

# **FnIO G-series**

## ***GT-5914***

***GT-5914 (4 channels, Current Input, 4-20mA HART)***

# Specification

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# Specification

## History

REV.	PAGES	REMARKS	DATE	Editor
1.00	All	Initial document release.	09, 09, 2019	KIM HONG SEOK

# Specification

## 1. ENVIRONMENT SPECIFICATION

<b>Environmental specification</b>	
Operation Temperature	-40°C to 70°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 90% Non-condensing
Operating Altitude	2,000m
Mounting	DIN Rail
<b>General specification</b>	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 Sine Vibration <ul style="list-style-type: none"> <li>- 5 ~ 25Hz : ±1.6mm</li> <li>- 25 ~ 300Hz : 4g</li> <li>- Sweep Rate : 1 Oct/min, 20 Sweeps</li> </ul> Random Vibration <ul style="list-style-type: none"> <li>- 10 ~ 40 Hz : 0.0125 g<sup>2</sup>/Hz</li> <li>- 40 ~ 100 Hz : 0.0125 → 0.002 g<sup>2</sup>/Hz</li> <li>- 100 ~ 500 Hz : 0.002 g<sup>2</sup>/Hz</li> <li>- 500 ~ 2000 Hz : 0.002 → 1.3 x 10<sup>-4</sup>g<sup>2</sup>/Hz</li> <li>- Test time : 1hrs for each test</li> </ul>
Industrial Emissions	EN 61000-6-4/A11 : 2011
Industrial Immunity	EN 61000-6-2 : 2005
Installation Pos. / Protect. Class	Variable/IP20
Product Certifications	CE/UL

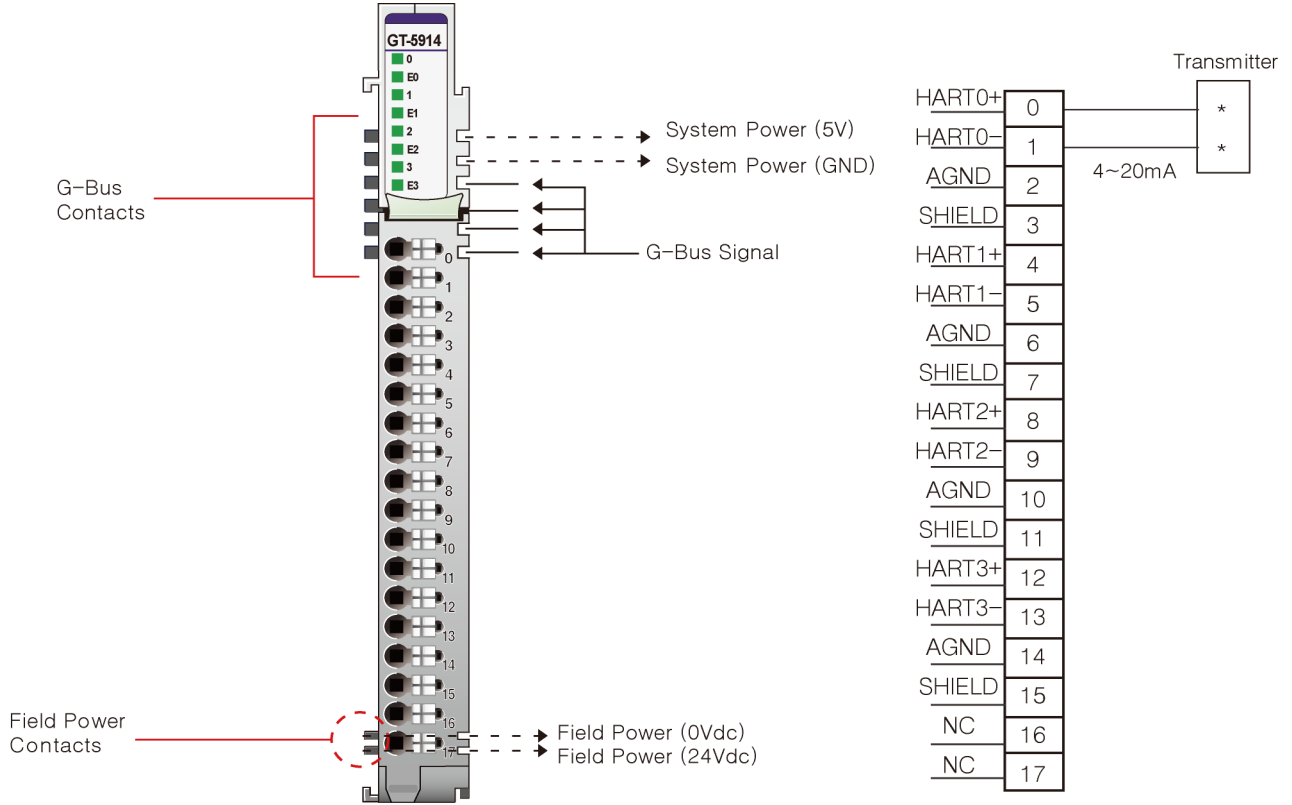
# Specification

## 2. GT-5914(4ch 4-20mA HART Module)

### 2.1. GT-5914 Specification

Items	Specification
<b>Analog Input</b>	
Number of Channel	4 Channels single ended, non-isolated between channels
Indicators	4 Green & 4 Red Input status, 1 Green Module status
Resolution in Ranges	16 bits (Include Sign) 15 bits : 0.49uA/Bit(4~20mA)
Module Error	±0.1% Full Scale @ 25°C ambient ±0.3% Full Scale @ -40°C, 70°C
Input Impedance	270Ω
Conversion Time	30msec / All channel
Field calibration	Not Required
Common Type	4 Common, Field Power 0V is Common(AGND)
<b>HART Specification</b>	
HART Version	Revision 5
Open circuit detection	I <sub>meas</sub> < 3.5mA
Short circuit detection	I <sub>meas</sub> > 22mA
<b>General Specification</b>	
Power Dissipation	Max. 30mA @ 5.0Vdc
Isolation	I/O to Logic : Isolation
Field Power	Supply voltage : 24Vdc nominal Voltage range : 18~32Vdc, Power Dissipation : Max. 10mA @ 24Vdc
Wiring	I/O Cable Max. 2.0mm <sup>2</sup> (AWG 14)
Weight	60g
Module Size	12mm x 99mm x 70mm,
<b>Environment Condition</b>	<b>Refer to 'Environment Specification'</b>

## 2.2. GT-5914 Wiring Diagram

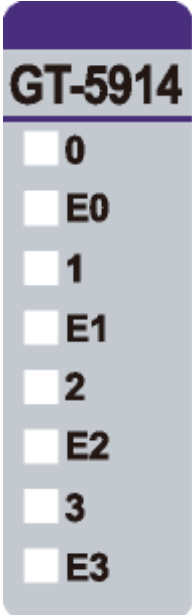


Pin No.	Signal Description	Signal Description	Pin No.
0	HART0+	HART0-	1
2	AGND	SHIELD	3
4	HART1+	HART1-	5
6	AGND	SHIELD	7
8	HART2+	HART2-	9
10	AGND	SHIELD	11
12	HART3+	HART3-	13
14	AGND	SHIELD	15
16	NC	NC	17

# Specification

## 2.3. LED Indicator

### 2.3.1. Channel Status LED

Module Win. Label	LED	Color	Status	Description
	0	Green	On	Analog input data range is within 4 ~ 20mA.
			Off	The analog input data range does not fall within 4 ~ 20mA.
	E0	LED	On	Hart communication does not work.
			Off	Hart communication works normally.
	1	Green	On	Analog input data range is within 4 ~ 20mA.
			Off	The analog input data range does not fall within 4 ~ 20mA.
	E1	LED	On	Hart communication does not work.
			Off	Hart communication works normally.
	2	Green	On	Analog input data range is within 4 ~ 20mA.
			Off	The analog input data range does not fall within 4 ~ 20mA.
	E2	LED	On	Hart communication does not work.
			Off	Hart communication works normally.
	3	Green	On	Analog input data range is within 4 ~ 20mA.
			Off	The analog input data range does not fall within 4 ~ 20mA.
	E3	LED	On	Hart communication does not work.
			Off	Hart communication works normally.

# Specification

## 2.4. Configuration Parameter Data

Byte	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Remarks(*)
0	Mode	Retry Time							WH
1	Filter Time							WH	
2	Reserved							WH	
3	Reserved							WH	

**Mode 0 : Basic Mode**

**Mode 1 : Extend Mode**

**Retry Time : Min 5, Max 10 (Hart Communication Retry Time/If Fail)**

**Filter Time : Min 20, Max 255 (Analog Input Filter)**



# Specification

## 2.5. Mapping data into the image table (Basic Mode)

- Input Image Value ( 24 Byte )

Byte	Input Image Data							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Analog Input Data								
0	Analog Input 0							
1								
2								
3								
4	Analog Input 1							
5								
6	Analog Input 2							
7								
Hart Data								
8	Variable Data 0 (PV,SV,TV,QV)							
9								
10								
11								
12	Variable Data 1 (PV,SV,TV,QV)							
13								
14								
15								
16	Variable Data 2 (PV,SV,TV,QV)							
17								
18								
19								
20	Variable Data 3 (PV,SV,TV,QV)							
21								
22								
23								

# Specification

## ● Output Image Value ( 4 Byte )

Byte	Output Image Data							
	Control Word 0							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Variable Data 1 / Data Sel	Variable Data 1 / ch Sel	Variable Data 0 / Data Sel	Variable Data 0 / ch Sel				
1	Variable Data 3 / Data Sel	Variable Data 3 / ch Sel	Variable Data 2 / Data Sel	Variable Data 2 / ch Sel				
2	Reserved							
3	Reserved							

**Variable Data x Sel : 0=PV, 1=SV, 2=TV, 3=QV**

**Variable Data x ch Sel : 0=0ch, 1=1ch, 2=2ch, 3=3ch**

Ex) Variable Data 0 = 0ch, SV

Variable Data 0 / Data Sel : 1 → bit 01

Variable Data 0 / ch Sel : 0 → bit 00

Ex) Variable Data 3 = 1ch, QV

Variable Data 3 / Data Sel : 3 → bit 11

Variable Data 3 / ch Sel : 1 → bit 01

# Specification

## 2.6. Mapping data into the image table (Extend Mode)

- **Input Image Value ( 24 Byte )**

Byte	Input Image Data							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Analog Input Data								
0	Analog Input 0							
1								
2								
3								
4	Analog Input 1							
5								
6	Analog Input 2							
7								
Hart Data								
8	Success	CMC Error	CMD Error	Run	Communication Count			
9	Response Data 0 byte							
10	Response Data 1 byte							
11	Response Data 2 byte							
12	Response Data 3 byte							
13	Response Data 4 byte							
14	Response Data 5 byte							
15	Response Data 6 byte							
16	Response Data 7 byte							
17	Response Data 8 byte							
18	Response Data 9 byte							
19	Response Data 10 byte							
20	Response Data 11 byte							
21	Response Data 12 byte							
22	Response Data 13 byte							
23	Response Data 14 byte							

\* STATUS

**Run = Communication Running**

**CMD Error = Command Error**

**CMC Error = Communication Error**

**Success = Communication Success**

# Specification

● **Output Image Value ( 4 Byte )**

Byte	Output Image Data							
	Control Word 0							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	channel Select							
1	Command							
2	Reserved				Communication Count			
3	Reserved							

**Example) How to Communication**

**Channel : 2**

**Command : 3**

**Step#1**

**Output Data = 0x01, 0x03, 0x00, 0x00**

Byte	Hex
0	0x01
1	0x03
2	0x00
3	0x00

**Step#2**

**Check Status Byte.**

**If Run is 1, Communication is in progress.**

**If Success is 1, Communication is Completed.**

**If Communication is completed. Go to Step#3**

Byte	Hart Data						
8	Success	CMC Error	CMD Error	Run	Communication Count		

**Step#3**

**Output Data = 0x01, 0xFF(Read Response Data), 0x00(Communication Count), 0x00**

**If the number of response data exceeds 15byte, if you send the command(FF) by increasing Communication Count, you can check the response data after 15byte.**

Byte	Hex
0	0x01
1	0xFF
2	0x00
3	0x00

## 2.7. Supported Commands

Commands		decription
Universal Command	0	Read Unique Identifier
	1	Read Primary Variable
	2	Read Current and Percent of Range
	3	Read all dynamic Variables and Current
	12	Read Message
	13	Read Tag, Descriptor, Date
	14	Read Primary Variable Sensor Information
	15	Read Primary Variable Output Information
	16	Read Final Assembly Number
Common Practice Command	48	Read Additional Transmitter Status