

FnIO M – Series :

M5352

M5352(16 Channels, Universal Input Terminal, 24Vdc)

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History

REV.	PAGES	REMARKS	DATE	Editor
1.00		Preliminary	2020/12/3	BS HA
1.01	9	Remove Description pages of Hot Swap Function, Use in Hazardous Envirnmnts and Caution(Before using the unit)	April 01, 2021	SJ LIM
1.02	4	Environment Specification Update	2021/11/16	EC KIM

1. ENVIRONMENT SPECIFICATION

Environmental specification	
Operating Temperature	-25℃~60℃
UL Temperature	-25℃~60℃
Storage Temperature	-40℃~85℃
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	IEC 60068-2-6, 4g
Industrial Emissions	EN 61000-6-4/A11 : 2011
Industrial Immunity	EN 61000-6-2 : 2019
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL, FCC, KR, ABS, ATEX

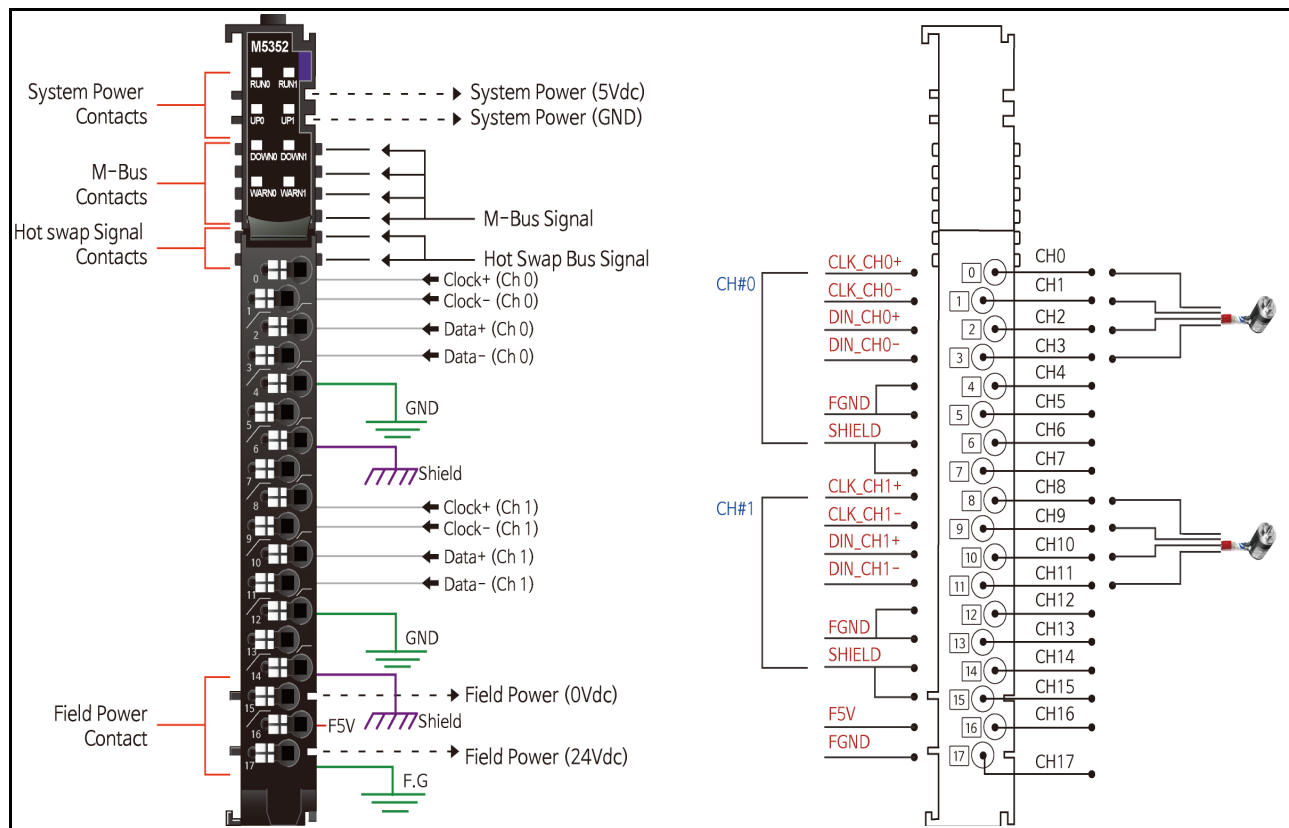
2. M5352 (16 Channels Universal Input Terminal)

2.1. M5352 Specification

Items	Specification
Input specification	
Number of channel	2 channel - Synchronous Serial Interface Module
Indicators	8 green status RUN0, RUN1, UP0, UP1, DOWN0, DOWN1, WARN0, WARN1
SSI data rate(bps)	Channel 0, 1 – 125K, 250K, 500K, 1M, 2M(default 250K)
SSI data width	Max. 30bit
SSI data delay time	100usec ~ 10msec(default 200us)
SSI output	C+, C- : ch0,1 RS422 differential output
SSI input	D+, D- : ch0,1 RS422 differential input
SSI data code type	Gray code or natural binary
Receiver common mode input voltage (data input voltage)	-7~7Vdc
Output voltage (clock output voltage)	-0.5~4.3Vdc
Special features	Adjustable baud rate, delay and data length
General specification	
Power dissipation	Max. 60mA @5Vdc
Isolation	I/O to Logic : Photocoupler isolation
UL Field Power	Supply voltage : 24Vdc nominal, Class 2
Field Power	Supply voltage : 24Vdc nominal Voltage range : 15~28.8Vdc Power dissipation: 40mA maximum @ 28.8Vdc
Wiring	I/O Cable Max. 2.0mm ² (AWG 14)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Environment Condition	Refer to '1. Environment Specification'

* Class 2, adjacent to voltage rating (30Vmax)

2.2. M5352 Wiring Diagram



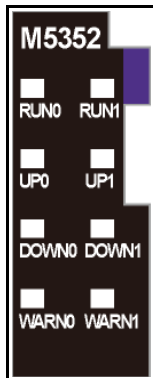
Pin No.	Signal Description
0	Pulse Output+ Ch#0
1	Pulse Output- Ch#0
2	Input Data+ Ch#0
3	Input Data- Ch#0
4	Field Ground(0V)
5	Field Ground(0V)
6	Shield
7	Shield
8	Pulse Output+ Ch#1
9	Pulse Output- Ch#1
10	Input Data+ Ch#1
11	Input Data- Ch#1
12	Field Ground(0V)
13	Field Ground(0V)
14	Shield
15	Shield
16	Field Power(5V)
17	Field Ground(0V)

Series No	Through Air	Over Surface	CTI
RTB18C	1.5mm	1.5mm	175≤CTI≤400

Spacings : The following minimum spacing in inches (millimeters) shall be maintained between uninsulated live parts of opposite polarity; and between an uninsulated live part and a grounded part including any mounting surface or exposed metal part.

2.3. M5352 LED Indicator

2.3.1. LED Indicator



LED No.	LED Function / Description	LED Color
RUN0	Run state Ch#0	Green
RUN1	Run state Ch#1	Green
UP0	Encoder is rotating counter clockwise. Ch#0	Green
UP1	Encoder is rotating counter clockwise. Ch#1	Green
DOWN0	Encoder is rotating clockwise. Ch#0	Green
DOWN1	Encoder is rotating clockwise. Ch#1	Green
WARN0	Warning state (WFP, WSSIF, WSSID) Ch#0	Green
WARN1	Warning state (WFP, WSSIF, WSSID) Ch#1	Green

2.4. M5352 IO Input Image Data – 10byte

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	SSI Data LL Ch#0							
1	SSI Data LH Ch#0							
2	SSI Data HL Ch#0							
3	SSI Data HH Ch#0							
4	SSI Data LL Ch#1							
5	SSI Data LH Ch#1							
6	SSI Data HL Ch#1							
7	SSI Data HH Ch#1							
8	RUN Ch#0	WARN Ch#0	DEC Ch#0	INC Ch#0	--	WFP Ch#0	WSSIF Ch#0	WSSID Ch#0
9	RUN Ch#1	WARN Ch#1	DEC Ch#1	INC Ch#1	--	WFP Ch#1	WSSIF Ch#1	WSSID Ch#1

- SSI Data word is a 32bit-wide data. Ch#0,1
- RUN : SSI Clock Output Enabled Flag
- WARN : Warning. Any warning has occurred, WFP, WSSIF or WSSID.
- DEC : SSI Data Decrement. It was set, it lasts until INC.
- INC : SSI Data Increment. It was set, it lasts DEC.
- WFP : Warning of Field Power (SSI Power).
- WSSIF : Warning of SSI Frame. The last bit of frame data is not trailed with 0.
- WSSID : Warning of SSI Data. SSI Data is 0 during gap of frames. Generally when invalid wiring or cross wiring.

2.5. M5352 IO Output Image Data – 4byte

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	RUN Ch#0	GRAY Ch#0	--		SSI Data Length (0~30) Ch#0			
1	SSI Data Delay Time Selection Ch#0				SSI Data Rate Selection Ch#0			
2	RUN Ch#1	GRAY Ch#1	--					
3	SSI Data Delay Time Selection Ch#1				SSI Data Rate Selection Ch#1			

- RUN : SSI Clock Output Command, 1:Run, 0:Stop

- GRAY : Conversion Binary to Gray code. 1:Gray, 0:Binary (It has effect on Current SSI Data.)

- SSI Data Length : Sensor Resolution Bit + Sensor Number of turn Bit.

Example) Sensor Resolution (Step/Revolution)=8192 => 13bit, Sensor Number of turn=4092 => 12bit

SSI Data Length must be 25 (13bit + 12bit).

■ SSI Data Rate Selection Ch#0, Ch#1

Value	Description	
	Ch#0	Ch#1
0(B`0000)	250Kbps (Default)	
1(B`0001)	125Kbps	
2(B`0010)	250Kbps	
3(B`0011)	500Kbps	
4(B`0100)	1Mbps	
5(B`0101)	2Mbps	

■ SSI Data Delay Time Selection

Value	Description	Value	Description
0(B`0000)	200usec (Default)	8(B`1000)	800usec
1(B`0001)	100usec	9(B`1001)	900usec
2(B`0010)	200usec	10(B`1010)	1msec
3(B`0011)	300usec	11(B`1011)	2msec
4(B`0100)	400usec	12(B`1100)	3msec
5(B`0101)	500usec	13(B`1101)	4msec
6(B`0110)	600usec	14(B`1110)	5msec
7(B`0111)	700usec	15(B`1111)	10msec

2.6. M5352 Configuration Parameter Data – 8byte

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							
1	Reserved							
2	Reserved							
3	Reserved							
4	Reserved							
5	Reserved							
6	Reserved							
7	Reserved							