Digital Input Module

GT-1xxx

UserManual

Version 1.00

2018 CREVIS Co.,Ltd

DOCUMENT CHANGE SUMMARY				
REV	PAGE	REMARKS	DATE	EDITOR
1.00	New Document		18/07/30	Rachel

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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 CREVIS 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, CREVIS 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
IMPORTANT	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, GBUS Pin.

1.1.3. Certification

c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada

See UL File E235505

CE Certificate

EN 61000-6-2; Industrial Immunity

EN 61000-6-4; Industrial Emissions

Reach, RoHS (EU, CHINA)

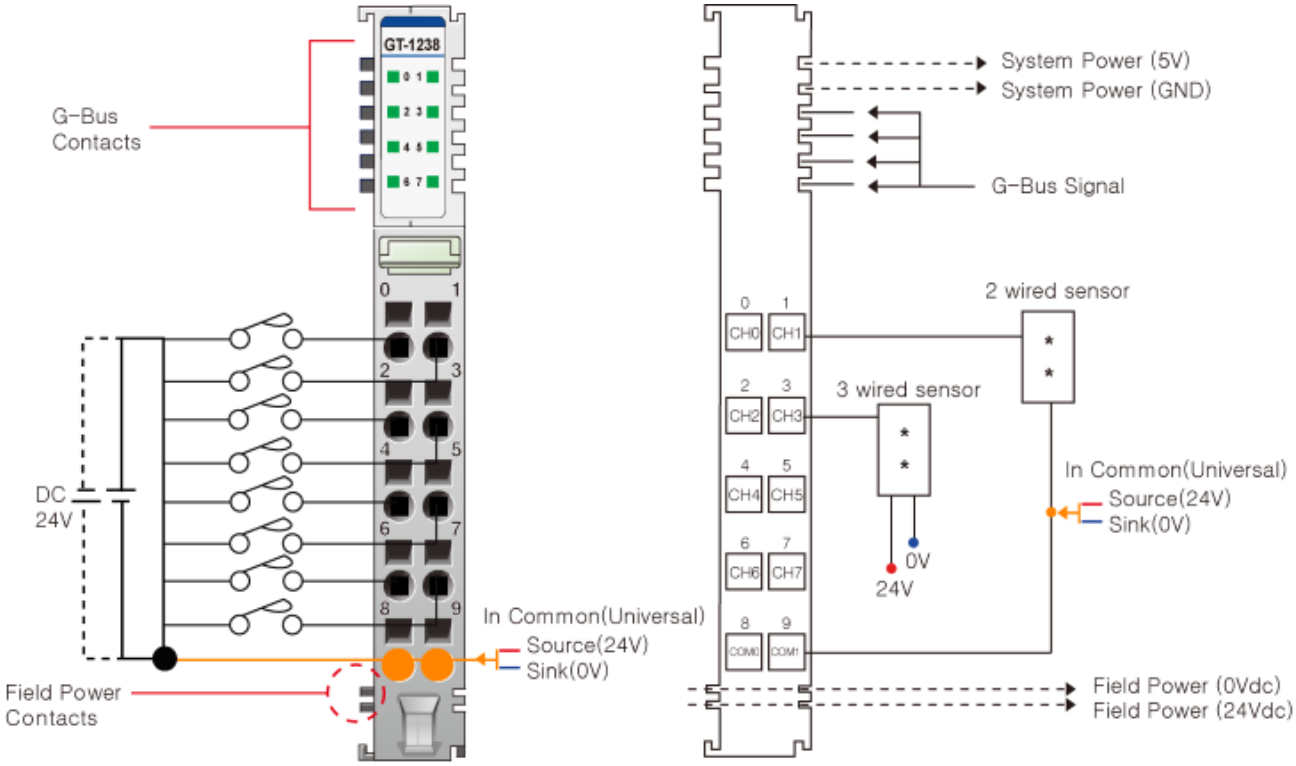
2. Digital Input Module List

GT-Number	Description	ID	Production Status
GT-1238	Digital Input, 8Points, Universal(Sink or Source), 24VDC, 10RTB	1238	Active
GT-123F	Digital Input, 16 Points, Universal (Sink or Source), 24VDC, 20P Connector	123F	Active
GT-12DF	Digital Input, 16Points, Universal(Sink or Source), 24VDC, 18RTB	12DF	Active
GT-12FA	Digital Input, 32 Points, Universal (Sink or Source), 24VDC, 40P Connector	12FA	Active
GT-1804	Digital Input, 4 Points, AC Type, 120VAC, 10 RTB	1804	Active
GT-1904	Digital Input, 4 Points, AC Type, 220VAC, 10 RTB	1904	Active

3. Specification

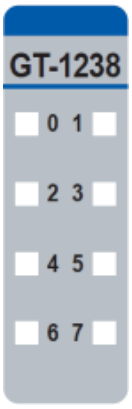
3.1. GT-1238

3.1.1. Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel 4	Input Channel 5	5
6	Input Channel 6	Input Channel 7	7
8	Common(Sink 0V / Source 24V)	Common(Sink 0V / Source 24V)	9

3.1.2. 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

3.1.3. Channel Status LED

Status	LED	To indicate
Off	Off	No Input Signal
On	Green	Input signal received

3.1.4. Environment Specification

Environmental Specification	
Operation Temperature	-40℃ ~ 70℃
UL Temperature	-20℃ ~ 60℃
Storage Temperature	-40℃ ~ 85℃
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 Sine Vibration - 5 ~ 25Hz : ±1.6mm - 25 ~ 300Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration - 10 ~ 40 Hz : 0.0125 g^2/Hz - 40 ~ 100 Hz : 0.0125 → 0.002 g^2/Hz - 100 ~ 500 Hz : 0.002 g^2/Hz - 500 ~ 2000 Hz : 0.002 → 1.3 x 10-4g^2/Hz - Test time : 1hrs for each test
EMC Resistance Burst/ESD	EN 61000-6-2 : 2005 EN61000-6-4/All : 2011
Protection Class	Variable/IP20
Installation Position	Vertical and horizontal installation is available
Product Certifications	CE, UL

3.1.5. Specification

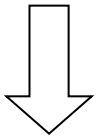
Items	Specification
Input Specification	
Inputs Per Module	8 Points Universal Type
Indicators	8 Green Input Status LEDs
ON–state Voltage	24Vdc (Min. 15Vdc ~ Max. 32Vdc)
ON-state Current	Max. 3.03mA / point @ 32Vdc
Field Power OFF-state voltage	8.3Vdc @ 25℃
Input Signal Delay	OFF to ON : Max. 0.3ms ON to OFF : Max. 0.3ms
Input Filter	Adjustable, up to 10ms
Nominal Input Impedance	10.2K Ohm Typical
Common Type	8 Points / 2 Common(Universal)
General Specification	
Power Dissipation	Max. 35mA @ 5Vdc
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc Power Dissipation : 0mA @ 24Vdc
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	39g
Module Size	12mm x 99mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

3.1.6. Mapping Data into the Image Table.

- **Input Module Data**

D7	D6	D5	D4	D3	D2	D1	D0

- **Input Image Value**



Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	D7	D6	D5	D4	D3	D2	D1	D0

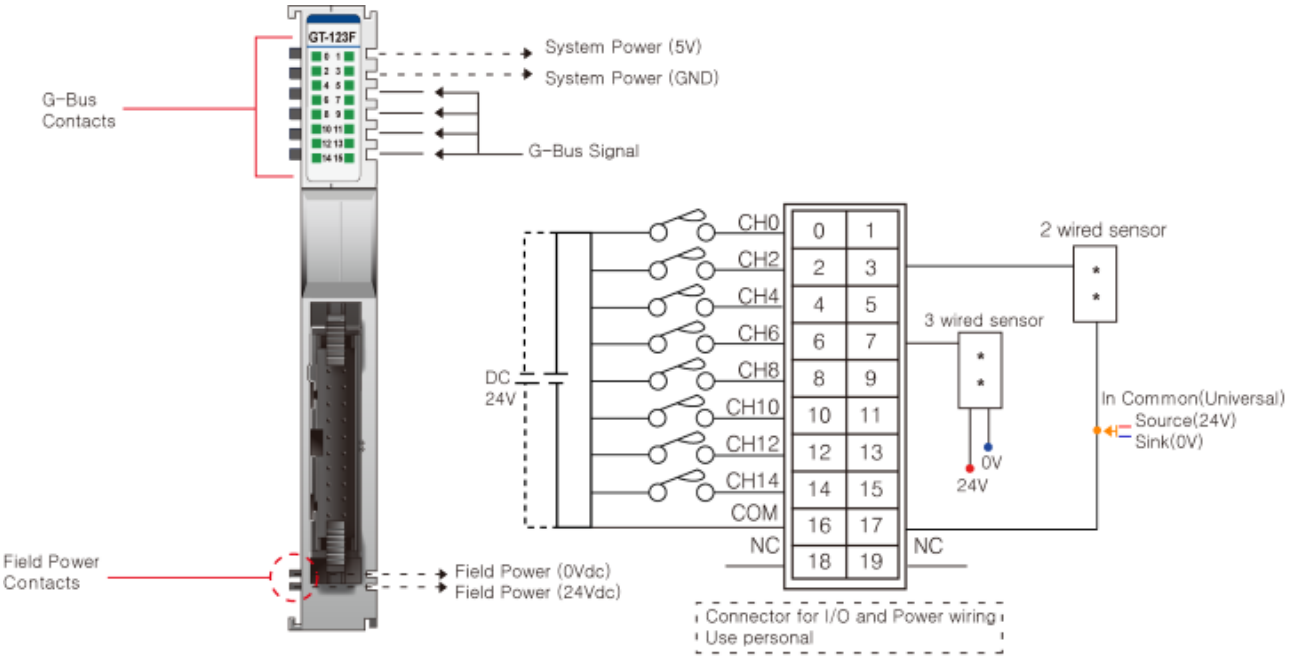
3.1.7. Parameter Data

- **Valid Parameter length : 2 Bytes**
- **Parameter Data**

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Input Filter Value : 0 ~ 10(unit : ms)							
Byte 1	Reserved							

3.2. GT-123F

3.2.1. Wiring Diagram

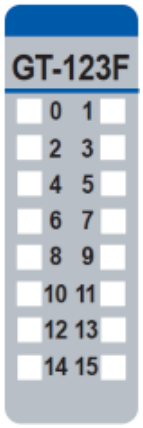


Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel 4	Input Channel 5	5
6	Input Channel 6	Input Channel 7	7
8	Input Channel 8	Input Channel 9	9
10	Input Channel 10	Input Channel 11	11
12	Input Channel 12	Input Channel 13	13
14	Input Channel 14	Input Channel 15	15
16	Common(Sink Oper.0V / Source Oper.24V)	Common(Sink Oper.0V / Source Oper.24V)	17
18	NC	NC	19

*

* Although the image above is GT-(Universal input module), it does not matter to refer to wiring diagram. Refer to the Sink (0V).

3.2.2. 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
8	Input Channel 8	Green
9	Input Channel 9	Green
10	Input Channel 10	Green
11	Input Channel 11	Green
12	Input Channel 12	Green
13	Input Channel 13	Green
14	Input Channel 14	Green
15	Input Channel 15	Green

3.2.3. Channel Status LED

Status	LED	To indicate
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

3.2.4. Environment Specification

Environmental Specification	
Operation Temperature	-40℃ ~ 70℃
UL Temperature	-20℃ ~ 60℃
Storage Temperature	-40℃ ~ 85℃
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 Sine Vibration - 5 ~ 25Hz : ±1.6mm - 25 ~ 300Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration - 10 ~ 40 Hz : 0.0125 g^2/Hz - 40 ~ 100 Hz : 0.0125 → 0.002 g^2/Hz - 100 ~ 500 Hz : 0.002 g^2/Hz - 500 ~ 2000 Hz : 0.002 → 1.3 x 10-4g^2/Hz - Test time : 1hrs for each test
EMC Resistance Burst/ESD	EN 61000-6-2 : 2005 EN61000-6-4/All : 2011
Protection Class	Variable/IP20
Installation Position	Vertical and horizontal installation is available
Product Certifications	CE, UL

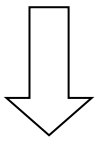
3.2.5. Specification

Items	Specification
Input Specification	
Inputs Per Module	16 Points Universal Type
Indicators	16 Green Input Status LEDs
ON–state Voltage	24Vdc (Min. 15Vdc ~ Max. 32Vdc)
ON-state Current	Max. 3.05mA / point @ 32Vdc
Field Power OFF-state voltage	9.3Vdc @ 25℃
Input Signal Delay	OFF to ON : Max. 0.3ms ON to OFF : Max. 0.3ms
Input Filter	Adjustable, up to 10ms
Nominal Input Impedance	10.2K Ohm Typical
Common Type	16 Points / 2 Common(Universal)
General Specification	
Power Dissipation	Max. 50mA @ 5Vdc
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc Power Dissipation : 0mA @ 24Vdc
Wiring	20Pin Connector Type
Weight	52g
Module Size	12mm x 99mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

3.2.6. 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	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	D7	D6	D5	D4	D3	D2	D1	D0
Byte1	D15	D14	D13	D12	D11	D10	D9	D8

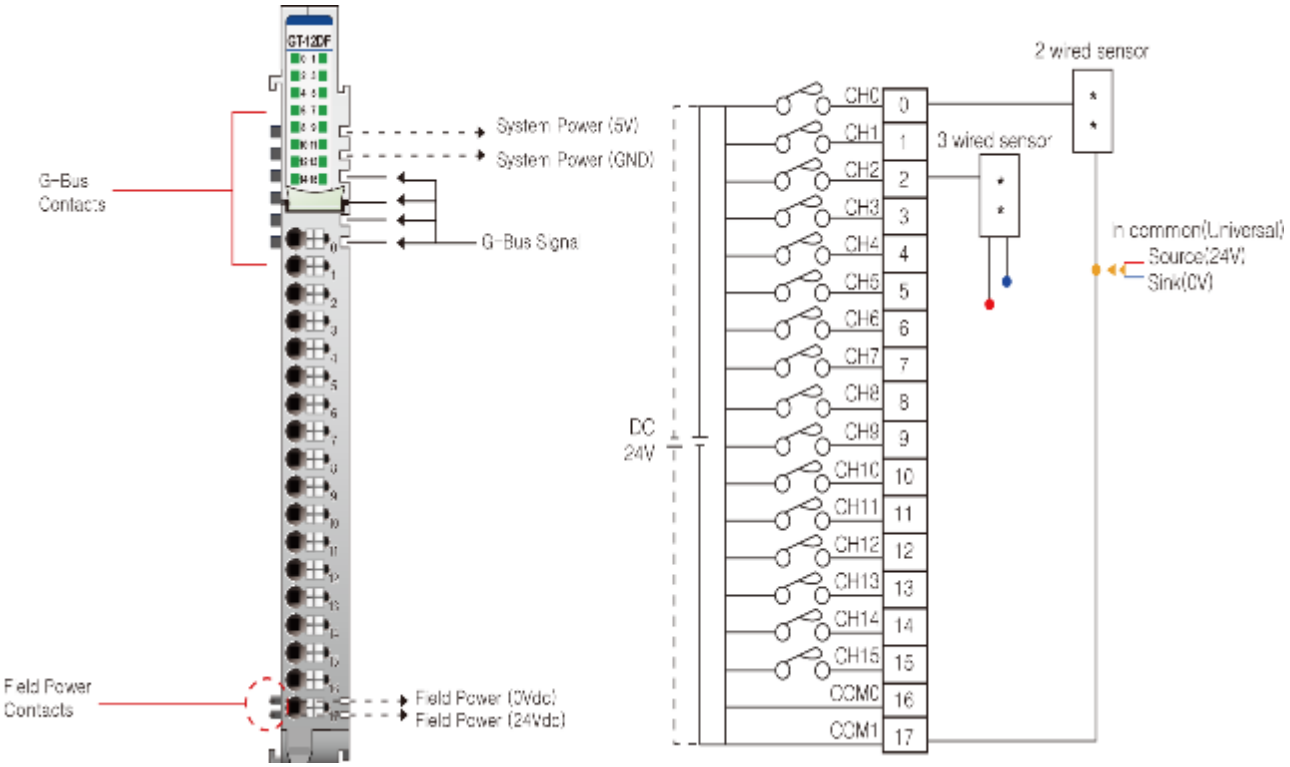
3.2.7. Parameter Data

- **Valid Parameter length : 2 Bytes**
- **Parameter Data**

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Input Filter Value : 0 ~ 10(unit : ms)							
Byte 1	Reserved							

3.3 GT-12DF

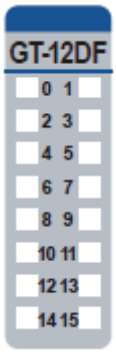
3.3.1 Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel 4	Input Channel 5	5
6	Input Channel 6	Input Channel 7	7
8	Input Channel 8	Input Channel 9	9
10	Input Channel 10	Input Channel 11	11
12	Input Channel 12	Input Channel 13	13
14	Input Channel 14	Input Channel 15	15
16	Common(Sink Oper.0V / Source Oper.24V)	Common(Sink Oper.0V / Source Oper.24V)	17

* Although the image above is GT-(Universal input module), it does not matter to refer to wiring diagram. Refer to the Sink (0V).

3.3.2 LED Indicator



LEDNo.	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
8	INPUT Channel 8	Green
9	INPUT Channel 9	Green
10	INPUT Channel 10	Green
11	INPUT Channel 11	Green
12	INPUT Channel 12	Green
13	INPUT Channel 13	Green
14	INPUT Channel 14	Green
15	INPUT Channel 15	Green

3.3.3 Channel Status LED

Status	LED	To indicate
Not Signal	Off	Normal Operation
On Signal	Green	Normal Operation

3.3.4 Environment Specification

Environmental specification	
Operation Temperature	-40℃ to 70℃
Non-Operating Temperature	-40℃ to 85℃
Relative Humidity	5% to 95% Non-condensing
Operating Altitude	2,000m
Mounting	DIN Rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 Sine Vibration - 5 ~ 25Hz : ±1.6mm - 25 ~ 300Hz : 4g - Sweep Rate : 1 Oct/min, 20 cycles Random Vibration - 10 ~ 40 Hz : 0.0125 g^2/Hz - 40 ~ 100 Hz : 0.0125 → 0.002 g^2/Hz - 100 ~ 500 Hz : 0.002 g^2/Hz - 500 ~ 2000 Hz : 0.002 → 1.3 x 10^{-4} g^2/Hz - Test time : 1hrs for each test
Industrial Emissions	EN 61000-6-4 : 2007 +A1:2011
Industrial Immunity	EN 61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL

3.3.5 Specification

Items	Specification
Input Specification	
Inputs per module	16 Points Universal Digital Type
Indicators	16 Green input state
ON–state Voltage	24V dc nominal @70℃ - Min. 15Vdc to Max. 28.8Vdc @60℃ - Min. 15Vdc to Max. 32Vdc
ON-state current	3.05mA maximum/point@32Vdc
Input Signal Delay	OFF to ON : 0.3ms Max ON to OFF : 0.3ms Max
Nominal Input Impedance	14.9K ohm typical
COMMON Type	16 points / 2 COM (Single Common)
General specification	
Power dissipation	50mA maximum @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Supply voltage : 24Vdc nominal Voltage range : 15~32Vdc Power dissipation: 0mA @ 32Vdc
Wiring	I/O Cable Max. 0.75mm²(AWG 22)
Weight	63g
Module Size	12mm x 109mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

3.3.6 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	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	D7	D6	D5	D4	D3	D2	D1	D0
Byte1	D15	D14	D13	D12	D11	D10	D9	D8

3.3.7. Parameter Data

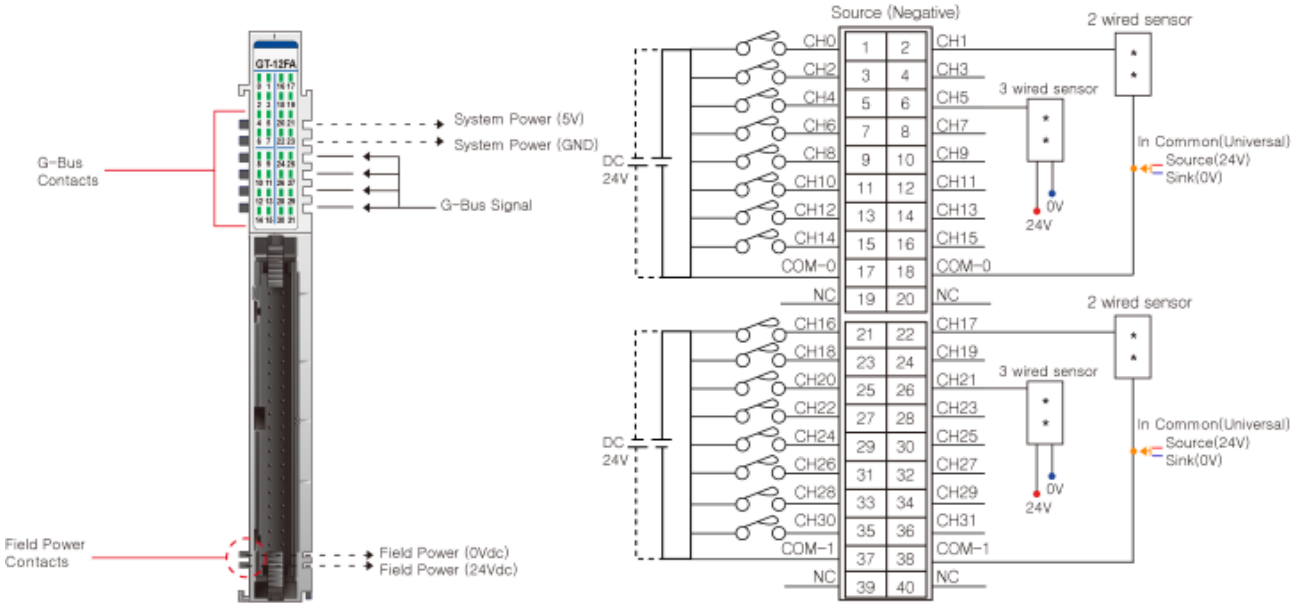
Valid Parameter length: 2 Bytes

Parameter Data

Bit No	**Bit7**	**Bit6**	**Bit5**	**Bit4**	**Bit3**	**Bit2**	**Bit1**	**Bit0**
Byte0	Input Filter value : 0 ~ 10 (unit : ms)							
Byte1	Reserved							

3.4. GT-12FA

3.4.1. Wiring Diagram



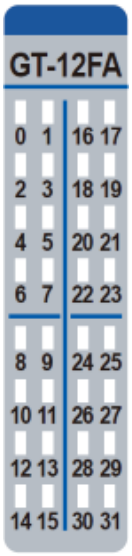
Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel 4	Input Channel 5	5
6	Input Channel 6	Input Channel 7	7
8	Input Channel 8	Input Channel 9	9
10	Input Channel 10	Input Channel 11	11
12	Input Channel 12	Input Channel 13	13
14	Input Channel 14	Input Channel 15	15
16	Common(Sink Oper.0V / Source Oper.24V)	Common(Sink Oper.0V / Source Oper.24V)	17
18	NC	NC	19
20	Input Channel 16	Input Channel 17	21
22	Input Channel 18	Input Channel 19	23
24	Input Channel 20	Input Channel 21	25
26	Input Channel 22	Input Channel 23	27
28	Input Channel 24	Input Channel 25	29

30	Input Channel 26	Input Channel 27	21
32	Input Channel 28	Input Channel 29	33
34	Input Channel 30	Input Channel 31	35
36	Common(Sink Oper.0V / Source Oper.24V)	Common(Sink Oper.0V / Source Oper.24V)	37
38	NC	NC	39

*

Although the image above is GT-(Universal input module), it does not matter to refer to wiring diagram. Refer to the Sink (0V).

3.4.2. LED Indicator



LED No.	LED Function / Description	LED Color
0	Input Channel 0	Green
1	Input Channel 1	Green
2	Input Channel 2	Green
…	…	…
31	Input Channel 31	Green

3.4.3. Channel Status LED

Status	LED	To indicate
Off Signal	Off	No Input Signal
On Signal	Green	Normal Operation

3.4.4. Environment Specification

Environmental specification	
Operating Temperature	-40℃~70℃
UL Temperature	-20℃~60℃
Storage Temperature	-40℃~85℃
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 Sine Vibration - 5 ~ 25Hz : 1.6mm - 25 ~ 300Hz : 4g - Sweep Rate : 1 Oct/min, 20 cycles Random Vibration - 10 ~ 40Hz : 0.0125g²/Hz - 40 ~ 100Hz : 0.0125 → 0.002g²/Hz - 100 ~ 500Hz : 0.002g²/Hz - 500 ~ 2000Hz : 0.002 → 1.3 x 10-⁴g²/H - Test time : 1hrs for each test
Industrial Emissions	EN61000-6-4/All : 2011
Industrial Immunity	EN61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available
Product Certifications	CE, UL

3.4.5. Specification

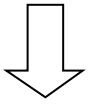
Items	Specification
Input Specification	
Inputs per module	32 Points Universal Digital Type
Indicators	32 Green Input Status LEDs
ON–state Voltage	24Vdc (Min. 15Vdc ~ Max. 32Vdc)
ON-state Current	Max. 3mA / point @ 32Vdc
OFF-state Voltage	9.1V@25℃
Input Signal Delay	OFF to ON : Max. 0.2ms ON to OFF : Max. 0.2ms
Input filter	Adjustable, up to 10ms
Nominal Input Impedance	10.2K Ohm Typical
Common Type	32 Point / External 8COM(Universal)
General Specification	
Power Dissipation	Max. 55mA @ 5Vdc
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Supply Voltage : 24Vdc nominal Voltage Range : 15~32Vdc * Power dissipation : 0mA @ 24Vdc
Wiring	Module connector : HIF3BA-40D-2.54R
Weight	59g
Module Size	12mm x 109mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

* Operating temperature
- 40 ~ 70℃ temperature range specification can be guaranteed under the following conditions.
- Supply voltage : 26.4V below.
- Otherwise, temperature specification can be guranteed with -40 ~ 60℃.

3.4.6. 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
D23	D22	D21	D20	D19	D18	D17	D16
D31	D30	D29	D28	D27	D26	D25	D24



- **Input Image Value**

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	D7	D6	D5	D4	D3	D2	D1	D0
Byte1	D15	D14	D13	D12	D11	D10	D9	D8
Byte2	D23	D22	D21	D20	D19	D18	D17	D16
Byte3	D31	D30	D29	D28	D27	D26	D25	D24

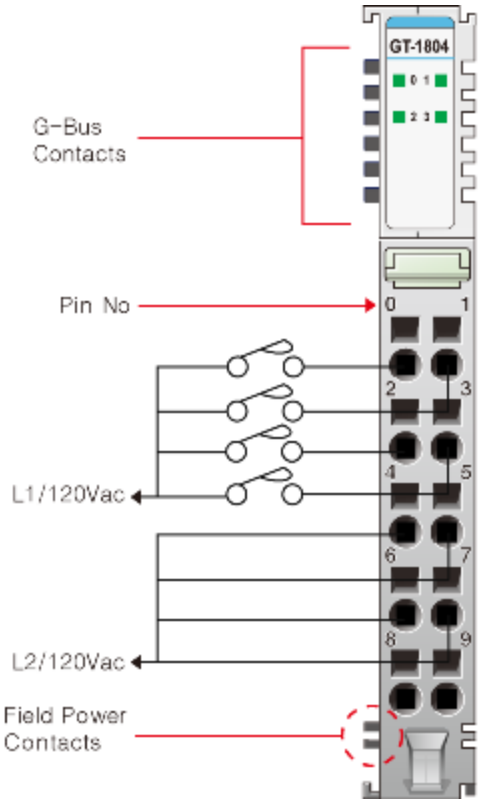
3.4.7. Parameter Data

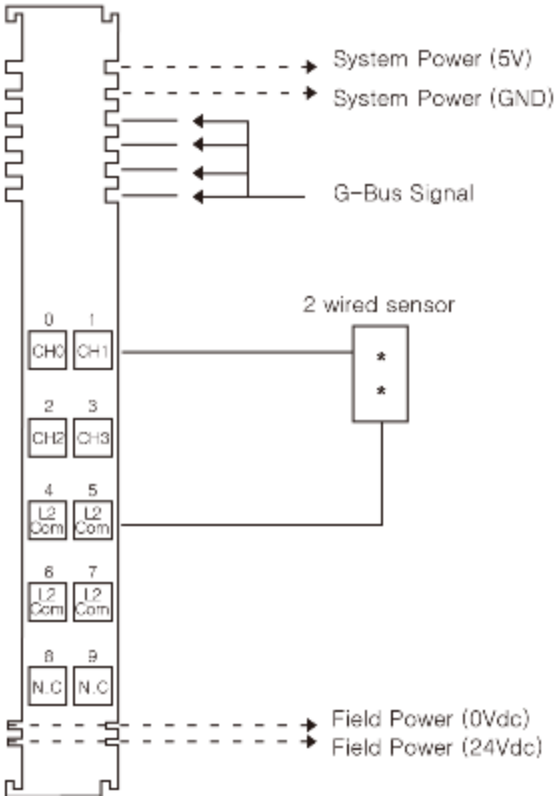
- **Valid Parameter length : 2 Bytes**
- **Parameter Data**

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Input Filter Value : 0 ~ 10(unit : ms)							
Byte 1	Reserved							

3.5. GT-1804

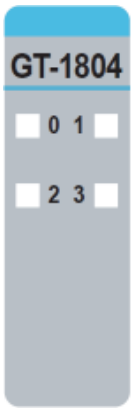
3.5.1. Wiring Diagram





Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel Common (L2/N)	Input Channel Common (L2/N)	5
6	Input Channel Common (L2/N)	Input Channel Common (L2/N)	7
8	N.C	N.C	9

3.5.2. 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

3.5.3. Channel Status LED

Status	LED	To indicate
Off Signal	Off	No Input Signal
On Signal	Green	Normal Operation

3.5.4. Environment Specification

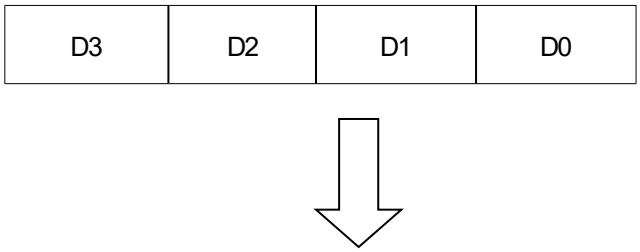
Environmental specification	
Operating Temperature	-40℃~70℃
UL Temperature	-20℃~60℃
Storage Temperature	-40℃~85℃
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 Sine Vibration 5 ~ 25Hz : ±1.6mm 25 ~ 300Hz : 4g Sweep Rate : 1 Oct/min, 20 cycles Random Vibration 10 ~ 40 Hz : 0.0125 g^2/Hz 40 ~ 100 Hz : 0.0125 → 0.002 g^2/Hz 100 ~ 500 Hz : 0.002 g^2/Hz 500 ~ 2000 Hz : 0.002 → 1.3 x 10^{-4} g^2/Hz Test time : 1hrs for each test
Industrial Emissions	EN61000-6-4/All : 2011
Industrial Immunity	EN61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL

3.5.5. Specification

Items	Specification
Input Specification	
Inputs Per Module	4 Points type
Indicators	4 Green input state
ON–state Voltage	120Vac nominal Min. 85Vac to Max. 132Vac
ON-state Current	7.5mA maximum/point@120Vac
Maximum OFF-state Voltage	45Vac maximum
Input Signal Delay	OFF to ON : 30mS @ 120Vac ON to OFF : 130mS @ 120Vac
Nominal Input Impedance	17.5KΩ typical
Frequency Range	60Hz
Common Type	4 Points / 4 Common (L2/N)
General Specification	
Power Dissipation	Max. 30mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler isolation
Field Power	Field Power passes through to the next module. Supply voltage : 24Vdc Voltage range : 15V ~ 32Vdc (AC Power Not used)
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	57g
Module Size	12mm x 99mm x 70mm
Environment Condition	**Refer to 'Environment Specification'**

3.5.6. Mapping Data into the Image Table

- **Input Module Data**

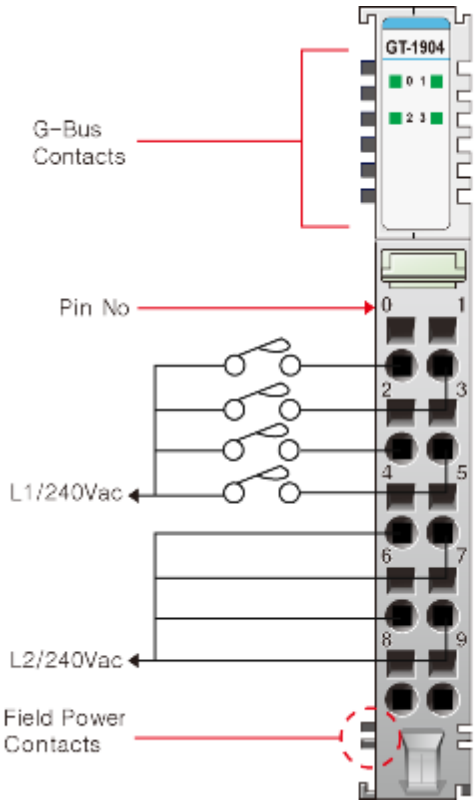


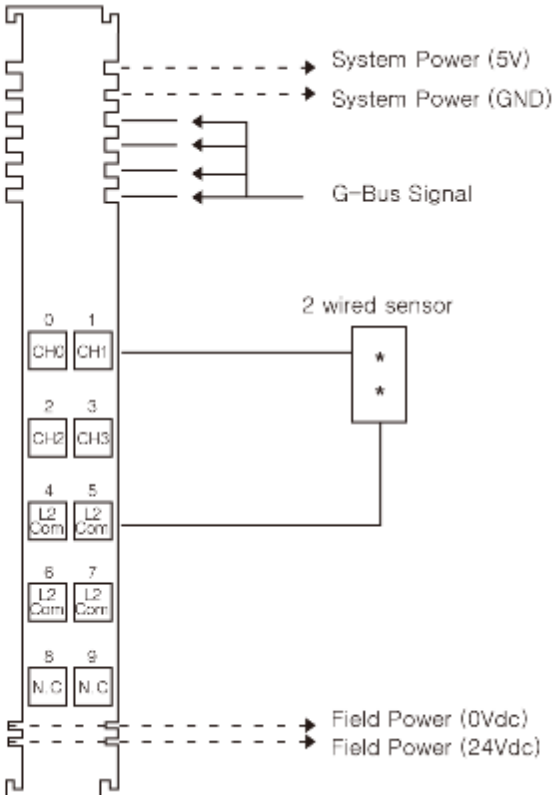
- **Input Image Value**

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Reserved				D3	D2	D1	D0

3.6. GT-1904

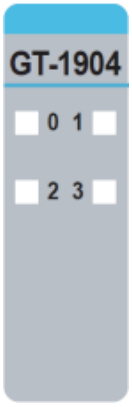
3.6.1. Wiring Diagram





Pin No.	Signal Description	Signal Description	Pin No.
0	Input Channel 0	Input Channel 1	1
2	Input Channel 2	Input Channel 3	3
4	Input Channel Common (L2/N)	Input Channel Common (L2/N)	5
6	Input Channel Common (L2/N)	Input Channel Common (L2/N)	7
8	N.C	N.C	9

3.6.2. 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

3.6.3. Channel Status LED

Status	LED	To indicate
Off Signal	Off	No Input Signal
On Signal	Green	Normal Operation

3.6.4. Environment Specification

Environmental specification	
Operating Temperature	-40℃~60℃
UL Temperature	-20℃~60℃
Storage Temperature	-40℃~85℃
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 Sine Vibration 5 ~ 25Hz : ±1.6mm 25 ~ 300Hz : 4g Sweep Rate : 1 Oct/min, 20 cycles Random Vibration 10 ~ 40 Hz : 0.0125 g^2/Hz 40 ~ 100 Hz : 0.0125 → 0.002 g^2/Hz 100 ~ 500 Hz : 0.002 g^2/Hz 500 ~ 2000 Hz : 0.002 → 1.3 x $10^{-4}g^2$/Hz Test time : 1hrs for each test
Industrial Emissions	EN 61000-6-4/All : 2011
Industrial Immunity	EN 61000-6-2 : 200
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL

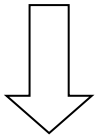
3.6.5. Specification

Items	Specification
Input Specification	
Inputs Per Module	4 Points Sink type
Indicators	4 Green input state
ON–state Voltage	240Vac nominal Min. 170Vac ~ Max. 264Vac
ON-state Current	10mA maximum/point@ 240Vac
Minimum OFF-state Voltage	Max. 115Vac
Input Signal Delay	OFF to ON : 30mS Max @ 240Vac ON to OFF : 140mS Max @ 240Vac
Nominal Input Impedance	26.5 KΩ Typical
Frequency Range	60Hz
Common Type	4 Points / 4 Common (L2/N)
General Specification	
Power Dissipation	Max. 30mA @ 5Vdc
Isolation	I/O to Logic : Photocoupler Isolation
Field Power	Field Power passes through to the next module. Supply Voltage : 24Vdc Voltage Range : 15 ~ 32Vdc (AC Power Not Used)
Wiring	I/O Cable Max. 2.0mm^2(AWG 14)
Weight	57g
Module Size	12mm x 99mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

3.6.6. Mapping Data into the Image Table

- **Input Module Data**

D3	D2	D1	D0



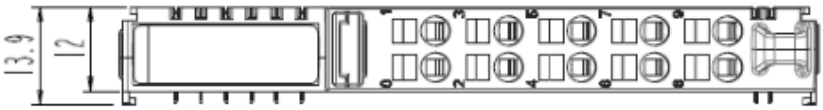
- **Input Image Value**

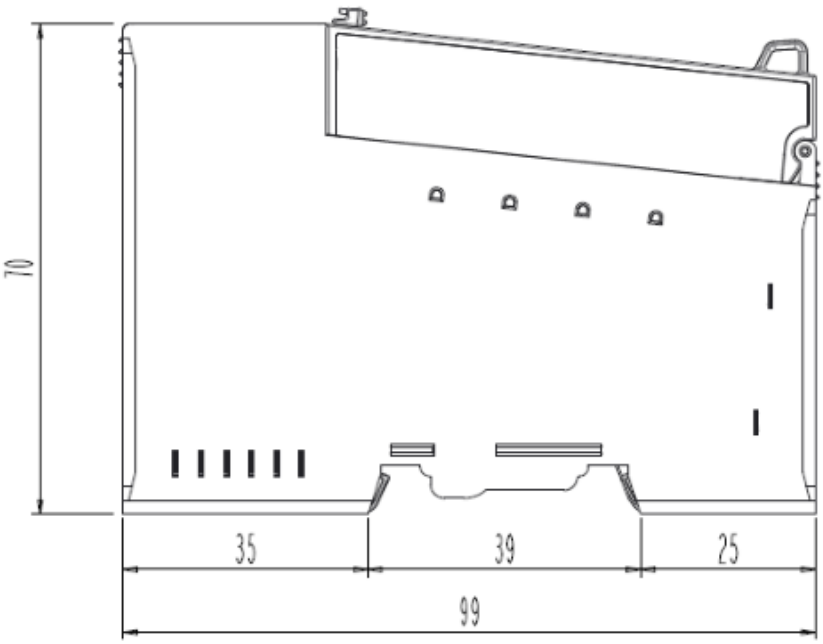
Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Reserved				D3	D2	D1	D0

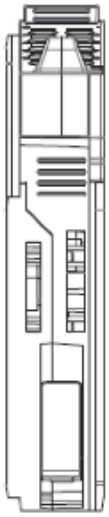
4. Dimension

4.1. GT-1xx4(RTB), GT-1xx8(RTB)

(mm)

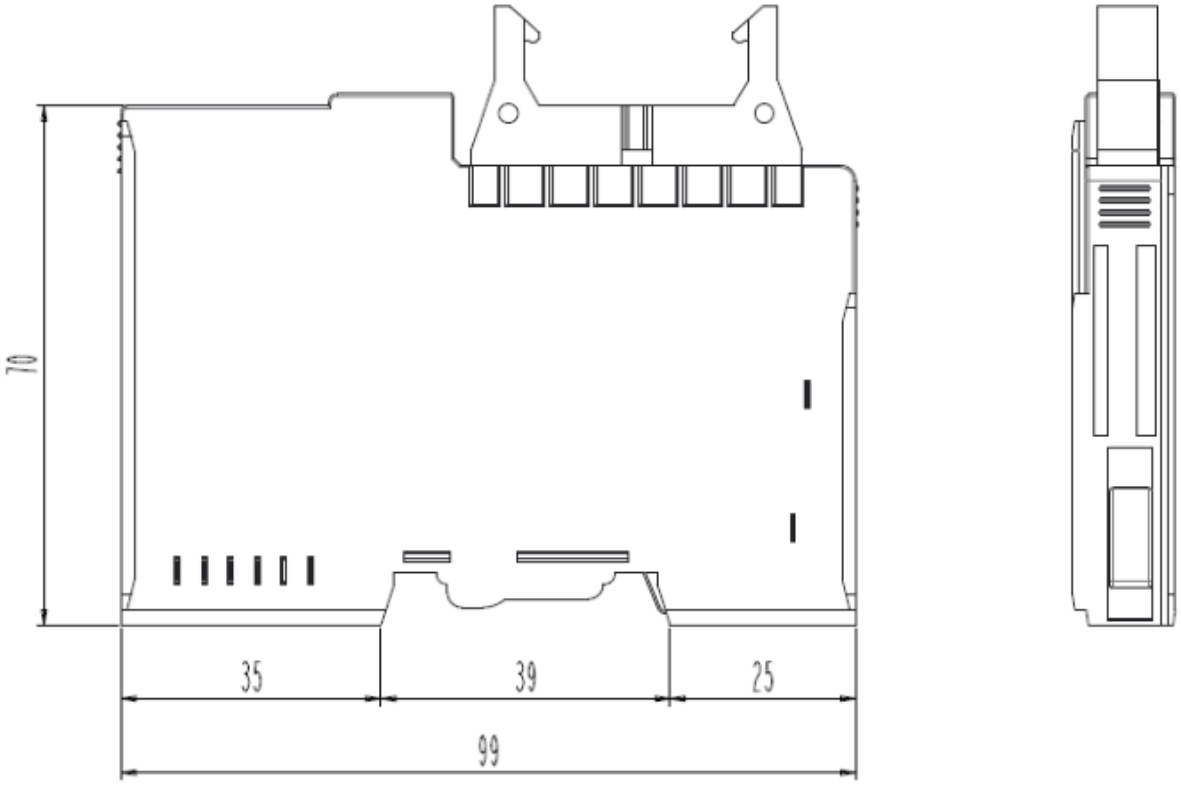






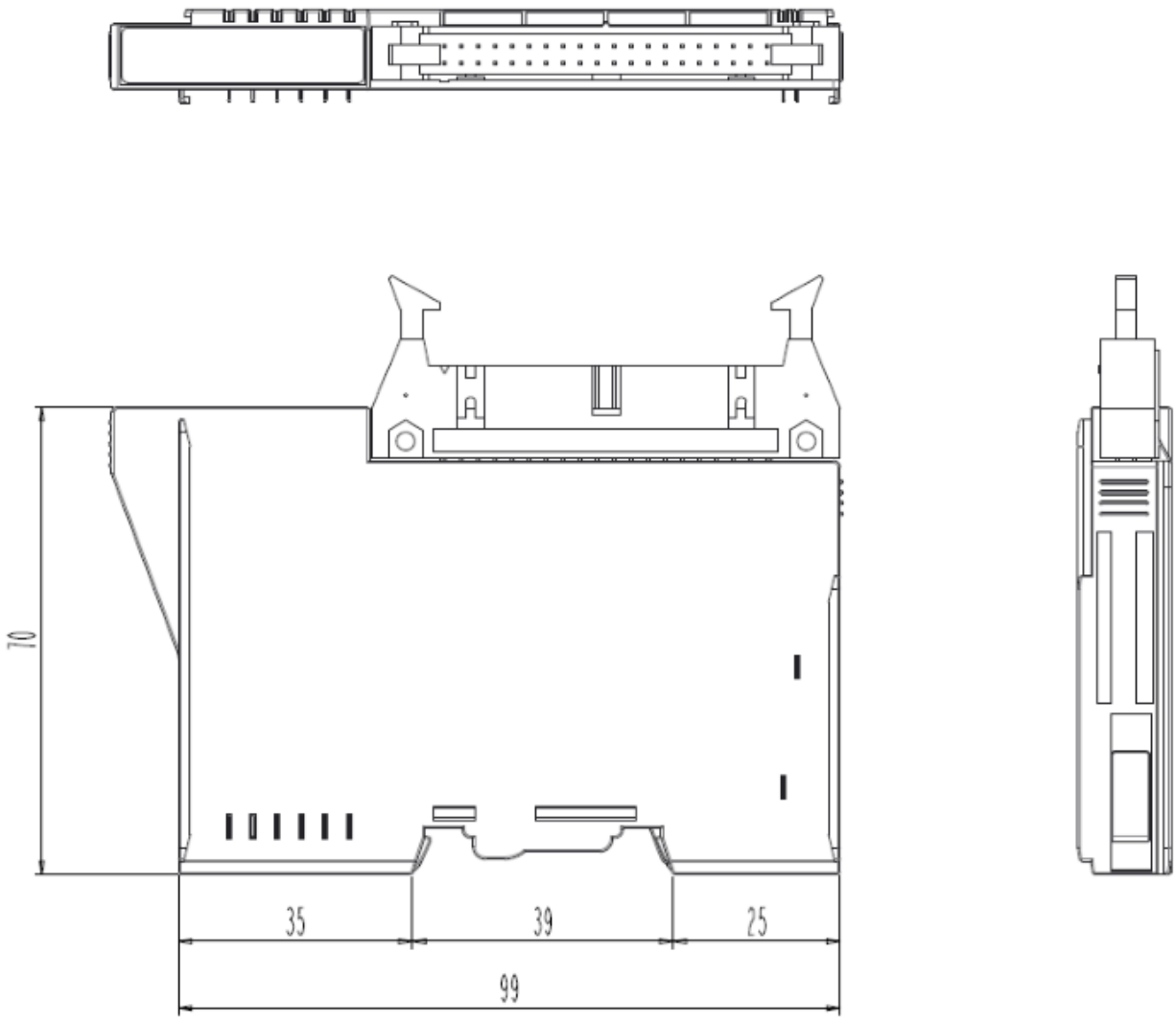
4.2. GT-1xxF(20P Connector)

(mm)



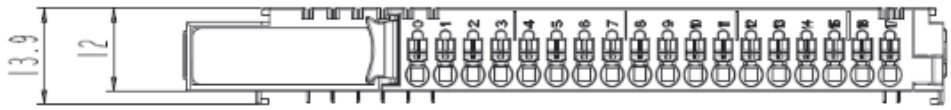
4.3. GT-1xxA (40P Connector)

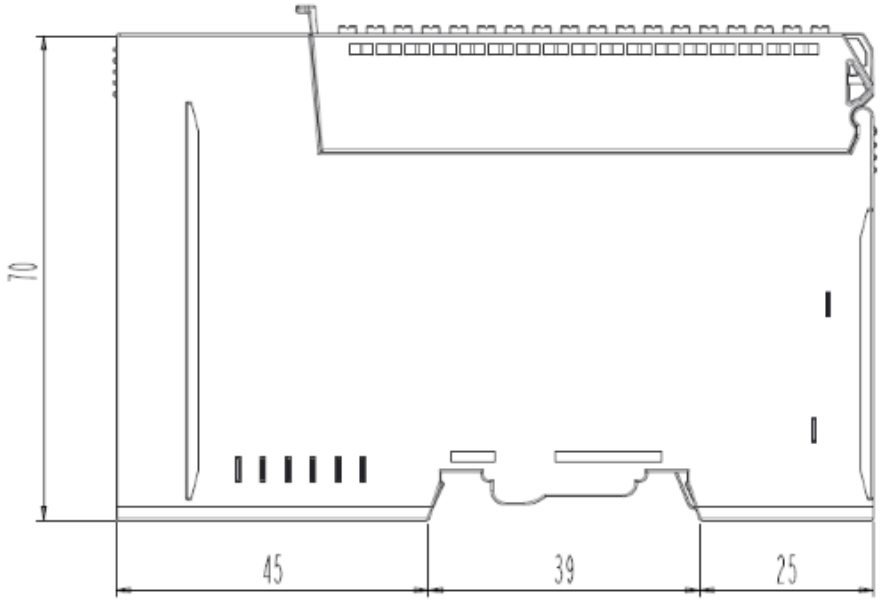
(mm)

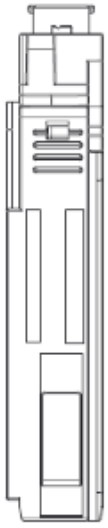


4.4. GT-12DF

(mm)







5. Mounting

Caution!

- **Hot surface!**

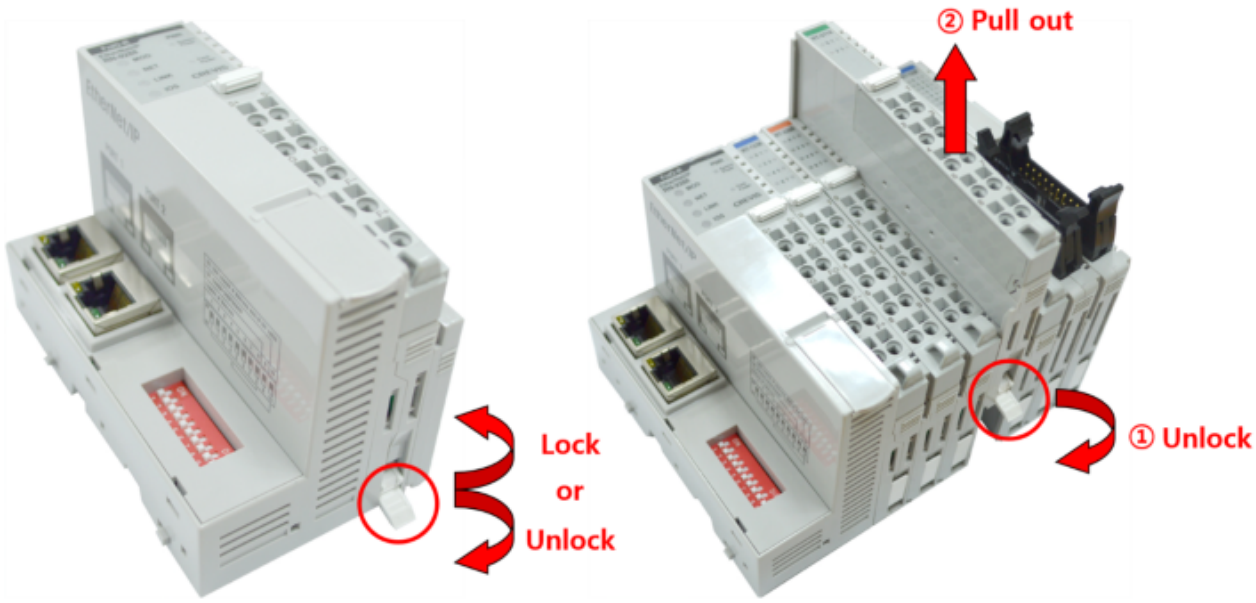
The surface of the housing can become hot during operation. If the device was operated at high ambient temperatures, allow it to be cool before touching it.

Notice!

- **Perform work on devices only if they are de-energized!**

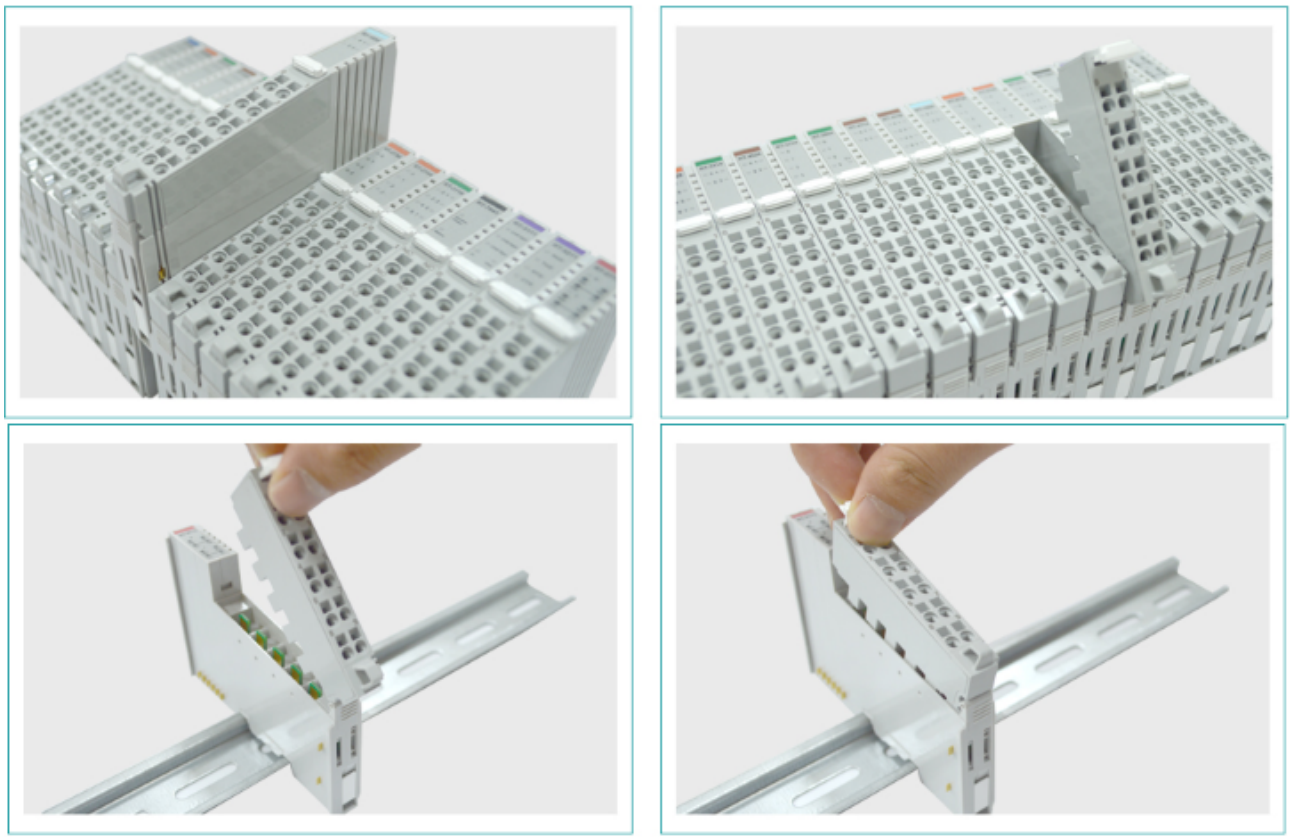
Working on energized devices can damage them. Therefore, turn off the power supply before working on the devices.

5.1. I/O Inserting and Removing Devices



- As above figure in order to safeguard the G-Series module from jamming, it should be fixed onto the DIN rail with locking level. To do so, fold on the upper of the locking lever.
  To pull out the G-Series module, unfold the locking lever as below figure.

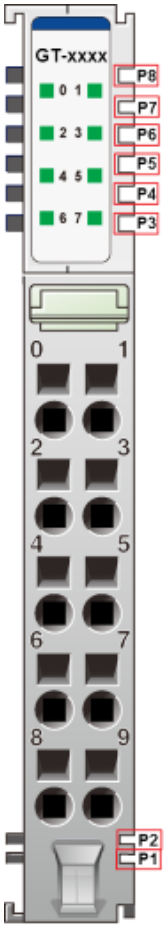
5.2. RTB (Removable Terminal Block)



- Whole terminal block can be combined and removed for the convenience.
- There is a locking switch on the RTB for the easy combination and easy removal.
- Easy combination and easy removal for I/O modules on the din rail through One Touch Locking Switch.

6. G-Bus Pin Description

Communication between the GN series 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 6 data pin and 2 field power pin.



*Please refer to the table below regarding the pin description from P1 to P8.

No.	Description
P1	Field Power (VCC)
P2	Field Power (GND)
P3	G-BUS CLK
P4	G-BUS MISO
P5	G-BUS MOSI
P6	G-BUS Token
P7	System Power (GND)
P8	System Power (VCC)

DANGER	
	Do not touch data and field power pins in order to avoid soiling and damage by ESD noise.

APPENDIX A

A.1 Product List

No.	GT-Number	Description	ID(hex)
Digital Input Module			
1	GT-1238	8 Points, Universal, 24Vdc, 10RTB	1238
2	GT-123F	16 Points, Universal, 24Vdc, 20P connector	123F
3	GT-12DF	16 Points, Universal, 24Vdc, 18RTB	12DF
4	GT-12FA	32 Points, Universal, 24Vdc, 40P connector	12FA
5	GT-1804	4 Points, 120Vac, 10RTB	1804
6	GT-1904	4 Points, 240Vac, 10RTB	1904
Digital Output Module			
7	GT-2318	8 Points, Sink, 24Vdc/0.5A, 10RTB	2318
8	GT-2328	8 Points, Source, 24Vdc/0.5A, 10RTB	2328
9	GT-221F	16 Points, Sink, 24Vdc/0.3A, 20P connector	221F
10	GT-222F	16 Points, Source, 24Vdc/0.3A, 20P connector	222F
11	GT-225F	16 Points, Sink, 24Vdc/0.3A, 18RTB	225F
12	GT-226F	16 Points, Source, 24Vdc/0.3A, 18RTB	226F
13	GT-22BA	32 Points, Sink, 24Vdc/0.3A, 40P connector	22BA
14	GT-22CA	32 Points, Source, 24Vdc/0.3A, 40P connector	22CA
15	GT-2618	8 Points, Sink, 24Vdc/2A, 10RTB	2618
16	GT-2628	8 Points, Source, 24Vdc/2A, 10RTB	2628
17	GT-2734	4 Points, MOS Relay, 240Vdc/ac, 0.5A, 10RTB	2734
18	GT-2744	4 Points, Relay, 24Vdc/2A, 240Vac/2A, 10RTB	2744
19	GT-2764	4 Points, MOS Relay, 24Vdc/ac, 2A, 10RTB	2764
20	GT-2784	4 Points, MOS Relay, 110Vdc/ac, 1A, 10RTB	2784
Analog Input Module			
21	GT-3001	LoadCell (TBD)	3001
22	GT-3114	4 Channels, 0~20, 4~20mA, 12bits, 10RTB	3114
23	GT-3154	4 Channels, 0~20, 4~20mA, 16bits, 10RTB	3154
24	GT-3118	8 Channels, 0~20, 4~20mA, 12bits, 10RTB	3118
25	GT-3158	8 Channels, 0~20, 4~20mA, 16bits, 10RTB	3158
26	GT-311F	16 Channels, 0~20, 4~20mA, 12bits, 20P connector	311F
27	GT-315F	16 Channels, 0~20, 4~20mA, 16bits, 20P connector	315F
28	GT-317F	16 Channels, 0~20, 4~20mA, 12bits, 18RTB	317F
29	GT-319F	16 Channels, 0~20, 4~20mA, 16bits, 18RTB	319F
30	GT-3424	4 Channels, 0~10, 0~5, 1~5Vdc, 12bits, 10RTB	3424
31	GT-3464	4 Channels, 0~10, 0~5, 1~5Vdc, 16bits, 10RTB	3464
32	GT-3428	8 Channels, 0~10, 0~5, 1~5Vdc, 12bits, 10RTB	3428
33	GT-3468	8 Channels, 0~10, 0~5, 1~5Vdc, 16bits, 10RTB	3468
34	GT-342F	16 Channels, 0~10, 0~5, 1~5Vdc, 12bits, 20P connector	342F
35	GT-346F	16 Channels, 0~10, 0~5, 1~5Vdc, 16bits, 20P connector	346F

36	GT-347F	16 Channels, 0~10, 0~5, 1~5Vdc, 12bits, 18RTB	347F
37	GT-349F	16 Channels, 0~10, 0~5, 1~5Vdc, 16bits, 18RTB	349F
38	GT-3704	4 Channels, RTD, 10RTB	3704
39	GT-3708	8 Channels, RTD, 20P connector	3708
40	GT-3804	4 Channels, Thermocouple, 10RTB	3804
41	GT-3808	8 Channels, Thermocouple, 20P connector	3808
42	GT-3901	AC Measurement	3901
43	GT-3914	4 Channels, Differential, 0~20, 4~20, +/-20mA, 12Bits, 10RTB	3914
44	GT-3934	4 Channels, Differential, 0~20, 4~20, +/-20mA, 16Bits, 10RTB	3934
45	GT-3918	8 Channels, Differential, 0~20, 4~20, +/-20mA, 12Bits, 18RTB	3918
46	GT-3938	8 Channels, Differential, 0~20, 4~20, +/-20mA, 16Bits, 18RTB	3938
47	GT-3924	4 Channels, Differential, 0~5, 0~10, +/-5, +/-10Vdc, 12Bits, 10RTB	3924
48	GT-3944	4 Channels, Differential, 0~5, 0~10, +/-5, +/-10Vdc, 16Bits, 10RTB	3944
49	GT-3928	8 Channels, Differential, 0~5, 0~10, +/-5, +/-10Vdc, 12Bits, 18RTB	3928
50	GT-3948	8 Channels, Differential, 0~5, 0~10, +/-5, +/-10Vdc, 16Bits, 18RTB	3948
Analog Output Module			
51	GT-4114	4CH, 0~20mA, 12Bits, 10RTB	4114
52	GT-4154	4CH, 0~20mA, 16Bits, 10RTB	4154
53	GT-4118	8CH, 0~20mA, 12Bits, 10RTB	4118
54	GT-4158	8CH, 0~20mA, 16Bits, 10RTB	4158
55	GT-4424	4CH, 0~10Vdc, 12Bits, 10RTB	4424
56	GT-4464	4CH, 0~10Vdc, 16Bits, 10RTB	4464
57	GT-4428	8CH, 0~10Vdc, 12Bits, 10RTB	4428
58	GT-4468	8CH, 0~10Vdc, 16Bits, 10RTB	4468
59	GT-417F	16CH, 0~20mA, 12Bits, 18RTB	417F
60	GT-419F	16CH, 0~20mA, 16Bits, 18RTB	419F
61	GT-442F	16CH, 0~10Vdc, 12Bits, 20P Connector	442F
62	GT-446F	6CH, 0~10Vdc, 16Bits, 20P Connector	446F
63	GT-447F	16CH, 0~10Vdc, 12Bits, 18RTB	447F
64	GT-449F	16CH, 0~10Vdc, 16Bits, 18RTB	449F
Special Module			
65	GT-5102	2CH, Encoder, Input, 5Vdc, 10RTB	5102
66	GT-5211	1CH, RS 232, RTS/CTS, Full Duplex Type, 10RTB	5211
67	GT-5212	2CH, RS 232, Full Duplex Type, 10RTB	5212
68	GT-5221	1CH, RS 485, Full Duplex Type, 10RTB	5221
69	GT-5231	1CH, RS 485, Half Full Duplex Type, 10RTB	5231
70	GT-5232	2CH, RS 485, Half Full Duplex Type, 10RTB	5232
71	GT-5352	2CH, Synchronous Serial Interface Input, 10RTB	5352
72	GT-5521	1CH, Stepper Module (TBD)	5521
Power Module			
73	GT-7408	Shield Module	7408
74	GT-7508	Common for 0Vdc	7508
75	GT-7511	Power Expansion, In 24Vdc, Out 1A/5Vdc	7511
76	GT-7518	Common for 24Vdc	7518
77	GT-7588	Common for 0Vdc, 24Vdc	7588

78	GT-7641	Field Power, 5/24/48 Vdc, 110/220 Vac	7641

A.2. Glossary

- System Power : The power for starting up CPU.
- Field Power : The power for input and output line.
- Terminator Resistor : Resistor for prevention reflected wave.
- EDS : Electronic Data Sheet.
- Sink : The method of in/output power supply if a device has no power source.
- Source : The method of in/output power supply if a device has the power source.