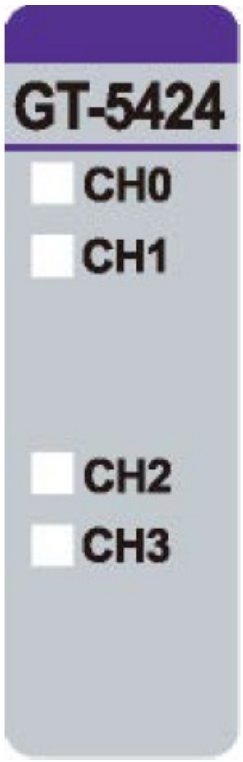
NOTE

Automatically switch current (sink/source) according to external load.

Pin no.	Signal description
0	PWM output channel #0
1	Field Power 0 V, common
2	PWM output channel #1
3	Field Power 0 V, common
4	Not connected
5	Not connected
6	Not connected
7	Not connected
8	PWM output channel #2
9	Field Power 0 V, common
10	PWM output channel #3
11	Field Power 0 V, common
12	Not connected

Pin no.	Signal description
13	Not connected
14	Not connected
15	Not connected
16	Shield
17	Shield

LED Indicator



LED no.	LED function / description	LED color
0	PMW output channel #0	Green
1	PMW output channel #1	Green
2	PMW output channel #2	Green
3	PMW output channel #3	Green

Channel Status

Status	LED	Indicates
No signal	Off	No output signal
On signal	Green	Normal operation

Mapping Data Into the Image Value

Input image value

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved							
Byte 1	Reserved							
Byte 2	Reserved							
Byte 3	Reserved							

Output image value

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Frequency CH#0, low byte							
Byte 1	Frequency CH#0, high byte							
Byte 2	Duty CH#0, low byte							
Byte 3	Duty CH#0, high byte							
Byte 4	Frequency CH#1, low byte							
Byte 5	Frequency CH#1, high byte							
Byte 6	Duty CH#1, low byte							
Byte 7	Duty CH#1, high byte							
Byte 0	Frequency CH#2, low byte							
Byte 1	Frequency CH#2, high byte							
Byte 2	Duty CH#2, low byte							
Byte 3	Duty CH#2, high byte							
Byte 4	Frequency CH#3, low byte							
Byte 5	Frequency CH#3, high byte							
Byte 6	Duty CH#3, low byte							
Byte 7	Duty CH#3, high byte							

NOTE
Range of each Duty is 0 (0.0 %) – 1000 (100.0%). Ex. If Duty value is 365, then duty rate is 36.5 %.

Parameter Data

- Valid parameter length: 2 Bytes

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved							
Byte 1	Reserved							

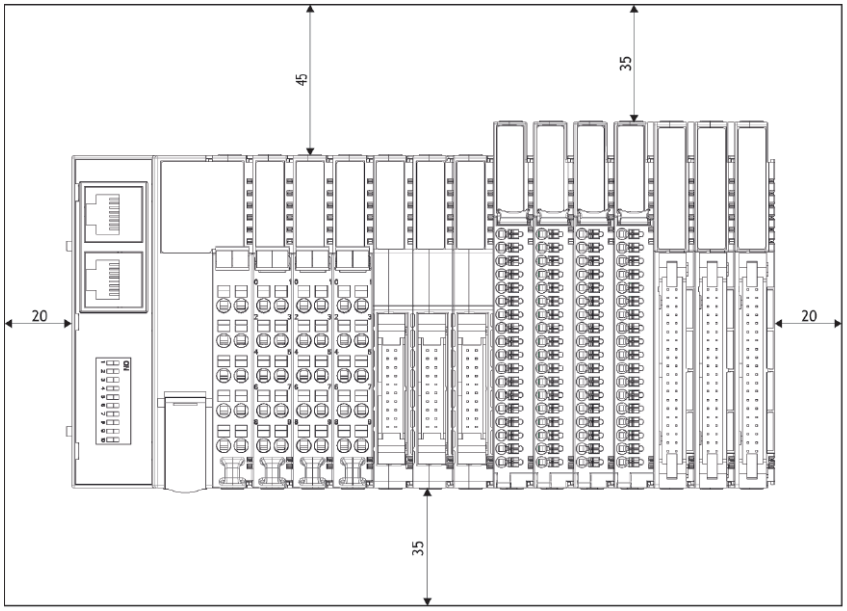
Hardware Setup

CAUTION
Always read this chapter before installing the module!

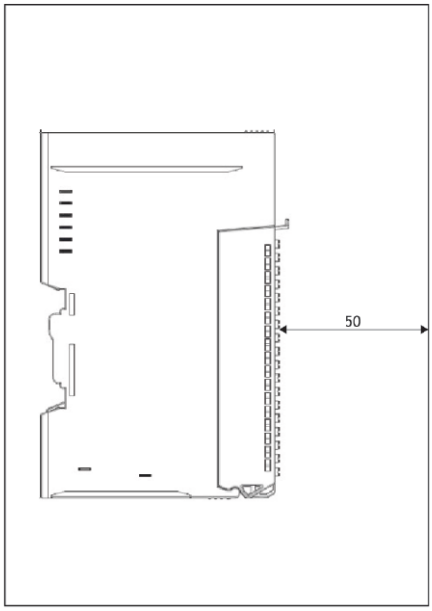
- Hot surface! The surface of the housing can become hot during operation. If the device is used in high ambient temperatures, always let the device cool down before touching it.
- Working on energized devices can damage the equipment! Always turn off the power supply before working on the device.

Space Requirements
The following drawings show the space requirements when installing the G-series modules. The spacing creates space for ventilation, and prevents conducted electromagnetic interference from influencing the operation. Installation position is valid vertical and horizontal. The drawings are illustrative and may be out of proportion.

CAUTION
NOT following the space requirements may result in damaging the product.



Vertical and horizontal space requirements



Required distance to door

Mount Module to DIN Rail
The following chapters describe how to mount the module to the DIN rail.

CAUTION
The module must be fixed to the DIN rail with the locking levers.

Mount GL-9XXX or GT-XXXX Module

The following instructions apply to these module types:

- GL-9XXX
- GT-1XXX
- GT-2XXX
- GT-3XXX
- GT-4XXX
- GT-5XXX
- GT-7XXX

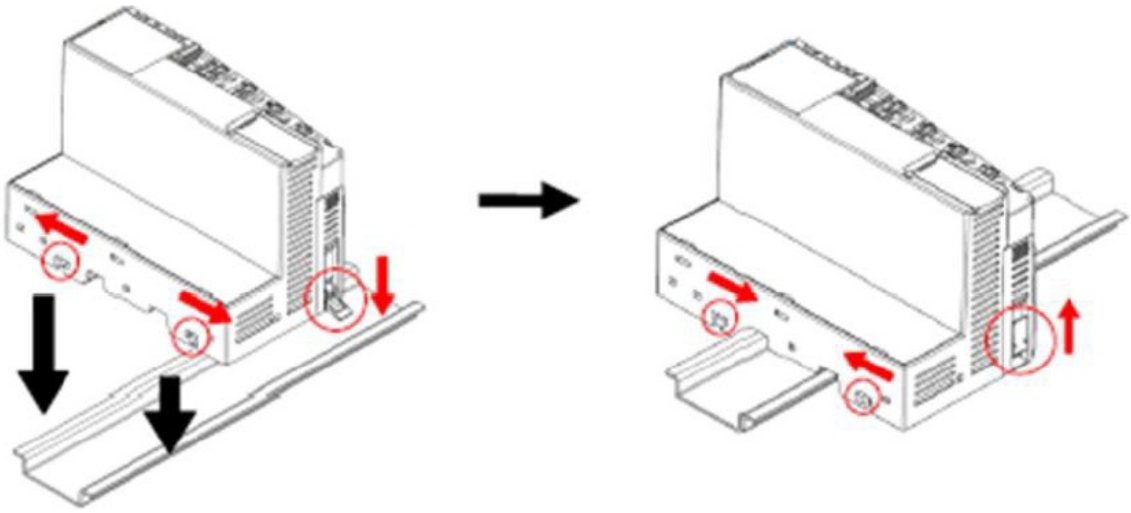
NOTE
GN-9XXX modules have three locking levers, one at the bottom and two on the side. For mounting instructions, see the chapter Mount GN-9XXX Module below.

Mount to DIN rail

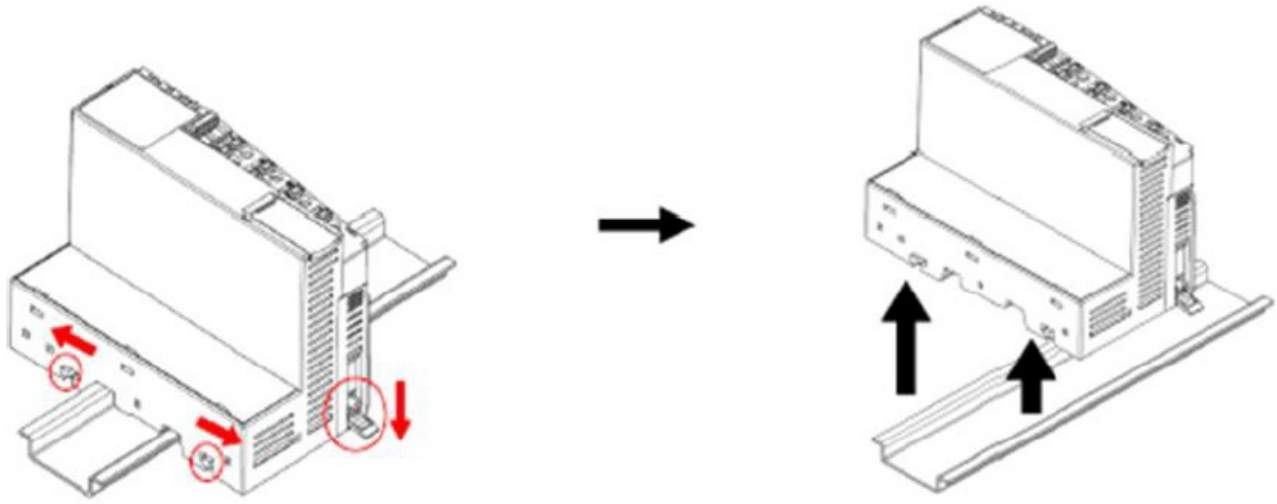
Dismount from DIN rail

Mount GN-9XXX Module

To mount or dismount a network adapter or programmable IO module with the product name GN-9XXX, for example GN-9251 or GN-9371, see the following instructions:



Mount to DIN rail



Dismount from DIN rail

Mount Removable Terminal Block

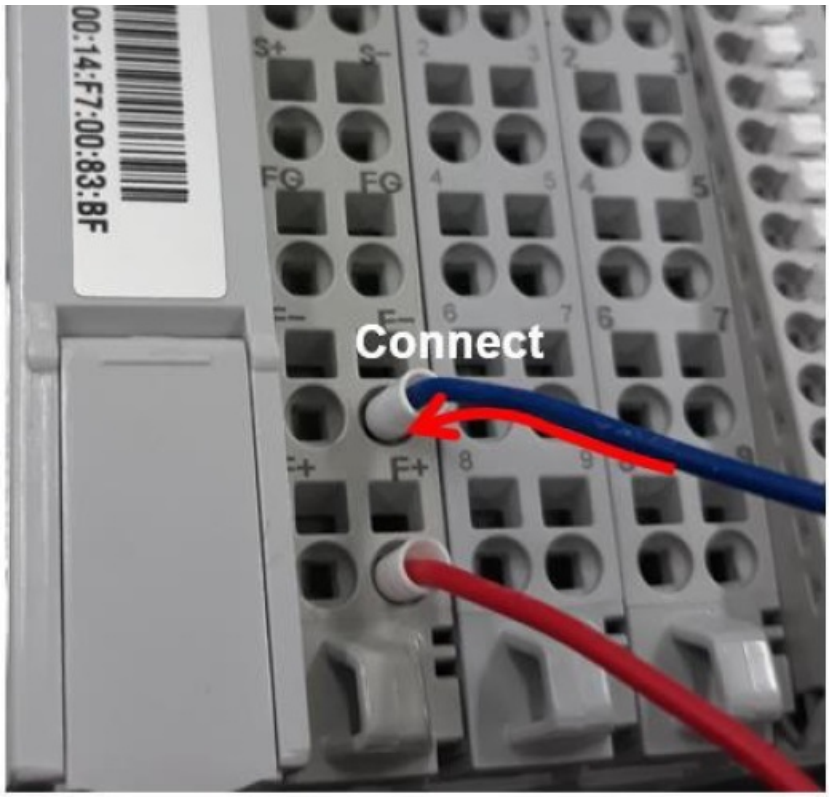
To mount or dismount a removable terminal block (RTB), see the instructions below.

Mount a removable terminal block

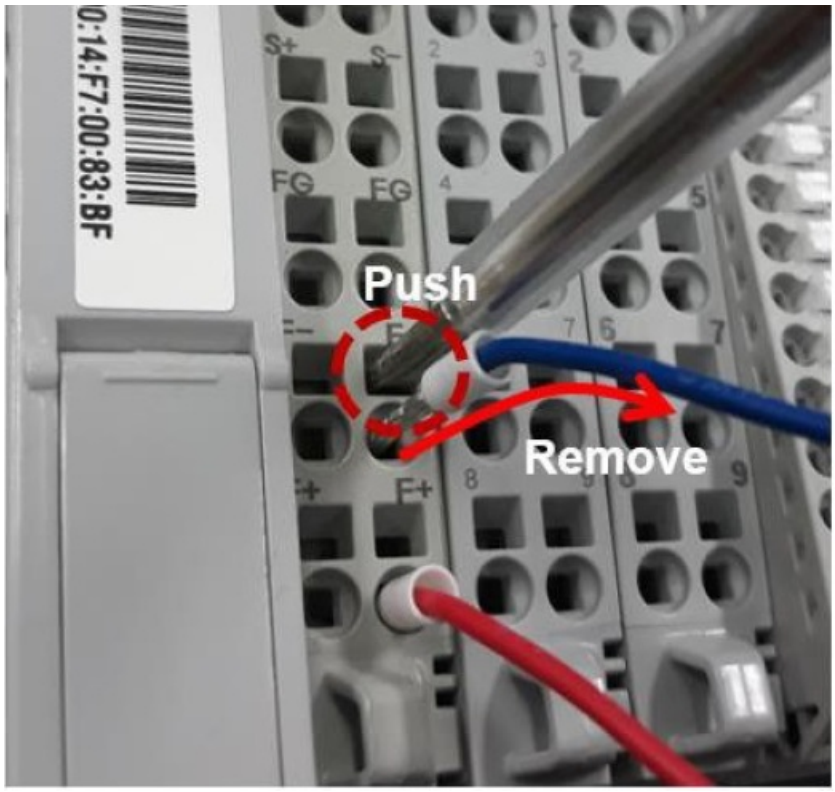
Dismount a removable terminal block

Connect Cables to Removable Terminal Block
To connect or disconnect cables to/from the removable terminal block (RTB), see the instructions below.

WARNING
Always use the recommended supply voltage and frequency to prevent damage to the equipment and ensure optimal performance.



Connect cable



Disconnect cable

themselves ensure that each application is in compliance with all relevant requirements, standards, and legislation in respect to configuration and safety. Beijer Electronics AB will accept no liability for any damage incurred during the installation or use of equipment mentioned in this document. Beijer Electronics AB prohibits all modification, changes, or conversion of the equipment.

Head Office
Beijer Electronics AB
Box 426
201 24 Malmö, Sweden
www.beijerelectronics.com / +46 40 358600

FAQ

- **Q: What should I do if I encounter a Warning icon in the manual?**

  A: The Warning icon indicates a potentially hazardous situation. Follow the instructions carefully to avoid any risks.
- **Q: How can I ensure proper grounding during installation?**

  A: Make sure all packing is well grounded and avoid touching conductive components to prevent damage due to electrostatic discharge.

Documents / Resources

	Beijer ELECTRONICS GT-5424 PWM Output Module [pdf] User Manual GT-5424 PWM Output Module, GT-5424, PWM Output Module, Output Module

References

- User Manual