

FnIO M – Series :

M349F

M349F (16 Channels , Voltage Input)
0~10Vdc / 0~5Vdc / 1~5Vdc, 16bit

Table of Contents

Table of Contents.....	2
History.....	3
1.ENVIRONMENT SPECIFICATION.....	4
2.M349F (16 Channels Voltage Input, 0~10Vdc / 0~5Vdc / 1~5Vdc, 16bit).....	5
2.1.M349F Specification.....	5
2.2.M349F Wiring Diagram.....	6
2.3.M349F LED Indicator.....	7
2.3.1.LED Indicator.....	7
2.3.2.Channel Status LED.....	7
2.3.3.Data value / Voltage.....	8
2.5.Mapping data into the image table.....	10

History

REV.	PAGES	REMARKS	DATE	Editor
-		Preliminary	2019/10/24	YM KIM
1.01		Image, UL Spec, Torque, Hotswap Function	2020/04/21	CW SEO
1.02		Vibration specification, Product certification changed	2020/04/27	CW SEO
1.03	12~16	Added ATEX certificate	2020/05/07	bs, HA
1.04		Remove Description pages of Hot Swap Function, Use in Hazardous Environments and Caution(Before using the unit)	2020/12/08	SJ LIM

1. ENVIRONMENT SPECIFICATION

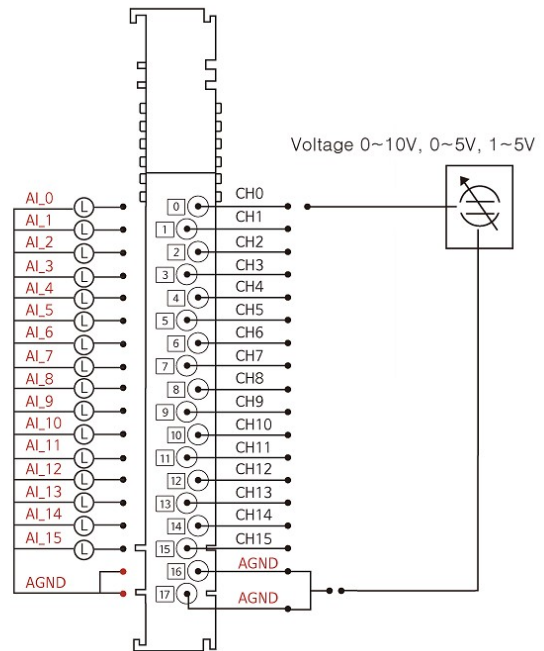
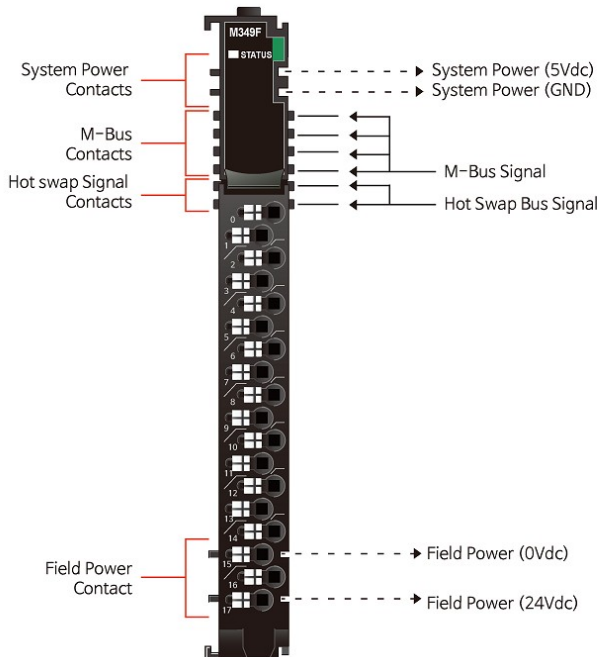
Environmental specification	
Operating Temperature	-25°C~60°C
UL Temperature	-20°C~60°C
Storage Temperature	-40°C~85°C
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail
General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 DNVGL-CG-0039 : Vibration Class B, 4g
Industrial Emissions	EN 61000-6-4/A11 : 2011
Industrial Immunity	EN 61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL, FCC, ATEX, DNV

2. M349F (16 Channels Voltage Input, 0~10Vdc / 0~5Vdc / 1~5Vdc, 16bit)

2.1. M349F Specification

Items	Specification
Input Specification	
Inputs per module	16 Channels single ended, non-isolated between channels
Indicators	1 Green M-Bus status LED
Resolution in Ranges	16 bit (Include Sign) 15 bits : 0.31mV/bit(0~10V) , 0.15mV/bit(0~5V), 0.12mV/bit(1~5Vdc)
Input Range	0~10Vdc, 0~5Vdc, 1~5Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ambient ±0.3% Full Scale @ -25°C~60°C
Input Impedance	500kΩ
Conversion Time	All Channel<1.3ms
Field calibration	Not Required
Common Type	2 Common
General specification	
Power dissipation	Max. 200mA @ 5.0Vdc
Isolation	I/O to Logic : DC-DC Isolation Field power : Not Connected
Field Power	Not used Field power bypass to next expansion module
Single Wire	0.205mm ² - 1.3mm ² (24-16 AWG)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Hot Swap	Possible
Environment Condition	Refer to '1. Environment Specification'

2.2. M349F Wiring Diagram



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

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. M349F LED Indicator

2.3.1. LED Indicator



LED No.	LED Function / Description	LED Color
STATUS	M bus Status	Green

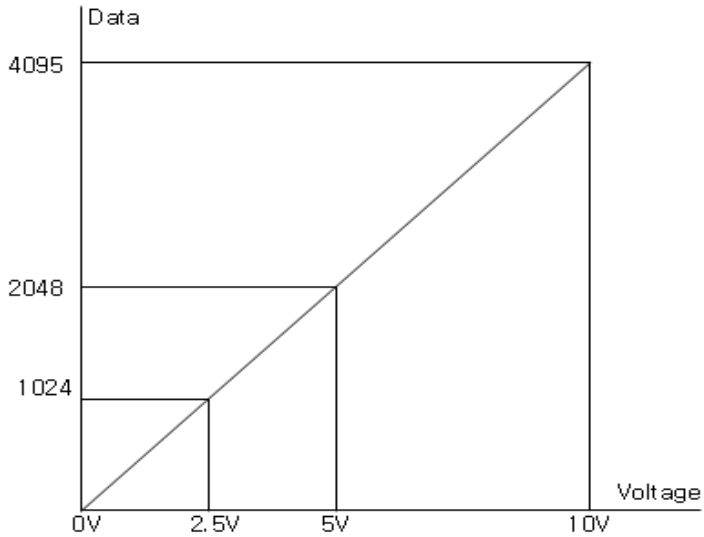
2.3.2. Channel Status LED

Status	LED	To indicate
M-bus Status	Off	Disconnection
	Green	Connection

2.3.3. Data value / Voltage

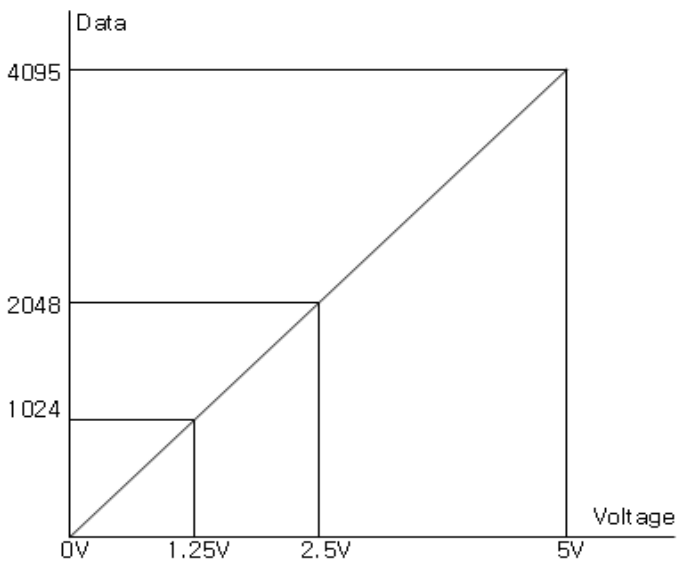
Voltage Range : 0~10Vdc

Voltage	0.0V	2.5V	5.0V	10.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



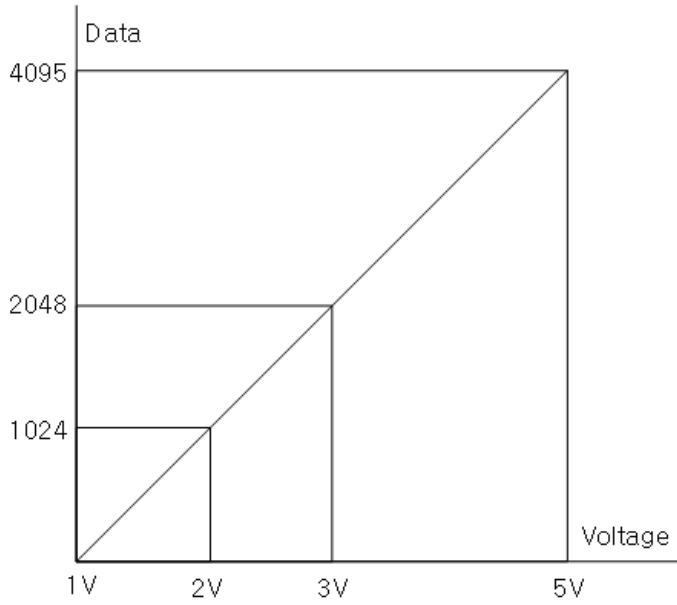
Voltage Range : 0~5Vdc

Voltage	0.0V	1.25V	2.5V	5.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



Voltage Range : 1~5Vdc

Voltage	1.0V	2.0V	3.0V	5.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



2.4. 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
	Analog Input Ch8
	Analog Input Ch9
	Analog Input Ch10
	Analog Input Ch11
	Analog Input Ch12
	Analog Input Ch13
	Analog Input Ch14
	Analog Input Ch15



- **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
Byte 16								Analog Input Ch8 Low byte
Byte 17								Analog Input Ch8 High byte
Byte 18								Analog Input Ch9 Low byte
Byte 19								Analog Input Ch9 High byte
Byte 20								Analog Input Ch10 Low byte
Byte 21								Analog Input Ch10 High byte
Byte 22								Analog Input Ch11 Low byte
Byte 23								Analog Input Ch11 High byte
Byte 24								Analog Input Ch12 Low byte
Byte 25								Analog Input Ch12 High byte
Byte 26								Analog Input Ch13 Low byte
Byte 27								Analog Input Ch13 High byte
Byte 28								Analog Input Ch14 Low byte
Byte 29								Analog Input Ch14 High byte
Byte 30								Analog Input Ch15 Low byte
Byte 31								Analog Input Ch15 High byte