

Beijer ELECTRONICS GT-442F Analog Output Module



Beijer ELECTRONICS GT-442F Analog Output Module User Manual

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Specifications

- **Model:** GT-442F Analog Output Module
- **Channels:** 16
- **Output Range:** 0 – 10 V
- **Resolution:** 12 bit
- **Connector Type:** Cage Clamp, 20 pt

Product Usage Instructions

Installation

Follow these steps to install the GT-442F Analog Output Module:

1. Ensure power is off before installation.
2. Connect the module to the appropriate slot in your system.
3. Securely fasten the cage clamp connector.
4. Refer to the wiring diagram for correct connections.

Setup

After installation, follow these steps to set up the module:

1. Configure the output channels as needed.
2. Check LED indicators for proper functioning.

Usage

To use the GT-442F Analog Output Module:

1. Input the desired values within the 0 – 10 V range.
2. Monitor the output using compatible devices.

About This Manual

This manual contains information on the software and hardware features of the Beijer Electronics GT-442F Analog 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

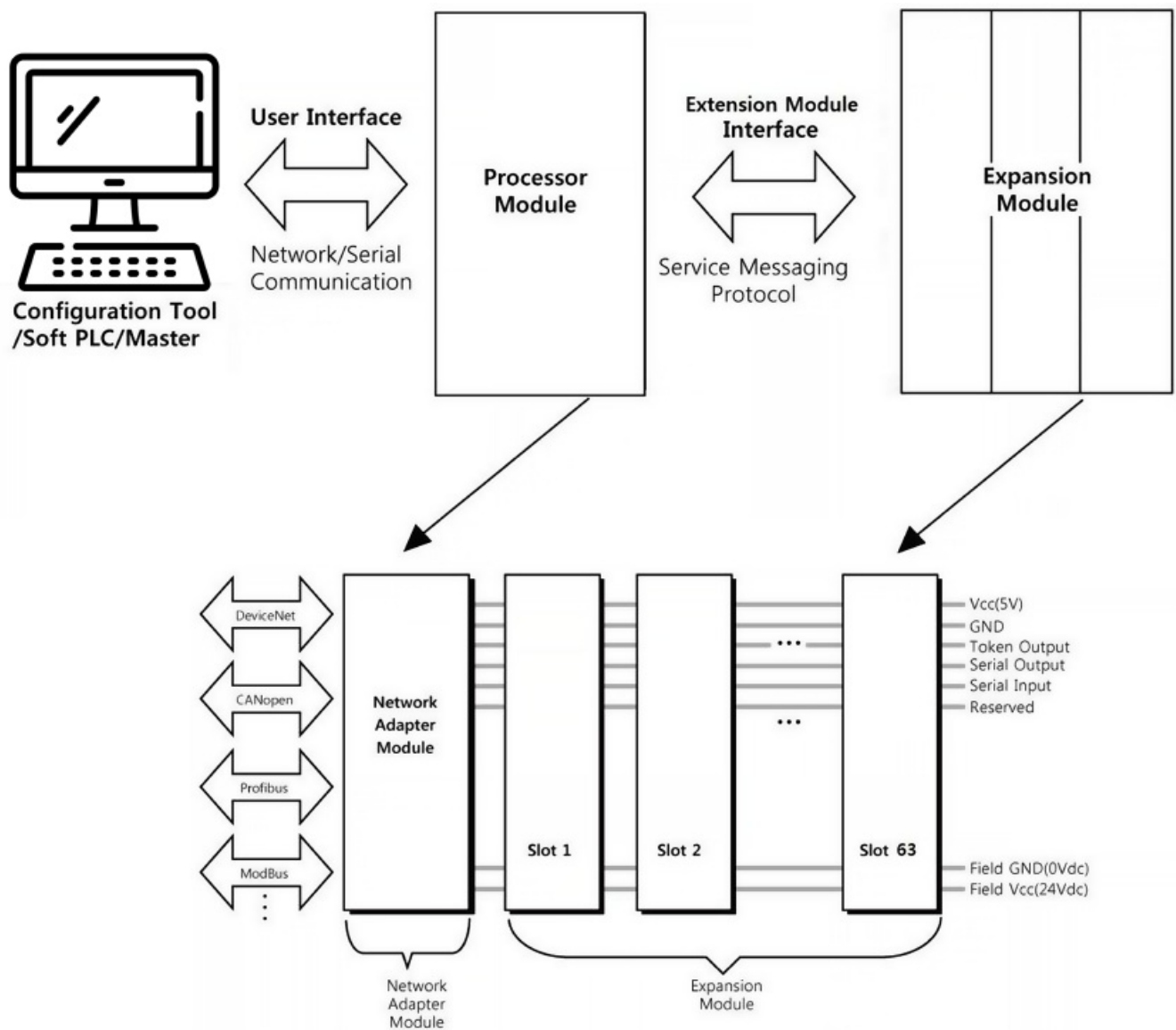
WARNING

- 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

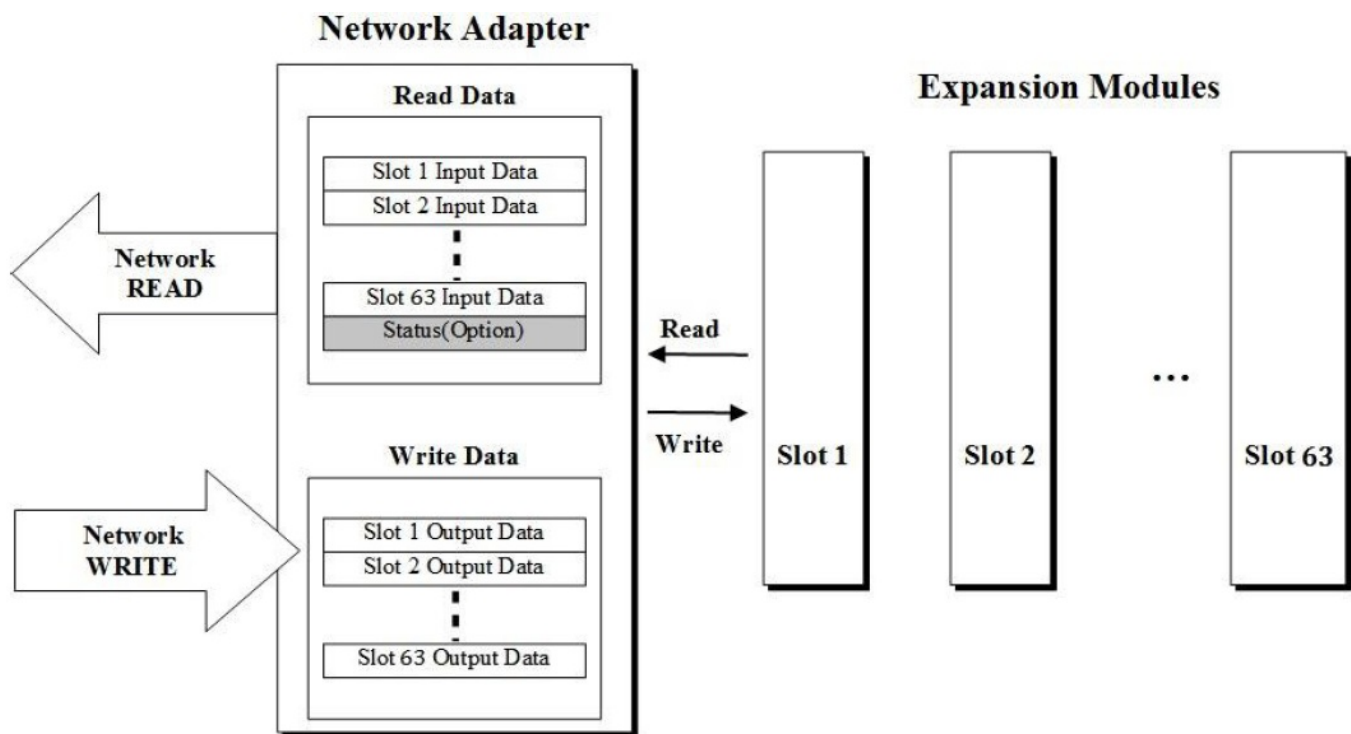


System overview

- **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

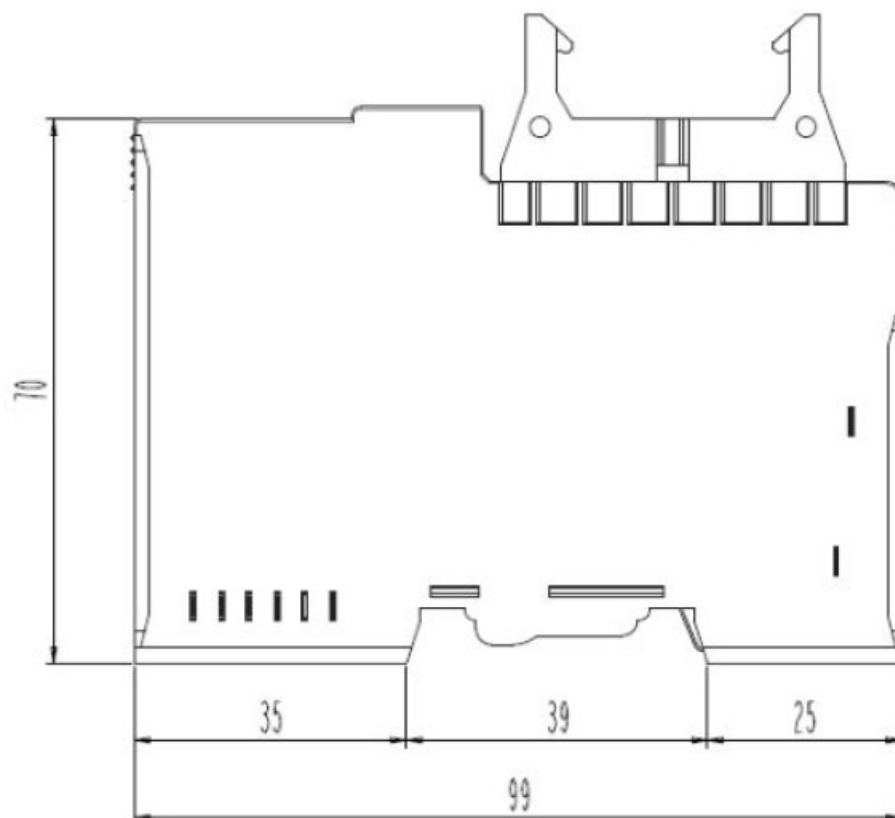
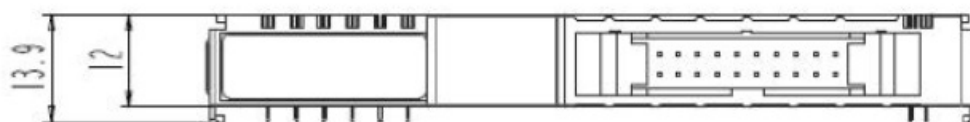
Environmental Specifications

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. 30 mA @ 5 VDC
Isolation	I/O to logic: Isolation Field power: Non-isolation
UL field power	Supply voltage: 24 VDC nominal, class 2
Field power	Supply voltage: 24 VDC nominal Voltage range: 18 – 26.4 VDC Power dissipation: 120 mA @ 24 VDC, Load (2K)
Wiring	According to the <i>Herose</i> connector specification Module Connector: HIF3BA-20PA-2.54DSA
Weight	58 g
Module size	12 mm x 99 mm x 70 mm

Dimensions

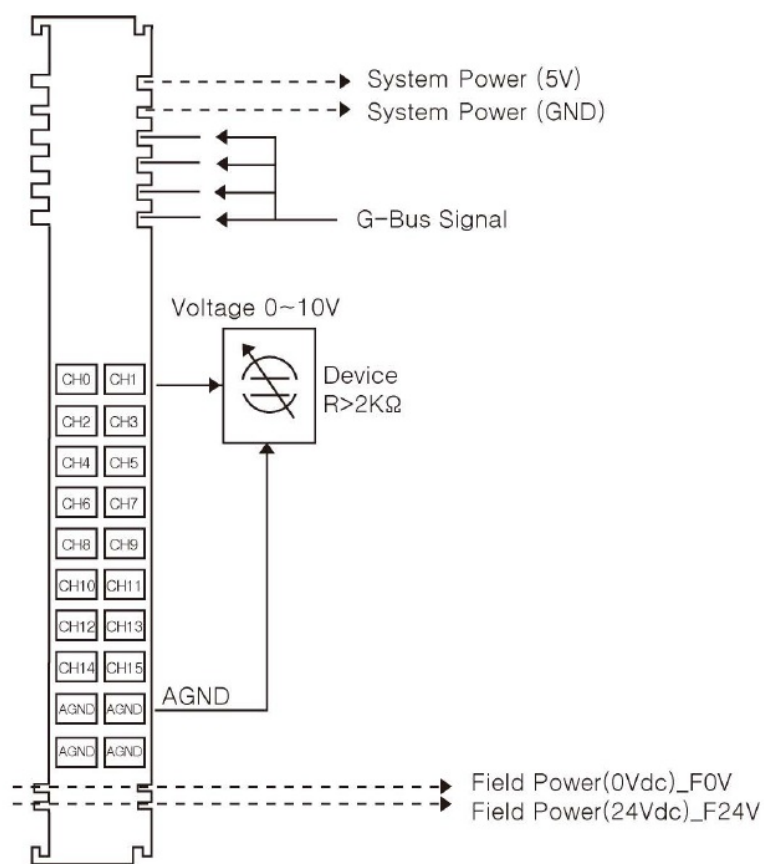


Module dimensions (mm)

Output Specifications

Output per module	16 channels single ended, non-isolated between channel
Indicators (logic side)	1 green G-bus status
Resolution in ranges	12 bits: 2.44 mV/Bit
Output range	0 – 10 VDC
Data format	16 bits integer (2' compliment)
Module error	±0.1 % full scale @ 25 °C ±0.3 % full scale @ -40 °C, 60 °C
Load resistance	Min. 2 kΩ
Diagnostic	Field power off: LED blinking
Conversion time	0.4 ms / all channels
Calibration	Not required
Common type	4 common, field power 0 V is common (AGND)

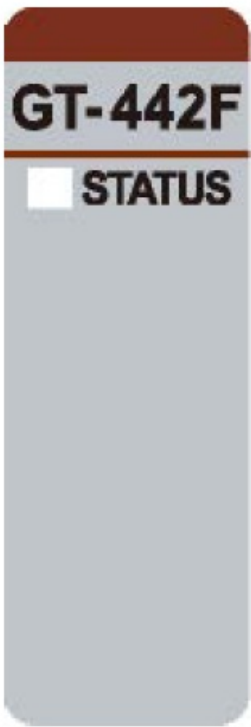
Wiring Diagram



Pin no.	Signal description
1	Analog output channel 0
2	Analog output channel 1
3	Analog output channel 2
4	Analog output channel 3
5	Analog output channel 4
6	Analog output channel 5
7	Analog output channel 6
8	Analog output channel 7
9	Analog output channel 8
10	Analog output channel 9
11	Analog output channel 10
12	Analog output channel 11
13	Analog output channel 12
14	Analog output channel 13
15	Analog output channel 14
16	Analog output channel 15
17	Output channel common (AGND)
18	Output channel common (AGND)

Pin no.	Signal description
19	Output channel common (AGND)
20	Output channel common (AGND)

LED Indicator



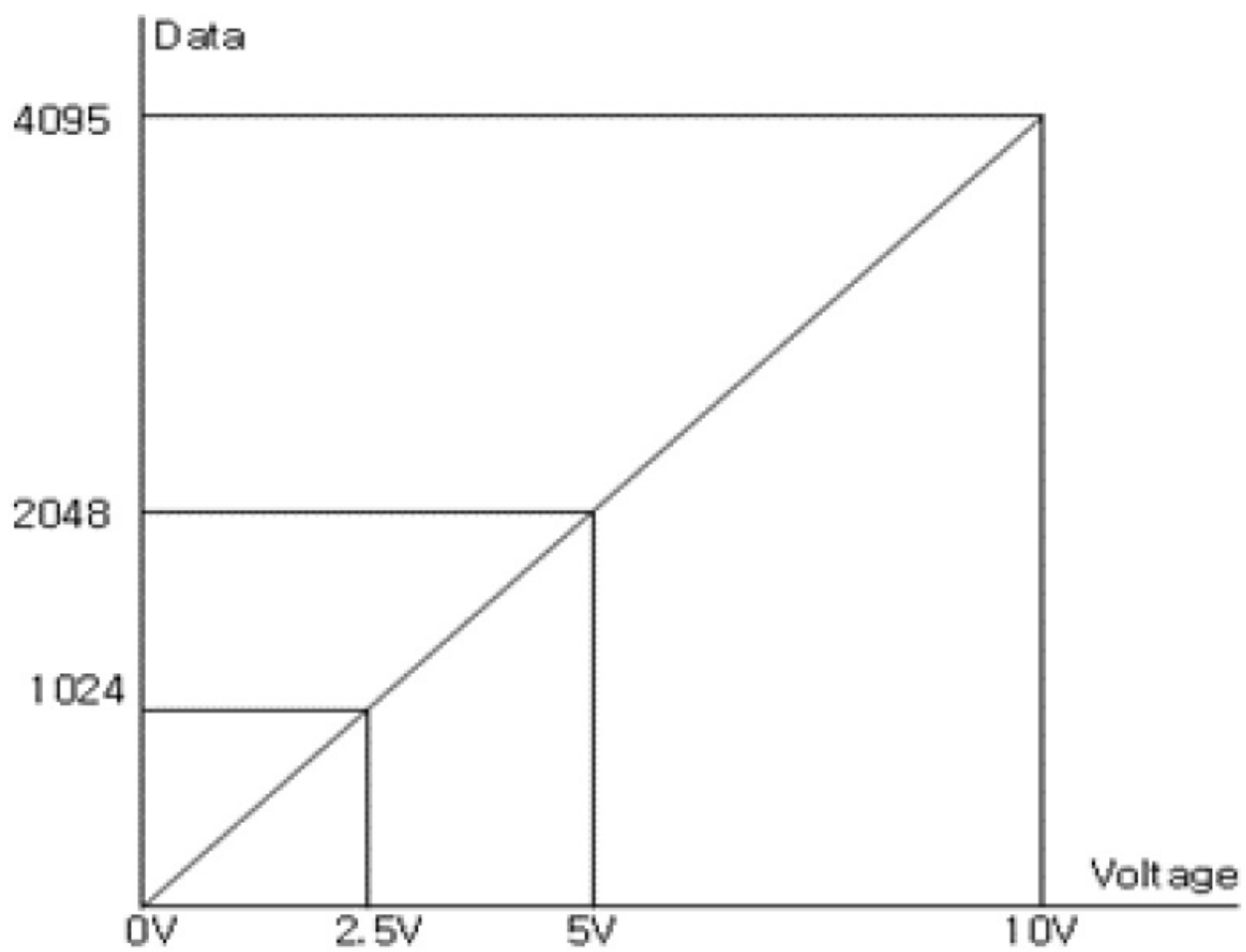
LED no.	LED function / description	LED color
0	Status LED	Green

LED Channel Status

Status	LED	Indication
G-bus status	Off	No connection
	Green	Connection
Field power error	All channel repeat the green and off Field power is not connected	

Data Value / Voltage

Voltage	0.0 V	2.5 V	5.0 V	10.0 V
Data (Hex)	H0000	H03FF	H07FF	H0FFF



Mapping Data From the Image Table

Output image value

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Analog output Ch 0 low byte							
Byte 1	Analog output Ch 0 high byte							
Byte 2	Analog output Ch 1 low byte							
Byte 3	Analog output Ch 1 high byte							
Byte 4	Analog output Ch 2 low byte							
Byte 5	Analog output Ch 2 high byte							
Byte 6	Analog output Ch 3 low byte							
Byte 7	Analog output Ch 3 high byte							
Byte 8	Analog output Ch 4 low byte							
Byte 9	Analog output Ch 4 high byte							
Byte 10	Analog output Ch 5 low byte							
Byte 11	Analog output Ch 5 high byte							
Byte 12	Analog output Ch 6 low byte							
Byte 13	Analog output Ch 6 high byte							
Byte 14	Analog output Ch 7 low byte							
Byte 15	Analog output Ch 7 high byte							
Byte 16	Analog output Ch 8 low byte							
Byte 17	Analog output Ch 8 high byte							
Byte 18	Analog output Ch 9 low byte							
Byte 19	Analog output Ch 9 high byte							
Byte 20	Analog output Ch 10 low byte							
Byte 21	Analog output Ch 10 high byte							
Byte 22	Analog output Ch 11 low byte							
Byte 23	Analog output Ch 11 high byte							
Byte 24	Analog output Ch 12 low byte							
Byte 25	Analog output Ch 12 high byte							
Byte 26	Analog output Ch 13 low byte							
Byte 27	Analog output Ch 13 high byte							
Byte 28	Analog output Ch 14 low byte							
Byte 29	Analog output Ch 14 high byte							
Byte 30	Analog output Ch 15 low byte							
Byte 31	Analog output Ch 15 high byte							



Output module data – 32 byte output data

Analog output Ch 0
Analog output Ch 1
Analog output Ch 2
Analog output Ch 3
Analog output Ch 4
Analog output Ch 5
Analog output Ch 6
Analog output Ch 7
Analog output Ch 8
Analog output Ch 9
Analog output Ch 10
Analog output Ch 11
Analog output Ch 12
Analog output Ch 13
Analog output Ch 14
Analog output Ch 15

Parameter Data

Valid parameter length: 6 bytes

Bit no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Fault action for channel 3		Fault action for channel 2		Fault action for channel 1		Fault action for channel 0	
	00: Fault value / 01: Hold last state / 10: Low limit / 11: High limit							
Byte 1	Fault action for channel 7		Fault action for channel 6		Fault action for channel 5		Fault action for channel 4	
	00: Fault value / 01: Hold last state / 10: Low limit / 11: High limit							
Byte 2	Fault action for channel 11		Fault action for channel 10		Fault action for channel 9		Fault action for channel 8	
	00: Fault value / 01: Hold last state / 10: Low limit / 11: High limit							
Byte 3	Fault action for channel 15		Fault action for channel 14		Fault action for channel 13		Fault action for channel 12	
	00: Fault value / 01: Hold last state / 10: Low limit / 11: High limit							
Byte 4	Fault value low byte							
Byte 5	Reserved				Fault value high byte			

Hardware Setup

CAUTION

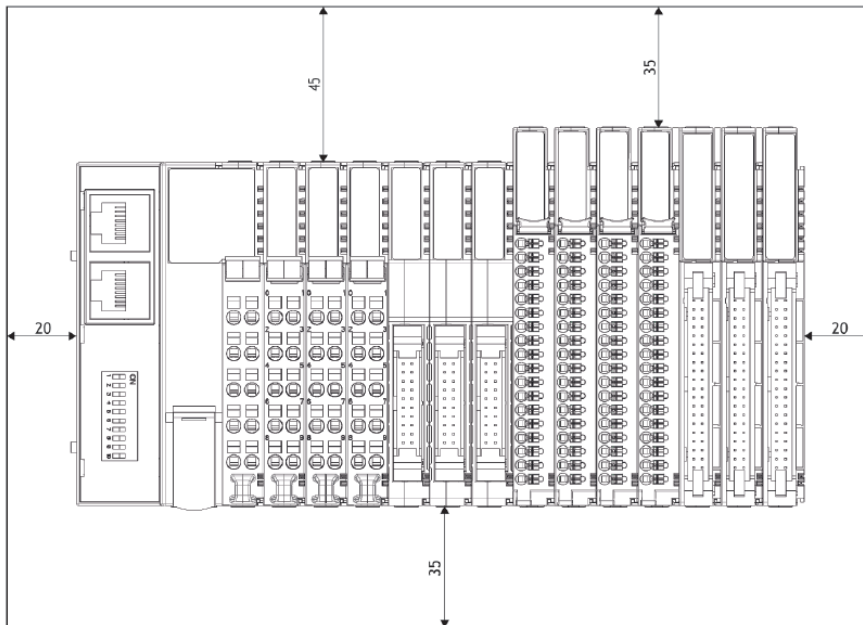
- Always read this chapter before installing the module!
- Hot surface! The surface of the housing can become hot during operation. If the device is used in high ambient temperatures, always let the device cool down before touching it.
- Working on energized devices can damage the equipment! Always turn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

Space Requirements

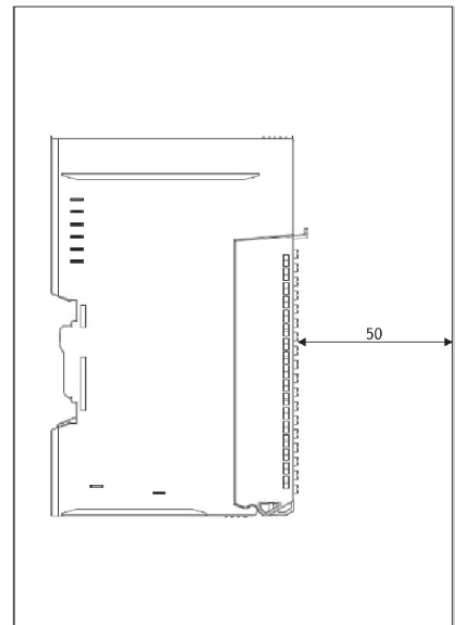
- The following drawings show the space requirements when installing the G-series modules. The spacing creates space for ventilation, and prevents conducted electromagnetic interference from influencing the operation. Installation position is valid vertical and horizontal. The drawings are illustrative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

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.



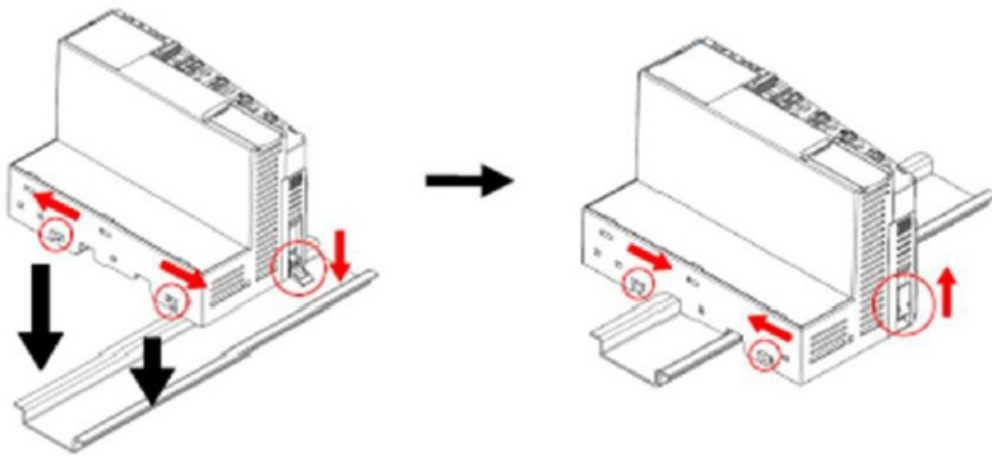
Mount to DIN rail



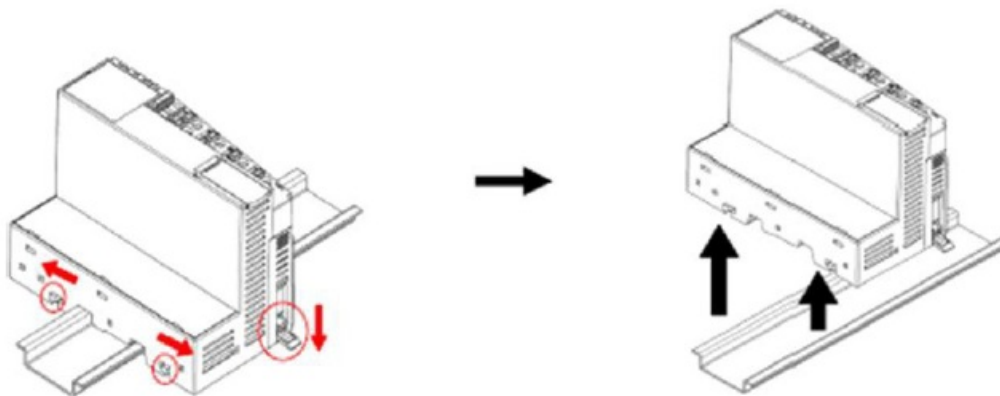
Dismount from DIN rail

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:



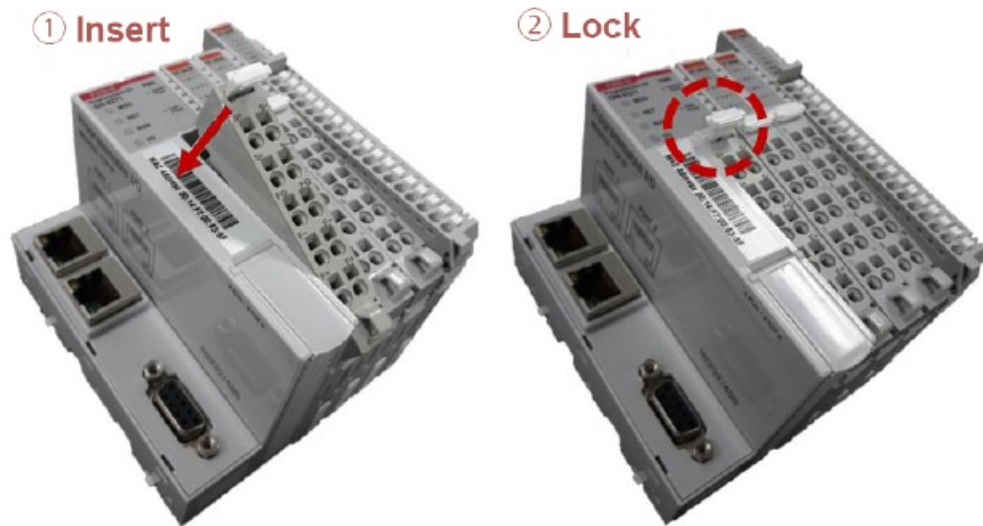
Mount to DIN rail



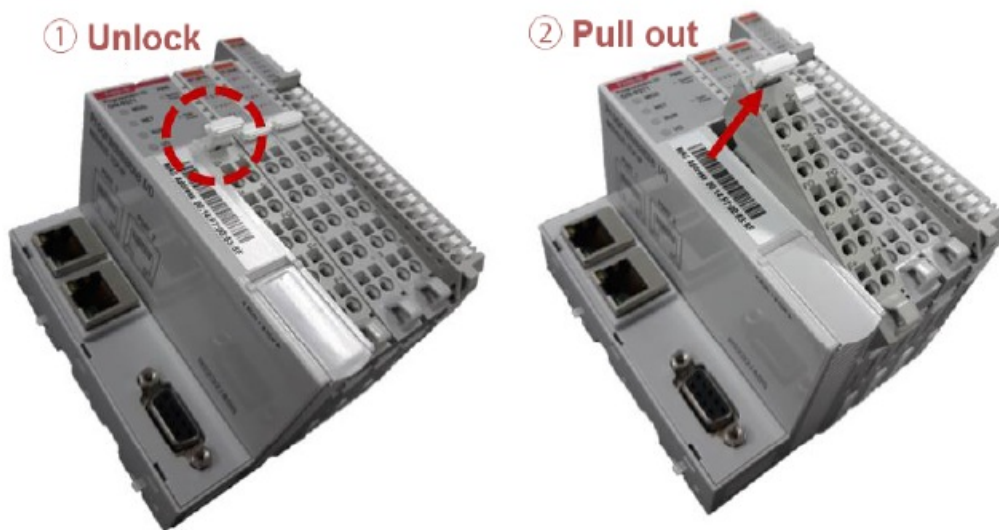
Dismount from DIN rail

Mount Removable Terminal Block

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



Mount a removable terminal block



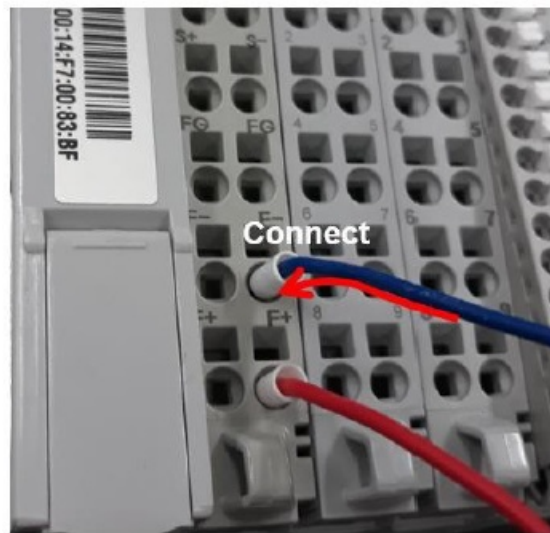
Dismount a removable terminal block

Connect Cables to Removable Terminal Block

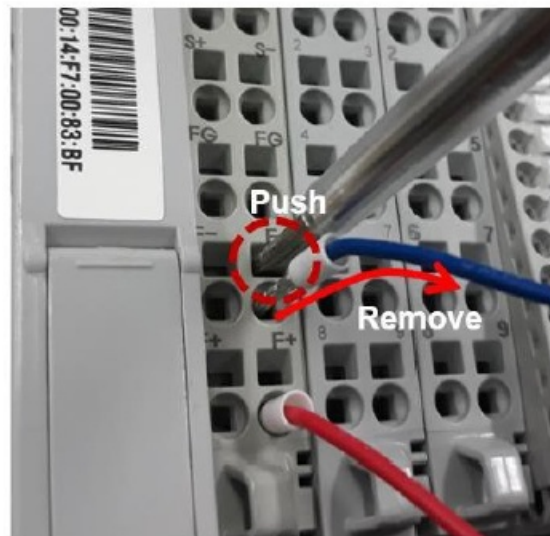
To connect/disconnect cables to/from the removable terminal block (RTB), see the instructions below.

WARNING

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



Connect cable



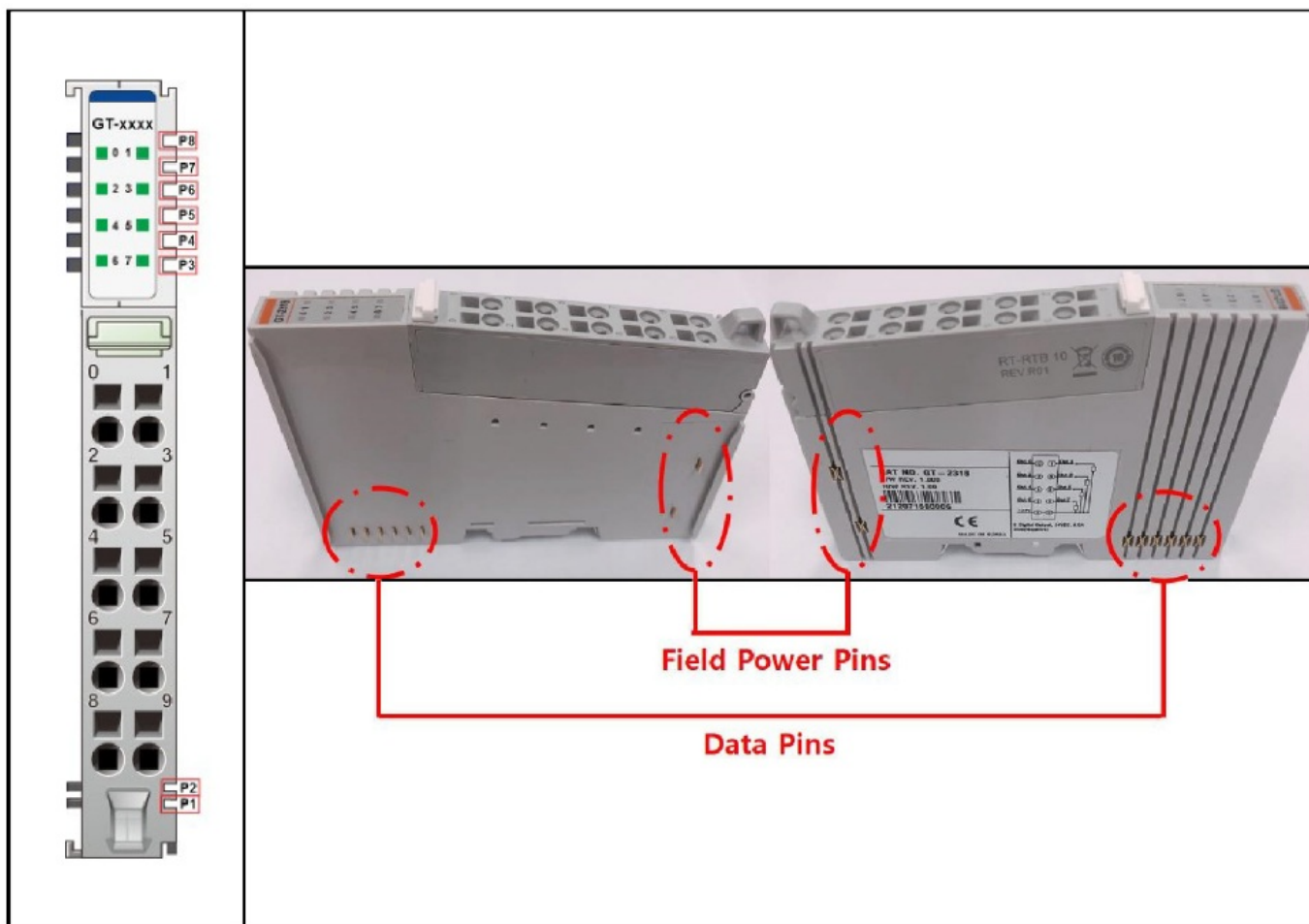
Disconnect cable

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 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)

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More Info

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FAQ

- **Q: What do the symbols in the manual mean?**
 - **A:** The symbols indicate important information such as warnings, cautions, notes, and important details. Please refer to the manual for specific interpretations of each symbol.
- **Q: How many channels does the GT-442F Analog Output Module have?**
 - **A:** The module has 16 output channels for analog signals.

Documents / Resources

	Beijer ELECTRONICS GT-442F Analog Output Module [pdf] User Manual GT-442F Analog Output Module, GT-442F, Analog Output Module, Output Module, Module
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References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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