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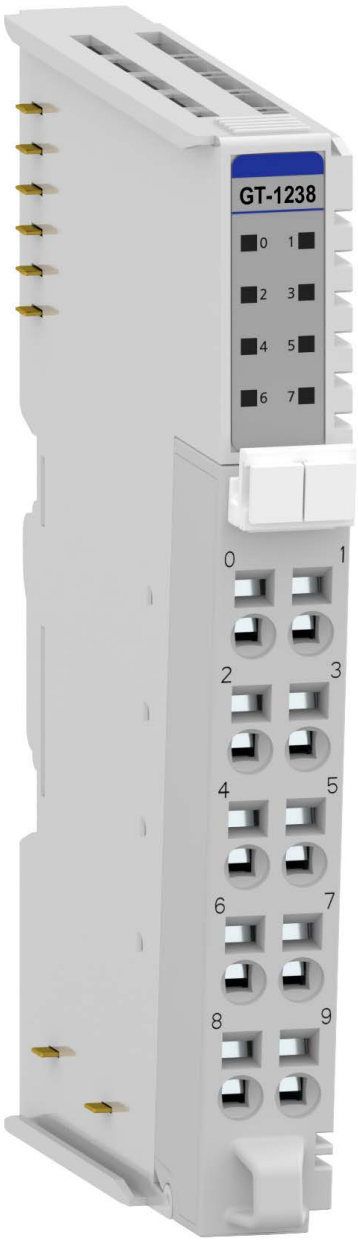
Beijer Electronics GT-1238 Digital Input Module



use of equipment mentioned in this document. Beijer Electronics AB prohibits all modification, changes, or conversion of the equipment.

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About This Manual

This manual contains information on the software and hardware features of the Beijer Electronics GT-1238 Digital Input Module. It provides in-depth specifications, guidance on installation, setup, and usage of the product.

Symbols Used in This Manual

This publication includes Warnings, Cautions, Notes, and important icons where appropriate to point out safety-related or other important information. The corresponding symbols should be interpreted asfollows:

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

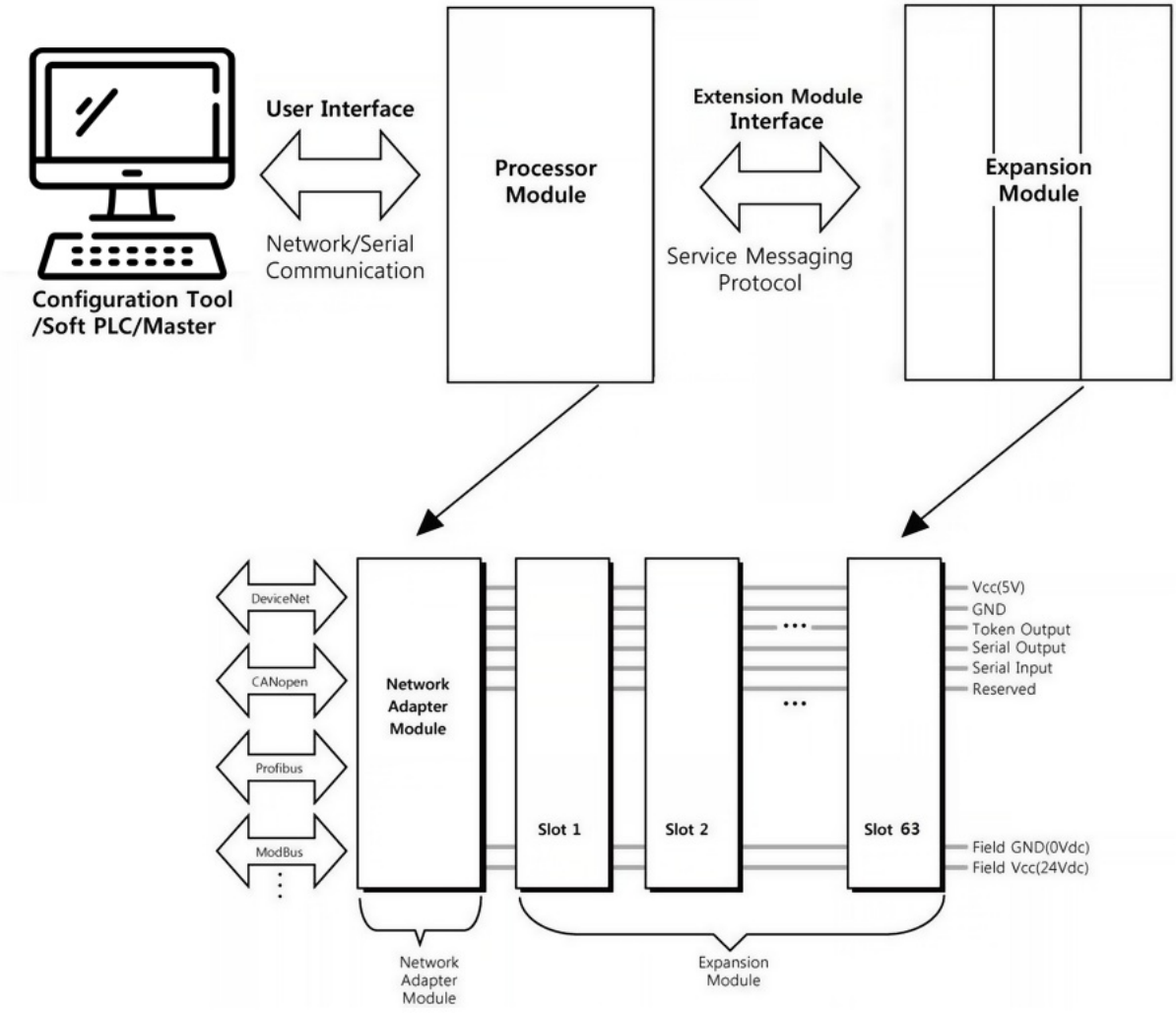
- Do not assemble the products and wires with power connected to the system. Doing so cause an “arc flash”, which can result in unexpected dangerous events (burns, fire, flying objects, blast pressure, sound blast, heat).
- Do not touch terminal blocks or IO modules when the system is running. Doing 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



System overview

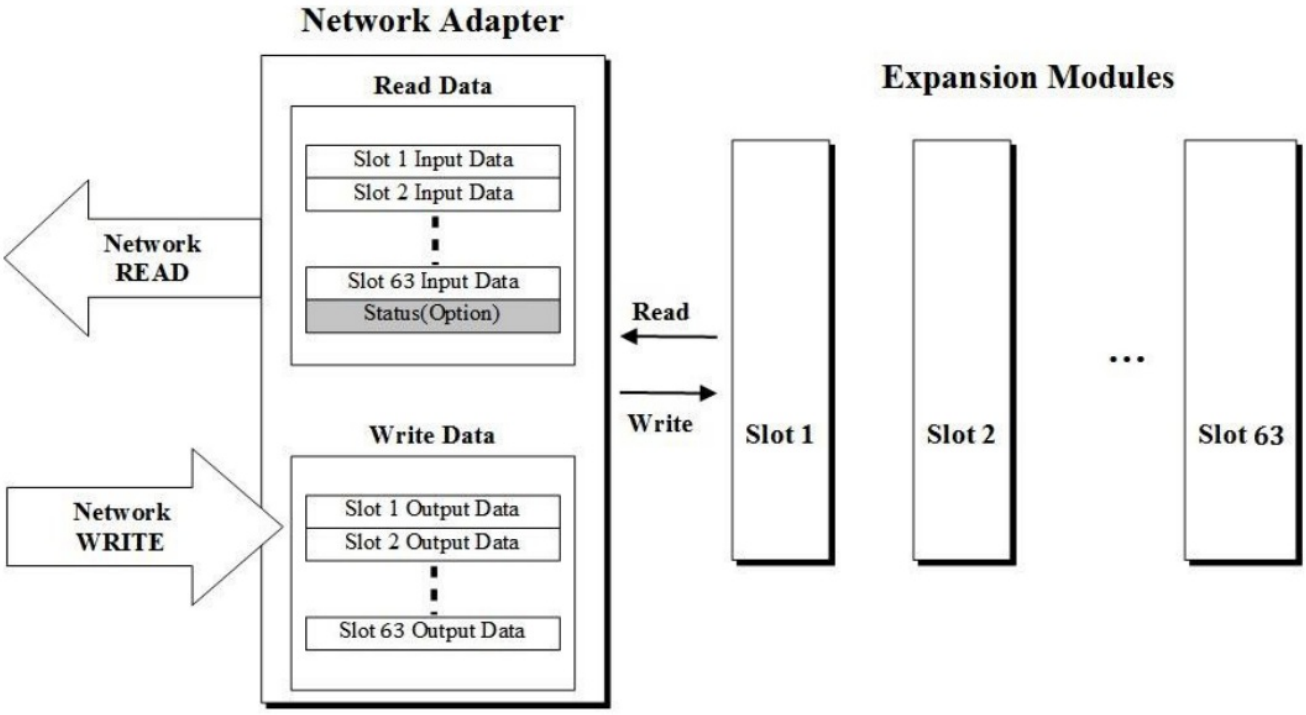
- Network Adapter Module – The network adapter module forms the link between the field bus and the field devices with the expansion modules. The connection to different field bus systems can be established by each of the corresponding network adapter

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. About the G-series System Beijer

IO 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 the 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 the network adapter and programmable IO modules. Valid parameter data depends on the modules in use. For example, analogue 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.

Specifications

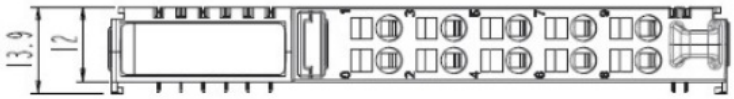
Environmental Specifications

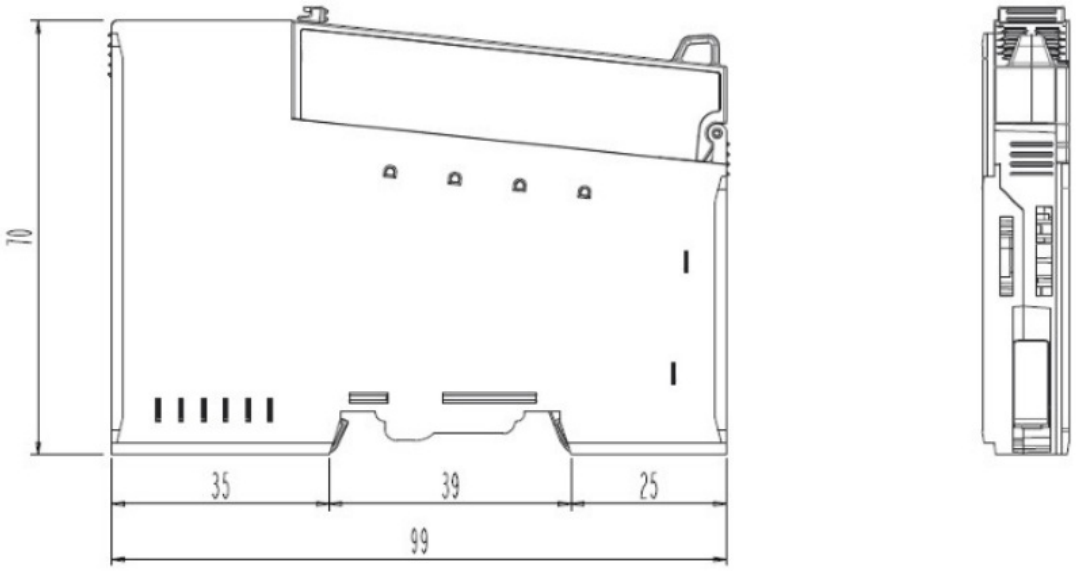
- Operating temperature -20°C – 60°C
- UL temperature -20°C – 60°C
- Storage temperature -40°C – 85°C
- Relative humidity 5% – 90% non-condensing
- Mounting DIN rail
- Shock operating IEC 60068-2-27 (15G)
- Vibration resistance IEC 60068-2-6 (4 g)
- Industrial emissions EN 61000-6-4: 2019
- Industrial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

General Specifications

- Power dissipation Max. 35 mA @ 5 VDC
- Isolation I/O to logic: Photocoupler isolation
- Field power Supply voltage: 24 VDC nominal
    - Voltage range: 15 – 30 VDC
    - Power dissipation: 0 mA @ 24 VDC
- Wiring I/O cable max. 2.0 mm^2 (AWG 14)
- Torque 0.8 Nm (7 lb-in)
- Weight 59 g
- Module size 12 mm x 99 mm x 70 mm

Dimensions





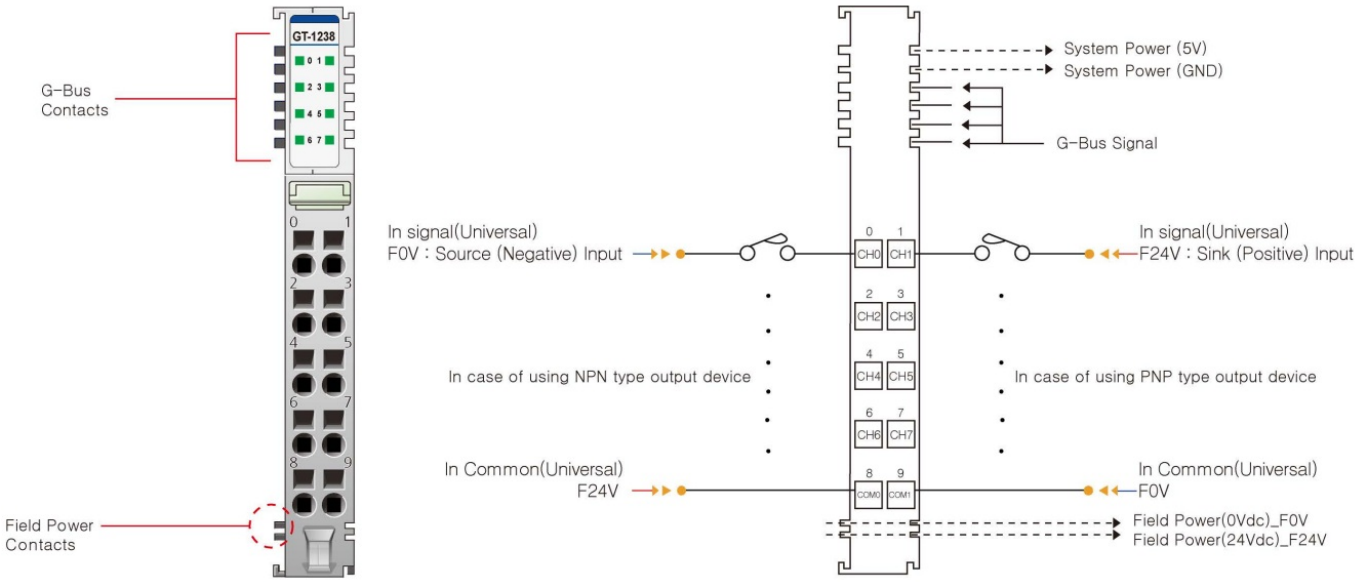
Module dimensions (mm)

Input Specifications

Inputs per module	8 points universal type
Indicators	8 green input status
On-state voltage	24 VDC nominal 15 – 26.4 VDC @ 70 °C 15 – 28.8 VDC @ 60 °C
On-state current	4 mA @ 24 VDC 5 mA @ 30 VDC
Off-state voltage	12.5 VDC @ 25 °C

Input signal delay	OFF to ON: Max. 0.3 ms ON to OFF: Max. 0.3 ms
Input filter	Adjustable, up to 10 ms
Nominal input impedance	5.4K Ω typical
Common type	8 points / 2 COM (universal)

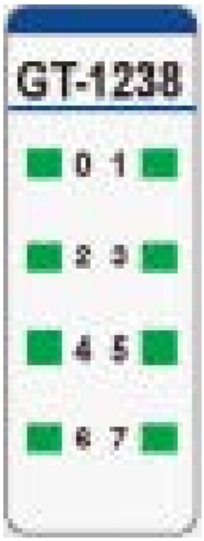
Wiring Diagram



Pin no.	Signal description
0	Input channel 0
1	Input channel 1
2	Input channel 2
3	Input channel 3
4	Input channel 4
5	Input channel 5

6	Input channel 6
7	Input channel 7
8	Common (sink oper. 0 V / source oper. 24 V)
9	Common (sink oper. 0 V / source oper. 24 V)

LED Indicator



LED no.	LED function / description	LED color
0	INPUT channel 0	Green
1	INPUT channel 1	Green
2	INPUT channel 2	Green
3	INPUT channel 3	Green
4	INPUT channel 4	Green
5	INPUT channel 5	Green
6	INPUT channel 6	Green
7	INPUT channel 7	Green

LED Channel Status

Status	LED	Indication
No signal	Off	Normal operation
On signal	Green	Normal operation

Mapping Data Into the Image Table

Input module data

D7	D6	D5	D4	D3	D2	D1	D0

Input image value

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	D7	D6	D5	D4	D3	D2	D1	D0

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	Input filter value: 0 – 10 (unit: ms)							
Byte 1	Reserved							

Hardware Setup

CAUTION

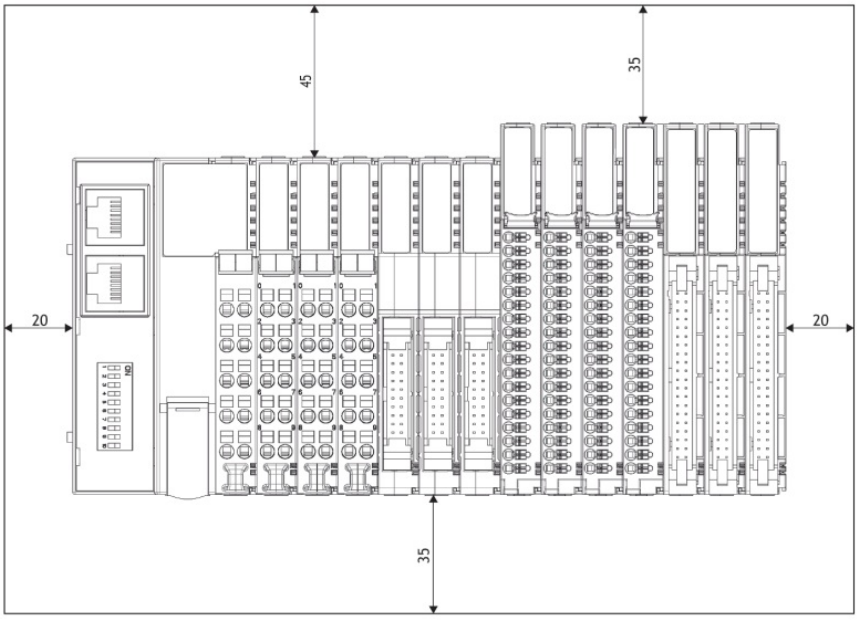
- Always read this chapter before installing the module!
- Hot surface! The surface of the housing can become hot during operation. If the device is used in high ambient temperatures, always let the device cool down before touching it.
- Working on energized devices can damage the equipment! Always turn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

Space Requirements

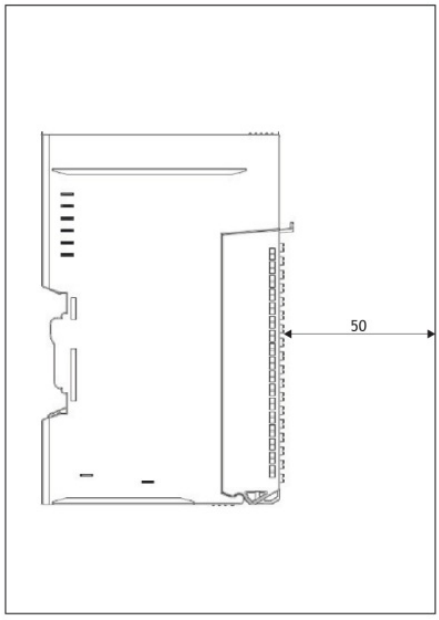
The following drawings show the space requirements when installing the G-series modules. The spacing creates space for ventilation and prevents conducted electromagnetic interference from influencing the operation. Installation position is valid vertical and horizontally. The drawings are illustrative 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

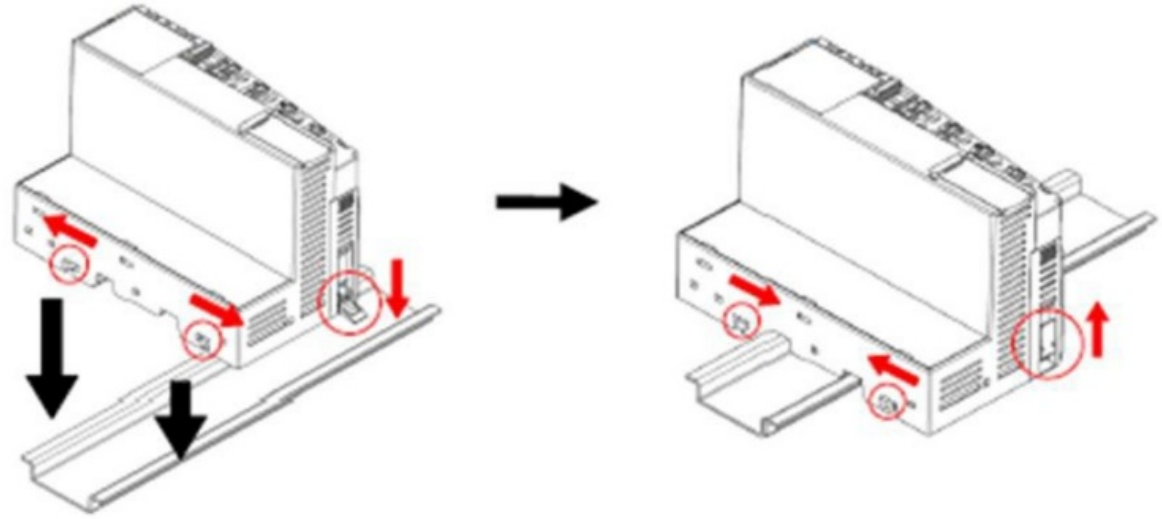
GN-9XXX modules have three locking levers, one at the bottom and two on the side. For mounting instructions, refer to Mount GN-9XXX Module.

Mount to DIN rail

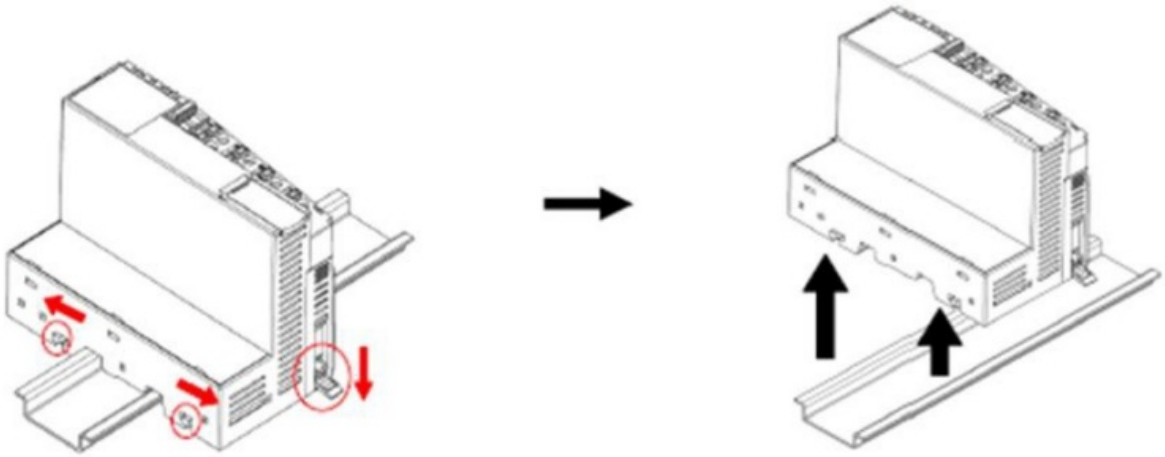
Dismount from DIN rail

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:



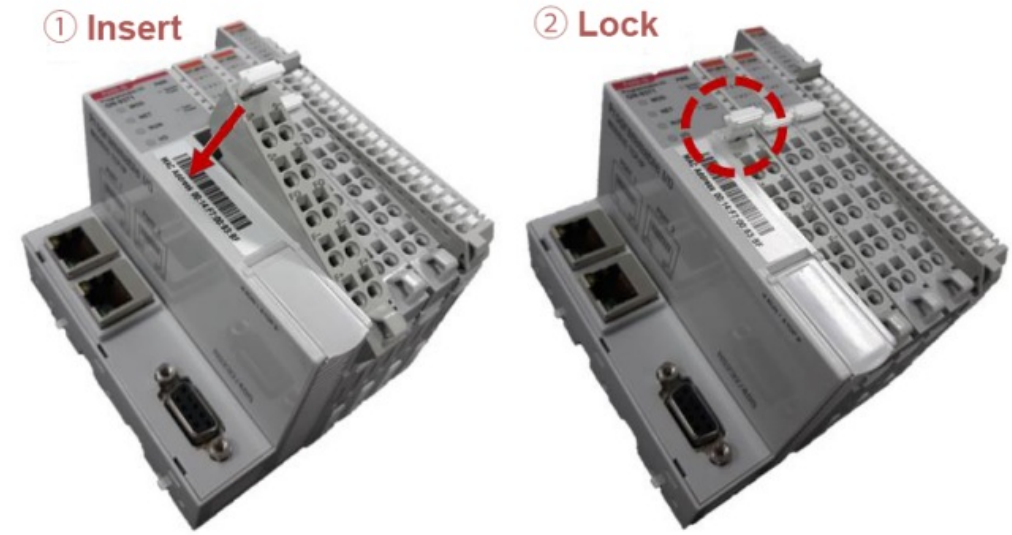
Mount to DIN rail



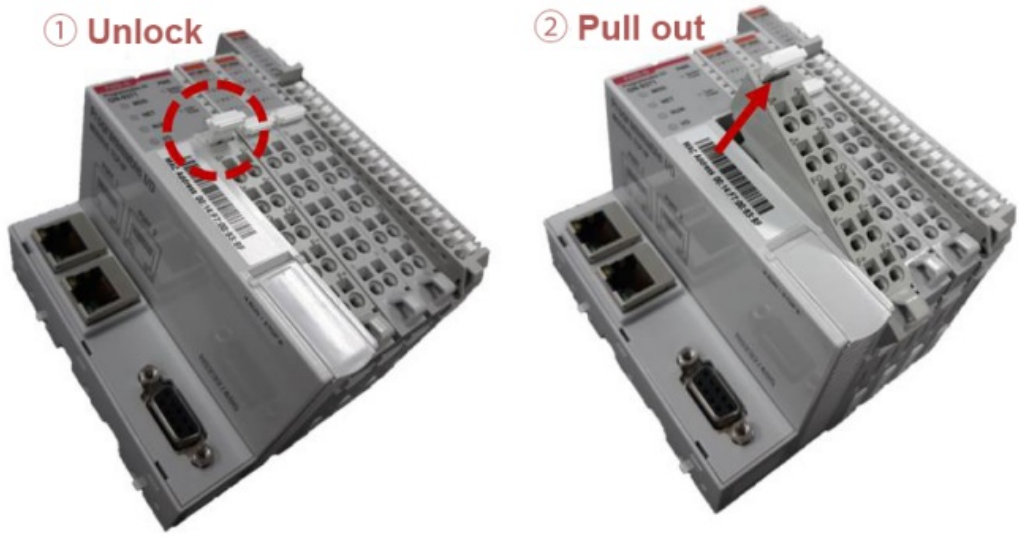
Dismount from DIN rail

Mount Removable Terminal Block

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



Mount a removable terminal block



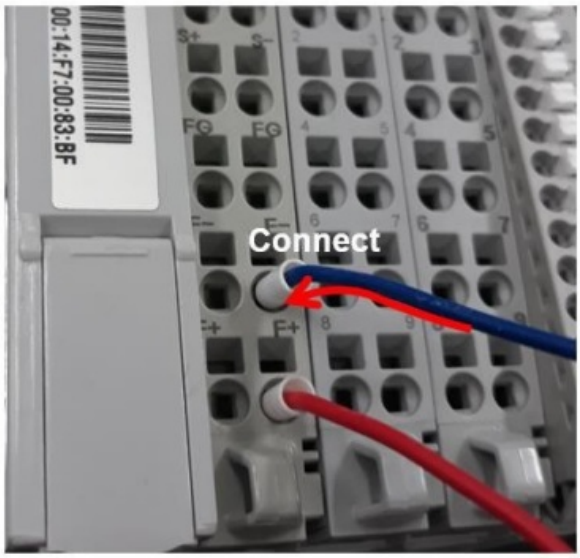
Dismount a removable terminal block

Connect Cables to Removable Terminal Block

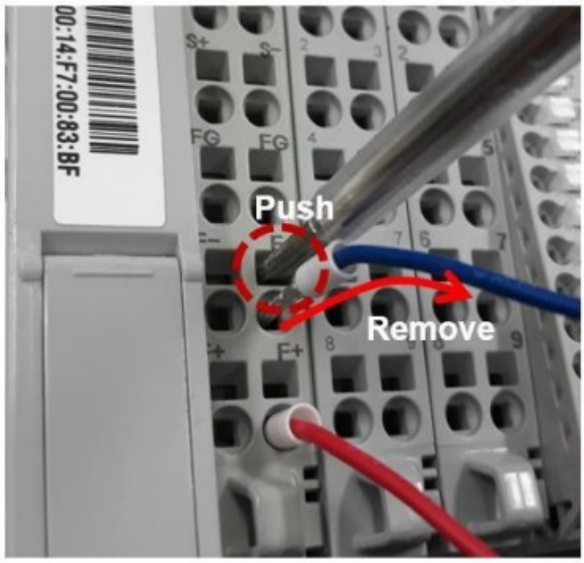
To connect/disconnect cables to/from the removable terminal block (RTB), see the instructions below.

WARNING

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



Connect cable



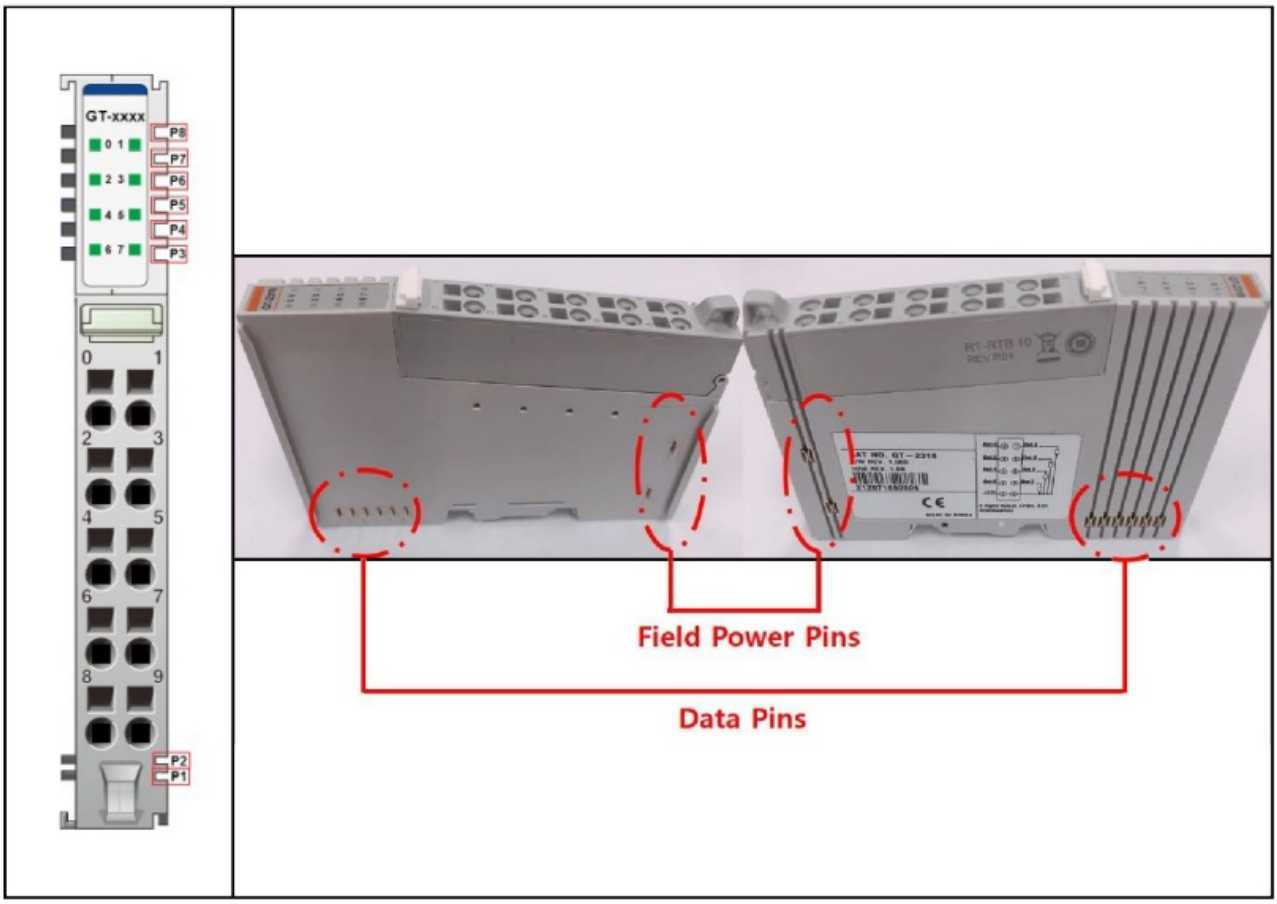
Disconnect cable

Field Power and Data Pins

Communication between the G-series network adapter and the expansion module, as well as system/field power supply of the bus modules is carried out via the internal bus. It is comprised of 2 Field Power Pins and 6 Data Pins.

WARNING

Do not touch the data and field power pins! Touching can result in soiling and damage by ESD noise.



Pin no.	Name	Description
P1	System VCC	System supply voltage (5 VDC)
P2	System GND	System ground
P3	Token output	Token output port of the processor module
P4	Serial output	Transmitter output port of processor module
P5	Serial input	Receiver input port of processor module
P6	Reserved	Reserved for bypass token
P7	Field GND	Field ground
P8	Field VCC	Field supply voltage (24 VDC)

FAQ

- **Q: What should I do if the LED indicators show abnormal patterns?**

- A: If the LED indicators display unusual patterns, check the wiring connections and ensure they are correctly set up. Refer to the LED indicator section in the manual for troubleshooting steps.

Documents / Resources

	Beijer Electronics GT-1238 Digital Input Module [pdf] User Manual GT-1238 Digital Input Module, GT-1238, Digital Input Module, Input Module

References

- User Manual

Beijer ELECTRONICS

Beijer ELECTRONICS, Digital Input Module, GT-1238, GT-1238 Digital Input Module, Input Module

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