

Analog Output Module

GT-4xxx User Manual



Version 1.0

2018 CREVIS Co.,Ltd

| DOCUMENT CHANGE SUMMARY | | | | |
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| 1.1 | | Add Product GT-4154, GT-4158, GT-4424, GT-4464, GT-4468, GT-442F | 19/01/16 | JY,Hyun |
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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°C 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

| | |
|--|--|
| <p>DANGER</p>  | <p>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</p> |
| <p>IMPORTANT</p> | <p>Identifies information that is critical for successful application and understanding of the product</p> |
| <p>ATTENTION</p>  | <p>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</p> |

1.1.2. Safety Notes

| | |
|--|--|
| <p>DANGER</p>  | <p>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.</p> |
|--|--|

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)

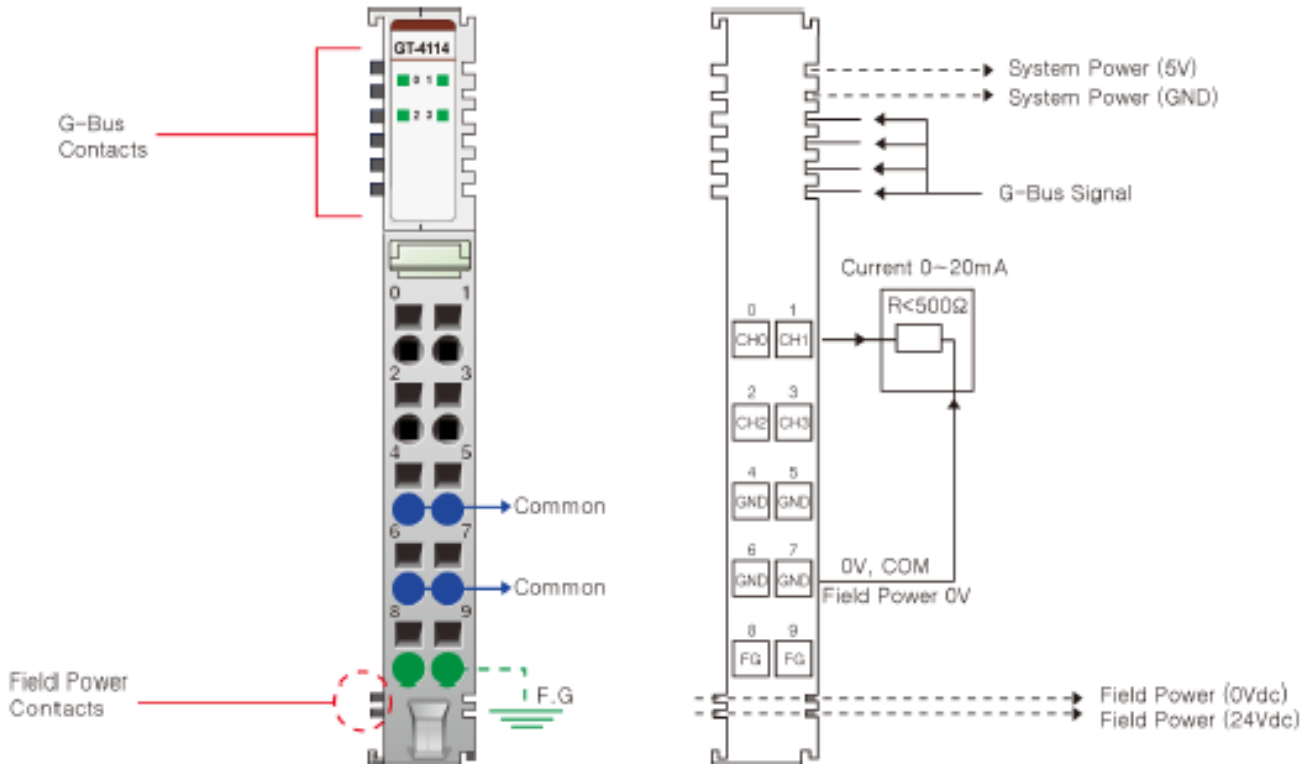
2. Analog Input Module List

| GT-Number | Description | ID | Production Status |
|-----------|--|------|-------------------|
| GT-4114 | Analog Output, 4 Channels, 0~20mA, 12Bits, 10RTB | 4114 | Active |
| GT-4154 | Analog Output, 4 Channels, 0~20mA, 16Bits, 10RTB | 4154 | Active |
| GT-4118 | Analog Output, 4 Channels, 0~20mA, 12Bits, 10RTB | 4118 | Active |
| GT-4458 | Analog Output, 4 Channels, 0~20mA, 16Bits, 10RTB | 4158 | Active |
| GT-4424 | Analog Output, 4 Channels, 0~10Vdc, 12Bits, 10RTB | 4424 | Active |
| GT-4464 | Analog Output, 4 Channels, 0~10Vdc, 16Bits, 10RTB | 4464 | Active |
| GT-4428 | Analog Output, 8 Channels, 0~10Vdc, 12Bits, 10RTB | 4428 | Active |
| GT-4468 | Analog Output, 8 Channels, 0~10Vdc, 16Bits, 10RTB | 4468 | Active |
| GT-442F | Analog Output, 16 Channels, 0~10Vdc, 12Bits, 20P Connector | 442F | Active |
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3. Specification

3.1. GT-4114

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 | Output Channel Common(AGND) | Output Channel Common(AGND) | 5 |
| 6 | Output Channel Common(AGND) | Output Channel Common(AGND) | 7 |
| 8 | Field Ground | Field Ground | 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 |

3.1.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|----------------------------------|----------------------------|
| Normal Operation | Off | No Output Value |
| | Green | Normal Operation |
| Field Power Error | All Channel Repeat Green and Off | Field Power is unconnected |

3.1.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

3.1.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 4 Channels Single Ended, Non-Isolated Between Channels |
| Indicators (Logic side) | 4 Green Output Status LEDs |
| Resolution in Ranges | 12 Bits : 4.88uA/bit |
| Output Range | 0~20mA |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 250 Ω * |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 150usec / All Channel |
| Field Calibration | Not Required |
| Common type | 4 Channels / 4 Common |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 80mA@ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to '1. Environment Specification' |

* Operating temperature

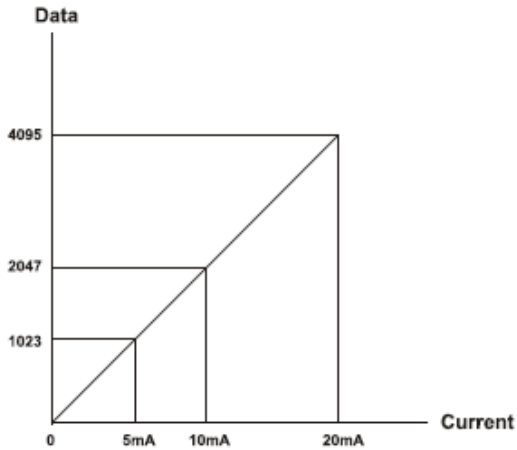
-40~70°C temperature range specification can be guaranteed under the following conditions.

- Load Resistance : Min 100Ω, Max 250Ω
- Otherwise, temperature specification can be guaranteed with -40~60°C

3.1.6. Data Value /Current

- Current Range : 0~20mA

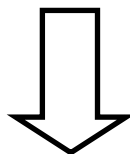
| Current | 0.0mA | 5.0mA | 10.0mA | 20.0mA |
|-----------|-------|-------|--------|--------|
| Data(Hex) | H0000 | H03FF | H07FF | H0FFF |



3.1.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| | |
|--|-------------------|
| | Analog Output Ch0 |
| | Analog Output Ch1 |
| | Analog Output Ch2 |
| | Analog Output Ch3 |

3.1.8. Parameter Data

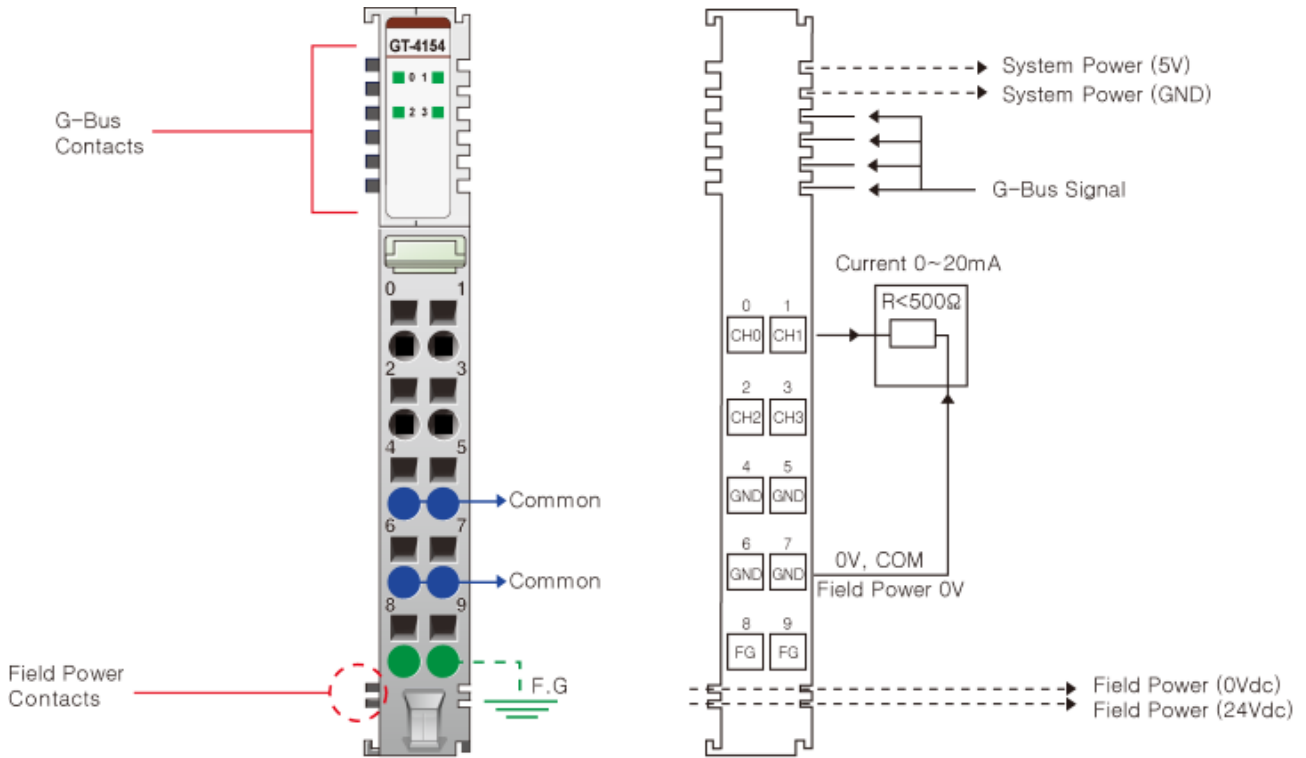
- Valid Parameterlength : 4Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|--------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | Not used | | | | | | | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Not used | | | | Fault Value High Byte | | | |

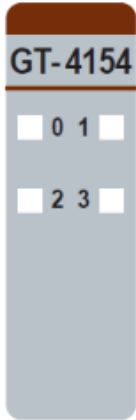
3.2. GT-4154

3.2.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Output Channel 0 | Output Channel 1 | 1 |
| 2 | Output Channel 2 | Output Channel 3 | 3 |
| 4 | Output Channel Common(AGND) | Output Channel Common(AGND) | 5 |
| 6 | Output Channel Common(AGND) | Output Channel Common(AGND) | 7 |
| 8 | Field Ground | Field Ground | 9 |

3.2.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |

3.2.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|----------------------------------|----------------------------|
| Normal Operation | Off | No Output Value |
| | Green | Normal Operation |
| Field Power Error | All Channel Repeat Green and Off | Field Power is unconnected |

3.2.4. Environment Specification

| Environmental Specification | |
|-----------------------------|---|
| Operation Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Cycles Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

3.2.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 4 Channels Single Ended |
| Indicators (Logic side) | 4 Green Output Status LEDs |
| Resolution in Ranges | 16 Bits(Include Sign) 15 bits : 0.61 uA/bit |
| Output Range | 0~20mA |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 250 Ω * |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 150usec / All Channel |
| Field Calibration | Not Required |
| Common type | 4 Channels / 4 Common |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 80mA@ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

* Operating temperature

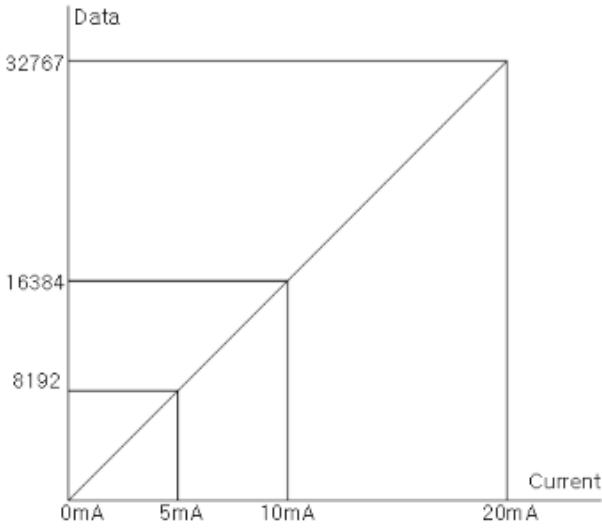
-40~70°C temperature range specification can be guaranteed under the following conditions.

- Load Resistance : Min 100Ω, Max 250Ω
- Otherwise, temperature specification can be guaranteed with -40~60°C

3.2.6. Data Value /Current

- Current Range : 0~20mA

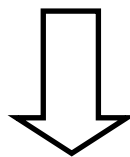
| Current | 0.0mA | 5.0mA | 10.0mA | 20.0mA |
|-----------|-------|-------|--------|--------|
| Data(Hex) | H0000 | H2000 | H4000 | H7FFF |



3.2.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| | |
|--|-------------------|
| | Analog Output Ch0 |
| | Analog Output Ch1 |
| | Analog Output Ch2 |
| | Analog Output Ch3 |

3.2.8. Parameter Data

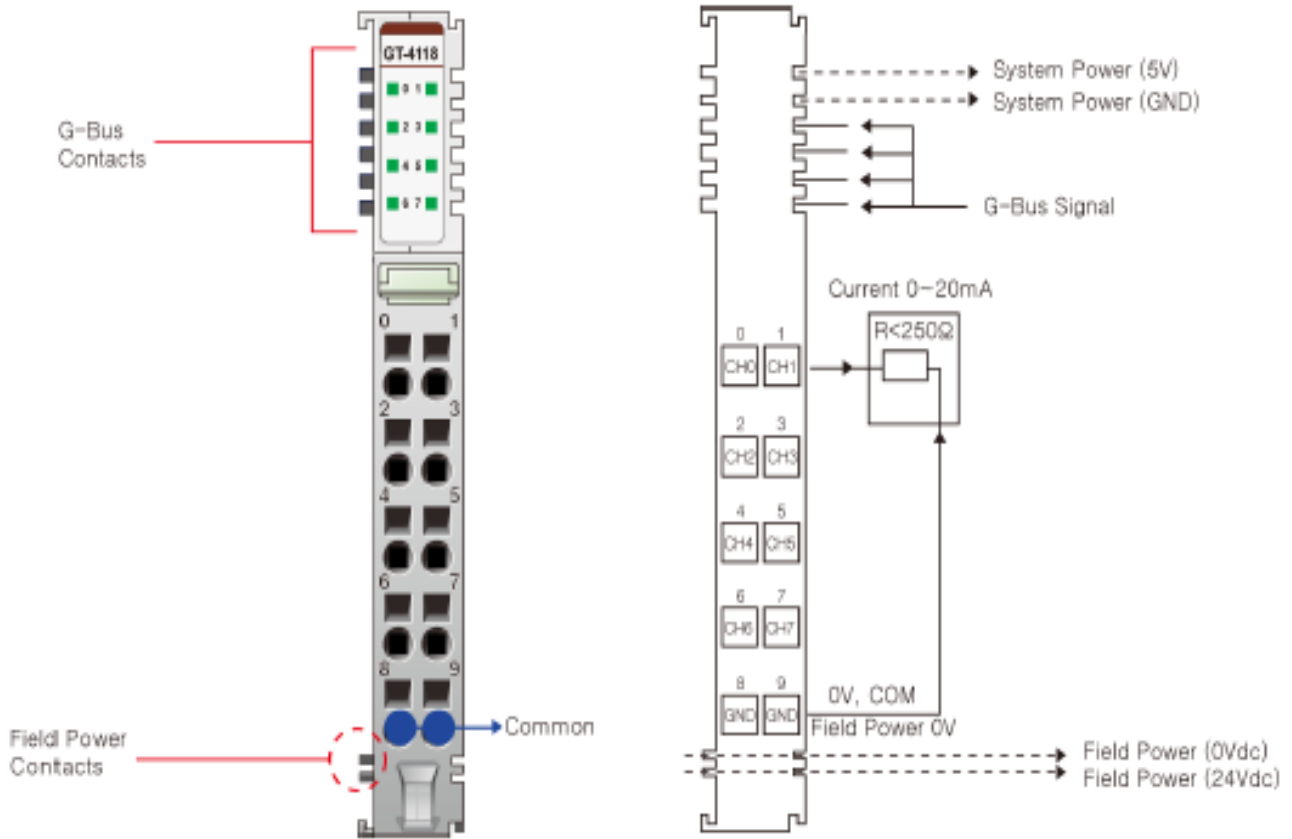
- Valid Parameterlength : 4Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|--------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | Not used | | | | | | | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Fault Value High Byte | | | | | | | |

3.3. GT-4118

3.3.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-------------------------|-------------------------|---------|
| 0 | Analog Output Channel 0 | Analog Output Channel 1 | 1 |
| 2 | Analog Output Channel 2 | Analog Output Channel 3 | 3 |
| 4 | Analog Output Channel 4 | Analog Output Channel 5 | 5 |
| 6 | Analog Output Channel 6 | Analog Output Channel 7 | 7 |
| 8 | Analog Output Channel 8 | Analog Output Channel 9 | 9 |

3.3.2 LED Indicator



| LED No. | LED Function | LED Color |
|---------|------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |
| 4 | Output Channel 4 | Green |
| 5 | Output Channel 5 | Green |
| 6 | Output Channel 6 | Green |
| 7 | Output Channel 7 | Green |

3.3.3 Channel Status LED

| Status | LED | To indicate |
|-------------------|---|-----------------------------|
| Normal Operation | No Output Channel Off Output Channel Green | No Output Output |
| Field Power Error | All Channel Repeat the Green and Off | Field Power is unconnected. |

3.3.4 Environment Specification

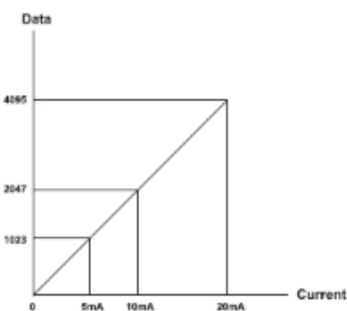
| Environment Specification | |
|-----------------------------------|--|
| Operating Temperature | -40℃ ~ 60℃ |
| UL Temperature | -20℃ ~ 60℃ |
| Storage Temperature | -40℃ ~ 85℃ |
| Relative humidity | 5% ~ 90% non-condensing |
| Mounting | DIN Rail |
| General specification | |
| Shock Operation | 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 : 0.0125g ² /Hz 40 ~ 100Hz : 0.015 → 0.002g ² /Hz 100 ~ 500Hz : 0.002g ² /Hz 500 ~ 2000Hz : 0.002 → 1.3 × 10 ⁻⁴ g ² /Hz Test time : 1 hrs for each test |
| Emc Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/All : 2011 |
| Installation Pos./ Protect. Class | Variable/IP20 |
| Product Certifications | CE, UL |

3.3.5 Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Inputs Per Module | 8 Channels Single Ended, Non-Isolated Between Channels |
| Indicators (Logic side) | 8 Green Output Status LEDs |
| Resolution in Ranges | 12 Bits : 4.88uA/bit |
| Output Range | 0~20mA |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C, 60°C |
| Load Impedance | Min. 100 Ω /Max. 250 Ω |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 250usec / All Channel |
| Field Calibration | Not Required |
| Common type | 2 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 80mA @ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.3.6 Data Value / Current

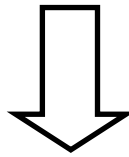
| Current | 0.0mA | 5.0mA | 10.0mA | 20.0mA |
|-----------|-------|-------|--------|--------|
| Date(Hex) | H0000 | H03FF | H07FF | H0FFF |



3.3.7 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 Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |
| Byte 8 | Analog Output Ch4 Low byte | | | | | | | |
| Byte 9 | Analog Output Ch4 High byte | | | | | | | |
| Byte 10 | Analog Output Ch5 Low byte | | | | | | | |
| Byte 11 | Analog Output Ch5 High byte | | | | | | | |
| Byte 12 | Analog Output Ch6 Low byte | | | | | | | |
| Byte 13 | Analog Output Ch6 High byte | | | | | | | |
| Byte 14 | Analog Output Ch7 Low byte | | | | | | | |
| Byte 15 | Analog Output Ch7 High byte | | | | | | | |



- Output Module Data -16byte Output Data

| |
|-------------------|
| Analog Output Ch0 |
| Analog Output Ch1 |
| Analog Output Ch2 |
| Analog Output Ch3 |
| Analog Output Ch4 |
| Analog Output Ch5 |
| Analog Output Ch6 |
| Analog Output Ch7 |

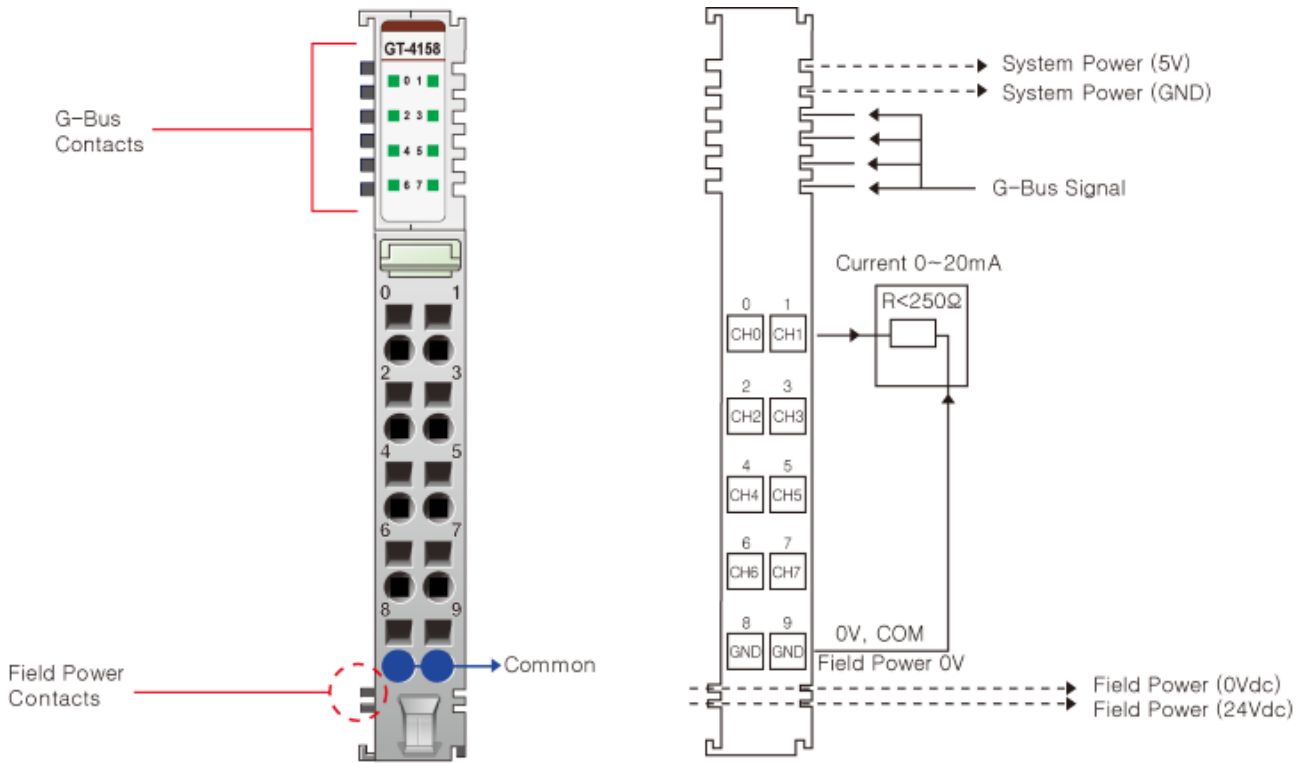
3.3.8 Parameter Data

- Valid Parameter length : 4 Bytes
- Parameter Data

| Bit No | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|--------|--|-------|----------------------------|-------|----------------------------|-------|----------------------------|-------|
| Byte0 | 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 | | | | | | | |
| Byte2 | Fault Calue Low Byte | | | | | | | |
| Byte3 | Not used | | | | Fault Calue High Byte | | | |

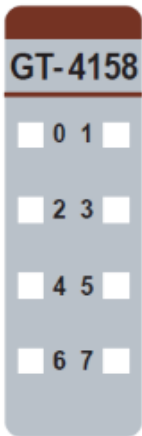
3.4. GT-4158

3.4.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Analog Output Channel 0 | Analog Output Channel 1 | 1 |
| 2 | Analog Output Channel 2 | Analog Output Channel 3 | 3 |
| 4 | Analog Output Channel 4 | Analog Output Channel 5 | 5 |
| 6 | Analog Output Channel 6 | Analog Output Channel 7 | 7 |
| 8 | Output Channel Common(AGND) | Output Channel Common(AGND) | 9 |

3.4.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |
| 4 | Output Channel 4 | Green |
| 5 | Output Channel 5 | Green |
| 6 | Output Channel 6 | Green |
| 7 | Output Channel 7 | Green |

3.4.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|----------------------------------|----------------------------|
| Nomal Operation | No Output Channel Off | No Output |
| | Output Channel Green | Output |
| Field Power Error | All Channel Repeat Green and Off | Field Power is unconnected |

3.4.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 60°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Cycles Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

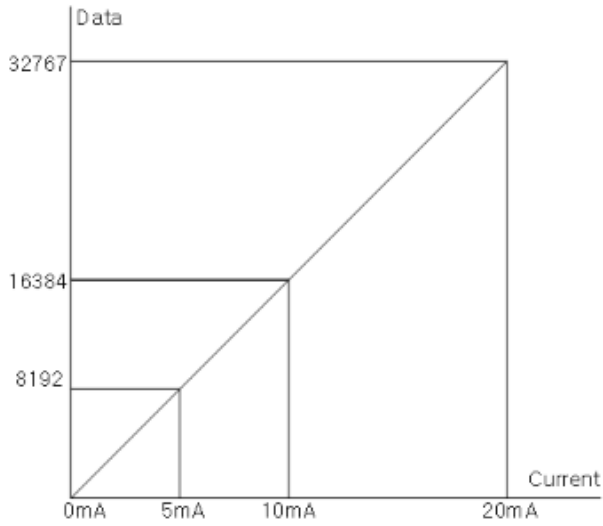
3.4.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 8 Channels Single Ended |
| Indicators (Logic side) | 8 Green Output Status LEDs |
| Resolution in Ranges | 16 Bits(Include Sign) 15 bits : 0.61 uA/bit |
| Output Range | 0~20mA |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,60°C |
| Load Impedance | Min. 100 Ω , Max. 250 Ω |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 250usec / All Channel |
| Field Calibration | Not Required |
| Common type | 2 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 130mA @ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.4.6. Data Value /Current

- Current Range : 0~20mA

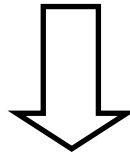
| Current | 0.0mA | 5.0mA | 10.0mA | 20.0mA |
|-----------|-------|-------|--------|--------|
| Data(Hex) | H0000 | H2000 | H4000 | H7FFF |



3.4.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |
| Byte 8 | Analog Output Ch4 Low byte | | | | | | | |
| Byte 9 | Analog Output Ch4 High byte | | | | | | | |
| Byte 10 | Analog Output Ch5 Low byte | | | | | | | |
| Byte 11 | Analog Output Ch5 High byte | | | | | | | |
| Byte 12 | Analog Output Ch6 Low byte | | | | | | | |
| Byte 13 | Analog Output Ch6 High byte | | | | | | | |
| Byte 14 | Analog Output Ch7 Low byte | | | | | | | |
| Byte 15 | Analog Output Ch7 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| |
|-------------------|
| Analog Output Ch0 |
| Analog Output Ch1 |
| Analog Output Ch2 |
| Analog Output Ch3 |
| Analog Output Ch4 |
| Analog Output Ch5 |
| Analog Output Ch6 |
| Analog Output Ch7 |

3.4.8. Parameter Date

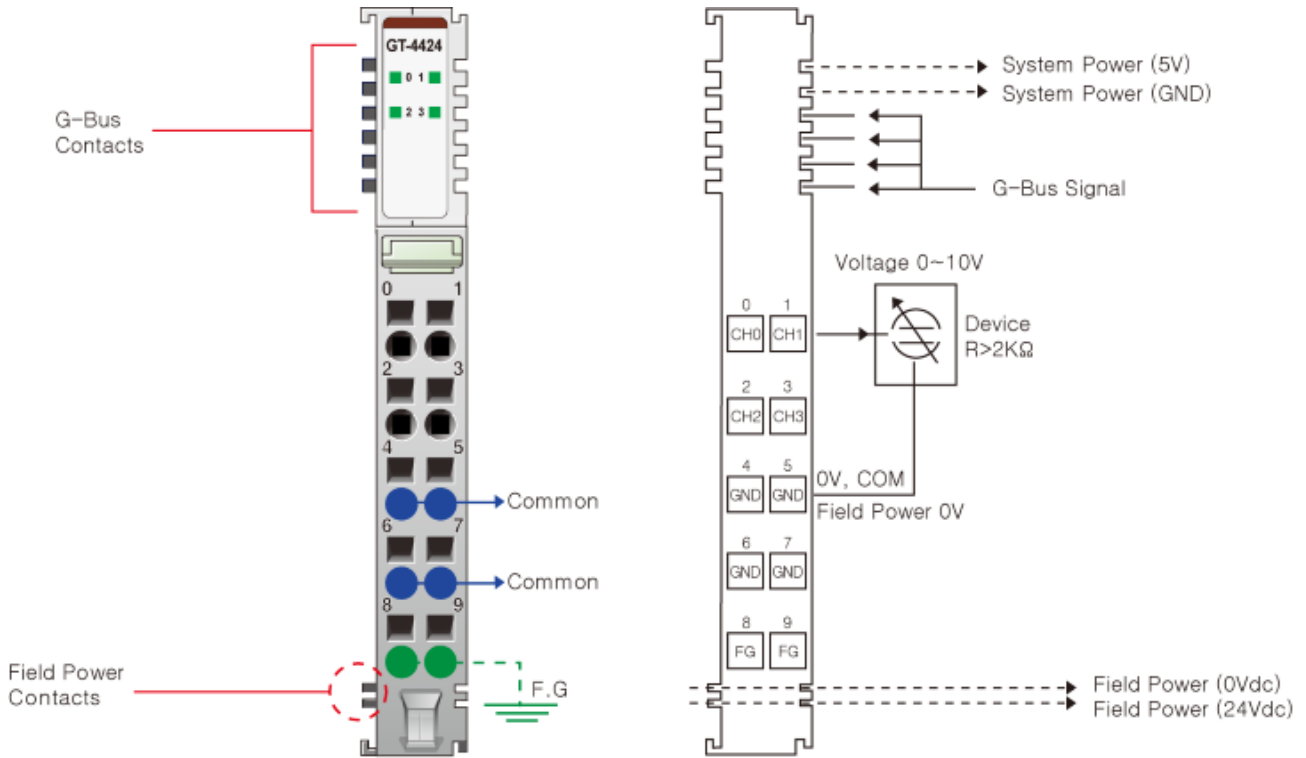
- Valid Parameterlength : 4Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|---------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel 1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | FaultAction for Channel7 | | FaultAction for Channel6 | | FaultAction for Channel5 | | FaultAction for Channel4 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Fault Value High Byte | | | | | | | |

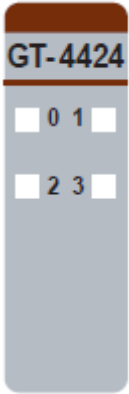
3.5. GT-4424

3.5.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Output Channel 0 | Output Channel 1 | 1 |
| 2 | Output Channel 2 | Output Channel 3 | 3 |
| 4 | Output Channel Common(AGND) | Output Channel Common(AGND) | 5 |
| 6 | Output Channel Common(AGND) | Output Channel Common(AGND) | 7 |
| 8 | Field Ground | Field Ground | 9 |

3.5.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |

3.5.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|--------------------------------------|----------------------------|
| Nomal Operation | No Output Channel Off | No Output |
| | Output Chnnel Green | Output |
| Field Power Error | All Channel Repeat the Green and Off | Field Power is unconnected |

3.5.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

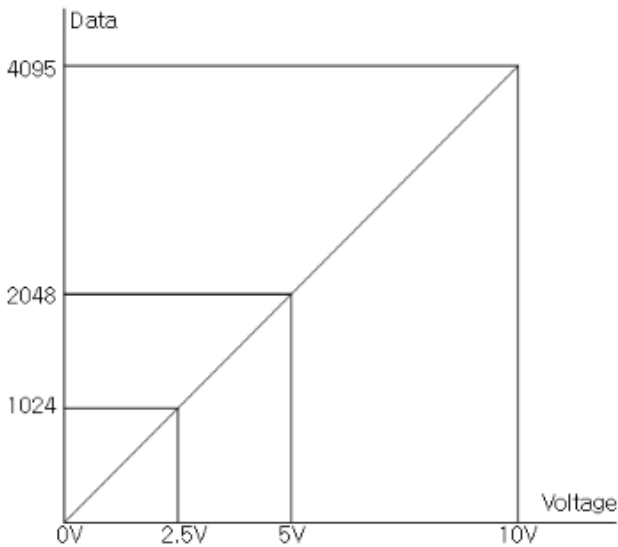
3.5.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 4 Channels Single Ended, Non-Isolated Between Channels |
| Indicators (Logic side) | 4 Green Output Status LEDs |
| Resolution in Ranges | 12 Bits : 2.44mV/bit |
| Output Range | 0~10Vdc |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 2K Ω |
| Conversion Time | Max. 150usec/ All channel |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 150usec / All Channel |
| Field Calibration | Not Required |
| Common type | 4 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 35mA@ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.5.6. Data Value /Voltage

- Voltage Range : 0~10Vdc

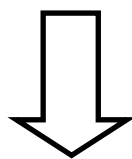
| Voltage | 0.0V | 2.5V | 5.0V | 10.0V |
|-----------|-------|-------|-------|-------|
| Data(Hex) | H0000 | H03FF | H07FF | H0FFF |



3.5.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| | |
|--|-------------------|
| | Analog Output Ch0 |
| | Analog Output Ch1 |
| | Analog Output Ch2 |
| | Analog Output Ch3 |

3.5.8. Parameter Data

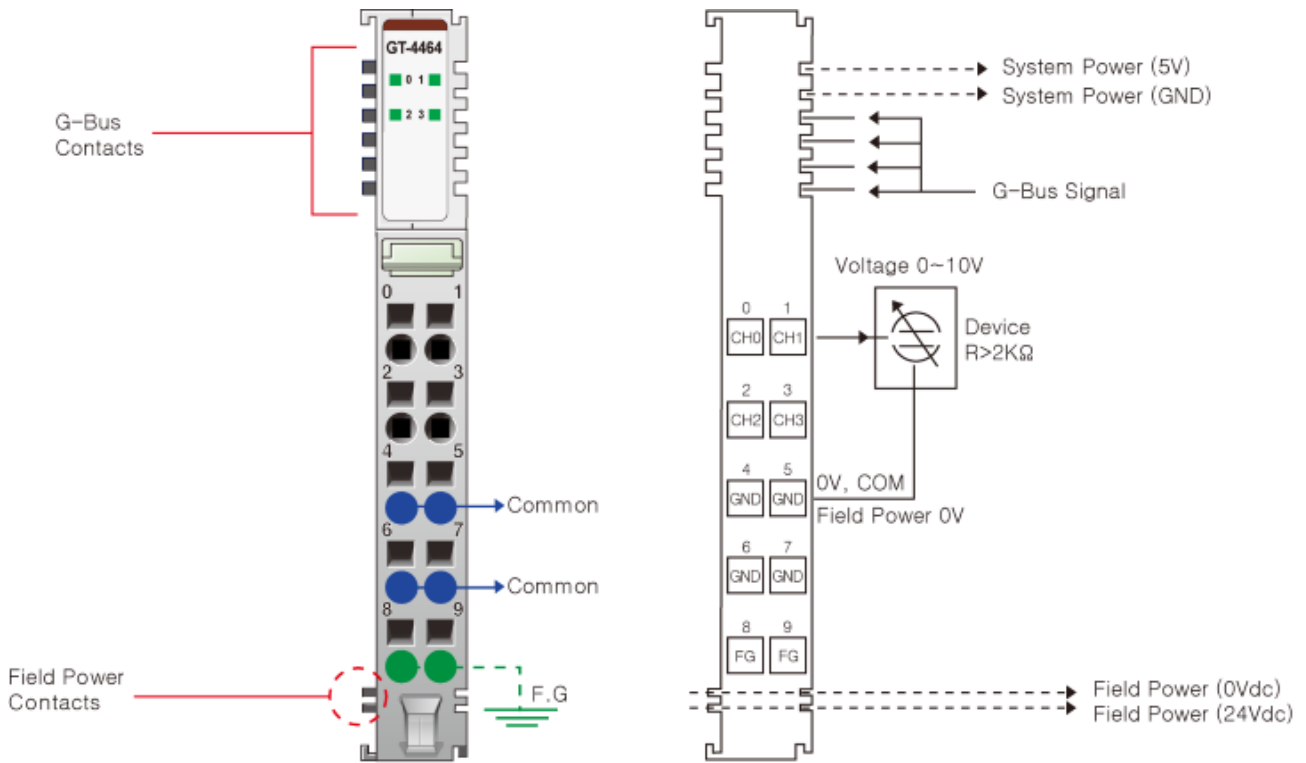
- Valid Parameterlength : 4Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|--------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | Not used | | | | | | | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Not used | | | | Fault Value High Byte | | | |

3.6. GT-4464

3.6.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Output Channel 0 | Output Channel 1 | 1 |
| 2 | Output Channel 2 | Output Channel 3 | 3 |
| 4 | Output Channel Common(AGND) | Output Channel Common(AGND) | 5 |
| 6 | Output Channel Common(AGND) | Output Channel Common(AGND) | 7 |
| 8 | Field Ground | Field Ground | 9 |

3.6.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |

3.6.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|----------------------------------|----------------------------|
| Normal Operation | No Output Channel Off | No Output |
| | Output Channel Green | Output |
| Field Power Error | All Channel Repeat Green and Off | Field Power is unconnected |

3.6.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~ 60°C |
| Storage Temperature | -40°C ~ 85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

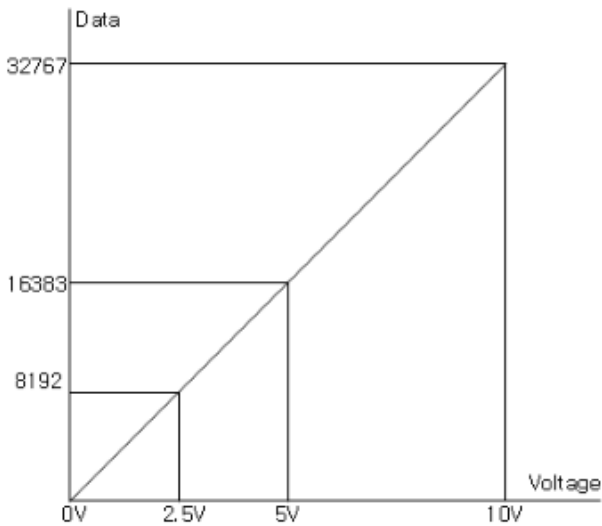
3.6.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 4 Channels Single Ended, Non-Isolated Between Channels |
| Indicators (Logic side) | 4 Green Output Status LEDs |
| Resolution in Ranges | 16 bit(Inlude Sign) 15 bits : 0.31 mV/bit |
| Output Range | 0~10Vdc |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 2KΩ |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 150usec / All Channel |
| Field Calibration | Not Required |
| Common type | 4 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 35mA@ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.6.6. Data Value /Voltage

- Voltatge Range : 0~10Vdc

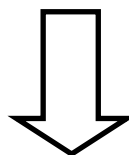
| Voltage | 0.0V | 2.5V | 5.0V | 10.0V |
|-----------|-------|-------|-------|-------|
| Data(Hex) | H0000 | H1FFF | H3FFF | H7FFF |



3.6.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| | |
|--|-------------------|
| | Analog Output Ch0 |
| | Analog Output Ch1 |
| | Analog Output Ch2 |
| | Analog Output Ch3 |

3.6.8. Parameter Data

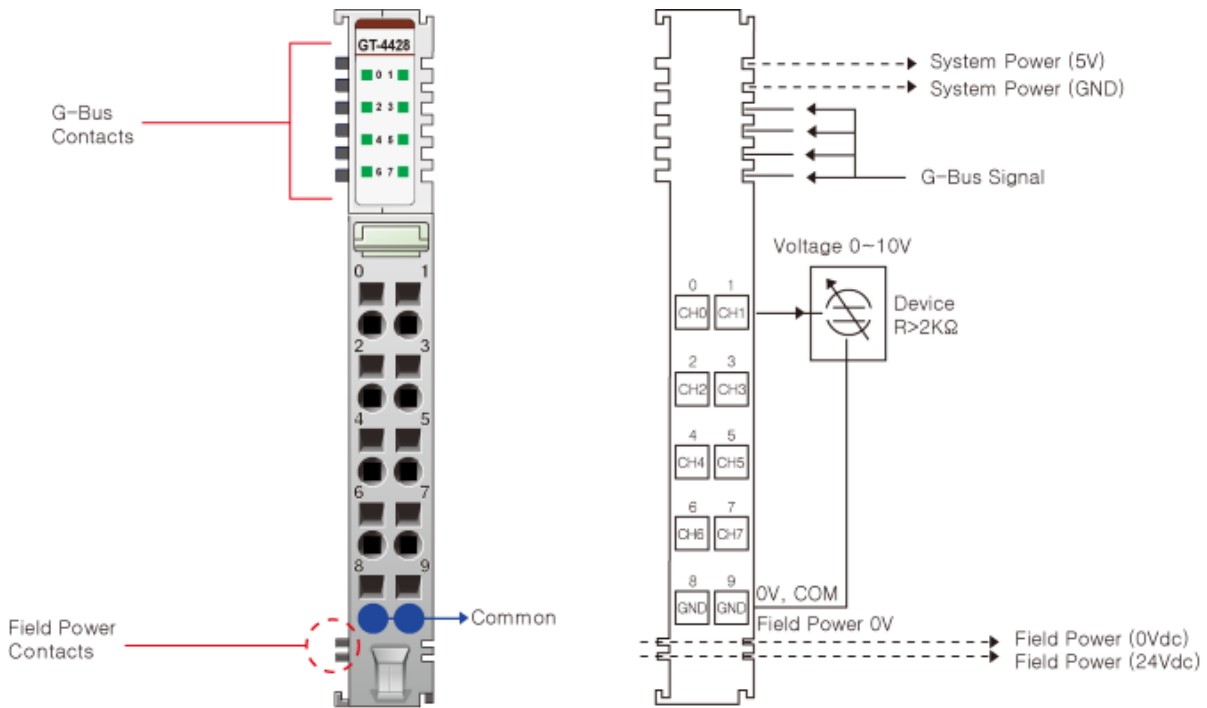
- Valid Parameter length : 4 Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|--------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | Not used | | | | | | | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Fault Value High Byte | | | | | | | |

3.7. GT-4428

3.7.1 Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Analog Output Channel 0 | Analog Output Channel 1 | 1 |
| 2 | Analog Output Channel 2 | Analog Output Channel 3 | 3 |
| 4 | Analog Output Channel 4 | Analog Output Channel 5 | 5 |
| 6 | Analog Output Channel 6 | Analog Output Channel 7 | 7 |
| 8 | Output Channel Common(AGND) | Output Channel Common(AGND) | 9 |

3.7.2 LED Indicator



| LED No. | LED Function/Description | LED Color |
|---------|--------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |
| 4 | Output Channel 4 | Green |
| 5 | Output Channel 5 | Green |
| 6 | Output Channel 6 | Green |
| 7 | Output Channel 7 | Green |

3.7.3 Channel Status LED

| Status | LED | To indicate |
|-------------------|---------------------------------------|----------------------------|
| Normal Operation | No Output Off Output Channel Green | No Output Output |
| Field Power Error | All Channel Repeat the Green and Off | Field Power is unconnected |

3.7.4 Environment Specification

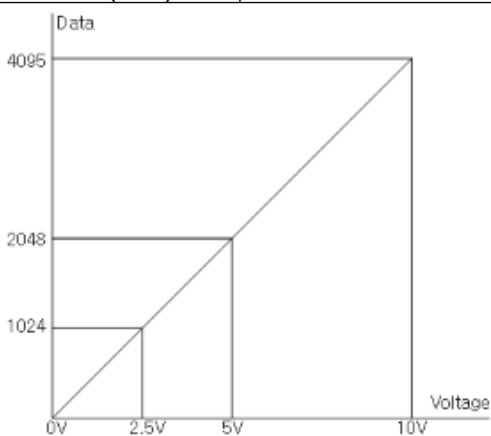
| Environment Specification | |
|-----------------------------------|--|
| Operating Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~ 60°C |
| Storage Temperature | -40°C ~ 85°C |
| Relative humidity | 5% ~ 90% non-condensing |
| Mounting | DIN Rail |
| General specification | |
| Shock Operation | 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 : 0.0125g ² /Hz 40 ~ 100Hz : 0.015 → 0.002g ² /Hz 100 ~ 500Hz : 0.002g ² /Hz 500 ~ 2000Hz : 0.002 → 1.3 × 10 ⁻⁴ g ² /Hz Test time : 1 hrs for each test |
| Emc Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/All : 2011 |
| Installation Pos./ Protect. Class | Variable/IP20 |
| Product Certifications | CE, UL |

3.7.5 Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Inputs Per Module | 8 Channels Single Ended, Non-Isolated Between Channels |
| Indicators (Logic side) | 8 Green Output Status LEDs |
| Resolution in Ranges | 12 Bits : 4.88uA/bit |
| Output Range | 0~20mA |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C, 60°C |
| Load Impedance | Min. 100 Ω /Max. 250 Ω |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 250usec / All Channel |
| Field Calibration | Not Required |
| Common type | 2 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 80mA @ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.7.6 Data Value / Voltage

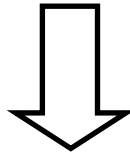
| Voltage | 0.0V | 2.5V | 5.0V | 10.0V |
|-----------|-------|-------|-------|-------|
| Data(Hex) | H0000 | H03FF | H07FF | H0FFF |



3.7.7 Mapping data from the image table

- Output image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |
| Byte 8 | Analog Output Ch4 Low byte | | | | | | | |
| Byte 9 | Analog Output Ch4 High byte | | | | | | | |
| Byte 10 | Analog Output Ch5 Low byte | | | | | | | |
| Byte 11 | Analog Output Ch5 High byte | | | | | | | |
| Byte 12 | Analog Output Ch6 Low byte | | | | | | | |
| Byte 13 | Analog Output Ch6 High byte | | | | | | | |
| Byte 14 | Analog Output Ch7 Low byte | | | | | | | |
| Byte 15 | Analog Output Ch7 High byte | | | | | | | |



- Output Module Data -16byte Output Data

| | |
|--|-------------------|
| | Analog Output Ch0 |
| | Analog Output Ch1 |
| | Analog Output Ch2 |
| | Analog Output Ch3 |
| | Analog Output Ch4 |
| | Analog Output Ch5 |
| | Analog Output Ch6 |
| | Analog Output Ch7 |

3.7.8 Parameter Data

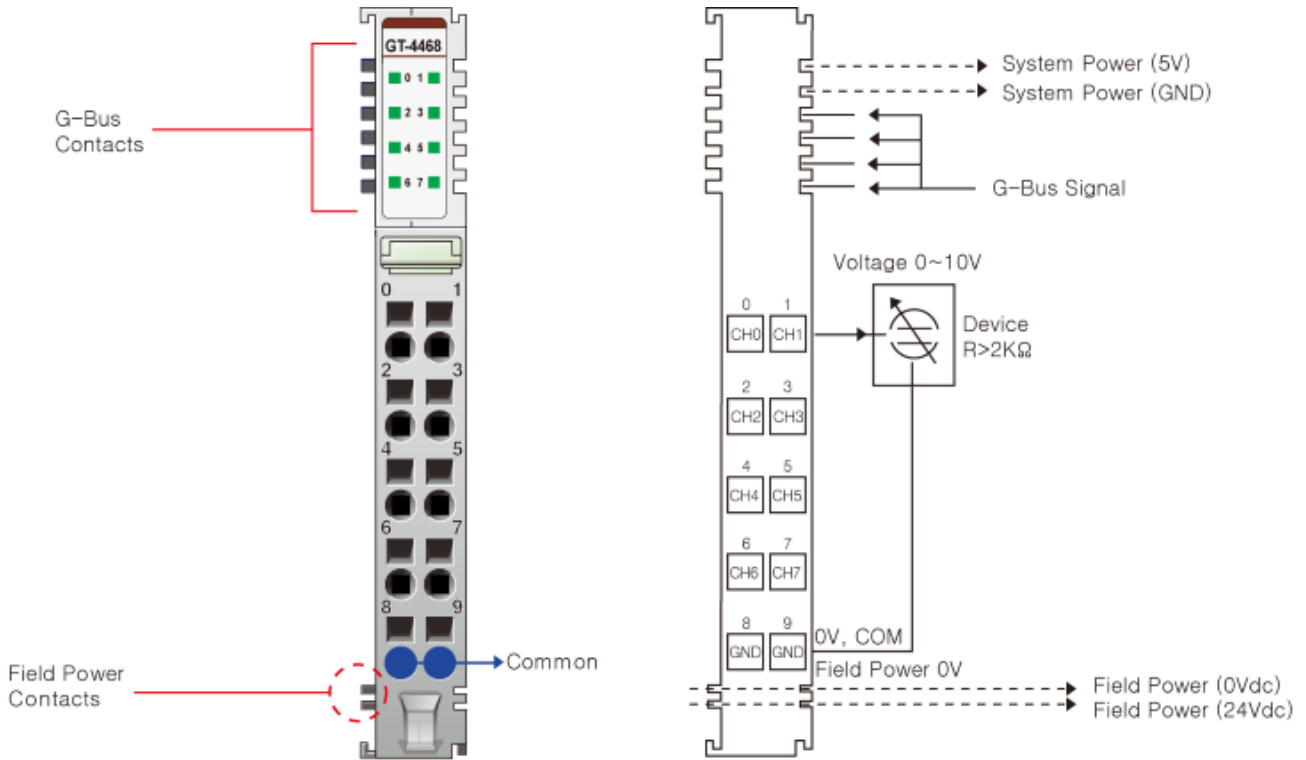
- Valid Parameter length : 4 Bytes

- Parameter Data

| Bit No | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|--------|--|-------|---------------------------|-------|----------------------------|-------|---------------------------|-------|
| Byte0 | Fault Action for channel3 | | Fault Action for channel2 | | Fault Action for channel 1 | | Fault Action for channel0 | |
| | 00 : Fault Value / 01 : Hold last state / 10 : Low Limit / 11 : High Limit | | | | | | | |
| Byte1 | Fault Action for channel7 | | Fault Action for channel6 | | Fault Action for channel5 | | Fault Action for channel4 | |
| | 00 : Fault Value / 01 : Hold last state / 10 : Low Limit / 11 : High Limit | | | | | | | |
| Byte2 | Fault Calue Low Byte | | | | | | | |
| Byte3 | Not used | | | | Fault Calue High Byte | | | |

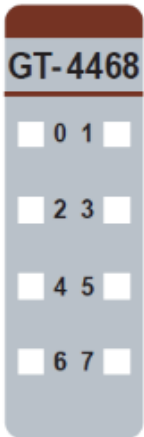
3.8. GT-4468

3.8.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Analog Output Channel 0 | Analog Output Channel 1 | 1 |
| 2 | Analog Output Channel 2 | Analog Output Channel 3 | 3 |
| 4 | Analog Output Channel 4 | Analog Output Channel 5 | 5 |
| 6 | Analog Output Channel 6 | Analog Output Channel 7 | 7 |
| 8 | Output Channel Common(AGND) | Output Channel Common(AGND) | 9 |

3.8.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Output Channel 0 | Green |
| 1 | Output Channel 1 | Green |
| 2 | Output Channel 2 | Green |
| 3 | Output Channel 3 | Green |
| 4 | Output Channel 4 | Green |
| 5 | Output Channel 5 | Green |
| 6 | Output Channel 6 | Green |
| 7 | Output Channel 7 | Green |

3.8.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|--------------------------------------|----------------------------|
| Nomal Operation | No Output Channle Off | No Output |
| | Output Channle Green | Output |
| Field Power Error | All Channel Repeat the Green and Off | Field Power is unconnected |

3.8.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 70°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Cerifications | CE, UL |

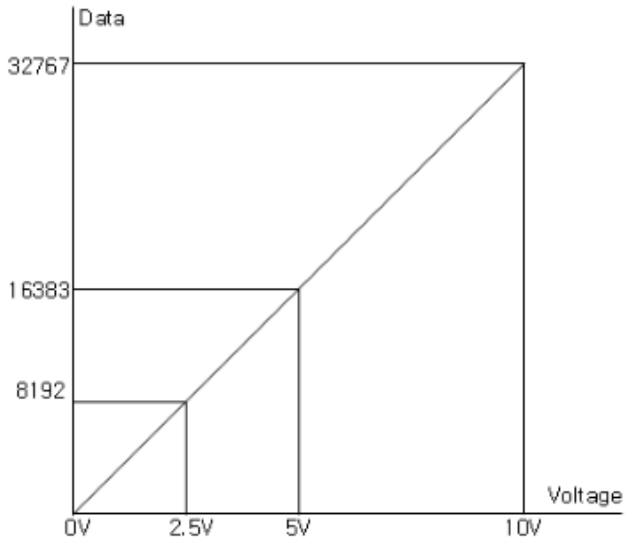
3.8.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 8 Channels Single ended |
| Indicators (Logic side) | 8 Green Output Status LEDs |
| Resolution in Ranges | 16 bit(Inlude Sign) 15 bits : 0.31 mV/bit |
| Output Range | 0~10Vdc |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ambient ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 2KΩ |
| Diagnostic | Field Power Off : LED Blinking Field Power On : No Output LED Off Field Power On : Output LED ON |
| Conversion Time | Max. 250usec / All Channel |
| Field Calibration | Not Required |
| Common type | 2 Common, Field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 70mA@ 24Vdc |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.8.6. Data Value /Voltage

- Voltage Range : 0~10Vdc

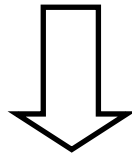
| Voltage | 0.0V | 2.5V | 5.0V | 10.0V |
|-----------|-------|-------|-------|-------|
| Data(Hex) | H0000 | H1FFF | H3FFF | H7FFF |



3.8.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |
| Byte 8 | Analog Output Ch4 Low byte | | | | | | | |
| Byte 9 | Analog Output Ch4 High byte | | | | | | | |
| Byte 10 | Analog Output Ch5 Low byte | | | | | | | |
| Byte 11 | Analog Output Ch5 High byte | | | | | | | |
| Byte 12 | Analog Output Ch6 Low byte | | | | | | | |
| Byte 13 | Analog Output Ch6 High byte | | | | | | | |
| Byte 14 | Analog Output Ch7 Low byte | | | | | | | |
| Byte 15 | Analog Output Ch7 High byte | | | | | | | |



- Output Module Data - 8byte Output Data

| |
|--------------------|
| Analog Output Ch0 |
| Analog Output Ch 1 |
| Analog Output Ch2 |
| Analog Output Ch3 |
| Analog Output Ch4 |
| Analog Output Ch5 |
| Analog Output Ch6 |
| Analog Output Ch7 |

3.8.8. Parameter Date

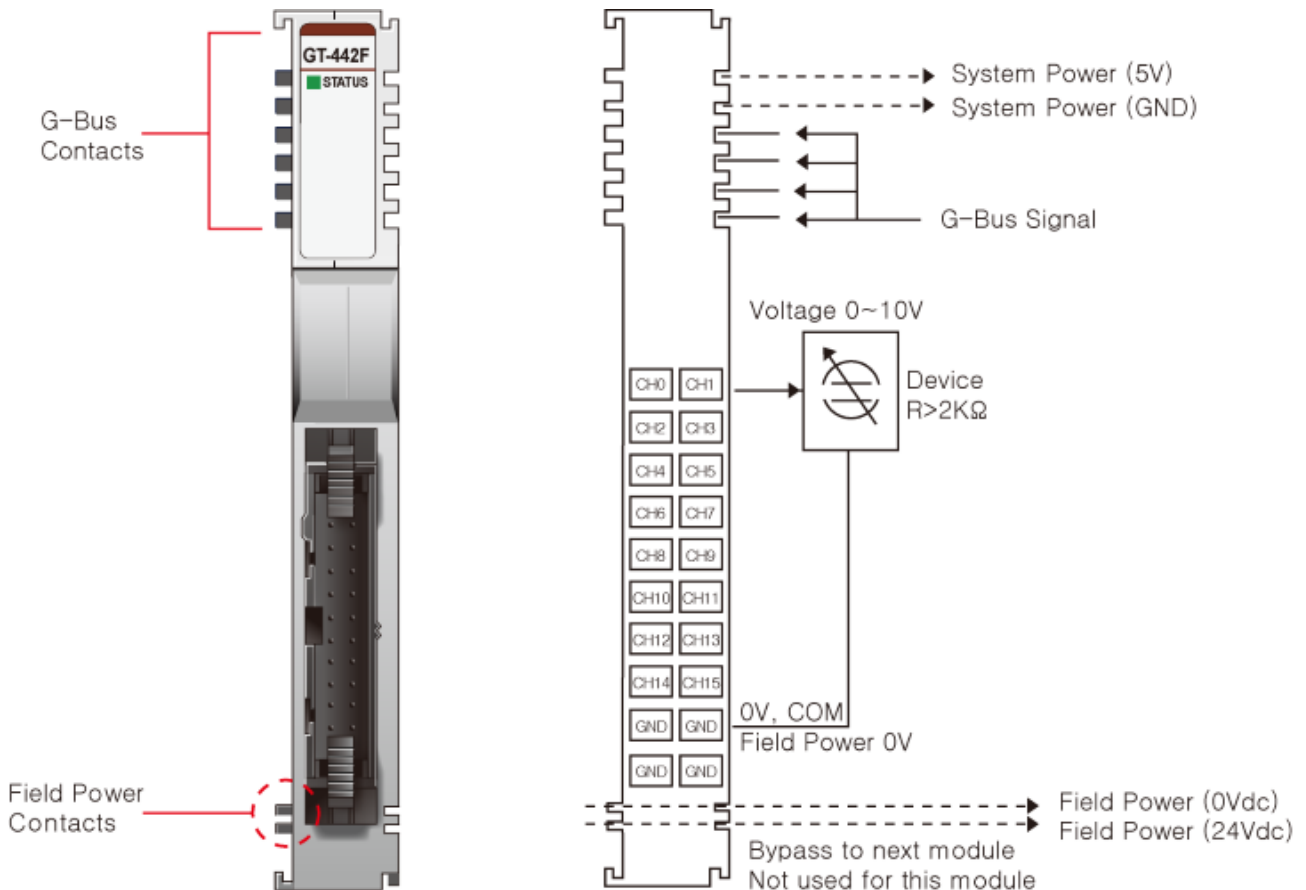
- Valid Parameter length : 4 Bytes

- Parameter Data

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|---|------|--------------------------|------|---------------------------|------|--------------------------|------|
| Byte 0 | FaultAction for Channel3 | | FaultAction for Channel2 | | FaultAction for Channel 1 | | FaultAction for Channel0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit/ 11: High Limit | | | | | | | |
| Byte 1 | FaultAction for Channel7 | | FaultAction for Channel6 | | FaultAction for Channel5 | | FaultAction for Channel4 | |
| Byte 2 | Fault Value Low Byte | | | | | | | |
| Byte 3 | Fault Value High Byte | | | | | | | |

3.9. GT-442F

3.9.1. Wiring Diagram



| Pin No. | Signal Description | Signal Description | Pin No. |
|---------|-----------------------------|-----------------------------|---------|
| 0 | Analog Output Channel 0 | Analog Output Channel 1 | 1 |
| 2 | Analog Output Channel 2 | Analog Output Channel 3 | 3 |
| 4 | Analog Output Channel 4 | Analog Output Channel 5 | 5 |
| 6 | Analog Output Channel 6 | Analog Output Channel 7 | 7 |
| 8 | Analog Output Channel 8 | Analog Output Channel 9 | 9 |
| 10 | Analog Output Channel 10 | Analog Output Channel 11 | 11 |
| 12 | Analog Output Channel 12 | Analog Output Channel 13 | 13 |
| 14 | Analog Output Channel 14 | Analog Output Channel 15 | 15 |
| 16 | Output Channel Common(AGND) | Output Channel Common(AGND) | 17 |
| 18 | Output Channel Common(AGND) | Output Channel Common(AGND) | 19 |

3.9.2. LED Indicator



| LED No. | LED Function / Description | LED Color |
|---------|----------------------------|-----------|
| 0 | Status LED | Green |

3.9.3. Channel Status LED

| Status | LED | To indicate |
|-------------------|----------------------------------|----------------------------|
| G-Bus Status | Off | Disconnection |
| | Green | Connection |
| Field Power Error | All Channel Repeat Green and Off | Field Power is unconnected |

3.9.4. Environment Specification

| Environmental Specification | |
|-----------------------------|--|
| Operation Temperature | -40°C ~ 60°C |
| UL Temperature | -20°C ~60°C |
| Storage Temperature | -40°C ~85°C |
| 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 ~300 Hz : 4g - Sweep Rate : 1 Oct/min, 20 Sweeps Random Vibration -10 ~ 40 Hz : 0.0125g ² /Hz - 40~100 Hz : 0.0125 ⇒ 0.002g ² /Hz - 100 ~ 500 Hz : 0.002g ² /Hz - 500 ~ 2000 Hz : 0.002 ⇒ 1.3 × 10 ⁻⁴ g ² /Hz - Test Time : 1hrs for each test |
| EMC Resistance Burst/ESD | EN 61000-6-2 : 2005 EN 61000-6-4/ All : 2011 |
| Protection Class | Variable/IP20 |
| Installation Position | Vertical and horizontal installation is available |
| Product Certifications | CE, UL |

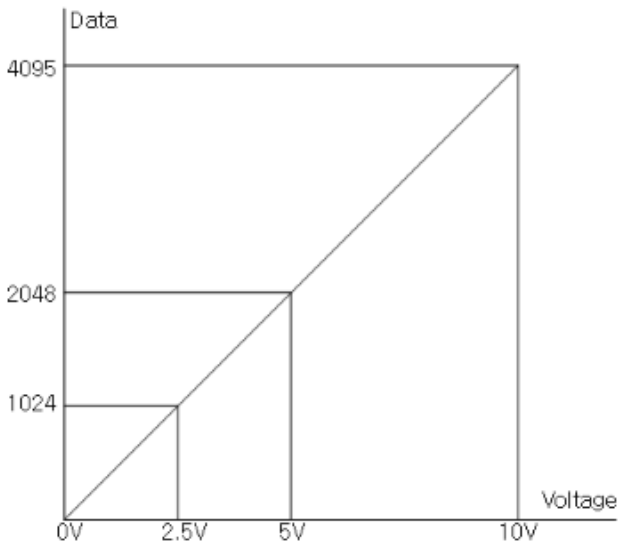
3.9.5. Specification

| Items | Specification |
|------------------------------|--|
| Output Specification | |
| Outputs Per Module | 16 Channels Single Ended |
| Indicators (Logic side) | 1 Green G-Bus Status |
| Resolution in Ranges | 12 Bits : 2.44mV/bit |
| Output Range | 0~10Vdc |
| Data Format | 16bits Integer(2's complement) |
| Module Error | ±0.1% Full Scale @25°C ±0.3% Full Scale @ -40°C,70°C |
| Load Impedance | Max. 2KΩ |
| Diagnostic | Diagnostic field Power Off : LED Blinking |
| Conversion Time | All Channel<400us |
| Field Calibration | Not Required |
| Common type | 4 Common, field Power 0V is Common(AGND) |
| General Specification | |
| Power Dissipation | Max. 30mA@5Vdc |
| Isolation | I/O to Logic : Photocoupler Isolation Field Power : Non-Isolation |
| Field Power | Supply Voltage : 24Vdc nominal Voltage Range : 18~32Vdc Power Dissipation : Max. 120mA @ 24Vdc, Load(2K) |
| Wiring | I/O Cable Max. 2.0mm ² (AWG14) |
| Weight | 58g |
| Module Size | 12mm x 99mm x 70mm |
| Environment Condition | Refer to 'Environment Specification' |

3.9.6. Data Value /Voltage

- Voltage Range : 0~10Vdc

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

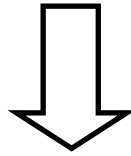


3.9.7. Mapping Data into the Image Table.

-Output Image Value

| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---------|-----------------------------|------|------|------|------|------|------|------|
| Byte 0 | Analog Output Ch0 Low byte | | | | | | | |
| Byte 1 | Analog Output Ch0 High byte | | | | | | | |
| Byte 2 | Analog Output Ch1 Low byte | | | | | | | |
| Byte 3 | Analog Output Ch1 High byte | | | | | | | |
| Byte 4 | Analog Output Ch2 Low byte | | | | | | | |
| Byte 5 | Analog Output Ch2 High byte | | | | | | | |
| Byte 6 | Analog Output Ch3 Low byte | | | | | | | |
| Byte 7 | Analog Output Ch3 High byte | | | | | | | |
| Byte 8 | Analog Output Ch4 Low byte | | | | | | | |
| Byte 9 | Analog Output Ch4 High byte | | | | | | | |
| Byte 10 | Analog Output Ch5 Low byte | | | | | | | |
| Byte 11 | Analog Output Ch5 High byte | | | | | | | |
| Byte 12 | Analog Output Ch6 Low byte | | | | | | | |
| Byte 13 | Analog Output Ch6 High byte | | | | | | | |
| Byte 14 | Analog Output Ch7 Low byte | | | | | | | |

| | |
|---------|------------------------------|
| Byte 15 | Analog Output Ch7 High byte |
| Byte 16 | Analog Output Ch8 Low byte |
| Byte 17 | Analog Output Ch8 High byte |
| Byte 18 | Analog Output Ch9 Low byte |
| Byte 19 | Analog Output Ch9 High byte |
| Byte 20 | Analog Output Ch10 Low byte |
| Byte 21 | Analog Output Ch10 High byte |
| Byte 22 | Analog Output Ch11 Low byte |
| Byte 23 | Analog Output Ch11 High byte |
| Byte 24 | Analog Output Ch12 Low byte |
| Byte 25 | Analog Output Ch12 High byte |
| Byte 26 | Analog Output Ch13 Low byte |
| Byte 27 | Analog Output Ch13 High byte |
| Byte 28 | Analog Output Ch14 Low byte |
| Byte 29 | Analog Output Ch14 High byte |
| Byte 30 | Analog Output Ch15 Low byte |
| Byte 31 | Analog Output Ch15 High byte |



- Output Module Data - 8byte Output Data

| |
|--------------------|
| Analog Output Ch0 |
| Analog Output Ch1 |
| Analog Output Ch2 |
| Analog Output Ch3 |
| Analog Output Ch4 |
| Analog Output Ch5 |
| Analog Output Ch6 |
| Analog Output Ch7 |
| Analog Output Ch8 |
| Analog Output Ch9 |
| Analog Output Ch10 |
| Analog Output Ch11 |
| Analog Output Ch12 |
| Analog Output Ch13 |
| Analog Output Ch14 |
| Analog Output Ch15 |

3.9.8. Parameter Date

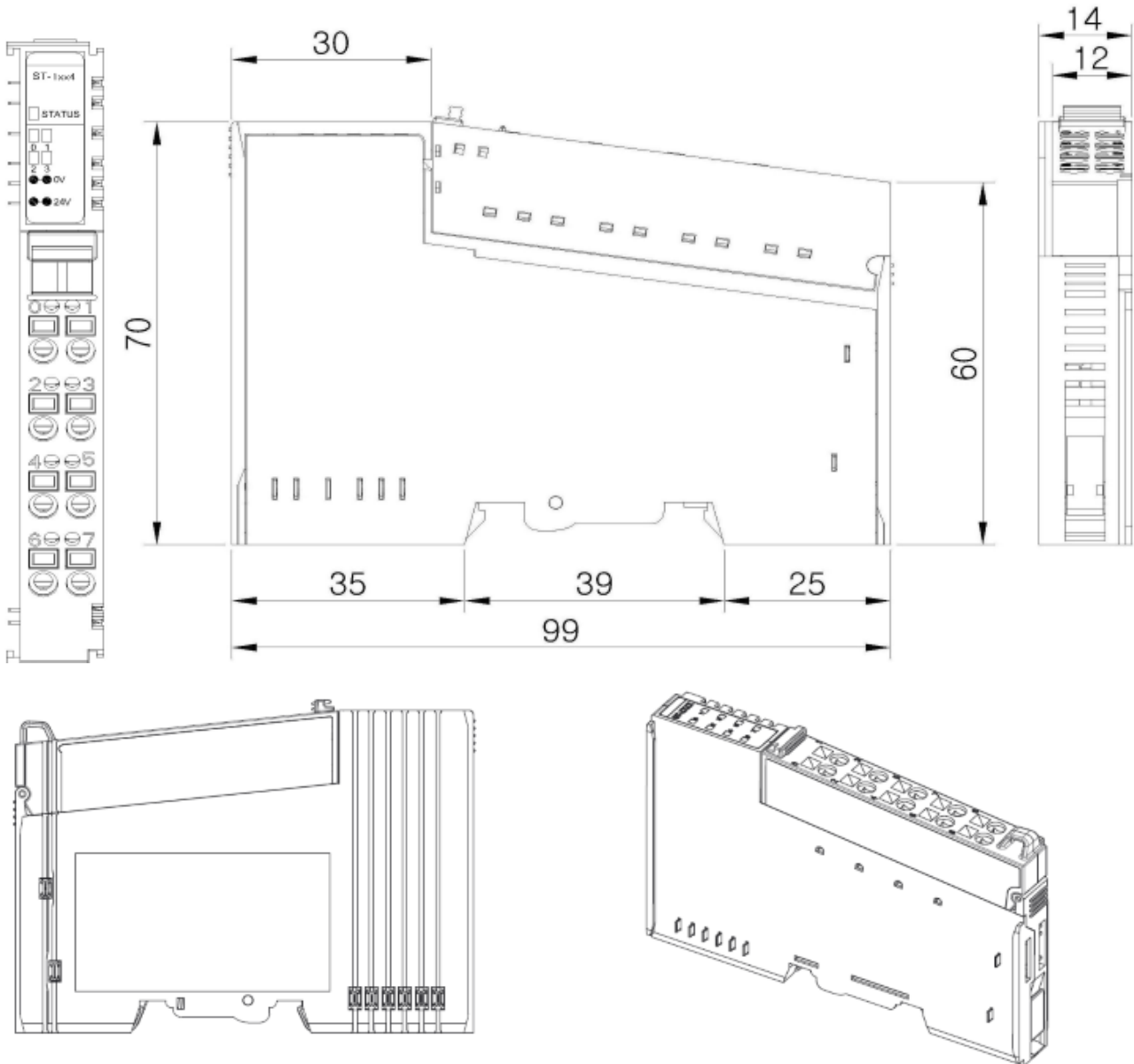
- Valid Parameterlength : 6 Bytes

- Parameter Data

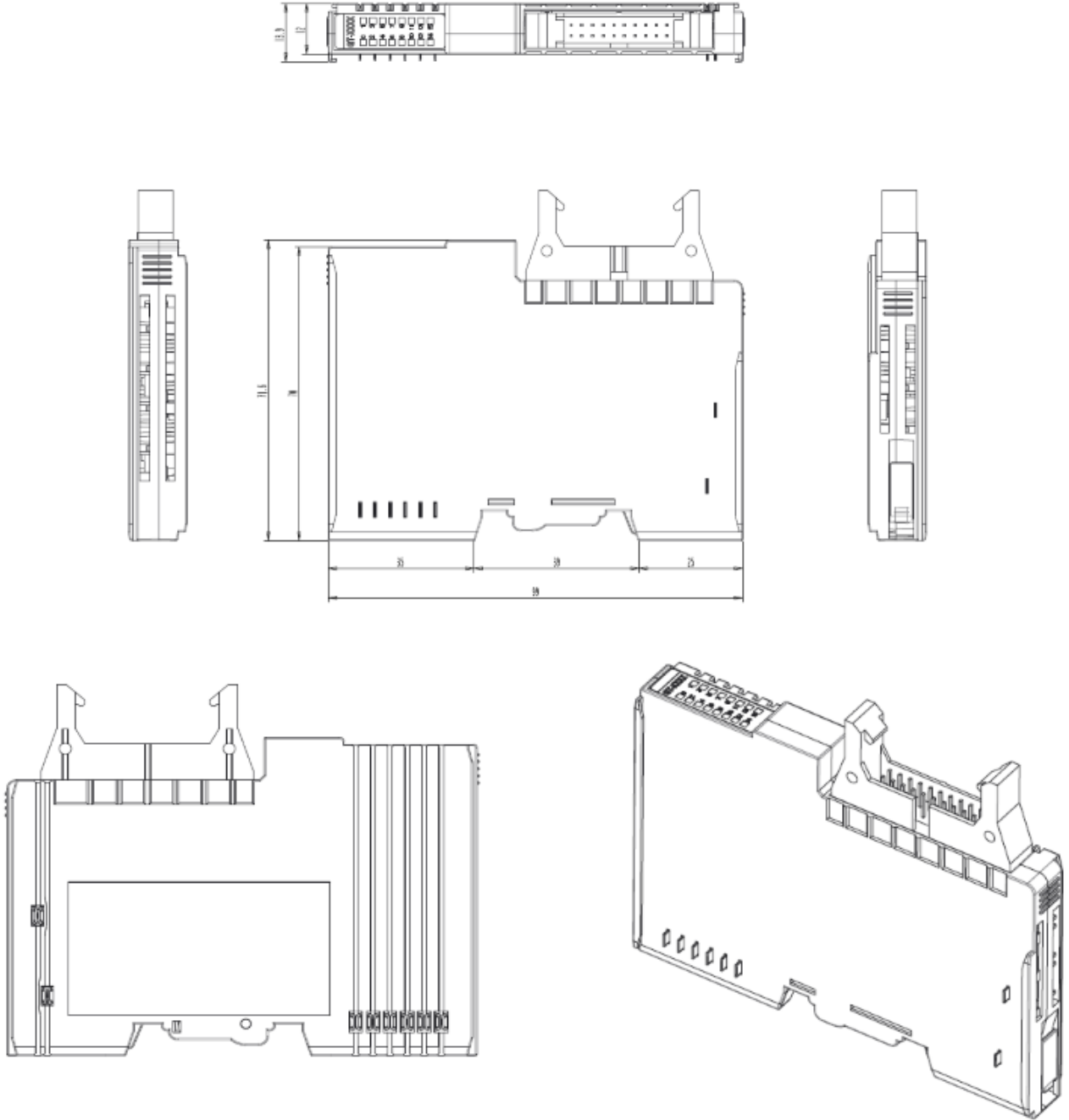
| Bit No | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|--|------|----------------------------|------|----------------------------|------|----------------------------|------|
| Byte 0 | Fault Action for Channel 3 | | Fault Action for Channel 2 | | Fault Action for Channel 1 | | Fault Action for Channel 0 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit / 11: High Limit | | | | | | | |
| Byte 1 | FaultAction for Channle 7 | | FaultAction for Channle 6 | | FaultAction for Channle 5 | | FaultAction for Channle 4 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit / 11: High Limit | | | | | | | |
| Byte 2 | FaultAction for Channle 11 | | FaultAction for Channle 10 | | FaultAction for Channle 9 | | FaultAction for Channle 8 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit / 11: High Limit | | | | | | | |
| Byte 3 | FaultAction for Channle 15 | | FaultAction for Channle 14 | | FaultAction for Channle 13 | | FaultAction for Channle 12 | |
| | 00 : Fault Value / 01: Hold last state / 10 : Low Limit / 11: High Limit | | | | | | | |
| Byte 4 | Fault Value Low Byte | | | | | | | |
| Byte 5 | Not used | | | | Fault Value high Byte | | | |

4. Dimension

4.1 GT-4xx4, GT-4xx8



4.2. GT-4xxF



5. Mounting

- **Hot surface!**

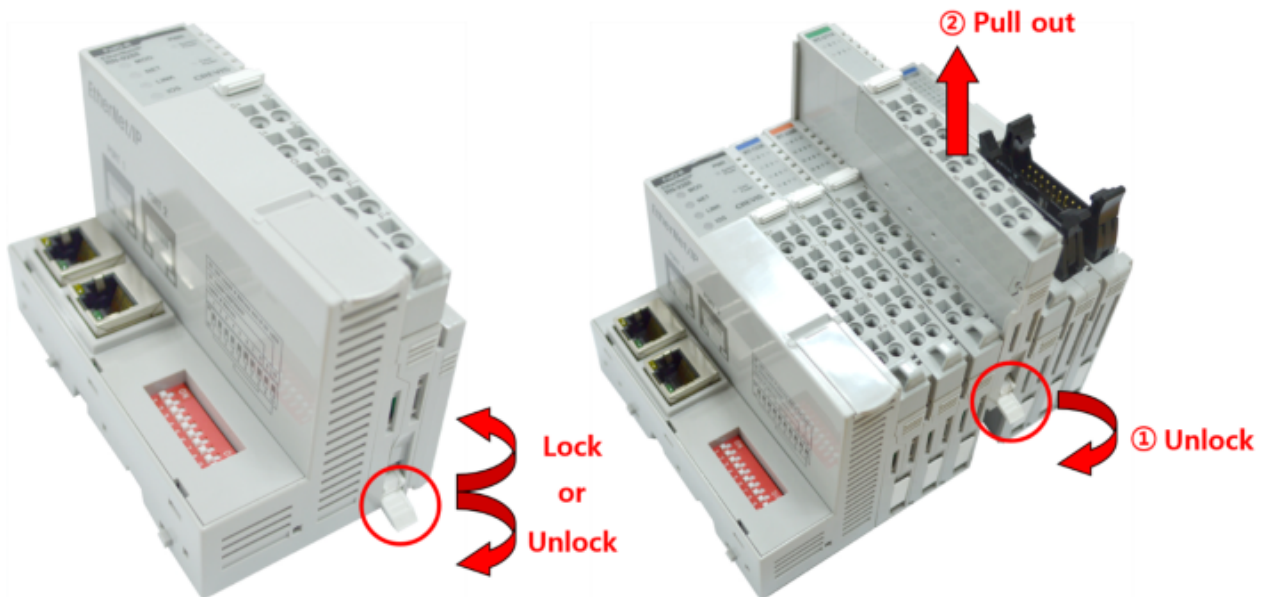
The surface of the housing can become hot during operation. If the device was operated at high ambient temperatures, allow it to be cool before touching it.

Notice!

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

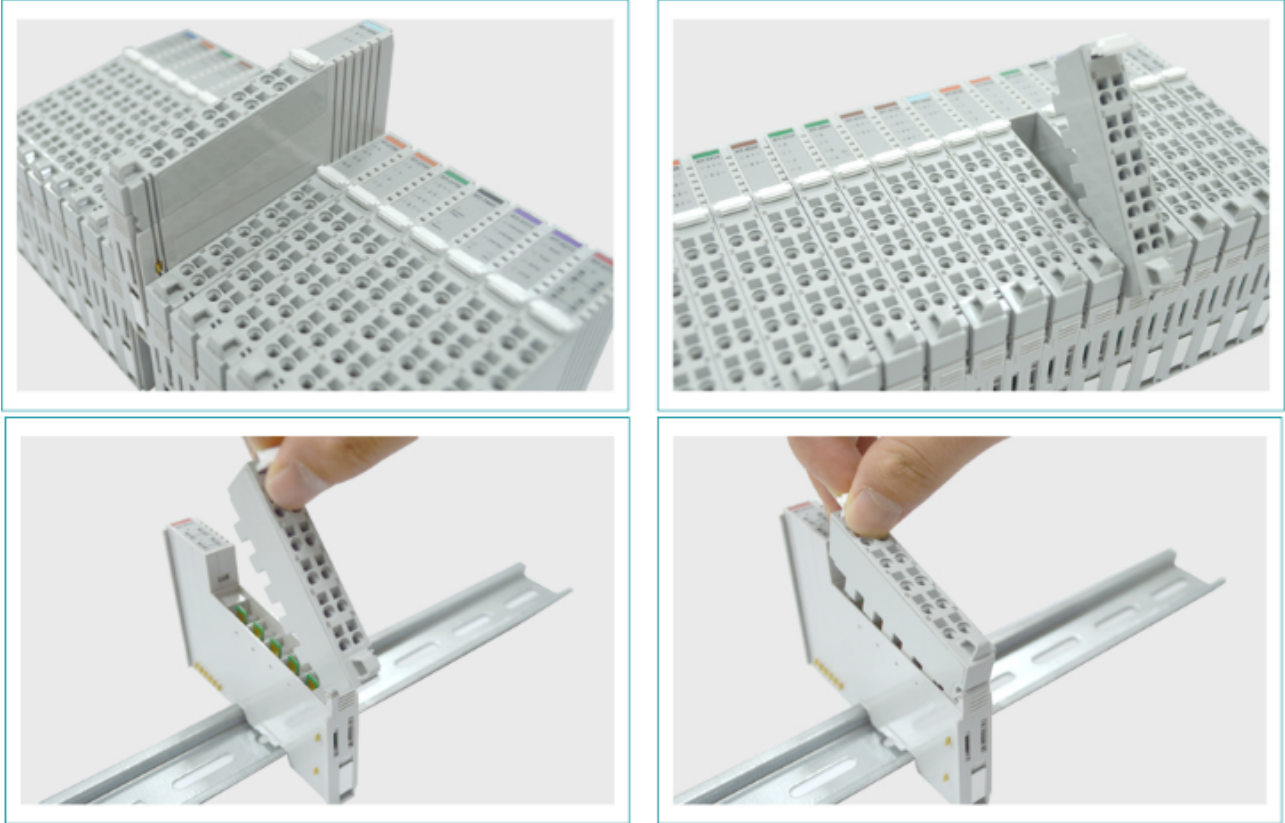
Working on energized devices can damage them. Therefore, turn off the power supply before working on the devices.

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.

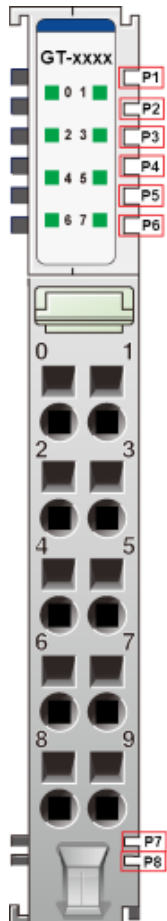
5.2. RTB (Removable Terminal Block)



- 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 IO 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 | System Power (VCC) |
| P2 | System Power (GND) |
| P3 | GBUS TX + |
| P4 | GBUS TX - |
| P5 | GBUS RX + |
| P6 | GBUS RX - |
| P7 | Field Power (GND) |
| P8 | Field Power (VCC) |

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