

## **FnIO M – Series :**

### **M3918, M3928, M3938, M3948**

**M3918 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 12bits)**

**M3928 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 12bits)**

**M3938 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 16bits)**

**M3948 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 16bits)**

## History

REV.	PAGES	REMARKS	DATE	Editor
-		Preliminary	2020/2/10	BS HA
1.01		Image, Torque, Hotswap Function	2020/04/21	CW SEO
1.02		Vibration specification, Product certification changed	2020/04/27	CW SEO
1.03	32-36	Added ATEX certificate	2020/05/07	CW SEO

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## 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

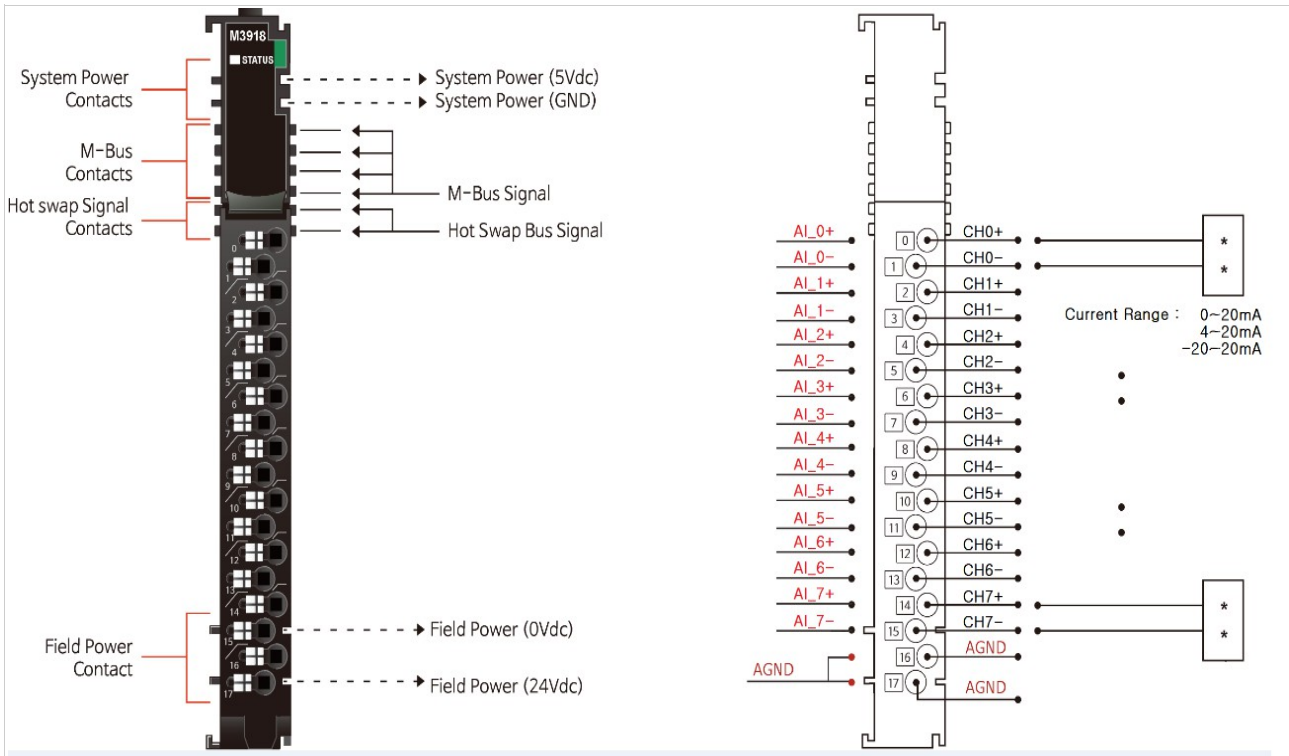
## 2. M3918 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 12bits)

### 2.1. M3918 Specification

Items	Specification
<b>Input Specification</b>	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green M bus Status LED
Resolution in Ranges	12 bits : 4.88uA/bit(0~20mA) 12 bits : 3.91uA/bit(4~20mA) 12 bits : 9.77uA/bit(-20~20mA)
Input Range	0~20mA, 4~20mA, -20~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -25°C, 60°C
Input Impedance	100Ω
Conversion Time	2.4msec / All channel
Calibration	Not Required
Common Type	2 Common
<b>General Specification</b>	
Power Dissipation	Max. 200mA @ 5Vdc
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 <sup>2</sup> - 1.3mm <sup>2</sup> (24-16 AWG)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Hot Swap	Possible
<b>Environment Condition</b>	<b>Refer to 'Environment Specification'</b>

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

## 2.2. M3918 Wiring Diagram



Pin No.	Signal Description
0	Input Channel 0(+)
1	Input Channel 0(-)
2	Input Channel 1(+)
3	Input Channel 1(-)
4	Input Channel 2(+)
5	Input Channel 2(-)
6	Input Channel 3(+)
7	Input Channel 3(-)
8	Input Channel 4(+)
9	Input Channel 4(-)
10	Input Channel 5(+)
11	Input Channel 5(-)
12	Input Channel 6(+)
13	Input Channel 6(-)
14	Input Channel 7(+)
15	Input Channel 7(-)
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. M3918 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

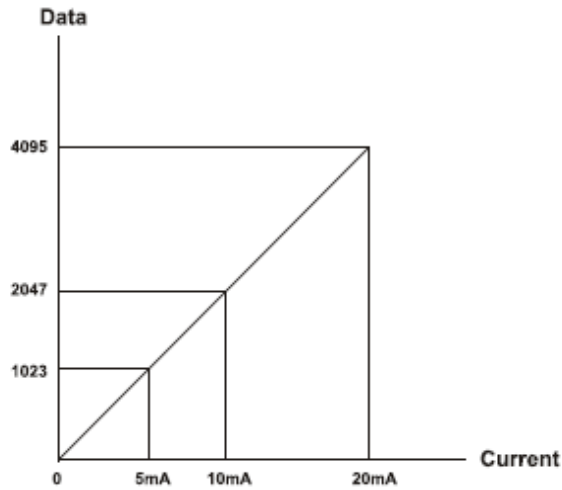
Status	LED	To indicate
M-bus Status	Off	Disconnection
	Green	Connection



## 2.4. Data Value / Current

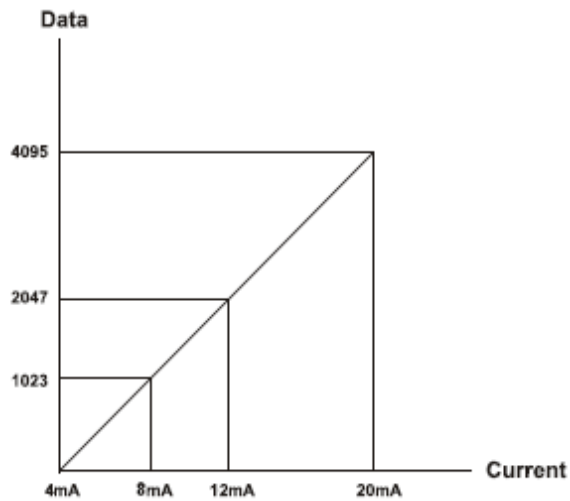
### Current Range : 0~20mA

Current	0.0mA	5.0mA	10.0mA	20.0mA
Data(Hex)	H0000	H03FF	H07FF	H0FFF



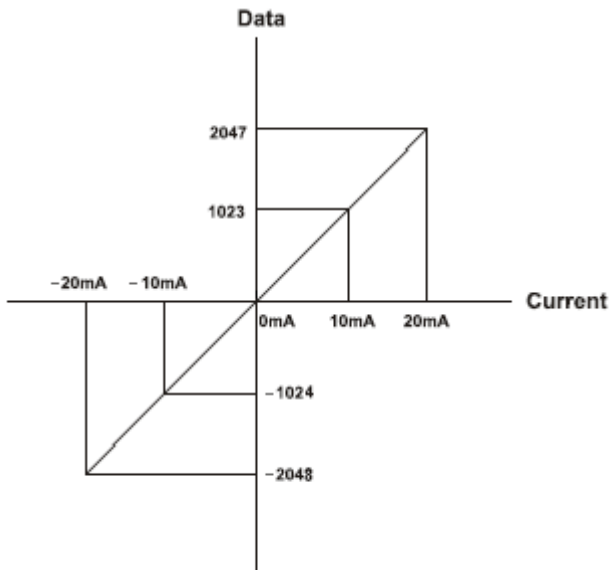
### Current Range : 4~20mA

Current	4.0mA	8.0mA	12.0mA	20.0mA
Data(Hex)	H0000	H03FF	H07FF	H0FFF



## Current Range : -20~20mA

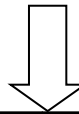
Current	-20.0mA	-10.0mA	0mA	+10.0mA	+20.mA
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF



## 2.5. 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



- **Input Image Value**

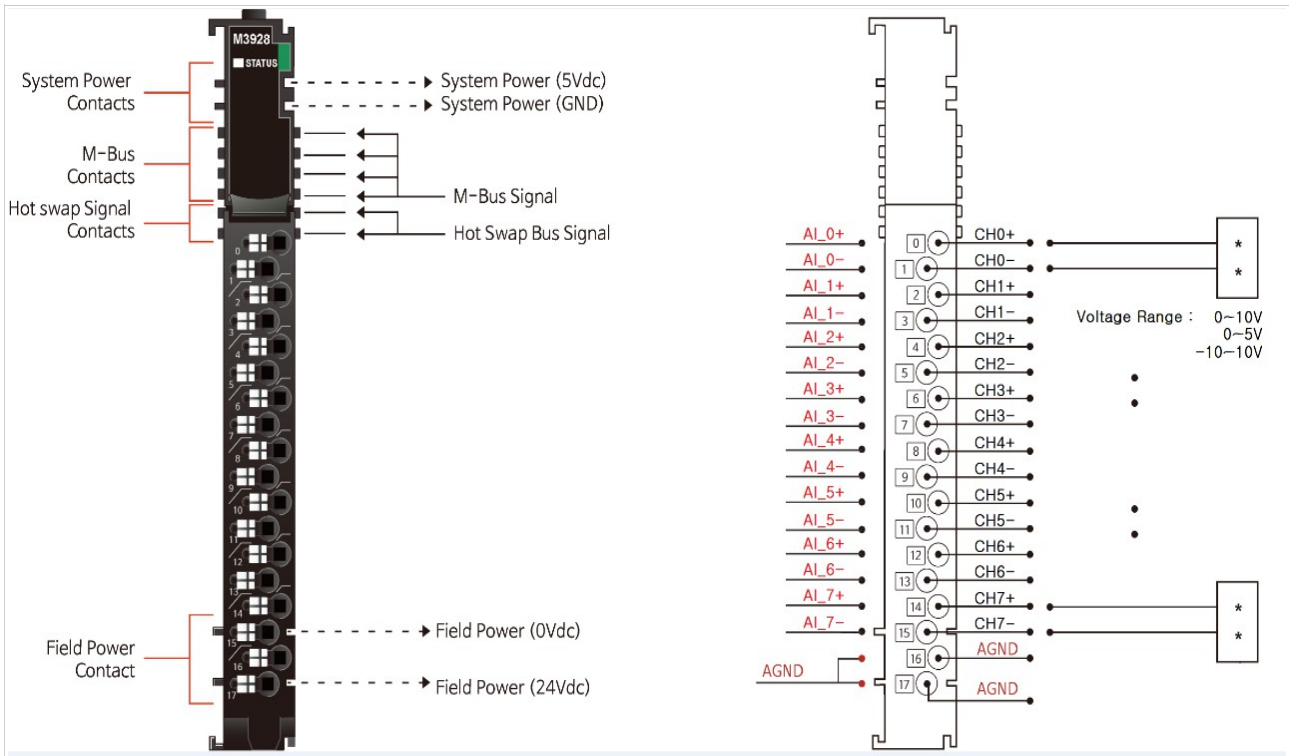
Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0								Analog Input Ch0 Low byte
Byte 1								Analog Input Ch0 High byte
Byte 2								Analog Input Ch1 Low byte
Byte 3								Analog Input Ch1 High byte
Byte 4								Analog Input Ch2 Low byte
Byte 5								Analog Input Ch2 High byte
Byte 6								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

### 3. M3928 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 12bits)

#### 3.1. M3928 Specification

Items	Specification
<b>Input Specification</b>	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green M bus Status LED
Resolution in Ranges	12 bits : 2.44mV/Bit(0~10V) 12 bits : 1.22mV/Bit(0~5V) 12 bits : 4.88mV/Bit(-10~10V) 12 bits : 2.44mV/Bit(-5~5V)
Input Range	0~10Vdc, 0~5Vdc, -10~10Vdc, -5~5Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -25°C, 60°C
Input Impedance	667kΩ
Conversion Time	<2.2msec / All channel
Calibration	Not Required
Common Type	2 Common
<b>General Specification</b>	
Power Dissipation	Max. 200mA @ 5Vdc
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 <sup>2</sup> - 1.3mm <sup>2</sup> (24-16 AWG)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Hot Swap	Possible
<b>Environment Condition</b>	<b>Refer to 'Environment Specification'</b>

### 3.2. M3928 Wiring Diagram



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

## 3.3. M3928 LED Indicator

### 3.3.1. LED Indicator



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

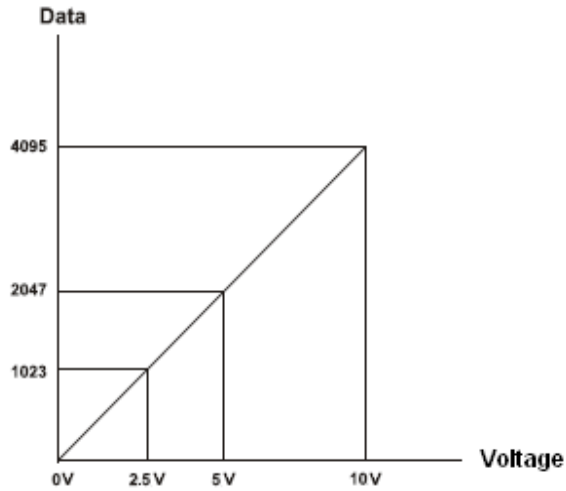
### 3.3.2. Channel Status LED

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

### 3.4. Data Value / Voltage

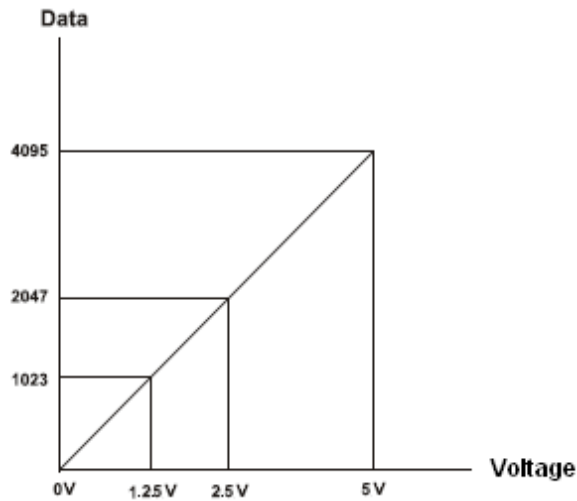
#### Voltage Range : 0~10V

Voltage	0V	2.5V	5.0V	10.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



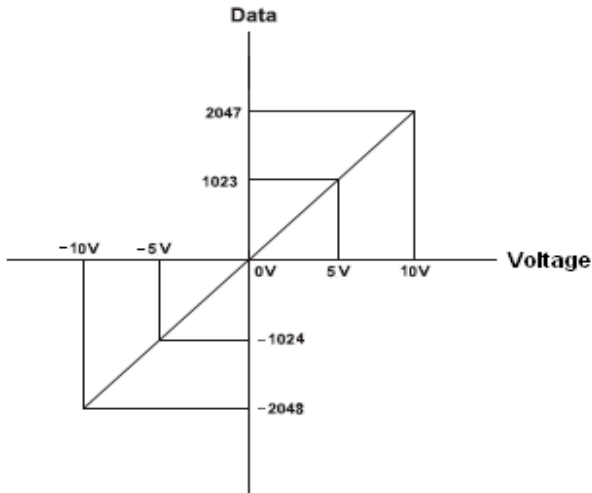
#### Voltage Range : 0~5V

Current	0V	1.25V	2.5V	5.0V
Data(Hex)	H0000	H03FF	H07FF	H0FFF



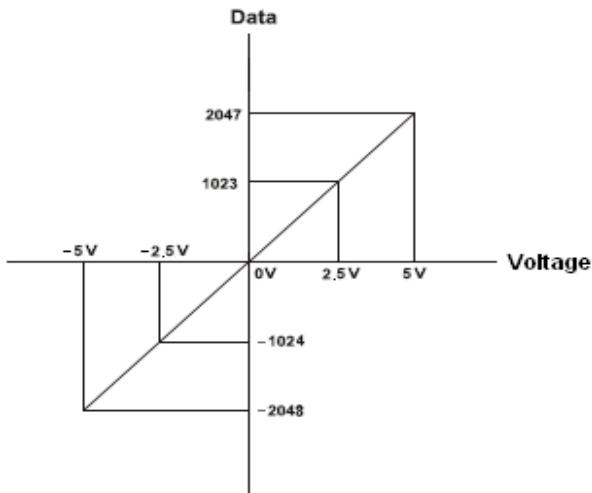
### Voltage Range : -10~10V

Current	-10V	-5V	0V	5.0V	10.0V
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF



### Voltage Range : -5~5V

Current	-5V	-2.5V	0V	2.5V	5.0V
Data(Hex)	HF800	HFC00	H0000	H03FF	H07FF

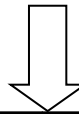




### 3.5. Mapping Data into the Image Table

- **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



- **Input Image Value**

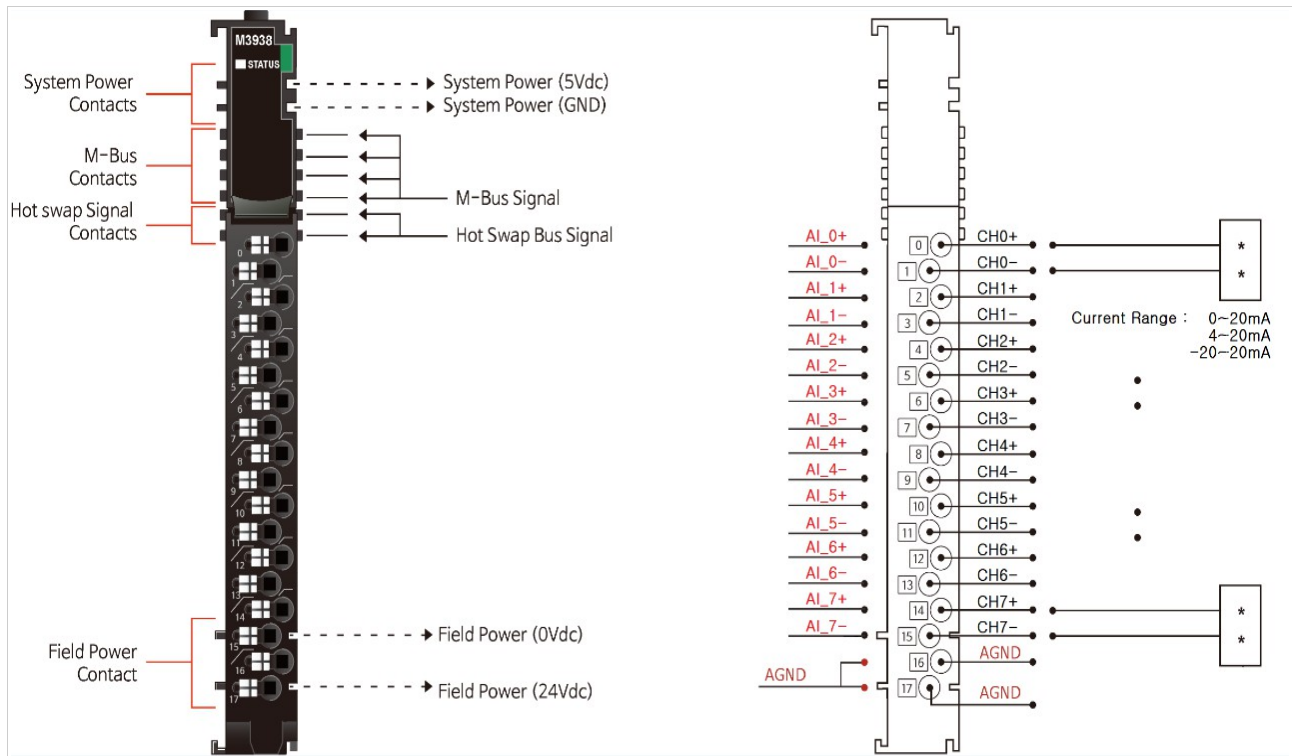
Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0				Analog Input Ch0 Low byte				
Byte 1				Analog Input Ch0 High byte				
Byte 2				Analog Input Ch1 Low byte				
Byte 3				Analog Input Ch1 High byte				
Byte 4				Analog Input Ch2 Low byte				
Byte 5				Analog Input Ch2 High byte				
Byte 6				Analog 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				

## 4. M3938 (8 Channels, Differential Current Input, 0~20mA / 4~20mA / -20~20mA, 16bits)

### 4.1. M3938 Specification

Items	Specification
<b>Input Specification</b>	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green M bus Status LED
Resolution in Ranges	16bit(Include Sign) 15 bits : 0.61uA/Bit(0~20mA) 15 bits : 0.49uA/Bit(4~20mA) 15bit(Include Sign) 15 bits : 1.22uA/Bit(-20~20mA)
Input Range	0~20mA, 4~20mA, -20~20mA
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -25°C, 60°C
Input Impedance	100Ω
Conversion Time	<2.4msec / All channel
Calibration	Not Required
Common Type	1 Common
<b>General Specification</b>	
Power Dissipation	Max. 200mA @ 5Vdc
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 <sup>2</sup> - 1.3mm <sup>2</sup> (24-16 AWG)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Hot Swap	Possible
<b>Environment Condition</b>	<b>Refer to 'Environment Specification'</b>

## 4.2. M3938 Wiring Diagram



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

## 4.3. M3938 LED Indicator

### 4.3.1. LED Indicator



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

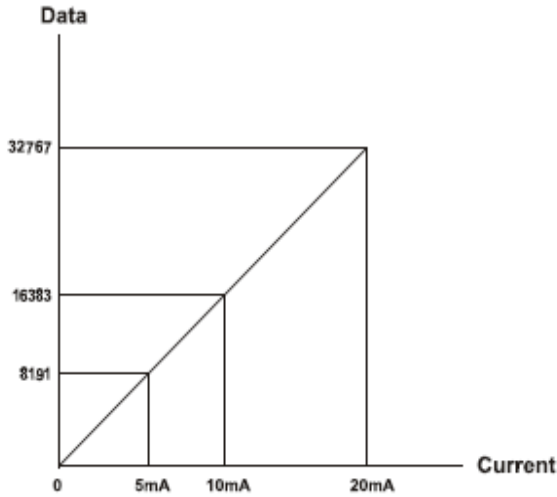
### 4.3.2. Channel Status LED

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

#### 4.4. Data Value / Current

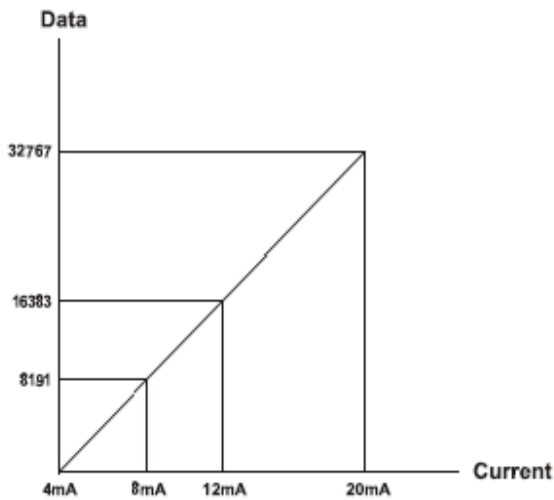
##### Current Range : 0~20mA

Current	0.0mA	5.0mA	10.0mA	20.0mA
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



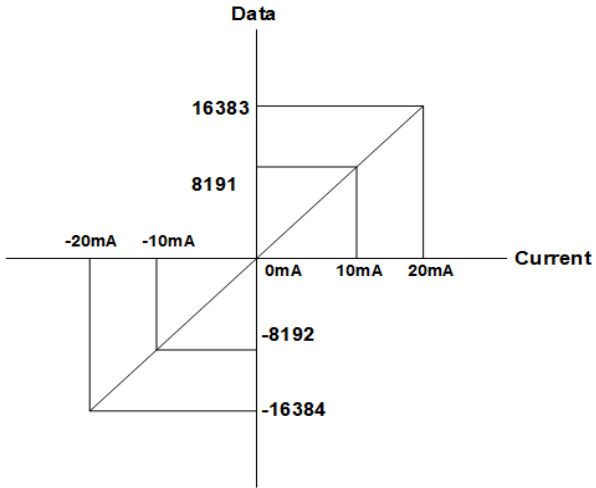
##### Current Range : 4~20mA

Current	4.0mA	8.0mA	12.0mA	20.0mA
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



## Current Range : -20~20mA

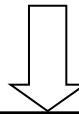
Current	-20.0mA	-10.0mA	0mA	+10.0mA	+20.mA
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



## 4.5. 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



- **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				

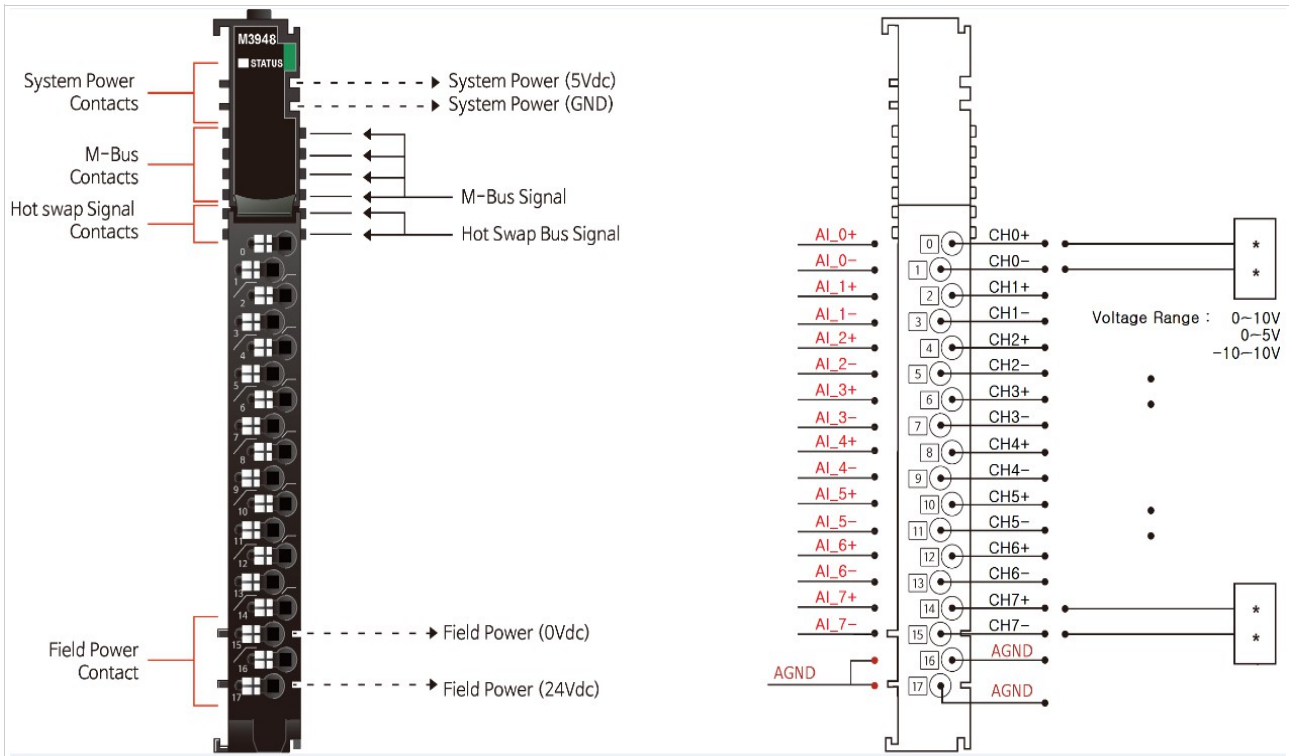
## 5. M3948 (8 Channels, Differential Voltage Input, 0~10V / 0~5V / -10~10V / -5~5V, 16bits)

### 5.1. M3948 Specification

Items	Specification
<b>Input Specification</b>	
Inputs Per Module	8 Channels Differential, Non-isolated Between Channels
Indicators	1 Green M bus Status LED
Resolution in Ranges	16bit(Include Sign) 15 bits : 0.31mV/Bit(0~10V) 15 bits : 0.15mV/Bit(0~5V) 15bit(Include Sign) 15 bits : 0.61mV/Bit(-10~10V) 15 bits : 0.31mV/Bit(-5~5V)
Input Range	0~10Vdc, 0~5Vdc, -10~10Vdc, -5~5Vdc
Data Format	16bits Integer (2' compliment)
Module Error	±0.1% Full Scale @ 25°C ±0.3% Full Scale @ -25°C, 60°C
Input Impedance	667kΩ
Conversion Time	<2.5msec / All channel
Calibration	Not Required
Common Type	2 Common
<b>General Specification</b>	
Power Dissipation	Max. 200mA @ 5Vdc
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 <sup>2</sup> - 1.3mm <sup>2</sup> (24-16 AWG)
Torque	0.8Nm(7 lb-in)
Weight	72g
Module Size	12mm x 110mm x 75mm
Hot Swap	Possible
<b>Environment Condition</b>	<b>Refer to 'Environment Specification'</b>



## 5.2. M3948 Wiring Diagram



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

## 5.3. M3948 LED Indicator

### 5.3.1. LED Indicator



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

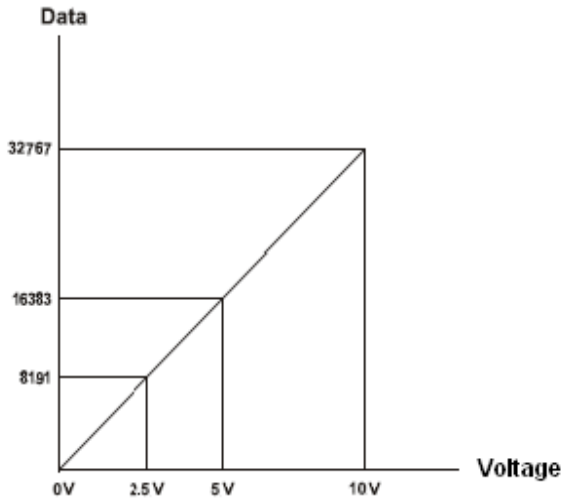
### 5.3.2. Channel Status LED

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

### 5.4. Data Value / Voltage

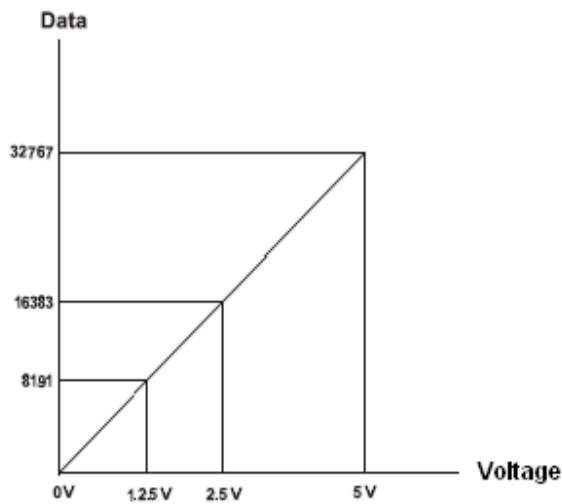
#### Voltage Range : 0~10V

Voltage	0V	2.5V	5.0V	10.0V
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



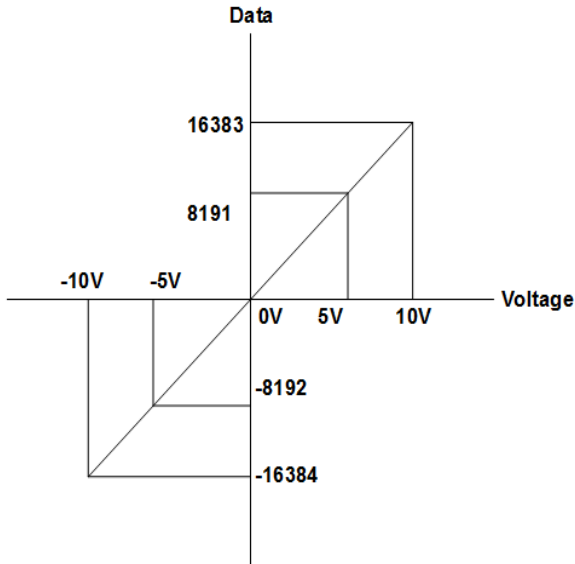
#### Voltage Range : 0~5V

Current	0V	1.25V	2.5V	5.0V
Data(Hex)	H0000	H1FFF	H3FFF	H7FFF



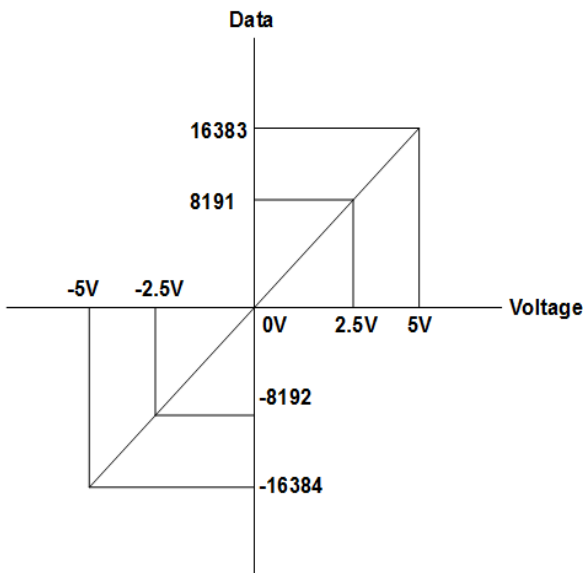
### Voltage Range : -10~10V

Current	-10V	-5V	0V	5.0V	10.0V
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



### Voltage Range : -5~5V

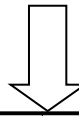
Current	-5V	-2.5V	0V	2.5V	5.0V
Data(Hex)	HC000	HE000	H0000	H1FFF	H3FFF



## 5.5. 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



- **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				

## 6. Input Range Setting & Conversion Time Setting

### 6.1. M3918, M3938

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch#0 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
1	Ch#1 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
2	Ch#2 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
3	Ch#3 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
4	Ch#4 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
5	Ch#5 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
6	Ch#6 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
7	Ch#7 Command(H00 : 0~20mA, H01 : 4~20mA, H02 : -20~20mA)							
8	Filter Time(H00 : Default Filter(20), H01 : Fastest ~ H3E : Slowest)							
9	Reserve							

\* ID\_PARAMETER (10Byte)

### 6.2. M3928, M3948

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch#0 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
1	Ch#1 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
2	Ch#2 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
3	Ch#3 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
4	Ch#4 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
5	Ch#5 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
6	Ch#6 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
7	Ch#7 Command(H00 : 0~10V, H01 : 0~5V, H02 : -10~10V, H03 : -5~5V)							
8	Filter Time(H00 : Default Filter(20), H01 : Fastest ~ H3E : Slowest)							
9	Reserve							

\* ID\_PARAMETER (10Byte)

## 6.3. Hot Swap Function

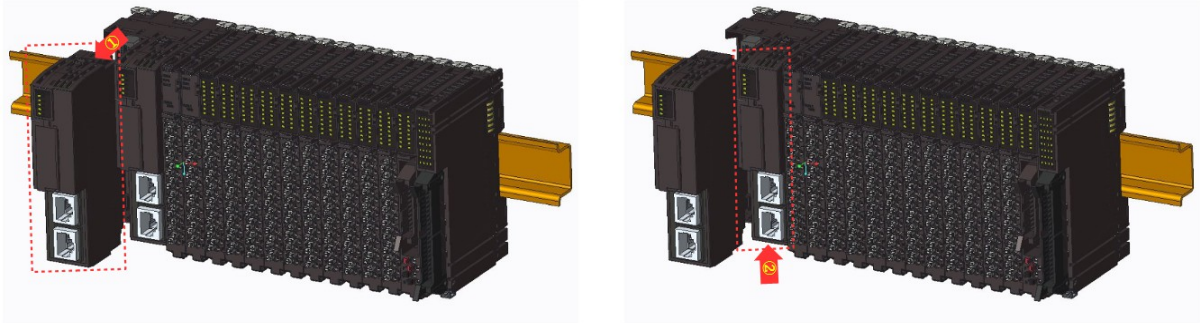
The M-Series has hot-swap capability to protect your system.

### \*Caution

If you remove multiple IO modules by mistake, you must connect IO modules one by one, starting with the lower slot number.

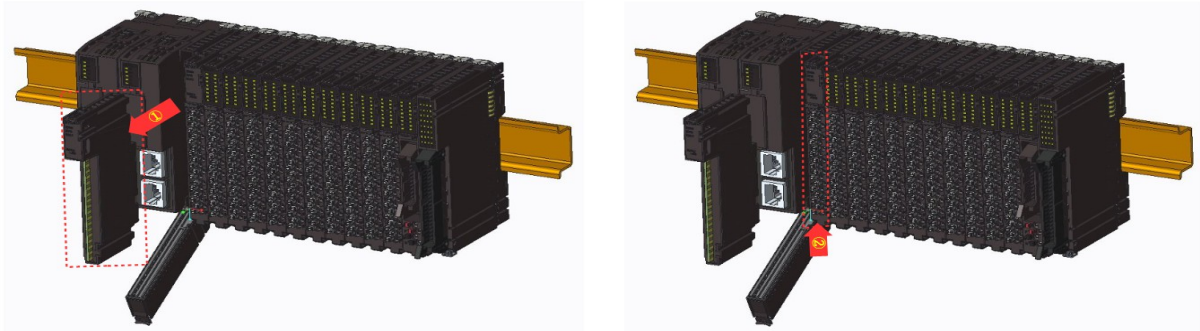
### 6.3.1. Network Adapter

If one of the network adapters fails(①), the rest of the network adapters(②) function normally to protect the system.



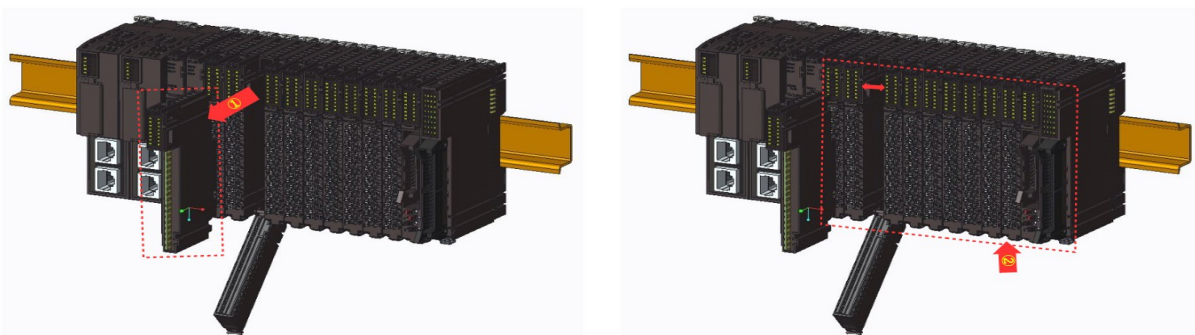
### 6.3.2. Power Module

If one of the power modules fails(①), the remaining power modules perform normal operation(②). For the hot swap function of the power module, the main and auxiliary power must be set. Refer to Power Module Specifications for related contents.



### 6.3.3. IO Module

Even if a problem occurs in the IO module(①), the remaining modules except for the problem module can communicate normally(②). If the problematic module is restored, normal communication can be performed again. And each module must be replaced one by one.



## 7. FnIO M-Series Caution(Before using the unit)

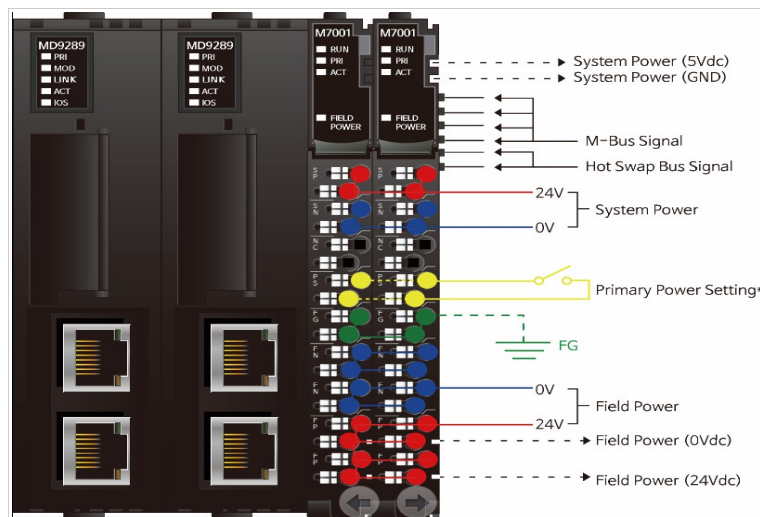
■ We appreciate you for purchasing CREVIS Products. To use the units more effectively, please read this quick guide and refer to the respective user manual for further details.

Cautions for your Safety	
If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion.	<b>Warning !</b>
<p>Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.</p> <p>Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction. Keep away from the strange metallic materials not related tot the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.</p>	

If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below instructions.	<b>Caution !</b>
<p>Check the rated voltage and terminal array before wiring.</p> <p>Do not place Modules near by the inflammable material. Else it may cause a fire.</p> <p>Do not permit any vibration approaching it directly.</p> <p>Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.</p> <p>Use Product under pollution degree 2 environment.</p> <p>These devices are open type devices which have to be installed in an enclosure with door or cover which is tool accessible only suitable for use in Class I, Groups A,B,C and D hazardous locations, or non-hazardous location only.</p>	

### 7.1. How to wire communication & Power

#### 7.1.1. Wiring of communication & System power line for Ethernet.



Notice for Wiring of communication and Field power

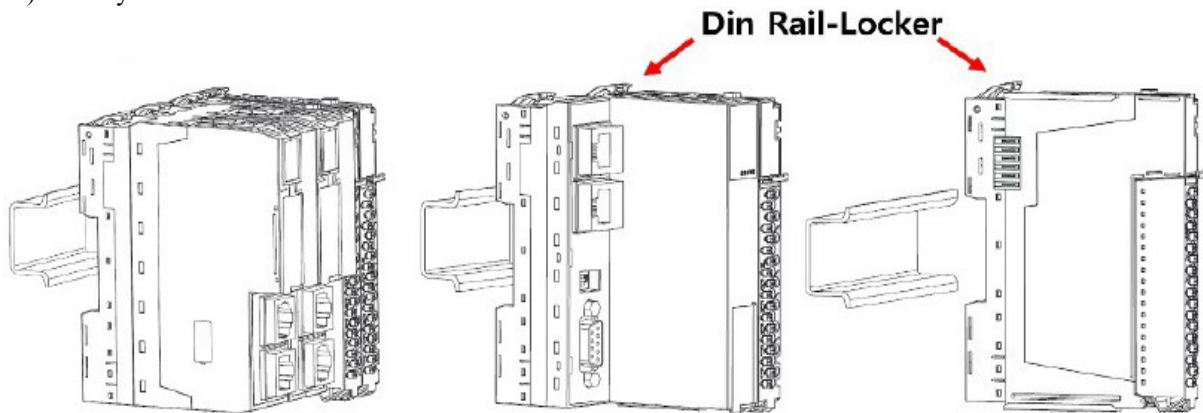
1. The communication power and Field power respectively are supplied to each network adapter.
    - 1) Communication Power : Power for System and MODBUS TCP connection.
    - 2) Field Power : Power for I/O Connection
  2. Field power and separated by System power must be used.
  3. To avoid a short circuit, tape the un-shield wire.
  4. Do not insert any other devices such as converter in to the connecter besides products.
- M7001 is used with M9\*\*\* (Single Network), MD9\*\*\* (Dual type Network) and I/O as power module.



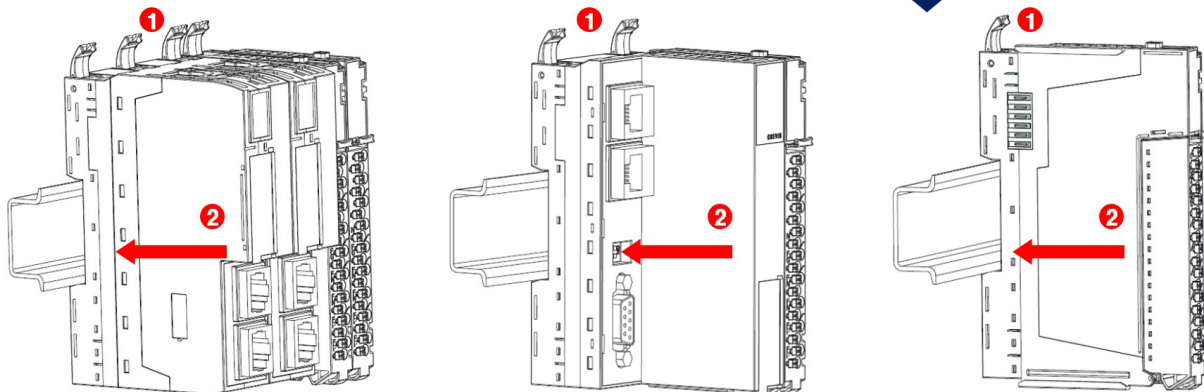
## 7.2. Module Mounting

### 7.2.1. How to mount & dismount M-Series Modules on Din-Rail

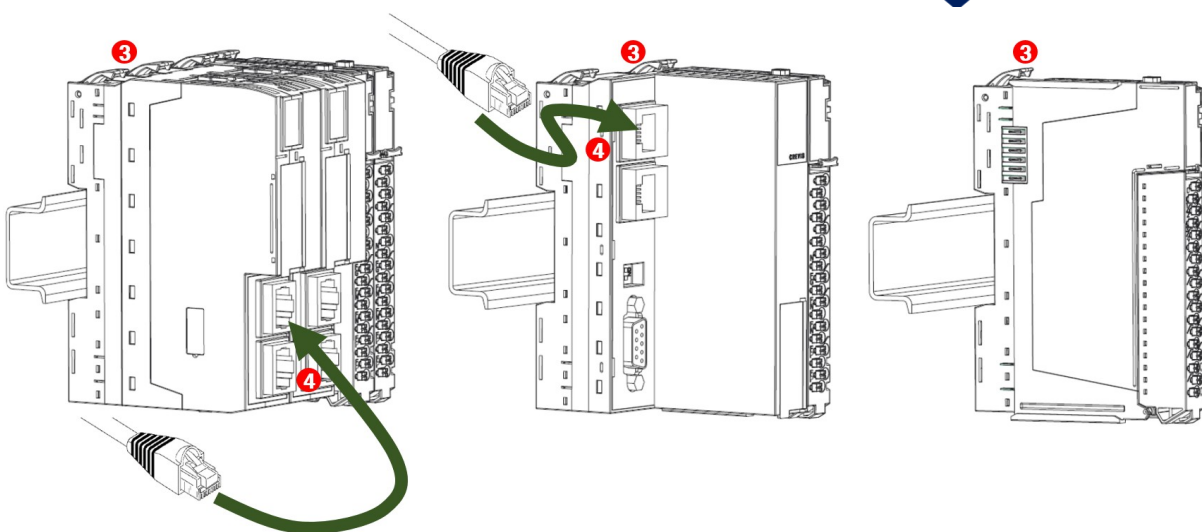
- 1) Ready



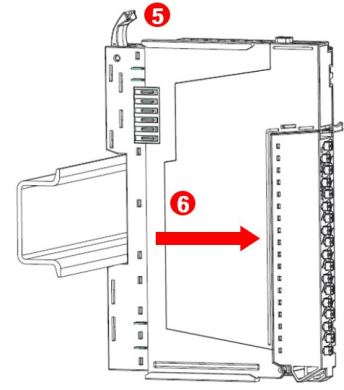
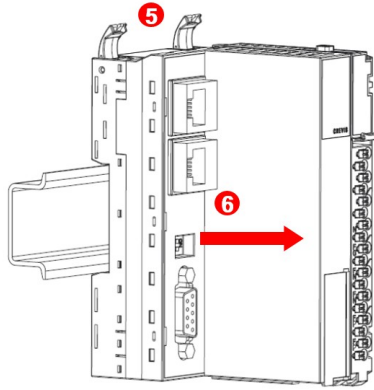
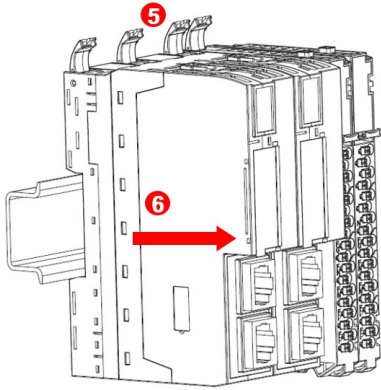
- 2) Unlock the 'Din Rail-Locker' like Number (1).
- 3) Push the module to the din-rail.



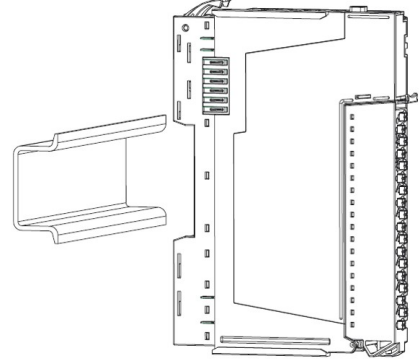
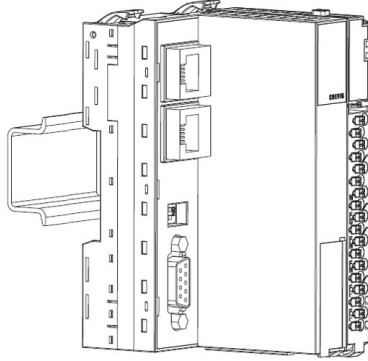
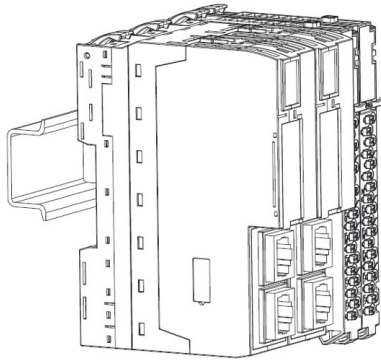
- 4) Lock the 'Din Rail-Locker' like Number (3) to fix the module on the din rail.
- 5) Connect the communication cable after locking the 'Din Rail-Locker'.



- 6) To remove the module on the din-rail, first unlock the 'Din-Rail Locker' like Number (5).
- 7) Pull the module against the din-rail.



8) End



## 8. Use in Hazardous Environments

### ATEX Zone2 Information

1. Certification number : **DEMKO 19 ATEX 2223X**
2. Ambient range (-20°C ≤ Tamb ≤ +60°C)
3. Certification string :



4. Standards covered (EN60079-0 and EN60079-7)
5. The conditions of safe usage :
  - a) The equipment shall be mounted in an enclosure with a minimum ingress protection rating of at least IP54 in accordance with IEC/EN 60079-7 and used in an environment of not more than Pollution Degree 2 (as defined in IEC/EN 60664-1).
  - b) Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140%.
  - c) The equipment shall be installed in an enclosure with tool removable door or cover.
  - d) Earthing is accomplished through mounting of modules on rail.
  - e) Field wiring conductor temperature rating must be 85°C or higher

### Crevis Co.,Ltd.

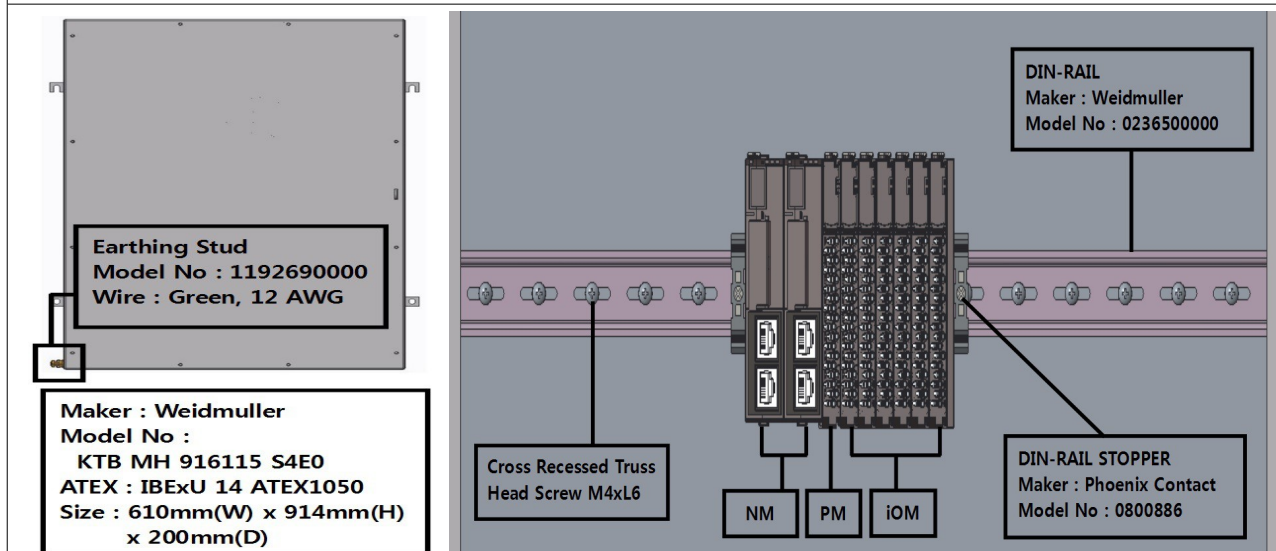
29-4, Gigok-ro, Giheung-gu, Yongin-si,  
Gyeonggi-do, Korea 446-930  
TEL : +82-31-899-4599 FAX : +82-31-899-4509  
Homepage : www.crevis.co.kr



**MODBUS TCP/IP**  
**EtherNet IP**  
**MODBUS RTU**

\*Specifications and designs may be changed without advance Notice.

## ATEX Zone22 Information



1. Certification number : **DEMKO 20 ATEX 2373**
2. Ambient range (-25°C ≤ Tamb ≤ +60°C)
3. Certification string :



**II 3 D Ex tc IIIC T80°C Dc**

Ambient temperature range : -25°C to +60°C  
Electrical Ratings : 24Vdc, 300mA / 5Vdc, 2.0A

\*Note :

- a) This device can be installed with maximum one network module (MD9 or M9) and six IO modules (M1 to M7). The total output current rating shall not exceed 2A. For suitable use, refer to the electrical rating part in each manual of the modules.
- b) Field wiring conductor temperature rating must be 85°C or higher
- c) Enclosure entry for the field wiring, refer to attached weidmuller's instruction.

### Nomenclature :

Programmable controllers FnIO-M Series, model FnIO-M followed by NM, followed by PM, followed by iOM consists of maximum 6 extension modules;

FnIO-M NM – PM – iOM  
I II III

#### I. NM : MD9 or M9

- A. MD9 – Model MD9\*\*\*
- B. M9 – Model M9\*\*\*

#### II. PM : M7

- A. M7 – Model M7&\*\*

#### III. iOM : M1, M2, M3, M4, M5 or M7

(Consists of maximum 6 extension modules)

- A. M1 – Model M1#\*\*
- B. M2 – Model M2@\*\*
- C. M3 – Model M3\*\*\*
- D. M4 – Model M4\*\*\*
- E. M5 – Model M5\*\*\*
- F. M7 – Model M7&\*\*

Note :

- “\*\*\*” may be any alphanumeric code
- “\*\*” may be any alphanumeric code
- “#” may be any numerical number except for 8 and 9
- “@” may be any numerical number except for 7 and 8
- “&” may be any numerical number except for 2

