
FnIO G – Series :

GT-3758

GT-3758 (8 Channels, NTC 10K/RESISTANCE INPUT)

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History

Rev	Pages	Remarks	Date	Editor
1.00			2022/05/12	Hongseok, Kim
1.01	5	Accuracy Error Correction	2023/02/03	Hongseok, Kim
1.02	5,9	Add description	2023/02/07	Hongseok, Kim
1.03	6	Pin Description Error Correction	2023/05/23	Hongseok, Kim
1.04	4	Environment Specification added(UL)	2023/06/19	Hongseok, Kim
1.05	1~10	Specification form update	2023/08/03	Hongseok, Kim
1.06	5	Change resistor type accuracy	2023/09/08	Hongseok, Kim
1.07	5	Edit System Power Dissipation	2025/05/30	Suna, Hwang
1.08	10	typo correction	2025/11/04	Hongseok, Kim

Specification

1. ENVIRONMENT SPECIFICATION

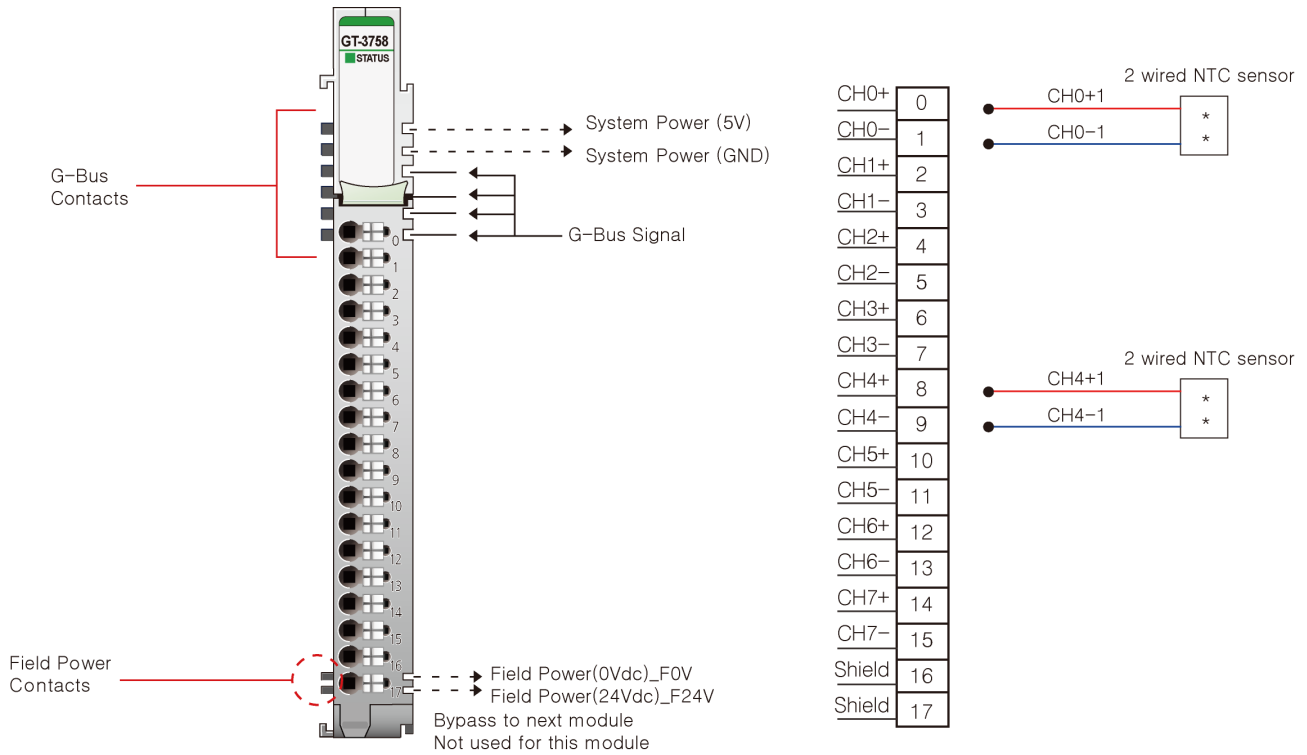
Environmental specification	
Operation Temperature	-40°C to 70°C
UL Temperature	-20°C to 60°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% Non-condensing
Operating Altitude	2,000m
Mounting	DIN Rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 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

2. GT-3758 (8 CHANNELS NTC 10K INPUT)

2.1. GT-3758 Specification

Items													
Input Specification													
Inputs per module	8 Channels												
Indicators(Logic side)	8 Green Input status												
Sensor Types	NTC Input Range <table border="1"> <thead> <tr> <th>NTC Input</th><th>Input Range</th></tr> </thead> <tbody> <tr> <td>NTC10K(B3950, 25°C/50°C)</td><td>-25~125°C</td></tr> <tr> <td>NTC10K(B3892, 0°C/50°C)</td><td>-40~135°C</td></tr> <tr> <td>NTC10K(B3435, 25°C/85°C)</td><td>-40~105°C</td></tr> <tr> <td>NTC10K(B3988, 25°C/100°C)</td><td>-40~155°C</td></tr> <tr> <td>10Ω/bit</td><td>0~300Kohm</td></tr> </tbody> </table>	NTC Input	Input Range	NTC10K(B3950, 25°C/50°C)	-25~125°C	NTC10K(B3892, 0°C/50°C)	-40~135°C	NTC10K(B3435, 25°C/85°C)	-40~105°C	NTC10K(B3988, 25°C/100°C)	-40~155°C	10Ω/bit	0~300Kohm
NTC Input	Input Range												
NTC10K(B3950, 25°C/50°C)	-25~125°C												
NTC10K(B3892, 0°C/50°C)	-40~135°C												
NTC10K(B3435, 25°C/85°C)	-40~105°C												
NTC10K(B3988, 25°C/100°C)	-40~155°C												
10Ω/bit	0~300Kohm												
Connection Method	2-Wire												
Diagnostic	Sensor open or range over, then conversion data = 0x8000(-32768)												
Conversion Time	< 4msec / All channel												
Data Format	16bits signed Integer (2' complement)												
Module Accuracy	All Sensor type Input Range <ul style="list-style-type: none"> ±1°C Full Scale @ 25°C ±2°C Full Scale @ -40°C~70°C Resistor type Input Range <ul style="list-style-type: none"> ±0.1% Full Scale at 0~100Kohm @ 25°C ±1% Full Scale at 100~200Kohm @ 25°C ±1.5% Full Scale at 200~300Kohm @ 25°C 												
Resolution of Data	NTC Type : ±0.1°C / F												
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	I/O Cable Max. 0.823mm ² (AWG 18)												
Weight	64g												
Module Size	12mm x 109mm x 70mm												
Environment Condition	Refer to 'Environment Specification'												

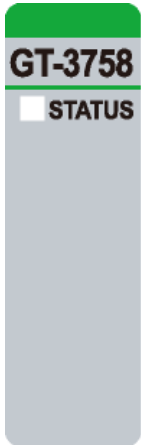
2.2. GT-3758 Wiring Diagram



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

2.3. GT-3758 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 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							
Register Communication								
Byte16	ACK	CMD	-	-	Attribute			
Byte17	ALL	-	Channel					
Byte18	Data(L)							
Byte19	Data(H)							

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

● Output Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Register Communication								
Byte0	REQ	CMD	-	-	Attribute			
Byte1	ALL	-	Channel					
Byte2	Data(L)							
Byte3	Data(H)							

- ACK : This is a BIT that indicates that data writing or reading through REQ has been successful.

When the operation is completed, it is changed to the same as the REQ value.

- REQ : This is a request bit to read or write data and operates when the value is different from ACK.

- CMD : 0 = Read, 1 = Write

- Attribute : 2.5. Enter the attribute address of Register Communication of the item

- ALL : If the corresponding bit is 1, it is written to all channels(Write Only)

- Channel : Channel number to input data(0~7)

Specification

2.5. Register Communication

Attribute	Byte	Decimal Bit	Description	Default Value
0	0	00-07	The selection Sensor Type =00h:NTC10K(B3950), -25~125°C, 0.1°C/count =01h:NTC10K(B3892), -40~135°C, 0.1°C/count =02h:NTC10K(B3435), -40~105°C, 0.1°C/count =03h:NTC10K(B3988), -40~155°C, 0.1°C/count =80h:10Ω/bit, 0~300kΩ =Others: Reserved	0: NTC10K(B3950)
1	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	2~3	00-15	***B – Parameter(User Sensor Define Mode)	0

- *Data exceeding 32767 cannot be displayed.

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

- ***When a value is entered in User Sensor Define Mode, the temperature value is calculated based on the entered value, and the range other than the temperature value that is the standard for the entered B constant may not satisfy the specification.

2.6. Data Value

Resistance Temperature Detector Input Range	
Type	Input Range
NTC10K(B3950)	-25 ~ 125 °C
NTC10K(B3892)	-40 ~ 135 °C
NTC10K(B3435)	-40 ~ 105 °C
NTC10K(B3988)	-40 ~ 155 °C