
FnIO G – Series :

GT-3788

GT-3788 (8 Channels, RTD/RESISTANCE INPUT)

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History

Rev	Pages	Remarks	Date	Editor
1.00			2022/08/02	Hongseok, Kim
1.01	5	Specification Modification	2023/02/10	Hongseok, Kim
1.02	5	Specification Modification	2023/02/17	Hongseok, Kim
1.03	5	Update Power dissipation	2023/05/09	Hongseok, Kim
1.04	4	Environment Specification added(UL)	2023/06/19	Hongseok, Kim
1.05	1~11	Specification form update	2023/08/03	Hongseok, Kim
1.06	6	Edit System Power Dissipation	2025/05/30	Suna, Hwang

Specification

1. ENVIRONMENT SPECIFICATION

Environmental specification	
Operation Temperature	-40°C to 70°C
UL Temperature	-20°C to 60°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% Non-condensing
Mounting	DIN Rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6, 4g
Industrial Emissions	EN61000-6-4/All : 2011
Industrial Immunity	EN 61000-6-2 : 2019
Installation Position	Vertical and horizontal installation is available
Product Certifications	CE, UL, UKCA

Specification

2. GT-3788 (8 CHANNELS RTD/RESISTANCE INPUT)

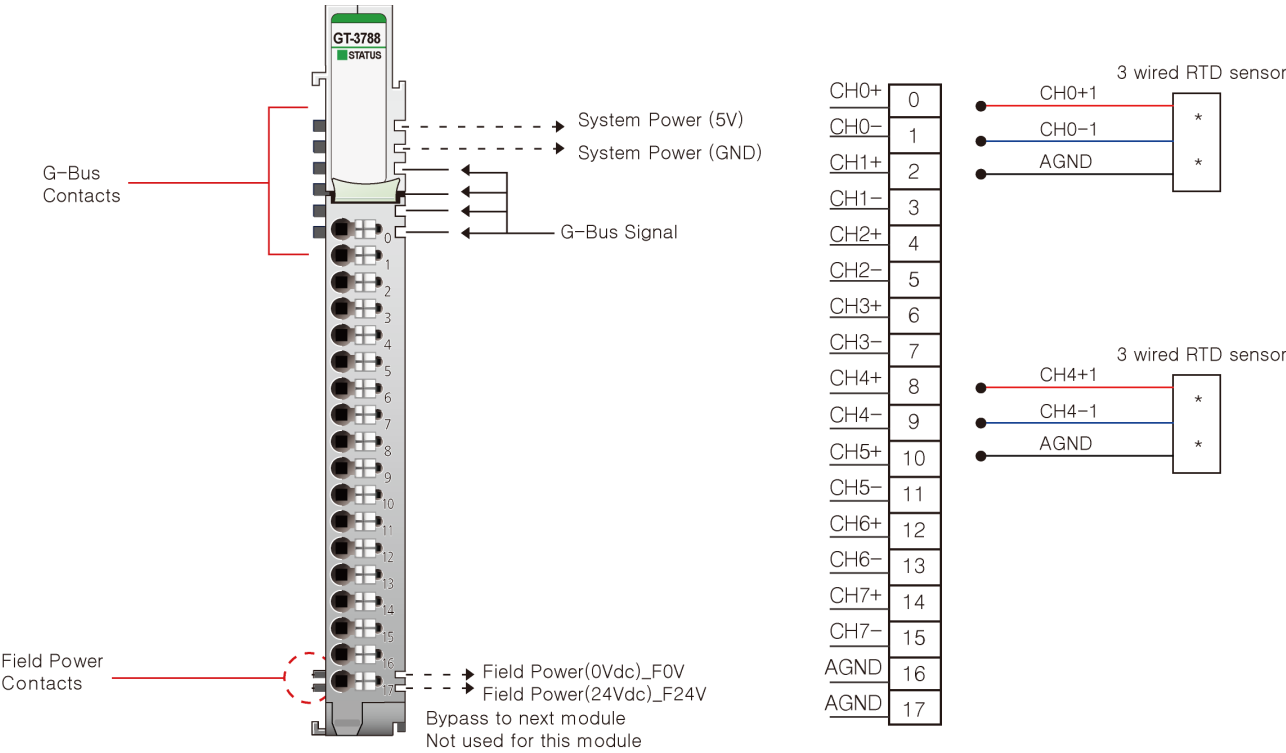
2.1. GT-3788 Specification

Items																											
Input Specification																											
Inputs per module	8 Channels																										
Indicators	1 Green G-BUS status																										
Sensor Types	<div>RTD Input Range</div> <table> <tr> <th>RTD Input</th><th>Input Range</th></tr> <tr> <td>PT50, PT100, PT200, PT500, PT1000</td><td>-200~850°C</td></tr> <tr> <td>JPT50, JPT100, JPT200, JPT500, JPT1000</td><td>-200~640°C</td></tr> <tr> <td>NI100, NI200, NI500, NI1000</td><td>-60~250°C</td></tr> <tr> <td>NI120</td><td>-80~260°C</td></tr> <tr> <td>Cu10, Cu100</td><td>-100~260°C</td></tr> <tr> <td>NI1000LG</td><td>-50~120°C</td></tr> <tr> <th>Resistance Input</th><th>Input Range</th></tr> <tr> <td>1Ω/bit</td><td>0~4000Ω</td></tr> <tr> <td>100mΩ/bit</td><td>0~2000Ω</td></tr> <tr> <td>10mΩ/bit</td><td>0~327Ω</td></tr> <tr> <td>20mΩ/bit</td><td>0~620Ω</td></tr> <tr> <td>50mΩ/bit</td><td>0~1200Ω</td></tr> </table>	RTD Input	Input Range	PT50, PT100, PT200, PT500, PT1000	-200~850°C	JPT50, JPT100, JPT200, JPT500, JPT1000	-200~640°C	NI100, NI200, NI500, NI1000	-60~250°C	NI120	-80~260°C	Cu10, Cu100	-100~260°C	NI1000LG	-50~120°C	Resistance Input	Input Range	1Ω/bit	0~4000Ω	100mΩ/bit	0~2000Ω	10mΩ/bit	0~327Ω	20mΩ/bit	0~620Ω	50mΩ/bit	0~1200Ω
RTD Input	Input Range																										
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1Ω/bit	0~4000Ω																										
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10mΩ/bit	0~327Ω																										
20mΩ/bit	0~620Ω																										
50mΩ/bit	0~1200Ω																										
Excitation Current	About 0.5mA																										
Connection Method	3-Wire																										
Diagnostic	Sensor open or range over, then conversion data = 0x8000(-32768)																										
Conversion Time	110msec / All channel																										
Data Format	16bits signed Integer (2' complement)																										
Module Accuracy	PT50, JPT50, NI100, NI120 : ±0.3% Full Scale @ 25°C PT50, JPT50, NI100, NI120 : ±0.5% Full Scale @ -40,70°C PT1000 : ±0.3°C at 50~150°C @ 25°C PT1000 : ±0.5°C at 50~150°C @ -40,70°C PT1000 : ±0.5°C at -200~250°C @ 25°C Cu10 : ±2% Full Scale @ 25°C Cu10 : ±4% Full Scale @ -40,70°C Cu100 : ±0.3% Full Scale @ 25°C Cu100 : ±0.5% Full Scale @ -40,70°C All Other types Input Range <ul style="list-style-type: none"> ±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C~70°C 																										

Specification

Resolution of Data	RTD Type : $\pm 0.1^{\circ}\text{C}$ / F , Resistance Type : 1Ω , $100\text{m}\Omega$, $10\text{m}\Omega$, $20\text{m}\Omega$, $50\text{m}\Omega$
Calibration	Not Required
General specification	
Power dissipation	Max. 120mA @ 5Vdc
Isolation	I/O to Logic : Isolation Field power : Not Connected
UL Field Power	Supply voltage : 24Vdc nominal, Class2
Field Power	Not used, Field power bypass to next expansion module
Wiring	I/O Cable Max. 0.823mm^2 (AWG 18)
Weight	60g
Module Size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

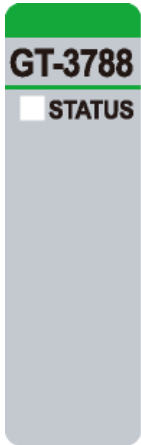
2.2. GT-3788 Wiring Diagram



Pin No.	Signal Description	Signal Description	Pin No.
0	RTD Channel 0+	RTD Channel 0-	1
2	RTD Channel 1+	RTD Channel 1-	3
4	RTD Channel 2+	RTD Channel 2-	5
6	RTD Channel 3+	RTD Channel 3-	7
8	RTD Channel 4+	RTD Channel 4-	9
10	RTD Channel 5+	RTD Channel 5-	11
12	RTD Channel 6+	RTD Channel 6-	13
14	RTD Channel 7+	RTD Channel 7-	15
16	AGND	AGND	17

2.3. GT-3788 LED Indicator

2.3.1. LED Indicator



LED No.	LED Function / Description	LED Color
Status	G-Bus Status	Green

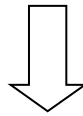
2.3.2. Channel Status LED

Status	LED	To indicate
G-Bus Status	Off	Disconnection
	Green	Connection

2.4. Mapping data into the image table

● Input Module Data

	Analog Input Ch0
	Analog Input Ch1
	Analog Input Ch2
	Analog Input Ch3
	Analog Input Ch4
	Analog Input Ch5
	Analog Input Ch6
	Analog Input Ch7



● Input Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0								Analog Input Ch0 Low byte
Byte1								Analog Input Ch0 High byte
Byte2								Analog Input Ch1 Low byte
Byte3								Analog Input Ch1 High byte
Byte4								Analog Input Ch2 Low byte
Byte5								Analog Input Ch2 High byte
Byte6								Analog Input Ch3 Low byte
Byte7								Analog Input Ch3 High byte
Byte8								Analog Input Ch4 Low byte
Byte9								Analog Input Ch4 High byte
Byte10								Analog Input Ch5 Low byte
Byte11								Analog Input Ch5 High byte
Byte12								Analog Input Ch6 Low byte
Byte13								Analog Input Ch6 High byte
Byte14								Analog Input Ch7 Low byte
Byte15								Analog Input Ch7 High byte

- If the input of channel is open or over-ranged, its conversion data will be 0x8000(-32678)

Specification

2.5. Configuration Parameter – 18 byte

Byte	Decimal Bit	Description	Default Value
0	00-07	The selection Sensor Type =00h:PT100, 0.00385, -200~850°C, 0.1°C/count =01h:PT200, 0.00385, -200~850°C, 0.1°C/count =02h:PT500, 0.00385, -200~850°C, 0.1°C/count =03h:PT1000, 0.00385, -200~850°C, 0.1°C/count =04h:PT50, 0.00385, -200~850°C, 0.1°C/count =10h:JPT100, 0.003916, -200~640°C, 0.1°C/count =11h:JPT200, 0.003916, -200~640°C, 0.1°C/count =12h:JPT500, 0.003916, -200~640°C, 0.1°C/count =13h:JPT1000, 0.003916, -200~640°C, 0.1°C/count =14h:JPT50, 0.003916, -200~640°C, 0.1°C/count =20h:NI100, 0.00618, -60~250°C, 0.1°C/count =21h:NI200, 0.00618, -60~250°C, 0.1°C/count =22h:NI500, 0.00618, -60~250°C, 0.1°C/count =23h:NI1000, 0.00618, -60~250°C, 0.1°C/count =30h:NI120, 0.00672, -80~260°C, 0.1°C/count =40h:Cu10, 0.00427, -100~260°C, 0.1°C/count =41h:Cu100, 0.00427, -100~260°C, 0.1°C/count =53h:NI1000LG, 0.00500, -50~120°C, 0.1°C/count =80h:Resistance Input, 1~2000Ω, 100mΩ/1count =81h:Resistance Input, 1~327Ω, 10mΩ/1count =82h:Resistance Input, 1~620Ω, 20mΩ/1count =83h: Resistance Input, 1~1200Ω, 50mΩ/1count =84h:Resistance Input, 1~4000Ω, 1Ω/1count =Others: Reserved	0: PT100
1	00	Temperature Type 0: Celsius(°C), 1: Fahrenheit(°F)	0: Celsius(°C)
	01	Reserved	0
	02-03	Data Resolution 00: 0.1°C, °F/bit 01: 1°C, °F/bit 10: *0.01°C, °F/bit 11: Reserved	0
	04	Filter Type 0: Normal Filter, 1: Enhanced Filter	0: Normal Filter
	05-06	SW Filter 0: Nomal Filter(Filter Time = 20) 1: **Fast Filter(Filter Time = 3) 2: Enhanced Filter(Filter Time = 40) 3: More Enhanced Filter(Filter Time = 80)	0
	07	Reserved	0
2~3		CH0 Offset value	0
4~5		CH1 Offset value	0
6~7		CH2 Offset value	0
8~9		CH3 Offset value	0
10~11		CH4 Offset value	0
12~13		CH5 Offset value	0
14~15		CH6 Offset value	0
16~17		CH7 Offset value	0

- *Data exceeding 32767 cannot be displayed.

- **If you set a fast filter, the specification accuracy may not be met.

Specification

2.6. Data Value

Resistance Temperature Detector Input Range	
Type	Input Range
PT100	-200 ~ 850 °C
PT200	-200 ~ 850 °C
PT500	-200 ~ 850 °C
PT1000	-200 ~ 850 °C
PT50	-200 ~ 850 °C
JPT100	-200 ~ 640 °C
JPT200	-200 ~ 640 °C
JPT500	-200 ~ 640 °C
JPT1000	-200 ~ 640 °C
JPT50	-200 ~ 640 °C
NI100	-60 ~ 250 °C
NI200	-60 ~ 250 °C
NI500	-60 ~ 250 °C
NI1000	-60 ~ 250 °C
NI120	-80 ~ 260 °C
Cu10	-100 ~ 260 °C
Cu100	-100 ~ 260 °C
NI1000LG	-50 ~ 120 °C
Resistance Input Range	
Type	Input Range
1Ω/bit	0~4000Ω
100mΩ/bit	0~2000Ω
10mΩ/bit	0~327Ω
20mΩ/bit	0~620Ω
50mΩ/bit	0~1200Ω