

FnIO G-Series

LED No.	LED Function / Description	LED Color
0	Status LED	Green

LED No.	LED Function / Description	LED Color
0	Status LED	Green

GT-3918, GT-3928, GT-3938, GT-3948

GT-3918 (8 Channels 18pt RTB, Differential Current Input)

0~20mA / 4~20mA / -20~20mA, 12bits

GT-3928 (8 Channels 18pt RTB, Differential Voltage Input)

0~10V / 0~5V / -10~10V / -5~5V, 12bits

GT-3938 (8 Channels 18pt RTB, Differential Current Input)

0~20mA / 4~20mA / -20~20mA, 16bits

GT-3948 (8 Channels 18pt RTB, Differential Voltage Input)

0~10V / 0~5V / -10~10V / -5~5V, 16bits

History

REV.	PAGES	REMARKS	DATE	Editor
1.00			Nov. 23, 2017	Seokhyun, Jun
1.01	18-30	Added GT-3938, GT-3948	Mar 09, 2018	Soyeong, Park
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1.03	18, 24	Edit 16bit Model_Resolution in Range	June 14, 2018	Soyeong, Park
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1. Environment Specification

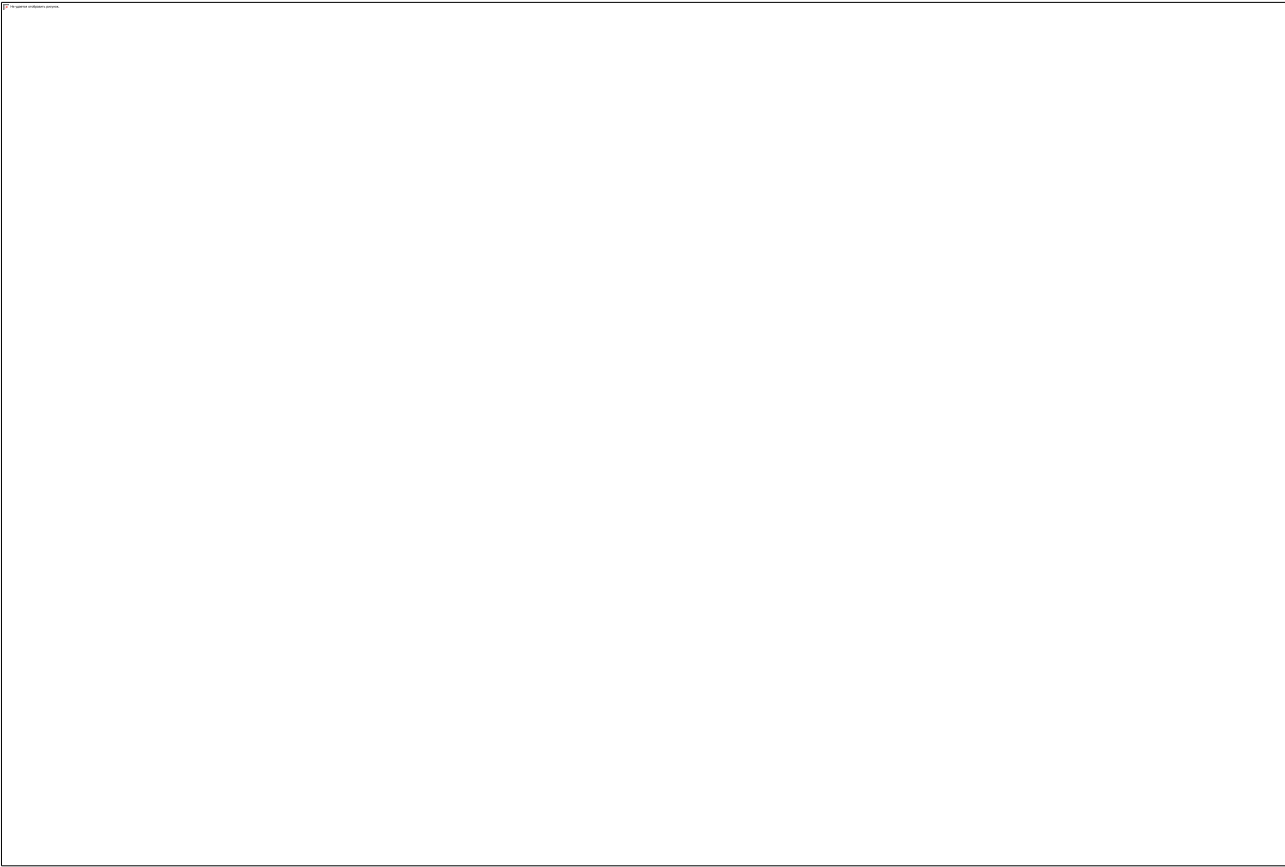
Environmental Specification	
Operation Temperature	-40°C ~ 60°C
UL Temperature	-20°C ~ 60°C
Non-Operating Temperature	-40°C ~ 85°C
Relative Humidity	5% ~ 90% Non-condensing
Mounting	DIN rail
General Specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 Sine Vibration - 5 ~ 25Hz : $\pm 1.6\text{mm}$ - 25 ~ 300Hz : 4g - Sweep Rate : 1 Oct/min, 20 cycles Random Vibration - 10 ~ 40 Hz : $0.0125 \text{ g}^2/\text{Hz}$ - 40 ~ 100 Hz : $0.0125 \rightarrow 0.002 \text{ g}^2/\text{Hz}$ - 100 ~ 500 Hz : $0.002 \text{ g}^2/\text{Hz}$ - 500 ~ 2000 Hz : $0.002 \rightarrow 1.3 \times 10^{-4} \text{ g}^2/\text{Hz}$ - Test time : 1hrs for each test
EMC Resistance	EN 61000-6-2 : 2005 EN 61000-6-4 : 2007+A1:2011
Installation Pos. / Protect. Class	Variable/IP20
Product Certifications	CE, UL

2. GT-3918 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 12bits)

2.1. GT-3918 Specification

Items	Specification
Input Specification	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green G-Bus status LED
Resolution in Ranges	12 bits : 4.88uA/bit(0~20mA) 12 bits : 3.91uA/bit(4~20mA) 12 bits : 9.77uA/bit(-20~20mA)
Input Range	0~20mA, 4~20mA, -20~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C, 60°C
Input Impedance	121.5Ω
Conversion Time	Max. 2.4msec (All channel)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
General Specification	
Power Dissipation	Max. 200mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used, Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm ² (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

2.2. GT-3918 Wiring Diagram



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

2.3. GT-3918 LED Indicator

2.3.1. LED Indicator



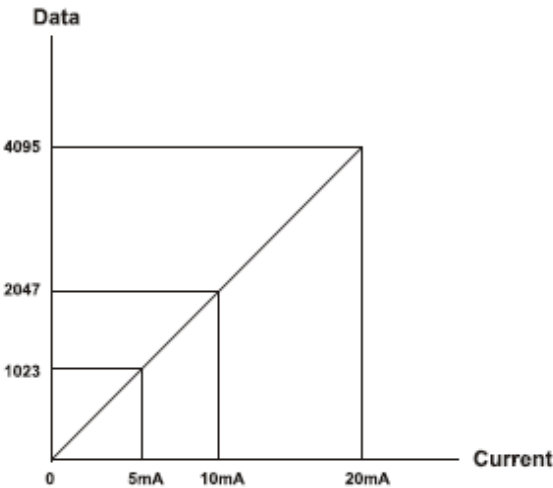
2.3.2. Channel Status LED

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

2.4. Data Value / Current

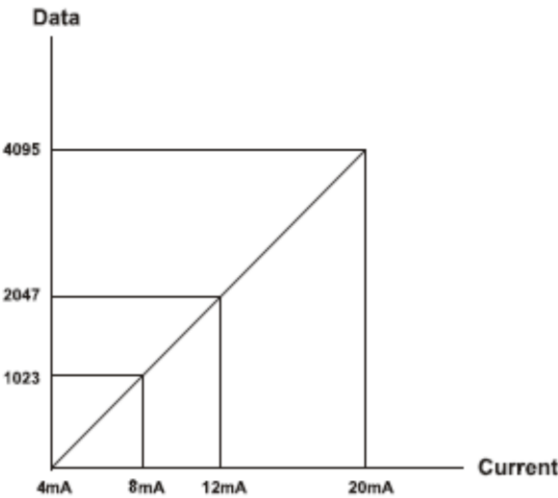
Current Range : 0~20mA

Current	0.0mA	5.0mA	10.0mA	20.0mA
Data(Hex)	H0000	H03FF	H07FF	H0FFF



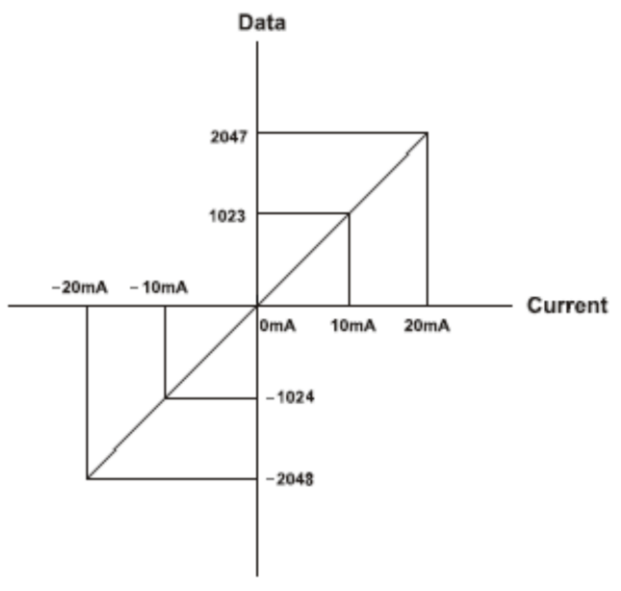
Current Range : 4~20mA

Current	4.0mA	8.0mA	12.0mA	20.0mA
Data(Hex)	H0000	H03FF	H07FF	H0FFF



Current Range : -20~20mA

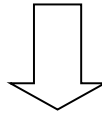
Current	-20.0mA	-10.0mA	0mA	+10.0mA	+20.mA
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF



2.5. 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							

Specification

3. GT-3928 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 12bits)

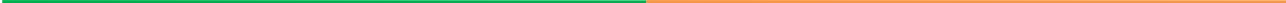
3.1. GT-3928 Specification

Items	Specification
Input Specification	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green G-Bus status LED
Resolution in Ranges	12 bits : 2.44mV/Bit(0~10V) 12 bits : 1.22mV/Bit(0~5V) 12 bits : 4.88mV/Bit(-10~10V) 12 bits : 2.44mV/Bit(-5~5V)
Input Range	0~10Vdc, 0~5Vdc, -10~10Vdc, -5~5Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C, 60°C
Input Impedance	667kΩ
Conversion Time	Max. 2.2msec (All channel)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
General Specification	
Power Dissipation	Max. 200mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm ² (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

3.2. GT-3928 Wiring Diagram



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



3.3. GT-3928 LED Indicator

3.3.1. LED Indicator



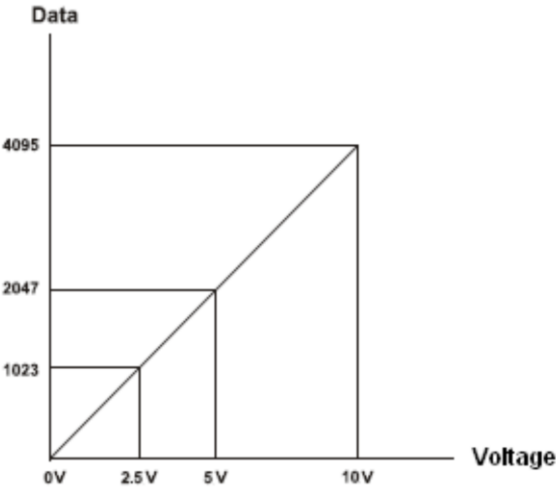
3.3.2. Channel Status LED

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

3.4. Data Value / Voltage

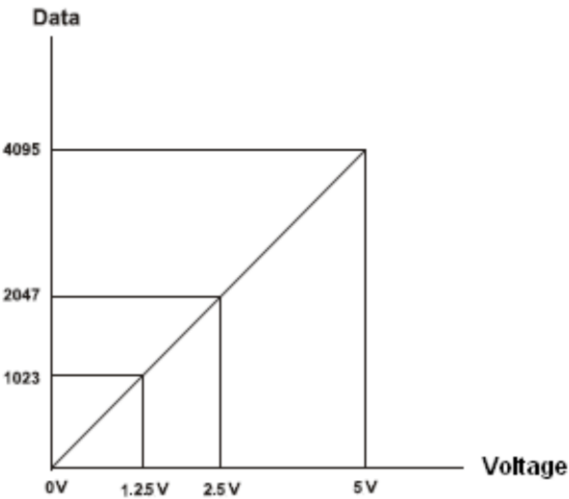
Voltage Range : 0~10V

Voltage	0V	2.5V	5.0V	10.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



Voltage Range : 0~5V

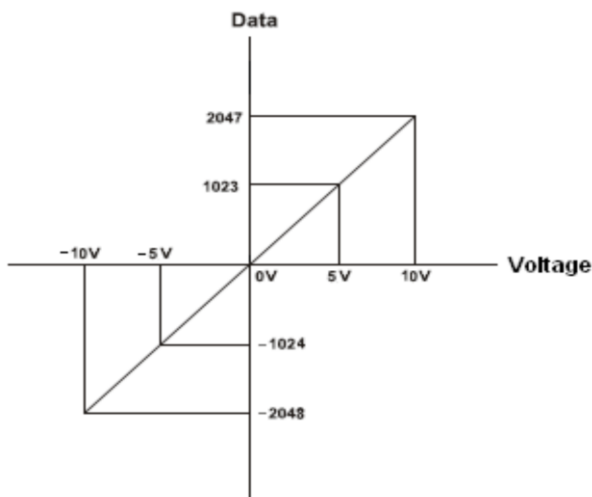
Current	0V	1.25V	2.5V	5.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



Specification

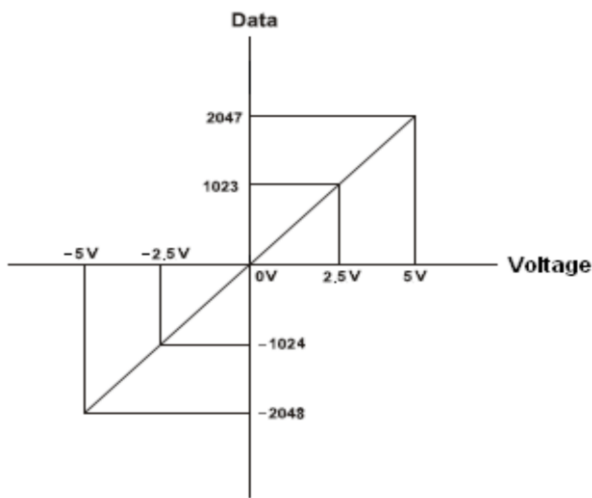
Voltage Range : -10~10V

Current	-10V	-5V	0V	5.0V	10.0V
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF



Voltage Range : -5~5V

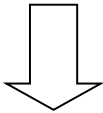
Current	-5V	-2.5V	0V	2.5V	5.0V
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF



3.5. 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							

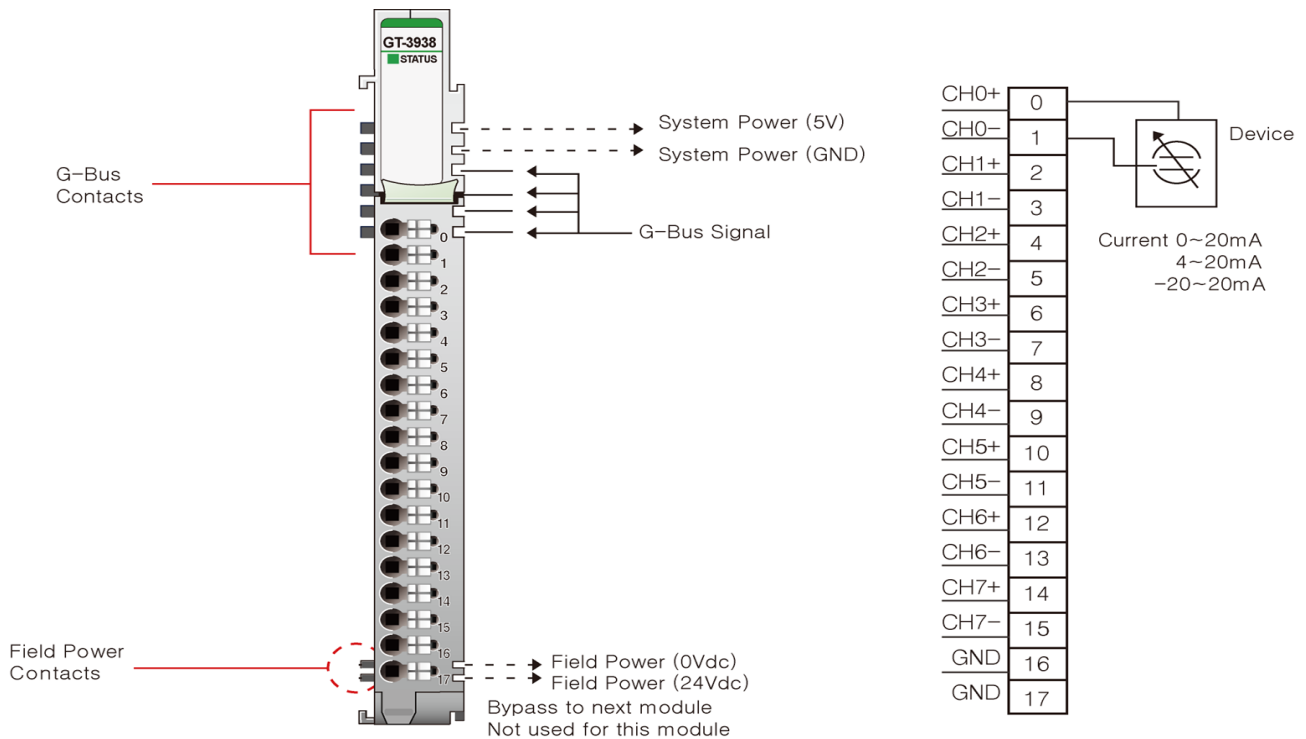
Specification

4. GT-3938 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 16bits)

4.1. GT-3938 Specification

Items	Specification
Input Specification	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green G-Bus status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.61uA/Bit(0~20mA) 15 bits : 0.49uA/Bit(4~20mA) 15bit (Include Sign) 15 bits : 1.22uA/Bit(-20~20mA)
Input Range	0~20mA, 4~20mA, -20~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C, 60°C
Input Impedance	121.5Ω
Conversion Time	Max. 2.4msec (All channel)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
General Specification	
Power Dissipation	Max. 200mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used, Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm ² (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

4.2. GT-3938 Wiring Diagram



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

4.3. GT-3938 LED Indicator

4.3.1. LED Indicator



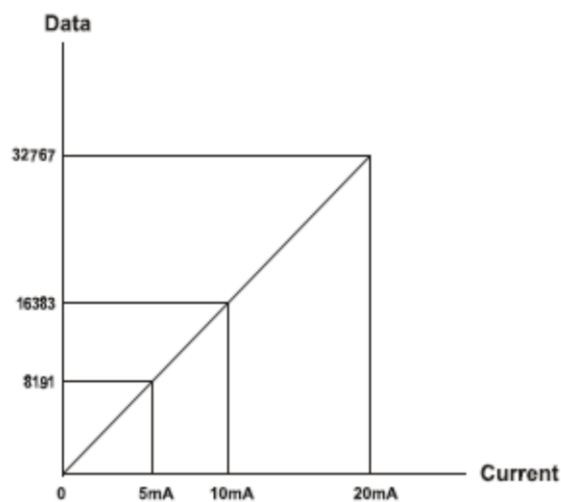
4.3.2. Channel Status LED

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

4.4. Data Value / Current

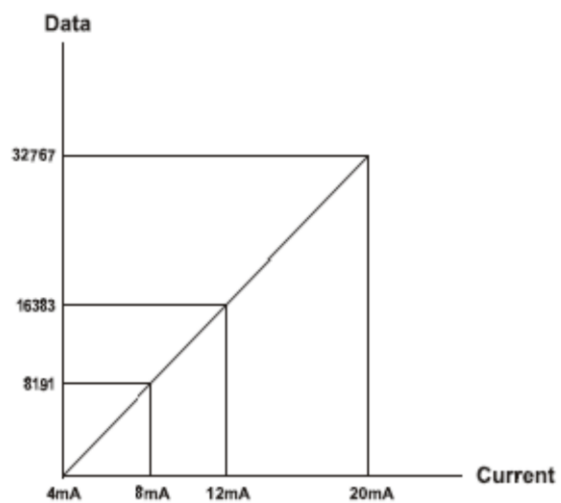
Current Range : 0~20mA

Current	0.0mA	5.0mA	10.0mA	20.0mA
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



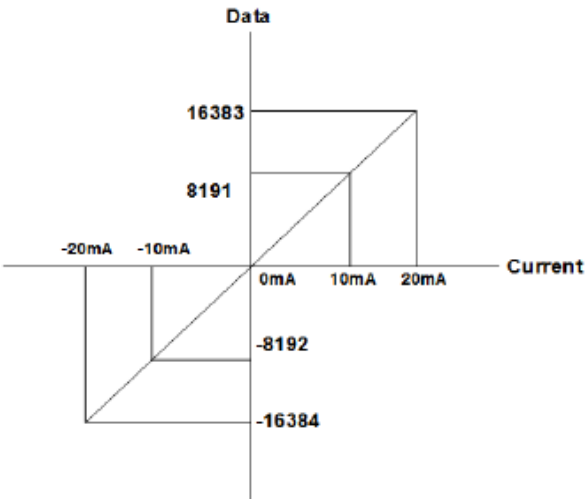
Current Range : 4~20mA

Current	4.0mA	8.0mA	12.0mA	20.0mA
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



Current Range : -20~20mA

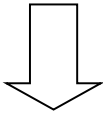
Current	-20.0mA	-10.0mA	0mA	+10.0mA	+20.mA
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



4.5. 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							

Specification

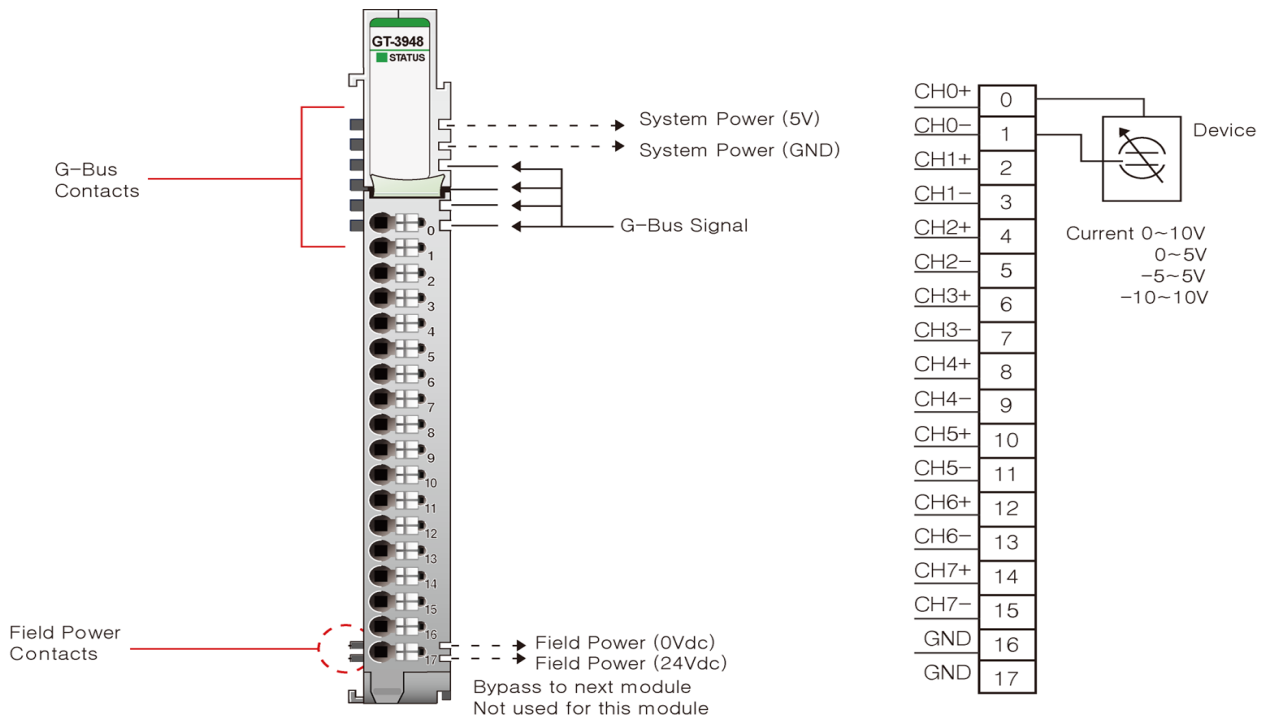
5. GT-3948 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 16bits)

5.1. GT-3948 Specification

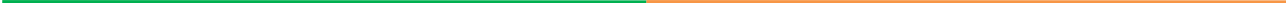
Items	Specification
Input Specification	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green G-Bus status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/Bit(0~10V) 15 bits : 0.15mV/Bit(0~5V) 15 bit (Include Sign) 15 bits : 0.61mV/Bit(-10~10V) 15 bits : 0.31mV/Bit(-5~5V)
Input Range	0~10Vdc, 0~5Vdc, -10~10Vdc, -5~5Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -40°C, 60°C
Input Impedance	667kΩ
Conversion Time	Max. 2.2msec (All channel)
Calibration	Not Required
Common Type	2 Common, Field Power 0V is Common(AGND)
General Specification	
Power Dissipation	Max. 200mA @ 5.0Vdc
Isolation	I/O to Logic : Photocoupler Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Wiring	I/O Cable Max. 1.0mm ² (AWG 18)
Weight	63g
Module Size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

Specification

5.2. GT-3948 Wiring Diagram



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



5.3. GT-3948 LED Indicator

5.3.1. LED Indicator



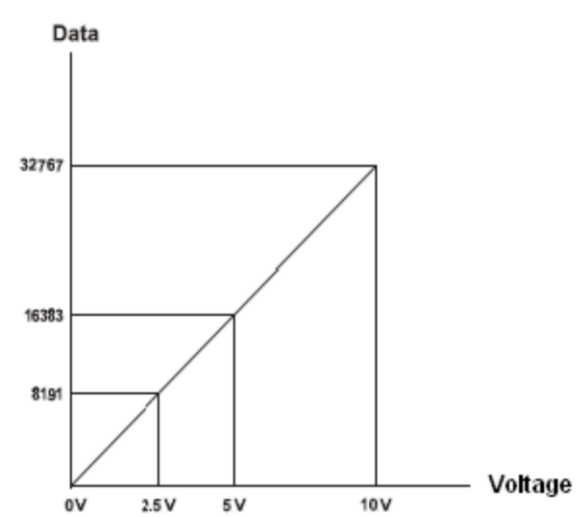
5.3.2. Channel Status LED

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

5.4. Data Value / Voltage

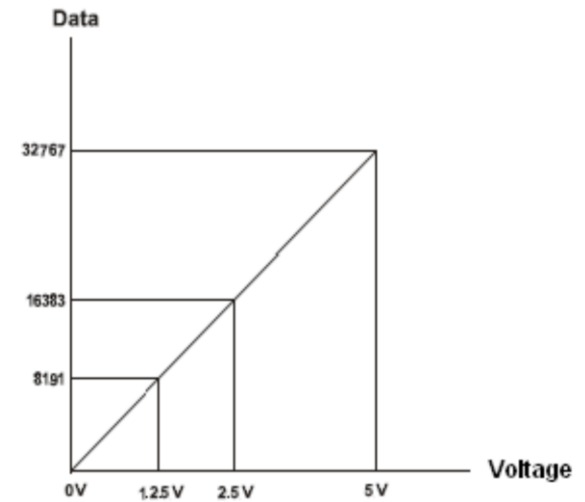
Voltage Range : 0~10V

Voltage	0V	2.5V	5.0V	10.0V
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



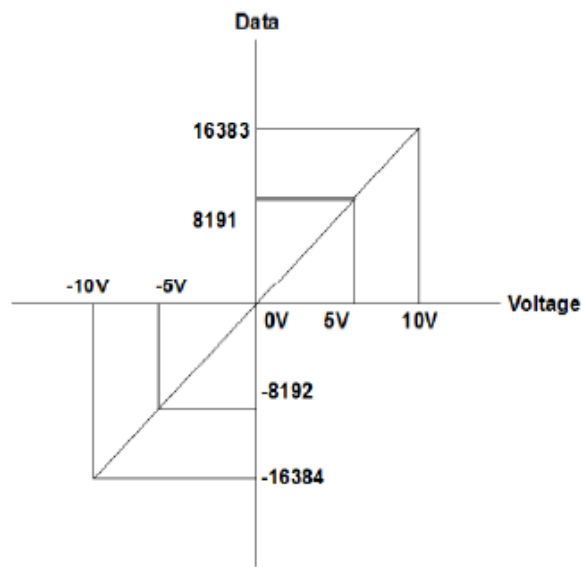
Voltage Range : 0~5V

Current	0V	1.25V	2.5V	5.0V
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



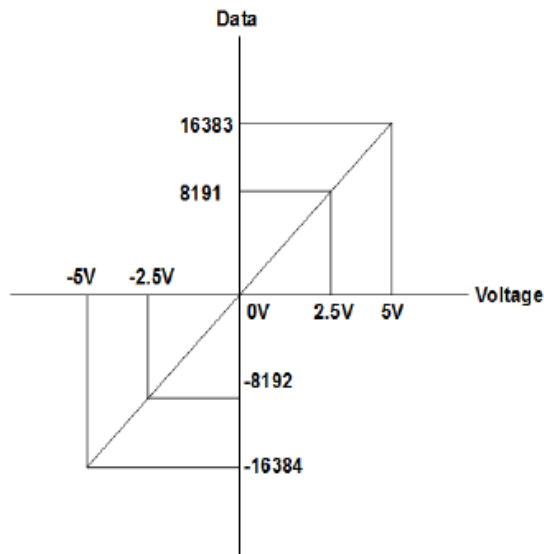
Voltage Range : -10~10V

Current	-10V	-5V	0V	5.0V	10.0V
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



Voltage Range : -5~5V

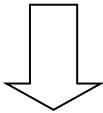
Current	-5V	-2.5V	0V	2.5V	5.0V
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



5.5. 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							

6. Input Range Setting & Conversion Time Setting

6.1. GT-3918, GT-3938

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch#0 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
1	Ch#1 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
2	Ch#2 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
3	Ch#3 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
4	Ch#4 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
5	Ch#5 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
6	Ch#6 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
7	Ch#7 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
8	Filter Time(H00 : Default Filter(20), H01 : Fastest ~ H3E : Slowest)							
9	Reserve							

* ID_PARAMETER (10Byte)

6.2. GT-3928, GT-3948

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch#0 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
1	Ch#1 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
2	Ch#2 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
3	Ch#3 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
4	Ch#4 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
5	Ch#5 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
6	Ch#6 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
7	Ch#7 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
8	Filter Time(H00 : Default Filter(20), H01 : Fastest ~ H3E : Slowest)							
9	Reserve							

* ID_PARAMETER (10Byte)