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# **FnIO G-Series :**

# **GT-5652**

**GT-5652 (2CH Differential Output, RS422)**

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## History

REV.	PAGES	REMARKS	DATE	Editor
1.00	8	New Document	Oct 11, 2019	Soyeong, Park
1.01		Release	Apr 21, 2020	Soyeong, Park

**1. ENVIRONMENT SPECIFICATION**

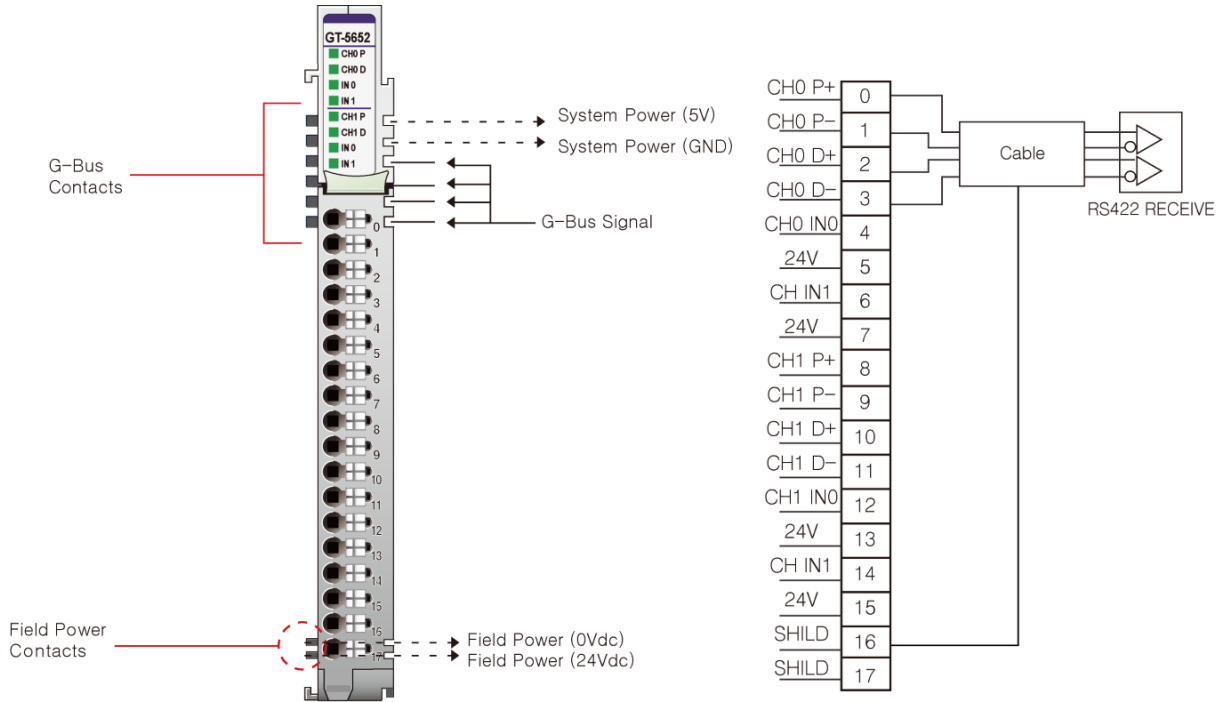
<b>Environmental specification</b>	
Operating Temperature	-40°C~70°C
UL Temperature	-20°C~60°C
Storage Temperature	-40°C~85°C
Relative Humidity	5%~90% non-condensing
Mounting	DIN rail
<b>General Specification</b>	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 DNVGL-CG-0039 : 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

## 2. GT-5652(2CH Differential Output, RS422)

### 2.1. GT-5652 Specification

Items	Specification
<b>Output Specification</b>	
Number of channel	2 Channel
Number of output	4 RS422 differential output (2 pulse output, 2 pulse direction output)
Indicators	4 green LEDs - 2 green pulse LEDs - 2 green direction LEDs
Output voltage	RS422 voltage level
Pulse output frequency	1-500kHz
Pulse output duty	About 50%
Pulse output quantity with one command	Continuous Pulse Output, Max.+1~+2147483647: pulse direction output off Max.-1~-2147483647 : pulse direction output on
Pulse output counter	Signed 32bit-wide
Function	Trapezoidal acceleration
Protection	Short protection
Common type	2 shield
<b>Digital Input Specification</b>	
Input per module	4 points sink type
Indicators	4 green terminal input status
Input on-state voltage	24Vdc nominal 15~32Vdc
Field power off-state voltage	8.0Vdc @ 25°C
On-state current	3.10mA @ 30Vdc
Input signal delay	OFF to ON : Max. 0.3ms ON to OFF : Max. 0.3ms
Nominal input impedance	10.72K ohm typical
<b>General Specification</b>	
Power dissipation	Max. 75mA @ 5Vdc
Isolation	I/O to Logic : photocoupler isolation Field power : non-isolation
UL field power	Supply voltage : 24Vdc nominal, Class 2
Field power	Supply voltage : 24Vdc nominal Voltage range : 15~30Vdc Power dissipation : Max. 10mA @ 24Vdc except load
Single wiring	I/O Cable Max. 0.75 mm <sup>2</sup> (AWG 18)
Weight	63g
Module size	12 mm x 109 mm x 70 mm
Environment condition	Refer to 'Environment Specification'

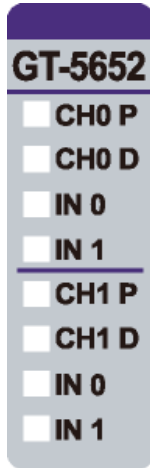
## 2.2. GT-5652 Wiring Diagram



Pin No.	Signal Description
0	Differential Pulse Output Channel #0 +
1	Differential Pulse Output Channel #0 -
2	Direction Output Channel #0 +
3	Direction Output Channel #0 -
4	Emergency Stop Input Channel #0
5	Field Power 24V, Common
6	Digital Input Channel #0
7	Field Power 24V, Common
8	Differential Output Channel #1 +
9	Differential Output Channel #1 -
10	Direction Output Channel #1 +
11	Direction Output Channel #1 -
12	Emergency Stop Input Channel #1
13	Field Power 24V, Common
14	Digital Input Channel #1
15	Field Power 24V, Common
16	Shield
17	Shield

## 2.3. GT-5652 LED Indicator

### 2.3.1. LED Indicator



LED No.	LED Function / Description	LED Color
0	Pulse Output Channel #0	Green
1	Direction Output Channel #0	Green
2	Emergency Stop Input #0	Green
3	Digital Input #0	Green
4	Pulse Output Channel #1	Green
5	Direction Output Channel #1	Green
6	Emergency Stop Input #1	Green
7	Digital Input #1	Green

### 2.3.2 Channel Status LED

Status	LED	To Indicate
No Signal	Off	Normal Operation
On Signal	Green	Normal Operation

## 2.4. Mapping data from the image table

### ● Input Image Value - 10Byte

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Pulse Output Counter CH#0 LL							
Byte 1	Pulse Output Counter CH#0 LH							
Byte 2	Pulse Output Counter CH#0 HL							
Byte 3	Pulse Output Counter CH#0 HH							
Byte 4	Pulse Output Counter CH#1 LL							
Byte 5	Pulse Output Counter CH#1 LH							
Byte 6	Pulse Output Counter CH#1 HL							
Byte 7	Pulse Output Counter CH#1 HH							
Byte 8	Emergency Stop Input CH#0				Digital Input CH#0			
Byte 9	Emergency Stop Input CH#1				Digital Input CH#1			

- A Pulse Output Counter is a signed 32bit-wide data.

- Emergency Stop Input 0,1 : Stop the pulse output, when signal is detected on input channel.

### ● Output Image Value - 14Byte

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Frequency CH#0 Low Byte							
Byte 1	Frequency CH#0 High Byte							
Byte 2	Frequency CH#1 Low Byte							
Byte 3	Frequency CH#1 High Byte							
Byte 4	Pulse Output Qty CH#0 LL							
Byte 5	Pulse Output Qty CH#0 LH							
Byte 6	Pulse Output Qty CH#0 HL							
Byte 7	Pulse Output Qty CH#0 HH							
Byte 8	Pulse Output Qty CH#1 LL							
Byte 9	Pulse Output Qty CH#1 LH							
Byte 10	Pulse Output Qty CH#1 HL							
Byte 11	Pulse Output Qty CH#1 HH							
Byte 12	RUN0	ECP0	ACC0	CLR0	.	.	Multiple	
Byte 13	RUN1	ECP1	ACC1	CLR1			Multiple	

- RUNx : Pulse Output Run

- ECPx (Enable Continuous Pulse) : If this bit is '1' and Pulse Output Qty is not 0, pulse output always runs.

- ACCx : Acceleration Function Enable (it does not work when parameter value is 0 or frequency value is less than 3000.)

- CLRx : Clear Real Pulse Output Counter



### ■ Frequency Multiple Selection

Value	Description
0 (B'00)	x1 Frequency Multiple
1 (B'01)	x10 Frequency Multiple
2 (B'10)	x100Frequency Multiple
3 (B'11)	x1000 Frequency Multiple

- If Pulse Frequency = 123 and Frequency Multiple =2, Real Pulse Output is 12.3KHz (123\*100).

## 2.5. Parameter Data

- Valid Parameter length : 4 Bytes
- Parameter Data

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Acceleration Time CH#0 L							
Byte 1	Acceleration Time CH#0 H							
Byte 2	Acceleration Time CH#1 L							
Byte 3	Acceleration Time CH#1 H							

- The unit is msec. if 1000, then Acceleration Time 1000msec

- The maximum is 10000. (10,000msec = 10sec)

## 2.6 Example

### 2.6.1 Exampe of Acceleration Function

\* This Function is available when the frequency is over 3k and the Parameter value is not 0.

- **Setting for CH0 (same as CH1)**

Frequency			
Byte0 (Low Byte)	0x14	Byte1 (High Byte)	0x00

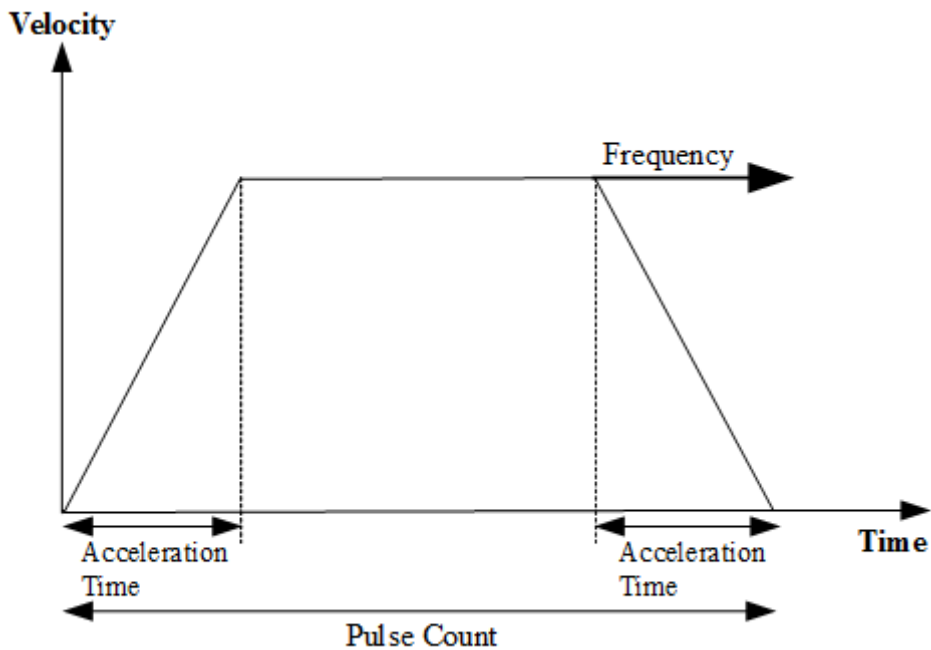
Pulse Output Qty							
Byte4 (LL)	0x50	Byte5 (LH)	0xC3	Byte6 (HL)	0x00	Byte7 (HH)	0x00

Control Byte (Byte 12) = 0xA3							
Bit7(RUN)	Bit6(ECP)	Bit5(ACC)	Bit4(CLR)	Bit3(None)	Bit2(None)	Bit1-0 (Multiple)	
1	0	1	0	.	.	0	3

Parameter (Accleration Value)			
Byte0 (L)	0xE8	Byte1 (H)	0x03

=> Frequency = 25000 / Pulse Count = 50000 / Acceleration Time = 1,000msec

- **Result**



※ If the counter value is not sufficient, the maximum velocity may not be reached.