
FnIO G – Series :

GT-3704

GT-3704 (4 Channels, RTD/RESISTANCE INPUT)

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Specification

History

Rev	Pages	Remarks	Date	Editor
1.00			2016/03/19	ju yong, Bae
1.01	5	Power dissipation is changed to 130mA.	2016/06/03	Jin Hyun, Hong
1.02	5	Conversion time is revised.	2016/10/12	Jin Hyun, Hong
1.03	4	Certifications is updated.(UL add)	2016/11/15	Jin Hyun, Hong
1.04		Release	2020/04/21	Seokhyun, Jun
1.05	6	Senor Type PPT1000, Cu10, Cu100 add	2021/07/05	Hongseok, Kim
1.06	6	Certifications is updated.	2021/10/12	Hongseok, Kim
1.07	10	SW Filter add	2022/01/14	Hongseok, Kim
1.08	5	Senor Type PT1000 350 ~850 add	2022/02/08	Hongseok, Kim
1.09	1~11	Specification form update	2023/07/27	Hongseok Kim
1.10	7	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
Operating Altitude	2,000m
Mounting	DIN Rail
General specification	
Shock Operating	IEC 60068-2-27 : 2008 / 15g, 11ms
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-3704 (4 CHANNELS RTD/RESISTANCE INPUT)

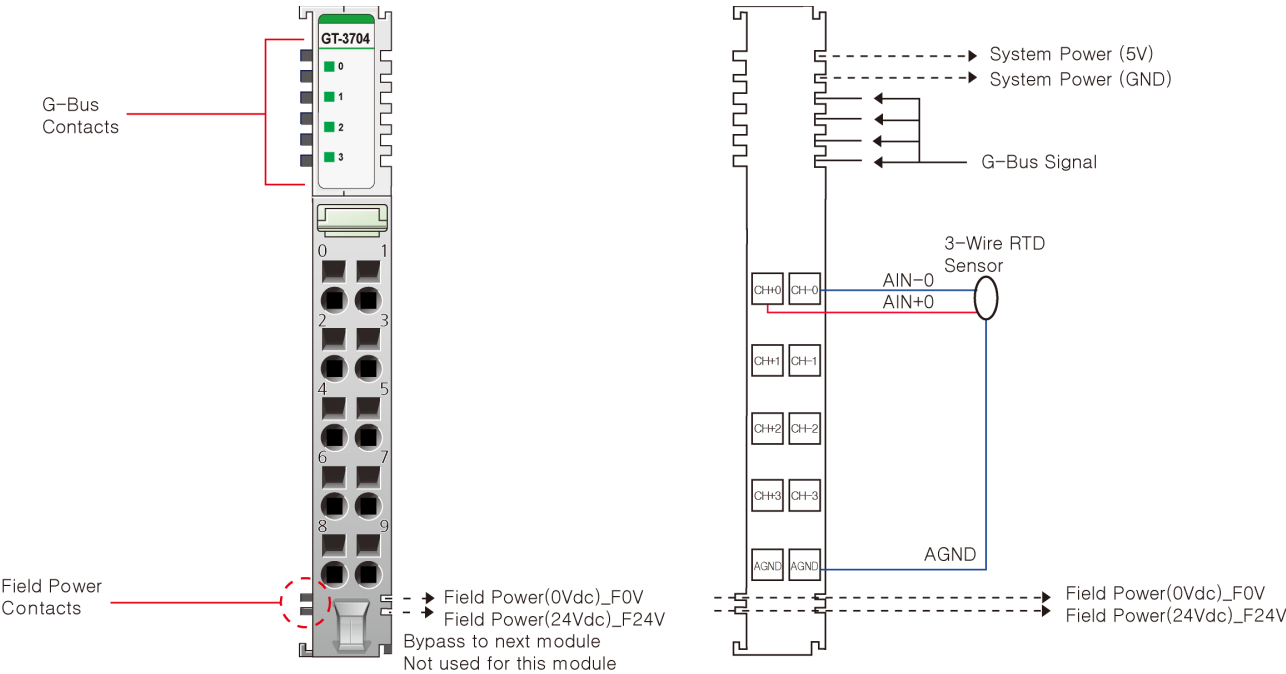
2.1. GT-3704 Specification

Items																											
Input Specification																											
Inputs per module	4 Channels																										
Indicators(Logic side)	4 Green Input 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																										
PT50, PT100, PT200, PT500, PT1000	-200~850°C																										
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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	55msec / All channel																										
Data Format	16bits signed Integer (2' complement)																										
Module Accuracy	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 <ul style="list-style-type: none"> ±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C~70°C 																										
Resolution of Data	RTD Type : ±0.1°C / F , Resistance Type : 1Ω, 100mΩ, 10mΩ, 20mΩ, 50mΩ																										

Specification

Calibration	Not Required
General specification	
Power dissipation	Max. 145mA @ 5Vdc
Isolation	I/O to Logic : Isolation Field power : Not Connected
UL Field Power	Supply Voltage : 24Vdc nominal, Class 2
Field Power	Not used, Field power bypass to next expansion module
Wiring	I/O Cable Max. 2.0mm ² (AWG 14)
Weight	60g
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to 'Environment Specification'

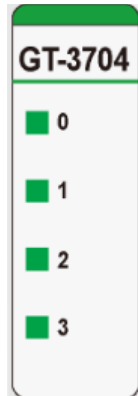
2.2. GT-3704 Wiring Diagram



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

2.3. GT-3704 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

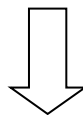
2.3.2. Channel Status LED

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



● 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							

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

Specification

2.5. Configuration Parameter – 10byte

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

- *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