

FnIO G – Series :

GT-3708

GT-3708 (8 Channels, RTD/RESISTANCE INPUT)

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Specification

History

Rev	Pages	Remarks	Date	Editor
1.00			2016/05/24	Jin Hyun, Hong
1.01	10	Configuration Parameter Revised.	2016/05/24	Jin Hyun, Hong
1.02		Release	2020/04/21	Seokhyun, Jun
1.03	6	Senor Type Cu10, Cu100 add	2021/07/05	Hongseok, Kim
1.04	6	Certifications is updated.	2021/10/12	Hongseok, Kim
1.05	10	SW Filter add	2022/01/14	Hongseok, Kim
1.06	5	Senor Type PT1000 350 ~850 add	2022/02/08	Hongseok, Kim
1.07	1~12	Specification form update	2023/07/26	Hongseok Kim
1.08	6	Edit System Power Dissipation	2025/05/30	Suna, Hwang
1.09	5	Changes to the measurement specifications	2026/01/22	Hongseok Kim
1.10	6	Add Wiring-Module Connector	2026/03/10	Soyeong, Park

Specification

1. ENVIRONMENT SPECIFICATION

Environmental specification	
Operation Temperature	-40°C to 70°C
Storage Temperature	-40°C to 85°C
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, 4g
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

2. GT-3708 (8 CHANNELS RTD/RESISTANCE INPUT)

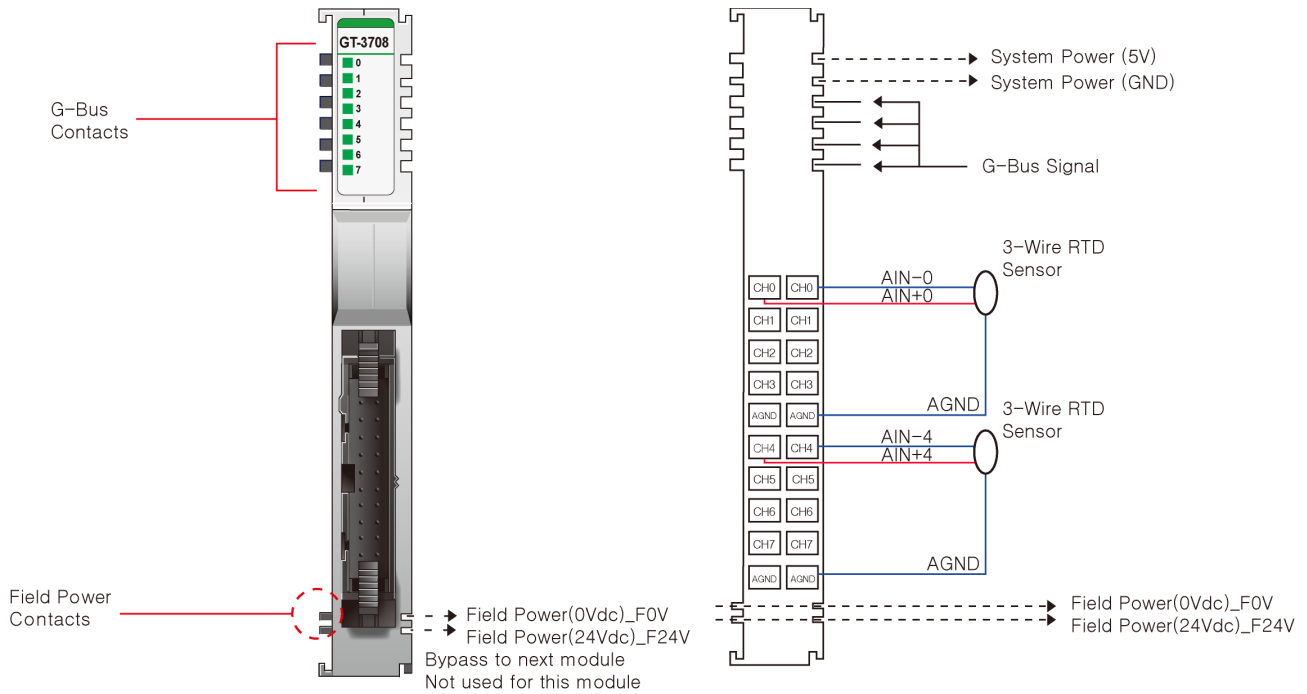
2.1. GT-3708 Specification

Items																											
Input Specification																											
Inputs per module	8 Channels																										
Indicators	8 Green Input status																										
Sensor Types	RTD Input Range																										
	<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
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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 PT1000 : ±1°C at 250~850°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 type Input Range ±0.1% Full Scale @ 25°C																										

Specification

	±0.3% Full Scale @ -40°C~70°C
Resolution of Data	RTD Type : ±0.1°C / F , Resistance Type : 1Ω, 100mΩ, 10mΩ, 20mΩ, 50mΩ
Calibration	Not Required
General specification	
Power dissipation	Max. 135mA @ 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	According to the connector specification Hirose Connector : HIF3BA-20PA-2.54DSA Omron Connector : XG4A-2031
Weight	60g
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to 'Environment Specification'

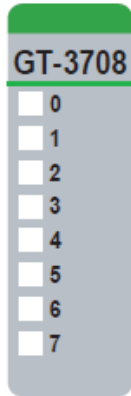
2.2. GT-3708 Wiring Diagram



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	AGND	AGND	9
10	RTD Channel 4+	RTD Channel 4-	11
12	RTD Channel 5+	RTD Channel 5-	13
14	RTD Channel 6+	RTD Channel 6-	15
16	RTD Channel 7+	RTD Channel 7-	17
18	AGND	AGND	19

2.3. GT-3708 LED Indicator

2.3.1. 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

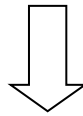
2.3.2. Channel Status LED

Status	LED	To indicate
Not Signal	Off	Input Sensor Open or Input Range Over
On Signal	Green	Sensor Connected and Input Range Valid

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
Byte 0								Analog Input Ch0 Low byte
Byte 1								Analog Input Ch0 High byte
Byte 2								Analog Input Ch1 Low byte
Byte 3								Analog Input Ch1 High byte
Byte 4								Analog Input Ch2 Low byte
Byte 5								Analog Input Ch2 High byte
Byte 6								Analog Input Ch3 Low byte
Byte 7								Analog Input Ch3 High byte
Byte 8								Analog Input Ch4 Low byte
Byte 9								Analog Input Ch4 High byte
Byte 10								Analog Input Ch5 Low byte
Byte 11								Analog Input Ch5 High byte
Byte 12								Analog Input Ch6 Low byte
Byte 13								Analog Input Ch6 High byte
Byte 14								Analog Input Ch7 Low byte
Byte 15								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