

FnIO G – Series :

GT-3704

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

Specification

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Specification

History

REV.	PAGES	REMARKS	DATE	Editor
1	11		Mar 19, 2016	Bae, ju yong
1.01	5	Power dissipation is changed to 130mA.	June 3, 2016	Hong Jin Hyun
1.02	5	Conversion time is revised.	Oct. 12, 2016	Hong Jin Hyun
1.03	4	Certifications is updated.(UL add)	Nov. 15, 2016	Hong, Jin Hyun
1.04		Release	Apr 21, 2020	Seokhyun, Jun

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 DNVGL-CG-0039 : 2016/6 Vibration Class B, 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, FCC

Specification

2. GT-3704 (4 CHANNELS RTD/RESISTANCE INPUT)

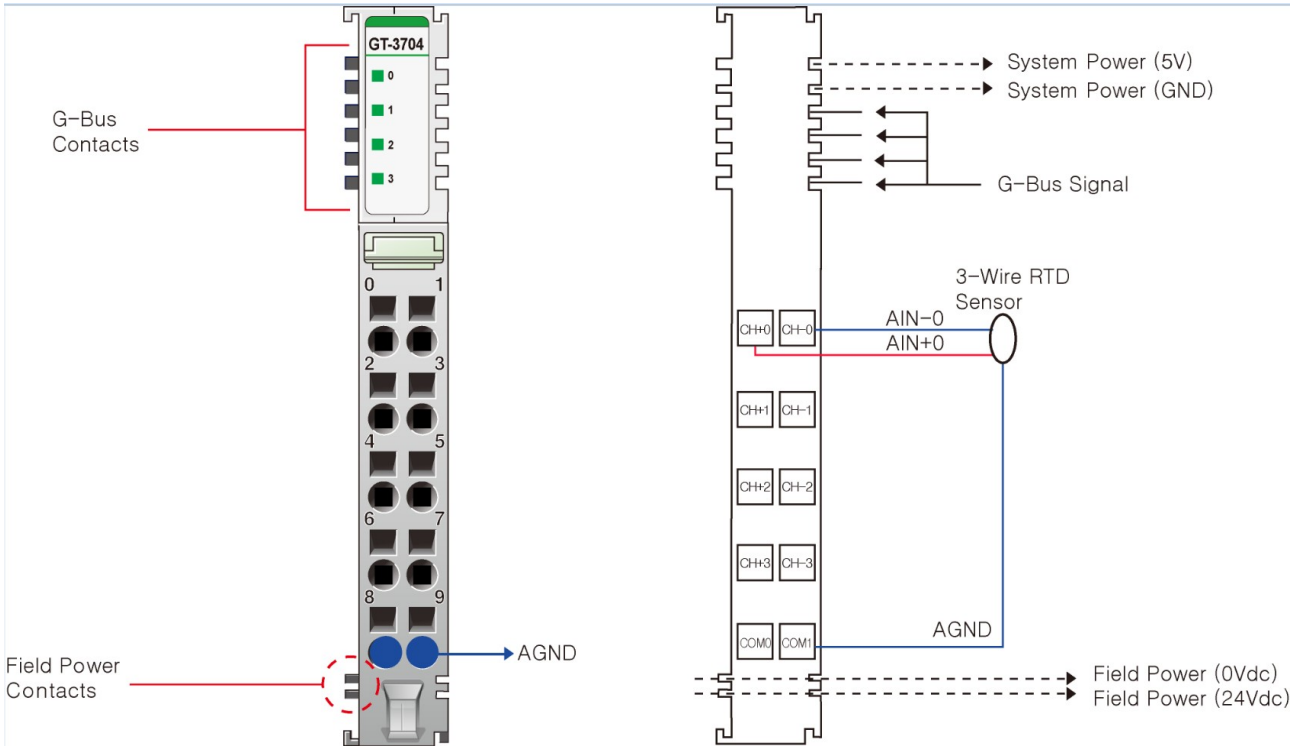
2.1. GT-3704 Specification

Items																													
Input Specification																													
Inputs per module	4 Channels																												
Indicators(Logic side)	4 Green Input status																												
Sensor Types	RTD Input Range <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">RTD Input</th> <th style="width: 50%;">Input Range</th> </tr> </thead> <tbody> <tr> <td>PT100, PT200, PT500, PT50</td> <td>-200~850°C</td> </tr> <tr> <td>PT1000</td> <td>-200~350°C</td> </tr> <tr> <td>JPT100, JPT200, JPT500, JPT50</td> <td>-200~640°C</td> </tr> <tr> <td>JPT1000</td> <td>-200~350°C</td> </tr> <tr> <td>NI100, NI200, NI500</td> <td>-60~250°C</td> </tr> <tr> <td>NI1000</td> <td>-60~180°C</td> </tr> <tr> <td>NI120</td> <td>-80~260°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>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> </tbody> </table>	RTD Input	Input Range	PT100, PT200, PT500, PT50	-200~850°C	PT1000	-200~350°C	JPT100, JPT200, JPT500, JPT50	-200~640°C	JPT1000	-200~350°C	NI100, NI200, NI500	-60~250°C	NI1000	-60~180°C	NI120	-80~260°C	NI1000LG	-50~120°C	Resistance Input	Input Range	100mΩ/bit	0~2000Ω	10mΩ/bit	0~327Ω	20mΩ/bit	0~620Ω	50mΩ/bit	0~1200Ω
RTD Input	Input Range																												
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20mΩ/bit	0~620Ω																												
50mΩ/bit	0~1200Ω																												
Excitation Current	About 1mA																												
Connection Method	3-Wire																												
Conversion Time	150msec / All channel																												
Data Format	16bits signed Integer (2' complement)																												
Module Accuracy	PT100, PT1000 : ±0.5°C Full Scale @ 25°C ambient ±0.1% Full Scale @ 25°C ambient ±0.3% Full Scale @ -40,70°C ambient																												
Resolution of Data	RTD Type : ±0.1°C / F , Resistance Type : 100mΩ, 10mΩ, 20mΩ, 50mΩ																												
Calibration	Not Required																												
Diagnostic	Sensor open or range over, then conversion data = 0x8000(-32768)																												

Specification

General specification	
Power dissipation	Max. 130mA @ 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)
Torque	0.8Nm(7lb-in)
Weight	60g
Module Size	12mm x 99mm x 70mm
Environment Condition	Refer to 'Environment Specification'

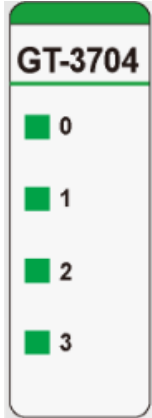
2.2. GT-3704 Wiring Diagram



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
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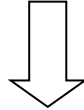
2.3.2. Channel Status LED

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

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
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							

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

Specification

1.1. 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, -200~350°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, -200~350°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, -60~180°C, 0.1°C/count =30h:NI120, 0.00672, -80~250°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 =Others: Reserved	0: PT100
1	00	Temperature Type 0: Celsius(°C), 1: Fahrenheit(°F)	0: Celsius(°C)
	01	Reserved	0
	02	Data Resolution 0: 0.1°C, °F/bit, 1: 1°C, °F/bit	0
	03	Reserved	0
	04	Filter Type 0: Normal Filter, 1: Enhanced Filter	0: Normal Filter
	05-07	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

Specification

1.2. Data Value

Resistance Temperature Detector Input Range	
Type	Input Range
PT100	-200 ~ 850 °C
PT200	-200 ~ 850 °C
PT500	-200 ~ 850 °C
PT1000	-200 ~ 350 °C
PT50	-200 ~ 850 °C
JPT100	-200 ~ 640 °C
JPT200	-200 ~ 640 °C
JPT500	-200 ~ 640 °C
JPT1000	-200 ~ 350 °C
JPT50	-200 ~ 640 °C
NI100	-60 ~ 250 °C
NI200	-60 ~ 250 °C
NI500	-60 ~ 250 °C
NI1000	-60 ~ 180 °C
NI120	-80 ~ 260 °C
NI1000LG	-50 ~ 120 °C
Resistance Input Range	
Type	Input Range
100mΩ/bit	0~2000Ω
10mΩ/bit	0~327Ω
20mΩ/bit	0~620Ω
50mΩ/bit	0~1200Ω