

# Beijer ELECTRONICS

## GT-122F

### Digital Input Module



## Beijer Electronics GT-122F Digital Input Module User Manual

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Beijer Electronics GT-122F Digital Input Module



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## About This Manual

This manual contains information on the software and hardware features of the Beijer Electronics GT-122F Digital Input Module. It provides in-depth specifications and 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**

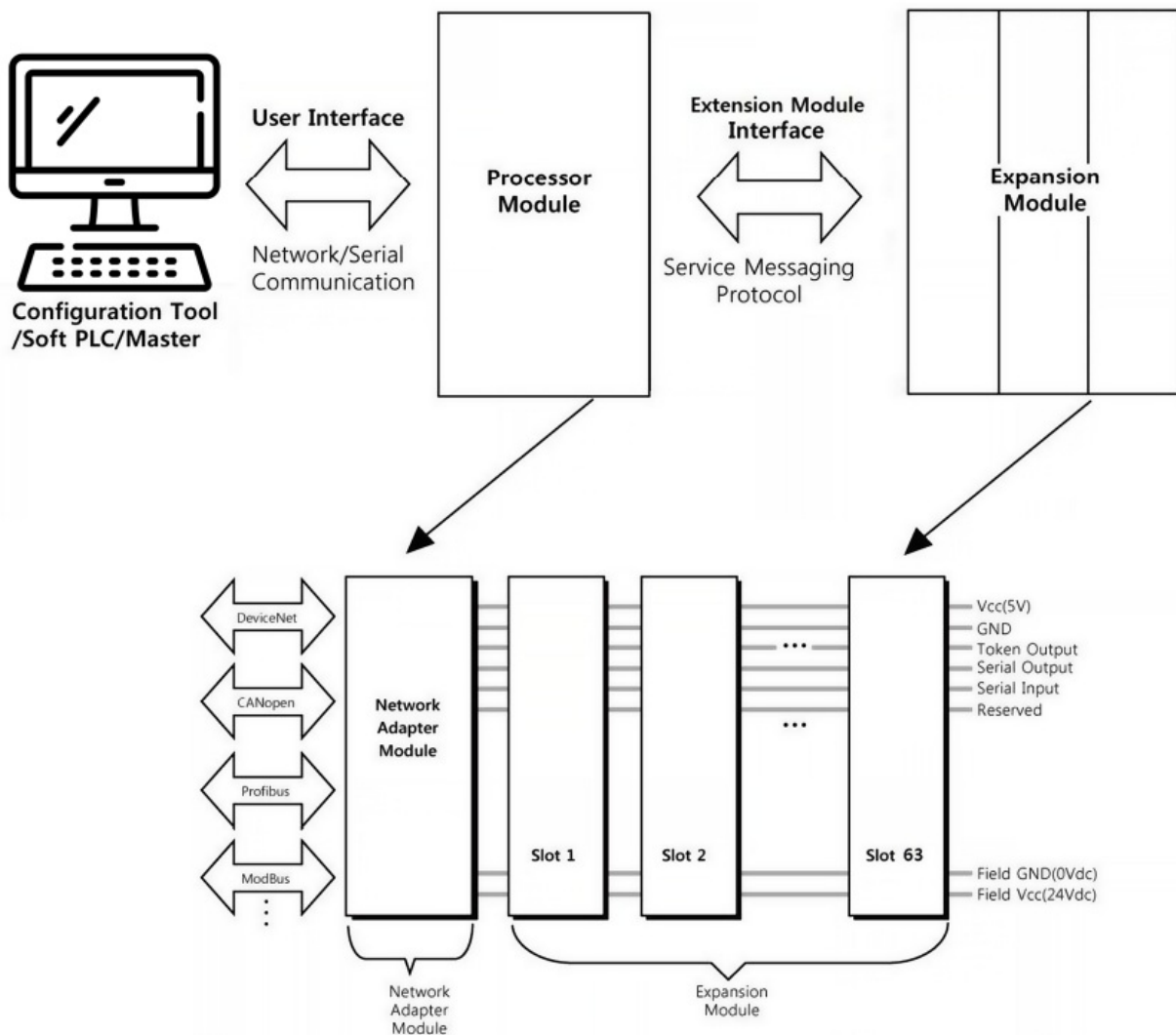
- Do not assemble the products and wires with power connected to the system. Doing so cause an “arc flash”, which can result in unexpected dangerous events (burns, fire, flying objects, blast pressure, sound blast, heat).
- Do not touch terminal blocks or IO modules when the system is running. Doing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

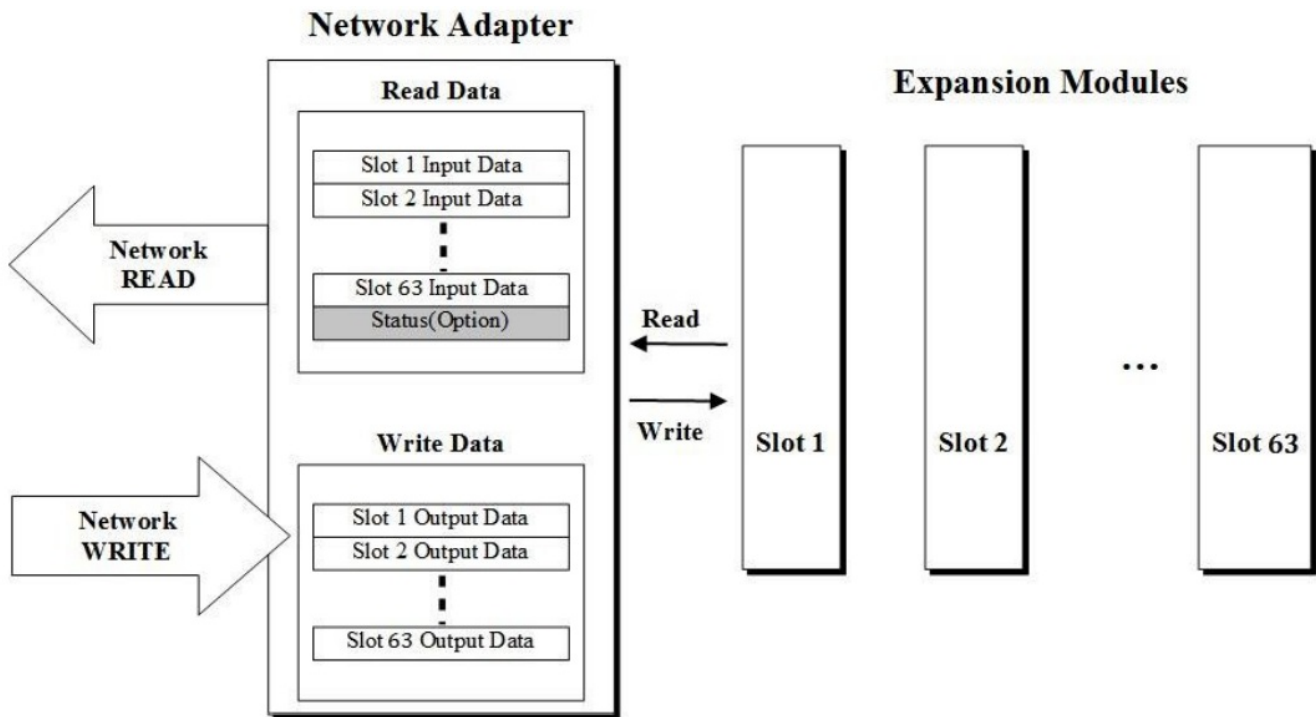
- **Network Adapter Module** – The network adapter module forms the link between the field bus and the field devices with the expansion modules. The connection to different field bus systems can be established by each

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.

## 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 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.

## Specifications

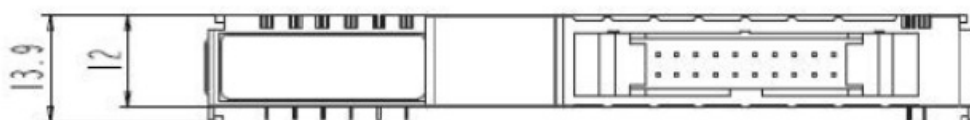
### Environmental Specifications

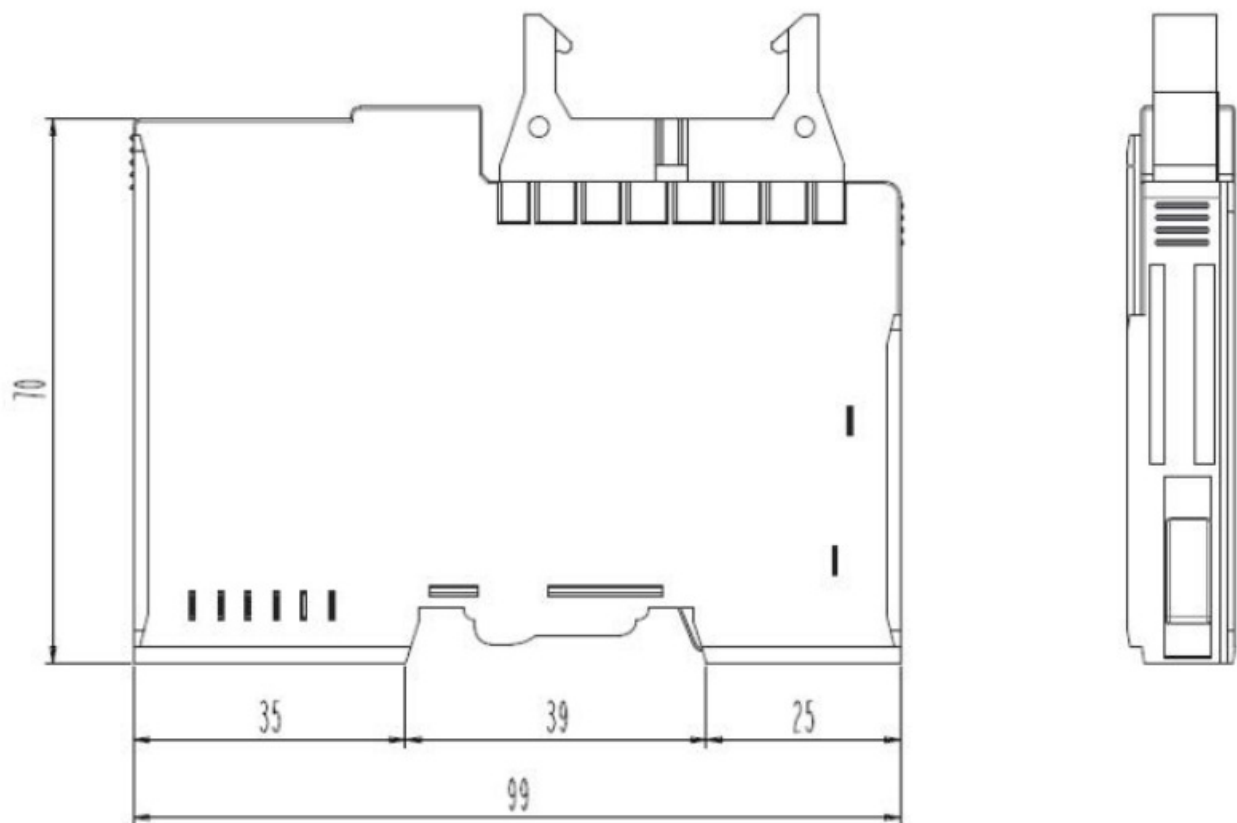
|                               |                         |
|-------------------------------|-------------------------|
| <b>Operating temperature</b>  | -20°C – 60°C            |
| <b>UL temperature</b>         | -20°C – 60°C            |
| <b>Storage temperature</b>    | -40°C – 85°C            |
|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

## General Specifications

|                          |   |
|--------------------------|---|
| <b>Power dissipation</b> | Max. 50 mA @ 5 VDC  |
| <b>Isolation</b>         | I/O to logic: Photocoupler isolation  |
| <b>UL field power</b>    | Supply voltage: 24 VDC nominal, class 2   |
| <b>Field power</b>       | Supply voltage: 24 VDC nominal Voltage range: 15 – 30 VDC<br>Power dissipation: 0 mA @ 24 VDC |
| <b>Wiring</b>            | Connector type, up to AWG22<br>Module connector: HIF3BA-20D-2.54DSA                           |
| <b>Weight</b>            | 52 g  |
| <b>Module size</b>       | 12 mm x 99 mm x 70 mm   |

## Dimensions



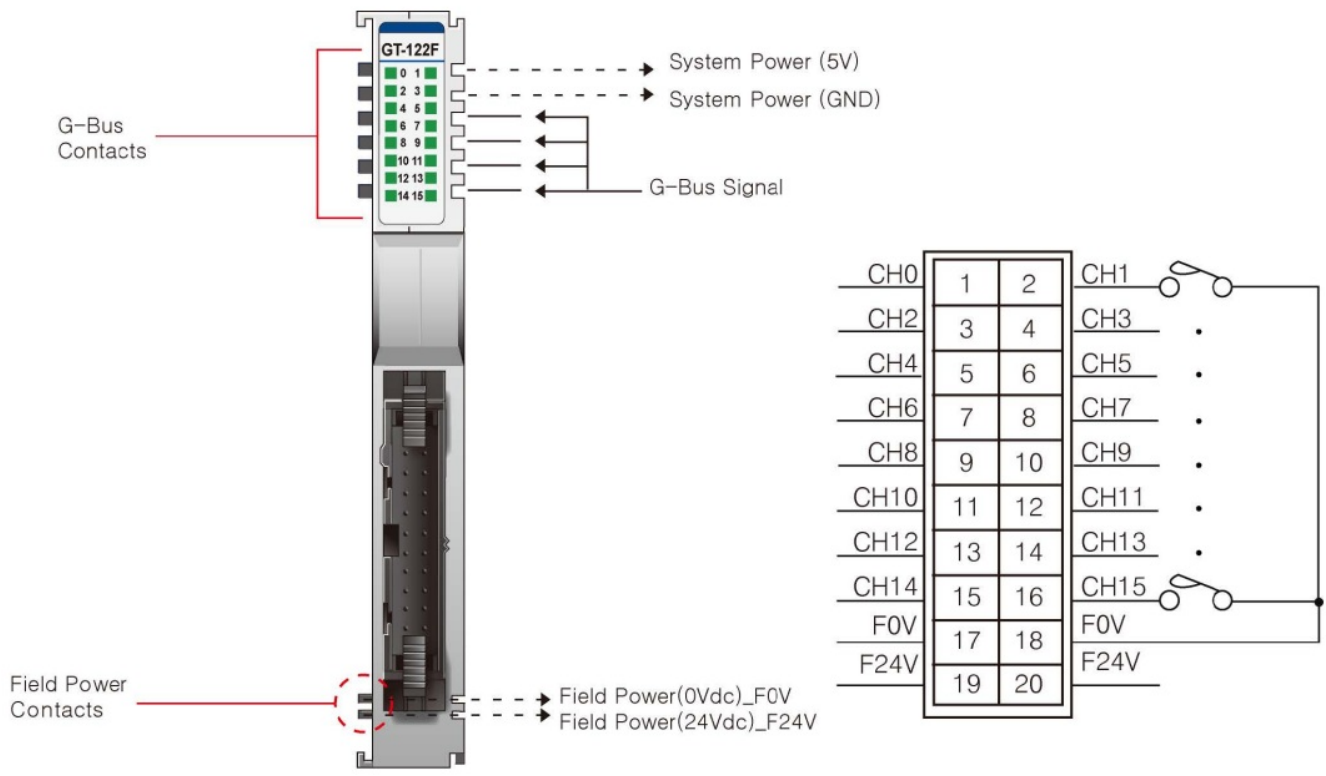


Module dimensions (mm)

## Input Specifications

|                                |  |
|--------------------------------|--|
| <b>Inputs per module</b>       | 16 points, source type                           |
| <b>Indicators</b>              | 16 green input status                            |
| <b>On-state voltage</b>        | 24 VDC nominal<br>15 – 30 VDC @ 60 °C            |
| <b>On-state current</b>        | 2.25 mA @ 24 VDC<br>3 mA @ 30 VDC                |
| <b>Off-state voltage</b>       | 9.3 VDC @ 25 °C                                  |
| <b>Input signal delay</b>      | OFF to ON: Max. 0.3 ms<br>ON to OFF: Max. 0.3 ms |
| <b>Input filter</b>            | Adjustable, up to 10 ms                          |
| <b>Nominal input impedance</b> | 10.2 kΩ typical                                  |
| <b>Common type</b>             | 16 points / 2 COM (universal)                    |

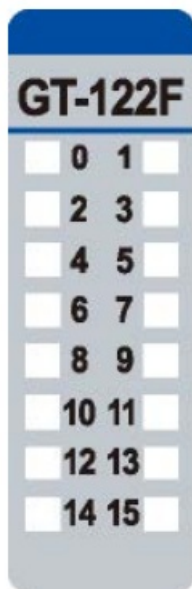
## Wiring Diagram





| Pin no. | Signal description        |
|---------|---------------------------|
| 1       | Input channel 0           |
| 2       | Input channel 1           |
| 3       | Input channel 2           |
| 4       | Input channel 3           |
| 5       | Input channel 4           |
| 6       | Input channel 5           |
| 7       | Input channel 6           |
| 8       | Input channel 7           |
| 9       | Input channel 8           |
| 10      | Input channel 9           |
| 11      | Input channel 10          |
| 12      | Input channel 11          |
| 13      | Input channel 12          |
| 14      | Input channel 13          |
| 15      | Input channel 14          |
| 16      | Input channel 15          |
| 17      | Field power 0 V           |
| 18      | Field power 0 V           |
| 19      | Common (field power 24 V) |
| 20      | Common (field power 24 V) |

## LED Indicator



| LED no. | LED function / description | LED color |
|---------|----------------------------|-----------|
| 0       | INPUT channel 0            | Green     |
| 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       | INPUT channel 8            |           |
| 9       | INPUT channel 9            |           |
| 10      | INPUT channel 10           |           |
| 11      | INPUT channel 11           |           |
| 12      | INPUT channel 12           |           |
| 13      | INPUT channel 13           |           |
| 14      | INPUT channel 14           |           |
| 15      | INPUT channel 15           |           |

#### 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 |
| D15 | D14 | D13 | D12 | D11 | D10 | D9 | D8 |



### 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    |
| Byte 1  | D15   | D14   | D13   | D12   | D11   | D10   | D9    | D8    |

### 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

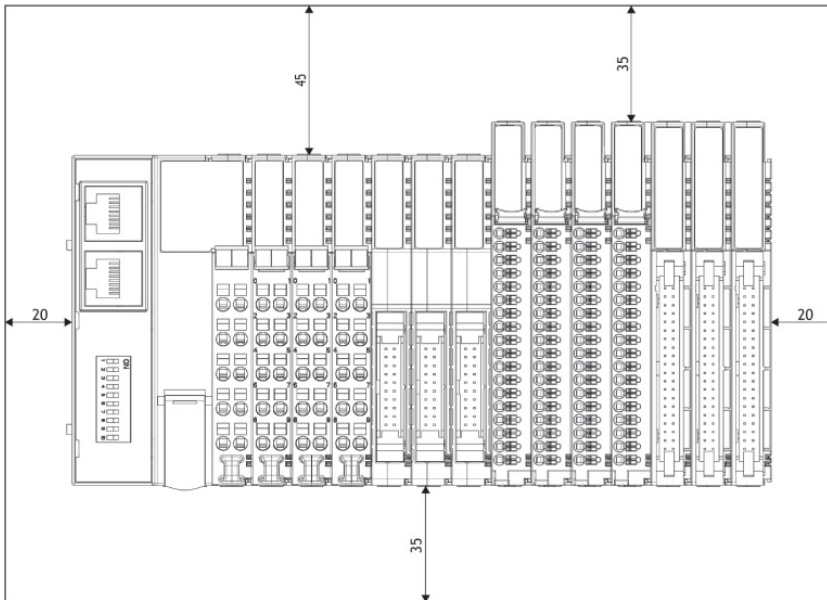
- Always read this chapter before installing the module!
- Hot surface! The surface of the housing can become hot during operation. If the device is used in high ambient temperatures, always let the device cool down before touching it.
- Working on energized devices can damage the equipment! Always turn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

### Space Requirements

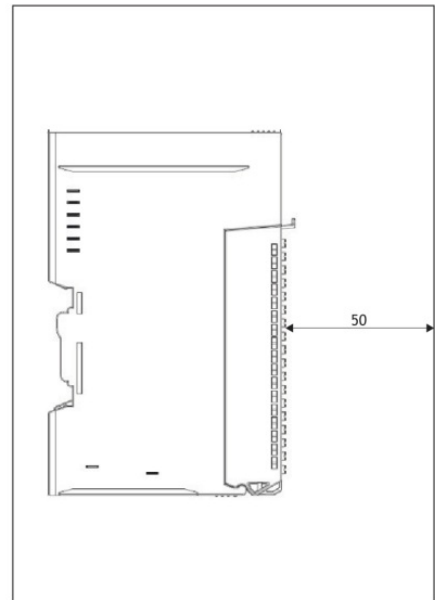
The following drawings show the space requirements when installing the G-series modules. The spacing creates space for ventilation and prevents conducted electromagnetic interference from influencing the operation. Installation position is valid vertically and horizontally. The drawings are illustrative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



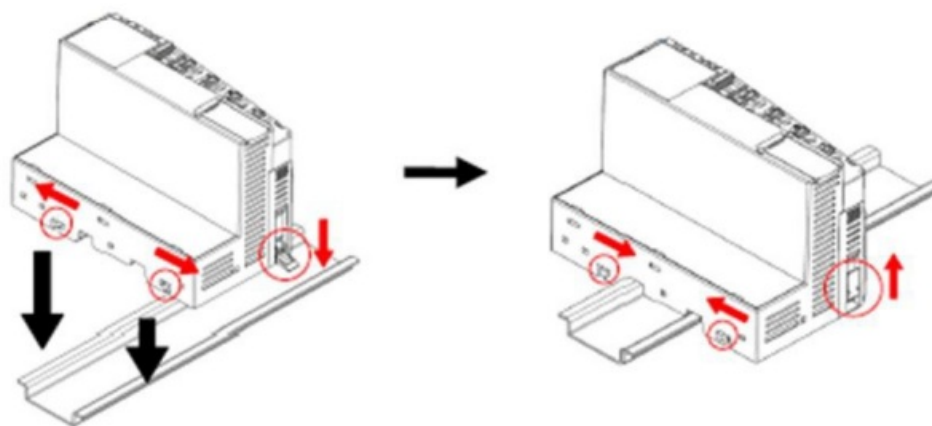
*Mount to DIN rail*



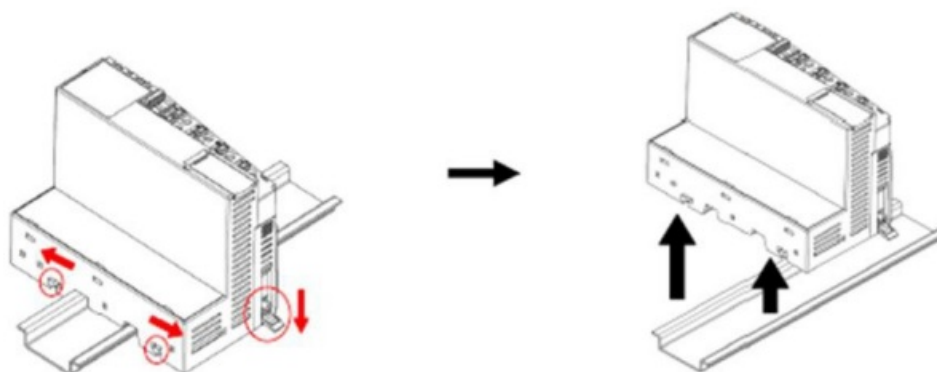
*Dismount from DIN rail*

### **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*



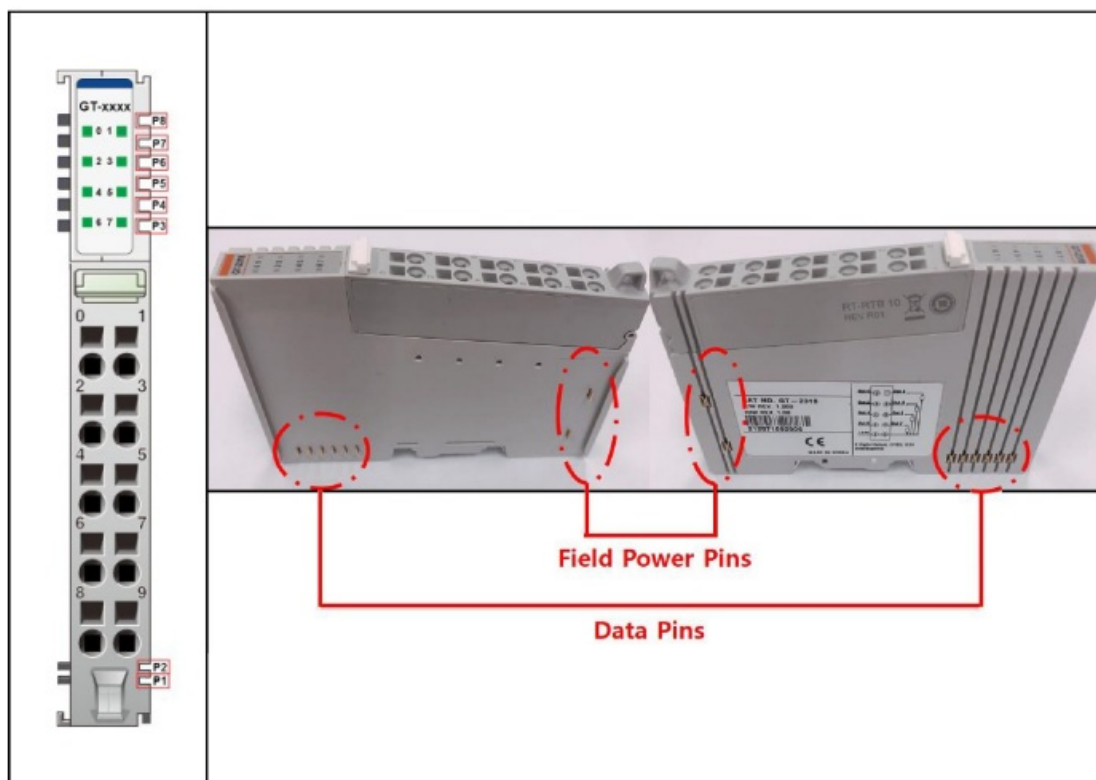
*Dismount from DIN rail*

### **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 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 do the Warning and Caution symbols in the manual indicate?**

- **A:** The Warning icon signifies potentially hazardous situations that could result in serious injury or damage if not avoided, while the Caution icon indicates situations that may lead to minor or moderate injury or damage.

## Documents / Resources



[Bejer Electronics GT-122F Digital Input Module](#) [pdf] User Manual  
GT-122F Digital Input Module, GT-122F, Digital Input Module, Input Module, Module

## References

- [User Manual](#)

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