

FnIO G – Series :

GT-5652

GT-5652 (2Channels, Differential Output, RS422)

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History

Rev	Pages	Remarks	Date	Editor
1.00			2019/10/11	Soyeong, Park
1.01		Certification Release	2020/04/21	Soyeong, Park
1.02	4,6	Edit Certification/Change Diagram	2023/09/04	Soyeong, Park
1.03	8,9	Add Emergency Stop status bit	2024/11/19	Soyeong, Park
1.04	5	Edit System Power Dissipation	2025/05/30	Suna, Hwang

1. ENVIRONMENT SPECIFICATION

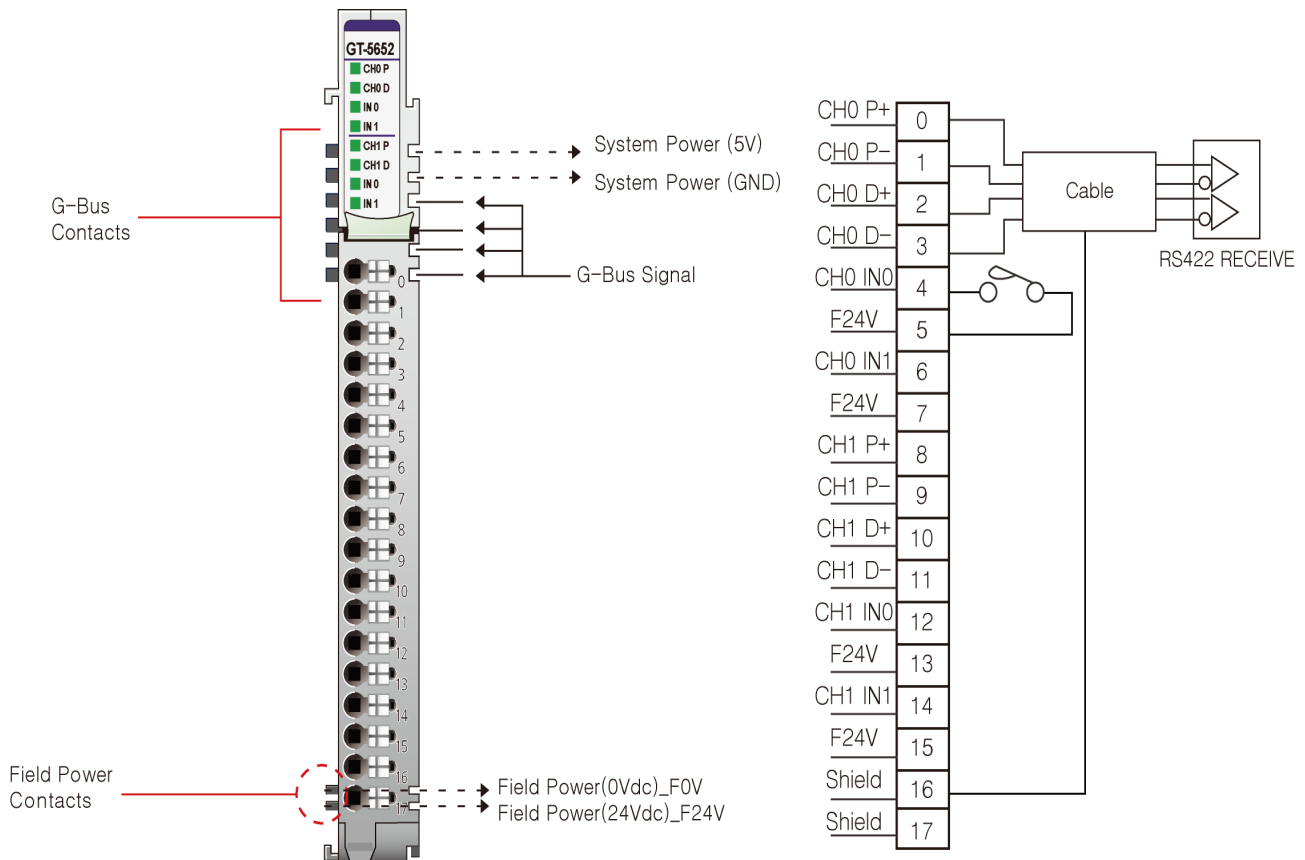
Environmental Specification	
Operation Temperature	-40°C ~60°C
UL Temperature	-20°C ~60°C
Storage Temperature	-40°C ~85°C
Relative Humidity	5%~90% Non-condensing
Mounting	DIN rail
General Specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6, 4g
Industrial Emissions	EN61000-6-4/All : 2011
Industrial Immunity	EN 61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available
Product Certifications	CE, UL

2. GT-5652 (2Channels, Differential Output, RS422)

2.1. GT-5652 Specification

Items	Specification
Output Specification	
Number of channel	2 Channels
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(0x7FFFFFFF) : Pulse Direction Output OFF. Max.-1~-2147483648(0x80000000) : Pulse Direction Output ON.
Pulse output counter	Signed 32bit-wide
Function	Trapezoidal Acceleration
Protection	Short Protection
Common type	2 Shield
Digital Input Specification	
Input per module	4 points sink type
Indicators	4 Green input status
Input on-state voltage	24Vdc nominal 15~30Vdc
OFF-state voltage	8.3Vdc @25°C
On-state current	2.3mA @ 24Vdc 2.9mA @ 30Vdc
Input signal delay	OFF to ON : Max. 0.3ms @24Vdc ON to OFF : Max. 0.3ms @24Vdc
Nominal input impedance	10.2K
General specification	
Power dissipation	Max. 80mA @ 5.0Vdc
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 wire	I/O Cable Max. 0.823mm ² (AWG18)
Weight	63g
Module size	12mm x 109mm x 70mm
Environment Condition	Refer to 'Environment Specification'

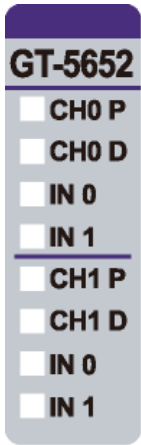
2.2. GT-5652 Wiring Diagram



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
6	Digital Input Channel #0
7	Field Power 24V
8	Differential Pulse Output Channel #1 +
9	Differential Pulse Output Channel #1 -
10	Direction Output Channel #1 +
11	Direction Output Channel #1 -
12	Emergency Stop Input Channel #1
13	Field Power 24V
14	Digital Input Channel #1
15	Field Power 24V
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 Channel #0	Green
4	Pulse Output Channel #1	Green
5	Direction Output Channel #1	Green
6	Emergency Stop Input #1	Green
7	Digital Input Channel #1	Green

2.3.2. Channel Status LED

Status	LED	To indicate
No Signal	Off	No Input / Output Signal
On Signal	Green	Input / Output Signal detected

2.4. Mapping data into the image table

● Input Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Pulse Output Counter CH#0 LL							
Byte1	Pulse Output Counter CH#0 LH							
Byte2	Pulse Output Counter CH#0 HL							
Byte3	Pulse Output Counter CH#0 HH							
Byte4	Pulse Output Counter CH#1 LL							
Byte5	Pulse Output Counter CH#1 LH							
Byte6	Pulse Output Counter CH#1 HL							
Byte7	Pulse Output Counter CH#1 HH							
Byte8	-	-	Emergen Bit CH#0 **	Emergen In CH#0*	-	-	-	DI CH#0
Byte9	-	-	Emergen Bit CH#1 **	Emergen In CH#1*	-	-	-	DI CH#1

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

* Emergen In CH#0,1 (Emergency Stop Input 0,1)

- When rising signal is detected on the input channel, this bit is set(1).

- If this bit is set(1), the pulse output function is disabled.

** Emergen Bit CH#0,1 (Emergency Stop Status 0,1)

- This bit is set when the emergency stop function is implemented.

- After the emergency stop function is performed, this bit must be reset(0) to operate the product.

You can reset(0) using the Emergen CLR bit of the output image value.

■ Emergency Stop Function

Emergen Bit	Emergen In	Description
0	0	Normal Operation
1	0	Stand by state (must be clear emergen bit)
0	1	X (There is no such case.)
1	1	Emergency Stop

Specification

● Output Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Frequency CH#0 Low Byte							
Byte1	Frequency CH#0 High Byte							
Byte2	Frequency CH#1 Low Byte							
Byte3	Frequency CH#1 High Byte							
Byte4	Pulse Output Qty CH#0 LL							
Byte5	Pulse Output Qty CH#0 LH							
Byte6	Pulse Output Qty CH#0 HL							
Byte7	Pulse Output Qty CH#0 HH							
Byte8	Pulse Output Qty CH#1 LL							
Byte9	Pulse Output Qty CH#1 LH							
Byte10	Pulse Output Qty CH#1 HL							
Byte11	Pulse Output Qty CH#1 HH							
Byte12	RUN0	ECP0	ACC0	CLR0	Emergen CLR 0*	-	Multiple0	
Byte13	RUN1	ECP1	ACC1	CLR1	Emergen CLR 1*	-	Multiple1	

- RUN0,1 : Pulse Output Run
- ECP0,1 (Enable Continuous Pulse) : If this bit '1' and Pulse Output Qty is not 0, pulse output always runs.
- ACC0,1 (Enable Acceleration Function) : it doesn't work when parameter value 0 or frequency value is less than 3K.
- CLR0,1 : Clear real pulse output counter (Input Image value)

* Emergen CLR 0,1 : Clear Emergen bit (Input Image Value)

- When the Emergen CLR bit changes from 0 to 1 (0→1), the clear function is performed.

Note : The Emergen CLR function must be performed after the emergency stop input is removed.

■ Multiple0,1 (Frequency Multiple Selection)

Value	Description
0 (B' 00)	x1 Frequency Multiple
1 (B' 01)	x10 Frequency Multiple
2 (B' 10)	x100 Frequency Multiple
3 (B' 11)	x1000 Frequency Multiple

- If Pulse Frequency = 123 and Frequency Multiple = 2 → Real Pulse Output is 12.3KHz (123*100Hz)

2.5. Parameter Data

- Valid Parameter length : 4 Bytes
- Parameter Data

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Acceleration Time CH#0 L							
Byte1	Acceleration Time CH#0 H							
Byte2	Acceleration Time CH#1 L							
Byte3	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. Example of Acceleration Function

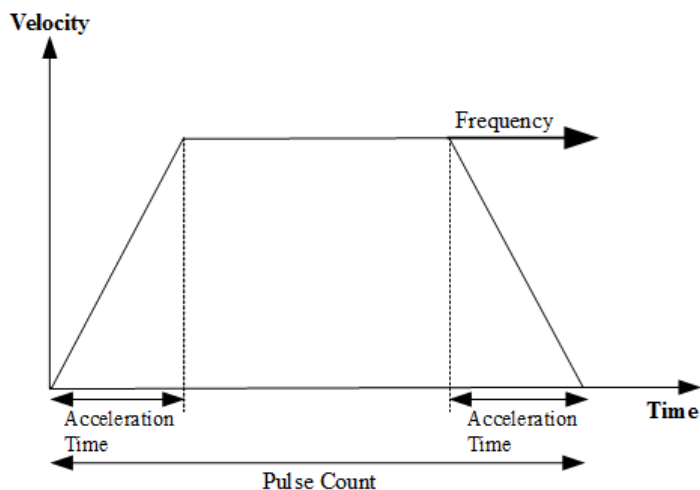
* This Function is available when the frequency is over 3k and the Parameter value is not 0.

- Setting for CH0 (same as CH1)

Example → Frequency = 25kHz / Pulse Count = 50,000 / Acceleration Time = 1,000msec (1sec)

Frequency															
Byte0 (Low Byte)		0x19		Byte1 (High Byte)		0x00									
Pulse Output Qty															
Byte4 (LL)		0x50		Byte5 (LH)		0xC3		Byte6 (HL)		0x00		Byte7 (HH)		0x00	
Control Byte (Byte12) = 0xA3															
Bit7(RUN)		Bit6(ECP)		Bit5(ACC)		Bit4(CLR)		Bit3(None)		Bit3(None)		Bit1-0 (Multiple)			
1		0		1		0		-		-		0		3	
Parameter (Acceleration Value)															
Byte0 (Low Byte)				0xE8				Byte1 (High Byte)				0x03			

- Result



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