

Wolf series Remote IO Modules User's Manual

advanio

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1. Collect all the information about the problem encountered. (For example, CPU speed, ADVANIO model number, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you got when the problem occurred.
2. Have your manual ready, contact the dealer, describe the abnormality encountered or provide reliable information on the defective product.
3. Once defect is diagnosed, you may obtain an RMA number by filling out the attached form. With the obtained number, you may return the product to our contact and trace the return process if required.
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Dear Customer,

Please fill out this form (blue color sections) and email it to our sales representative for confirmation within 3 days while we process your request referring to the information stated on this RMA Request Form. **Red color sections** will be filled by our sales representative. Thank you for your cooperation!

Request Date:		RMA No.	
Company Name:		Contact person:	
Phone:		Fax:	
Return Address:			
Other information:			
Return Shipping Date:			

Item	Model No.	S/N No.:	Reason of Return	Received Qty.
1				
2				
3				
4				
5				
6				
7				
8				
9				

Certification Claims Technology

Wolf Series Product is developed and tested by Advanio, all tests certified by EMC including EMI and EMS are designed for module protection.

Hence, we strongly recommend pairing Wolf series modules with industrial chassis certified by CE.

Certification:



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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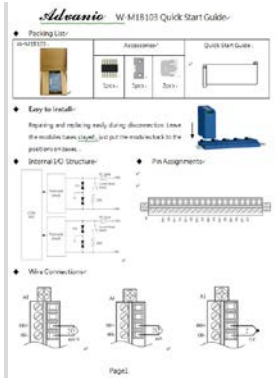
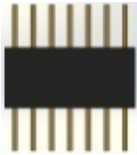
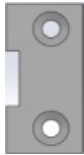

Chapter 1. Introduction

1.1 Product Overview

Thank you for selecting Wolf series. Wolf series is a remote I/O module providing 7 kinds of control mode: analog input, output, analog input/output, digital input, output, digital input/output and relay, all are connected by RS-485. Each control mode in Wolf series also provides different number of input/output channels for user's choice- for instance, 8, 16 and 32.

Wolf series module is a kind of remote I/O Module which is host sends command to control it. After receiving commands sent by host, remote control modules start responding. The protocol used in-between host and modules is Modbus/RTU. Furthermore, to have a more efficient application, a great variety of baud rates for user's selection (1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k and 115.2k) are also available.

Product packing is shown below:

<p>Module Package</p> 	<p>Accessories</p>			<p>Quick Start Guide</p> 
	 <p>14 pin Signal Connector 1pcs</p>	 <p>Plastic grounding tab 1pcs</p>	 <p>Plastic buckle 2pcs</p>	

1.2 System Specification

Power Requirement	10 ~ 60 VDC
Watchdog Timer	System (1.6 second Fixed) Communication (Programmable)
Connector	Plug-in-terminal block (#16~30 AWG)
Temperature (Operating)	-25 ~ 70 °C
Humidity	5 ~ 95 %RH
Temperature (Storage)	-30 ~ 75 °C
Interface	RS-485
Isolation Protection	3000 VDC
Communication Protocol	Modbus RTU
Communication Speed	Serial: From 1200 to 115.2k bps
Communication Distance	Serial: 1.2km

1.3 Set Up and Use

The rotary switch provided by Wolf series module is a handy gadget for user to facilitate the address setup during the installation Utility software is employed to set up the module configuration parameter. The factory default can be reset by pressing INIT for at least 3 second. Furthermore, EEPROM built in the modules is detachable and can be changed on new module to retain the setting.

For the module installation and system settings in details, please refer to Chapter 2,, for the module details information please refer to Chapter 3 & Chapter 4, for the frequently asked questions, please refer to Chapter 5 for the technical support, please refer to Chapter 6.

1.4 Watchdog

There are module watchdog and system watchdog in Wolf Series module. Module watchdog is a hardware monitoring the operation status of module, when working in a harsh/noisy environment and encountering interference, the module can automatically reset and reboot by itself. The system watchdog is software monitoring the operation status of system, its purpose is to provide immediate counter-measure when erroneous network, communication or breakdown occur. Once time-out occurs, the module will reset all outputs to SAFE mode to prevent any improper operations on the controlled target.

Watchdog of Modbus functions as following table~

Address	Function	R/W	Initial value
44108 (0x100B)	Timeout value(0.1s) Range: 0 ~ 0x00FF	R/W	0x0000
44109 (0x100C)	Function enable/disable 0x0001: Enable 0x0000: Disable	R/W	0x0000
44110 (0x100D)	Watchdog status 0x0001: Timeout 0x0000: Normal	R/W	0x0000

Module watchdog: If discontinuation exceeds 1.6 sec (default), the system would reset the signal and reboot.

System watchdog: System watchdog is time programmable. When system watchdog is enabled and module doesn't receive polling from the host at the time set, system watchdog time-out will automatically start. Outputs mode is configurable on certain modules. Please refer to Chapter 3 & Chapter4.

1.5 Power Requirements

DC ranged from 10V to 60V is applicable to Wolf Series Module; the reverse power protection is also available.

1.6 RS-485 Network Connections

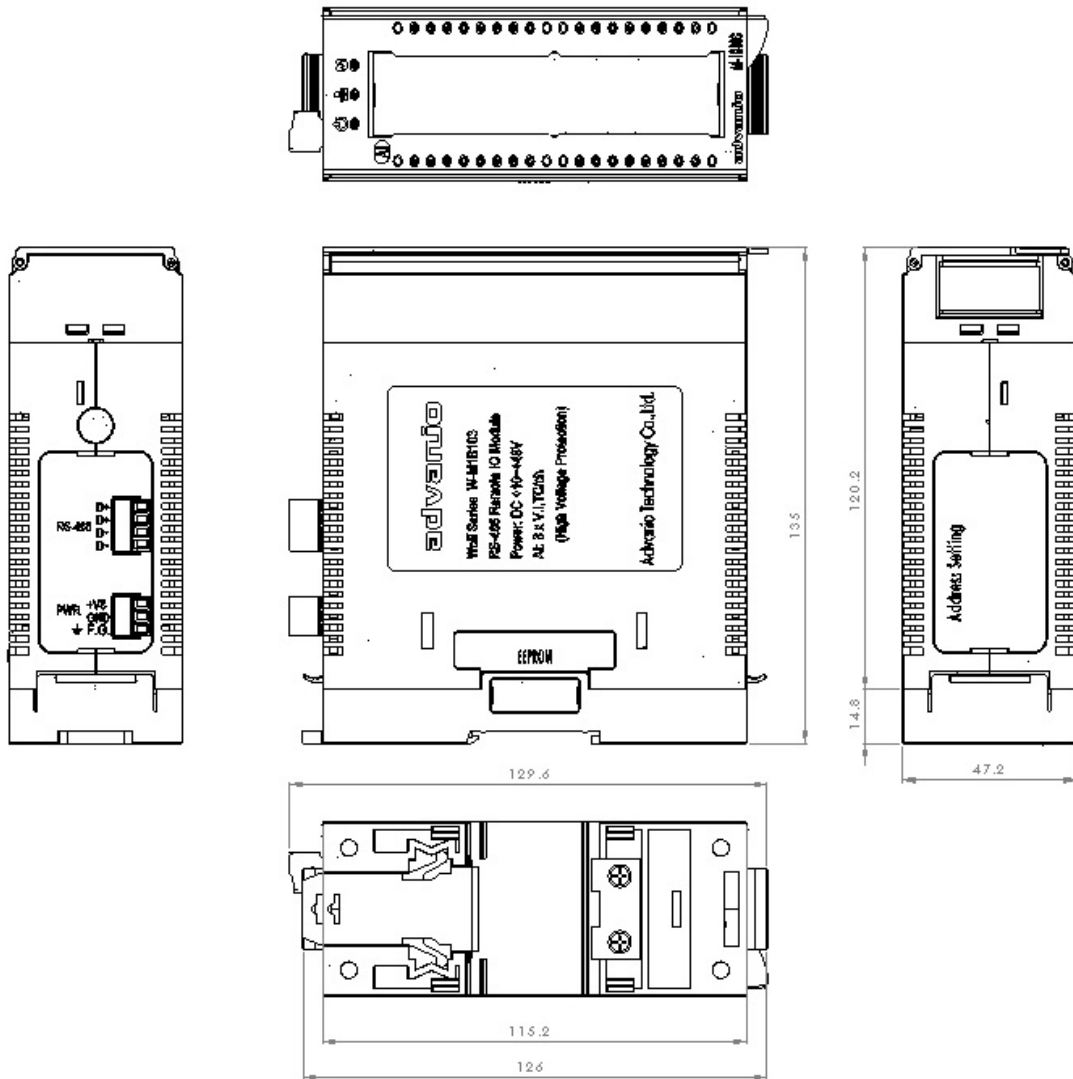
The most commonly used communication interface is adapted, co-called RS-485. It provides a remote transmitting and is applicable to all remote connect.

1.7 Environmental Safety

Wolf series modules are EMC certified in many countries. With EMI and EMS FREE to ensure the environmental quality of modules.

1.8 Dimension

Wolf series module dimension as following:



Unit : mm

Chapter 2. Installation

2.1 Basic Installation

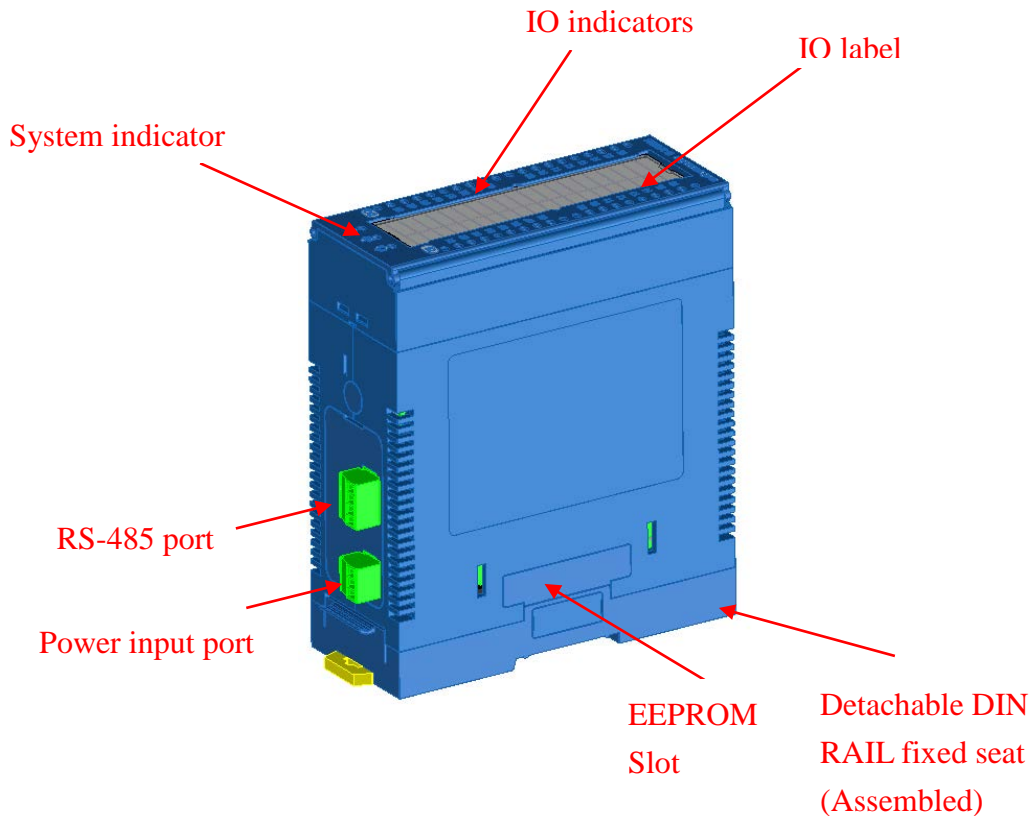
The following parts/devices are necessary when constructing Wolf Series module.

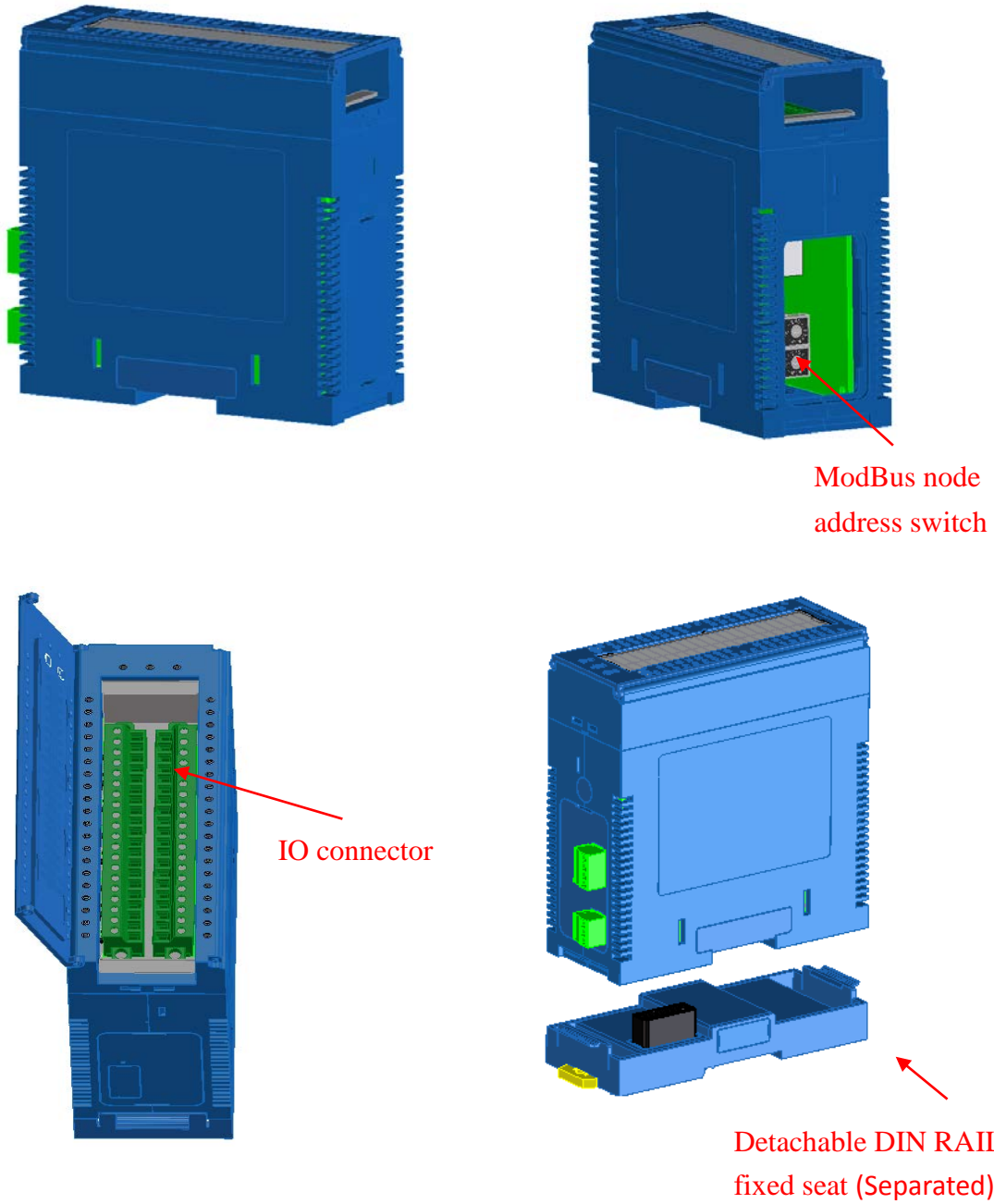
2.1.1 Host PC Requirement

A PC equipped RS-232 or RS-485 communication port. It would be connecting Wolf modules directly by RS-485 port. Or an isolated RS-232-to-RS-485 converter from our company is necessary if this PC workstation is equipped RS-232 port only. Also, a USB to RS-485 converter of our company is alternative solution. These isolated converters are based on photo couple to protect your PC workstation.

2.1.2 Wolf Module

Ports connection and setup of Wolf Series module is shown as figures below. The external connecting and construction will be described in the sequential chapters.





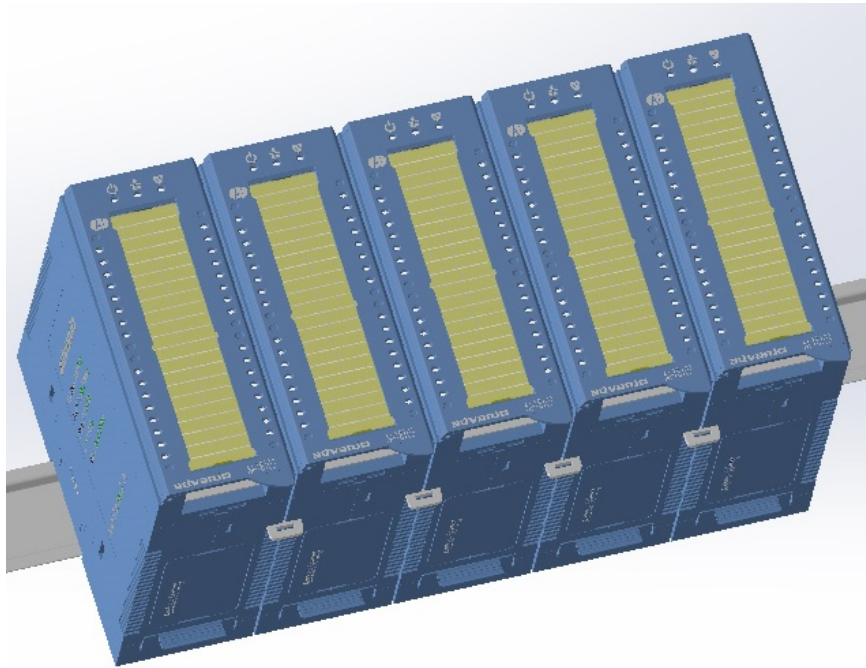
Item	Description
Detachable DIN RAIL fixed seat	Each modules connecting power and RS-485 via this fixed seat. It support attach/detach module rapidly and easy extendable.
IO connector	Wiring IO signals for your application.
RS-485 port	Major communication port
Power input power	For power input
System indicator	Represent system status.

IO indicator	Represent the status of each I/O channels
IO label	Note I/O function for after maintains.
EEPROM slot	Dedicate EEPROM to store system configuration.
ModBus node address switch	Setup Modbus node address by fastest way.
INIT switch (hole)	Restore module setting to factory default.

2.1.3 Installation

DIN rail mounting

Mounting the detachable DIN rail on standard DIN35 rail, therefore, more modules can be extended if required.

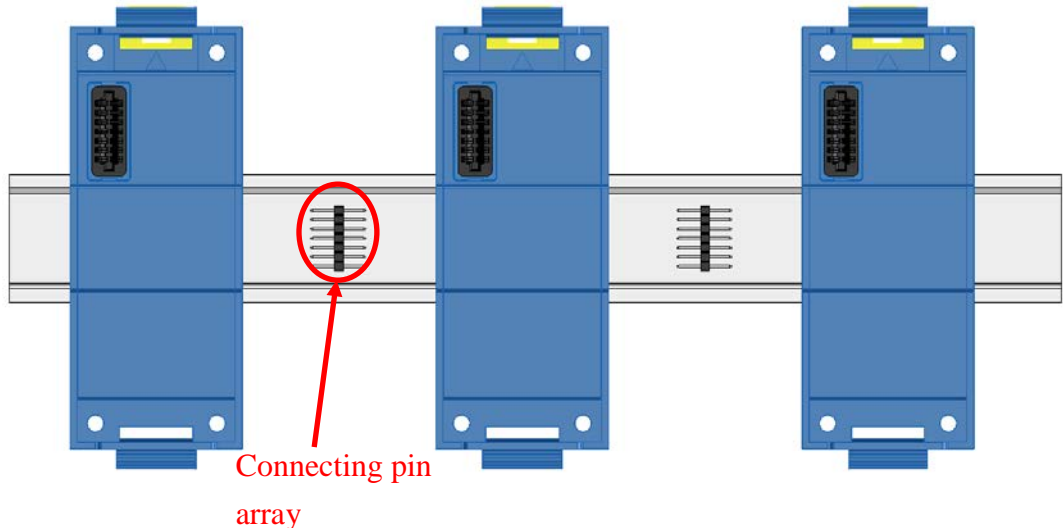


DIN rail module chain installation

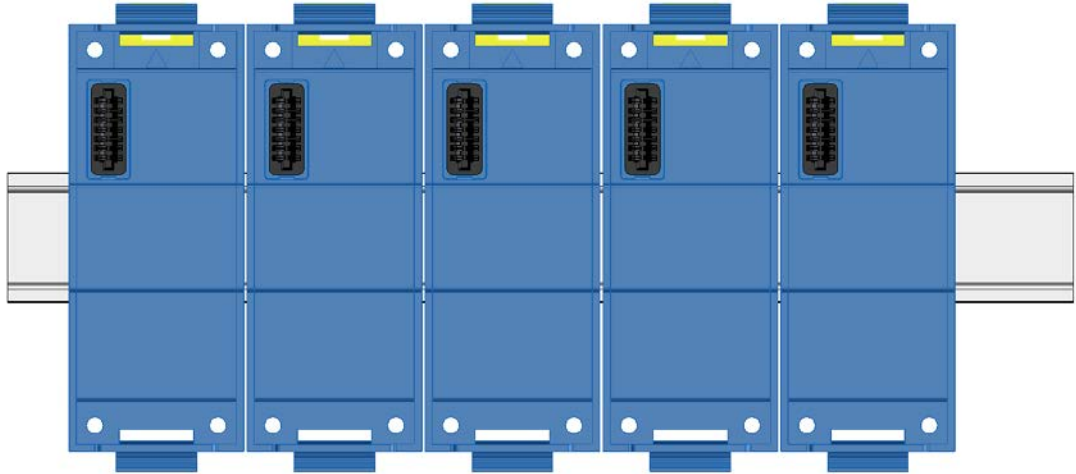
Fixed seats been installed on DIN35 rail, also using connecting pin array to connect each fixed seats one by one as shown as following figure. The communication and power would be chain connected.

Chain connecting procedures as following:

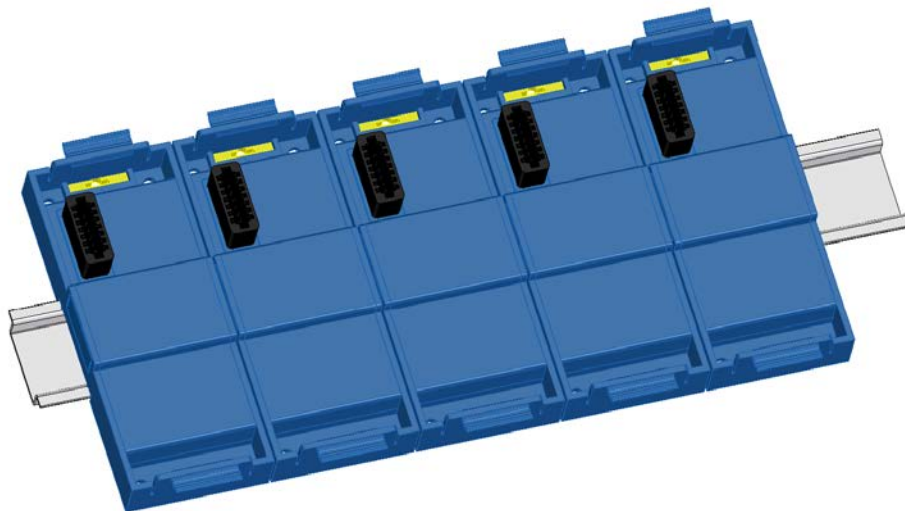
Step 1: Use the connecting pin array which is in the accessory pack to connect fixed seats as shown as following figure.



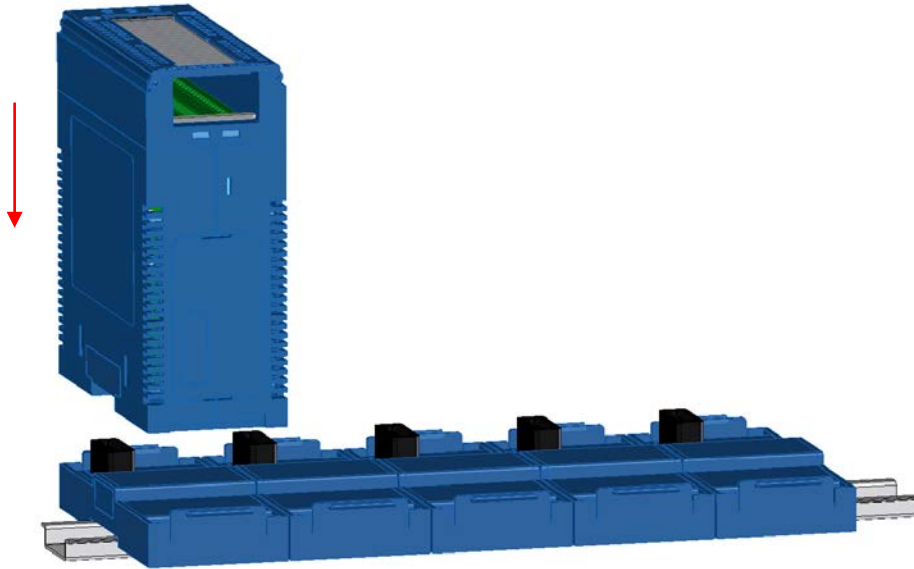
Step 2: Push modules together on DIN rail and connected by pin array.



A chained fixed seat of module on DIN rail as shown as following figure:



Step 3: Insert each I/O modules to detachable fixed seats by vertical direction:

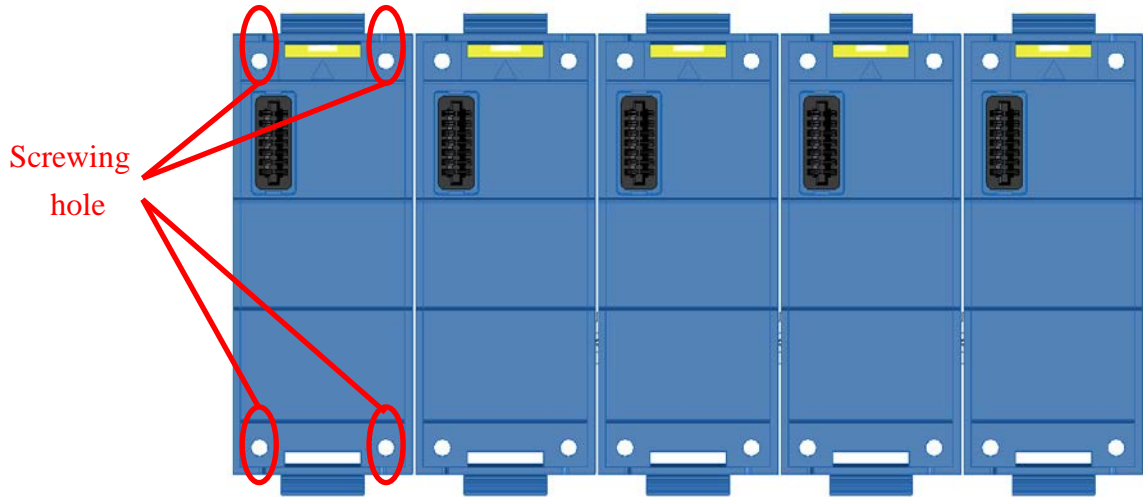


Step 4: A complete module chain on DIN rail as show as following figure:

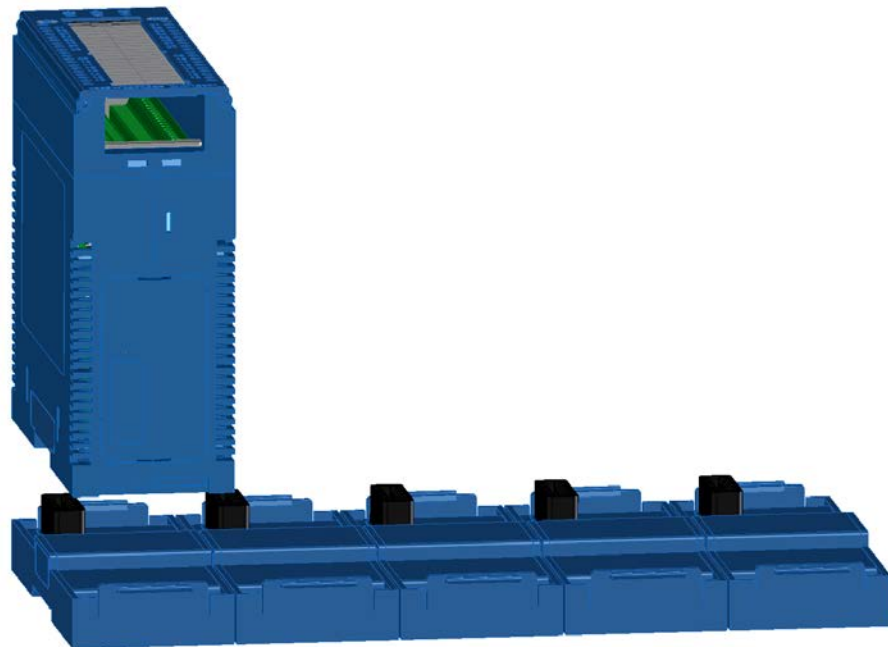


Wall mounting

Wolf series modules also support wall mounting mechanism. Mounting fixed seat on wall by screws first. The locations of screw hole as shown as following figure:



Insert each modules to fixed seats on wall, as shown as following figure :

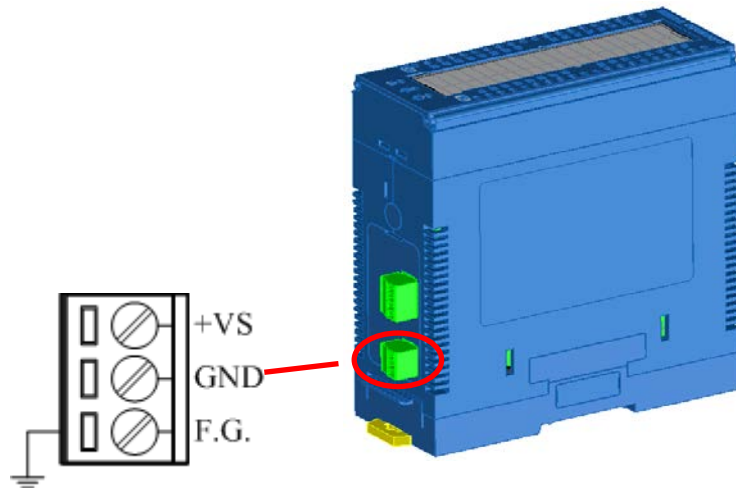


Module grounding

If Wolf series modules were installed on an aluminum DIN rail, then the module grounding would utilize aluminum rail for F.G. (Frame Ground), the grounding also could be connected by connector as shown as following figure:

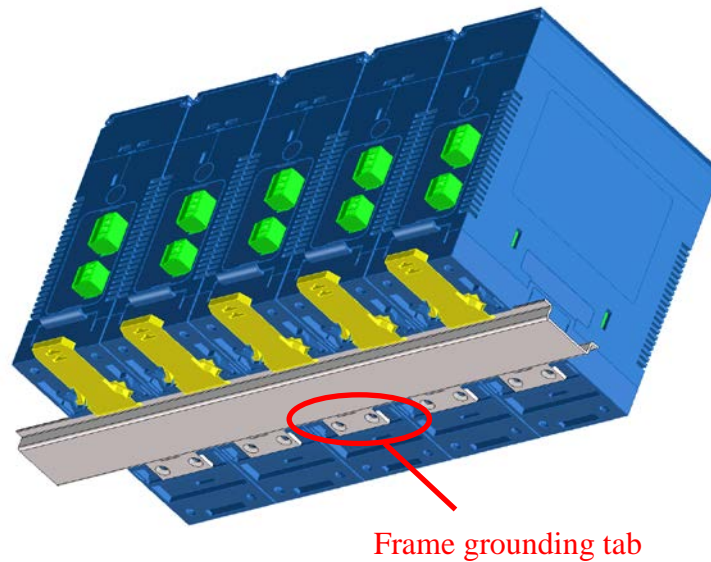
Module grounding by power connector

If not DIN rail typed installation, the grounding could be connected by power connector. The detail for the frame grounding installation as shown as following figure:

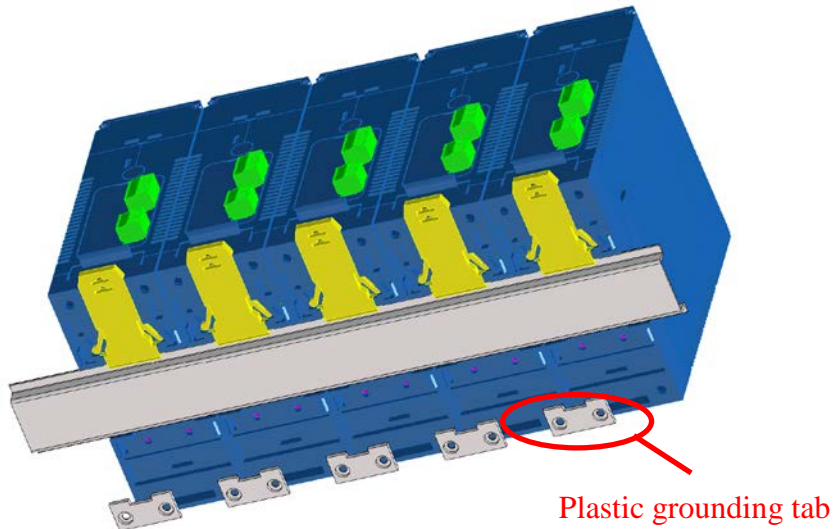


DIN rail grounding

When modules were installed on an aluminum DIN rail, A metal grounding tab could be installed between modules and rail. The install location of metal grounding tab as shown as following figure:

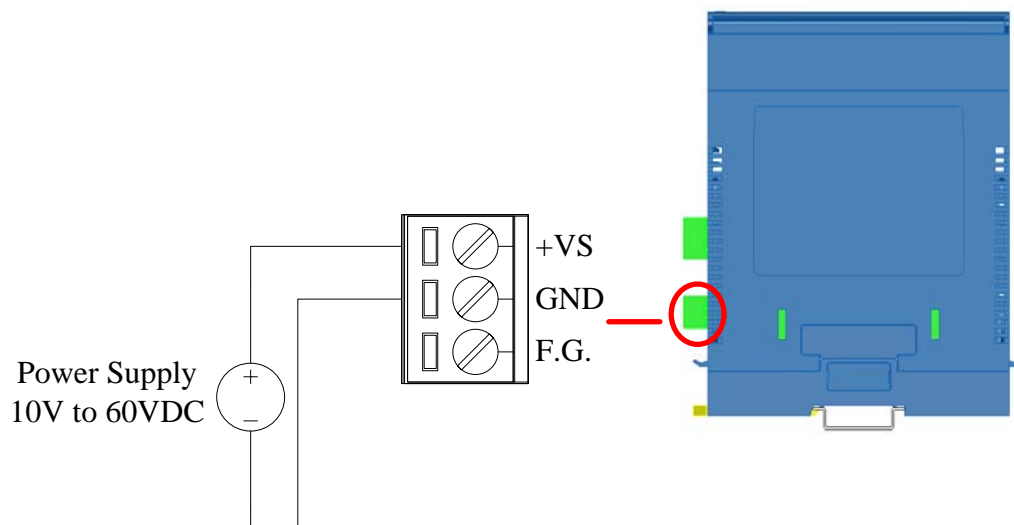


※ We strongly recommends a suitable Grounding (Frame Grounding) is necessary to ensure the system stability. If the grounding of power supply is poor or there have noise on frame grounding, then it need isolate frame grounding of module. Use a plastic grounding tab instead to isolate module frame ground and DIN rail as show as following figure.

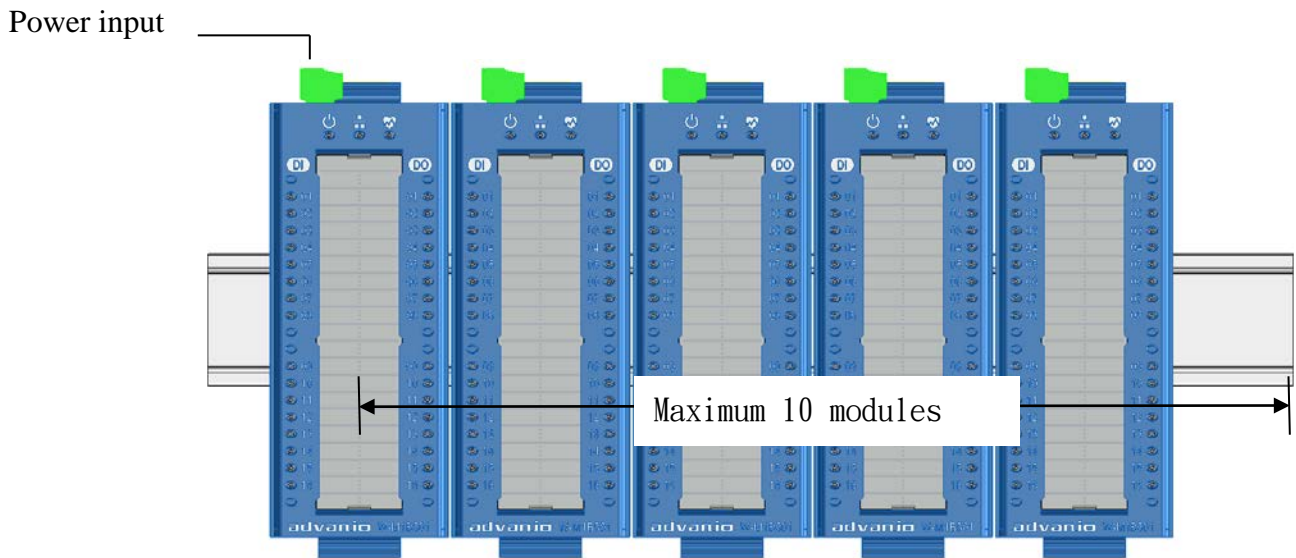


2.1.4 Power Supply

Wolf series modules support wide range DC power input, the voltage from 10V up to 60V to fit industrial application, there is power regulator inside for system power stabilization to supply high quality power if supplied power is within support rang. It is ideally on voltage and current in module are inversely proportional but the power ripple must be limited to 5V Vpp. How wire power connector as shown as following figure.

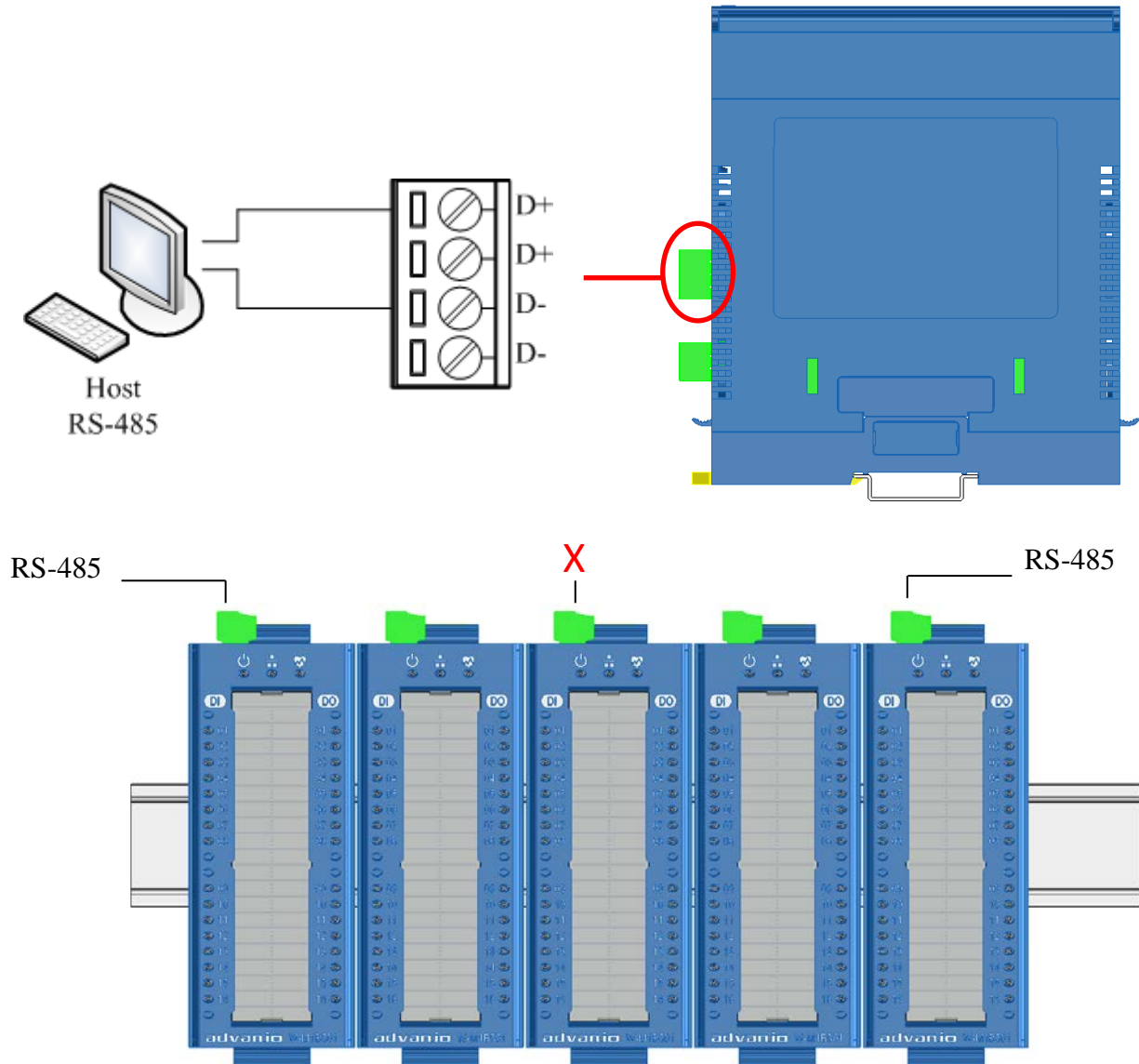


- ※ Power level would be drop low when connected power line is too long, so strongly recommend the distance between power and module should be as short as possible in order to prevent the system unstable.
- ※ Each module power would be parallel connected on DIN rail, so the power connector are on same situation. While connecting the power supply to one of them on the rail then the power would distribute to every module via rail. (Be careful! only one power source could be connecting to one set of modules on one rail.) The maximum number of modules on one rail is 10 modules and power consumption approximat 30W.
- ※ Using power connector to connect power source on every modules if not on rail.



2.1.5 Connecting Communication Interface

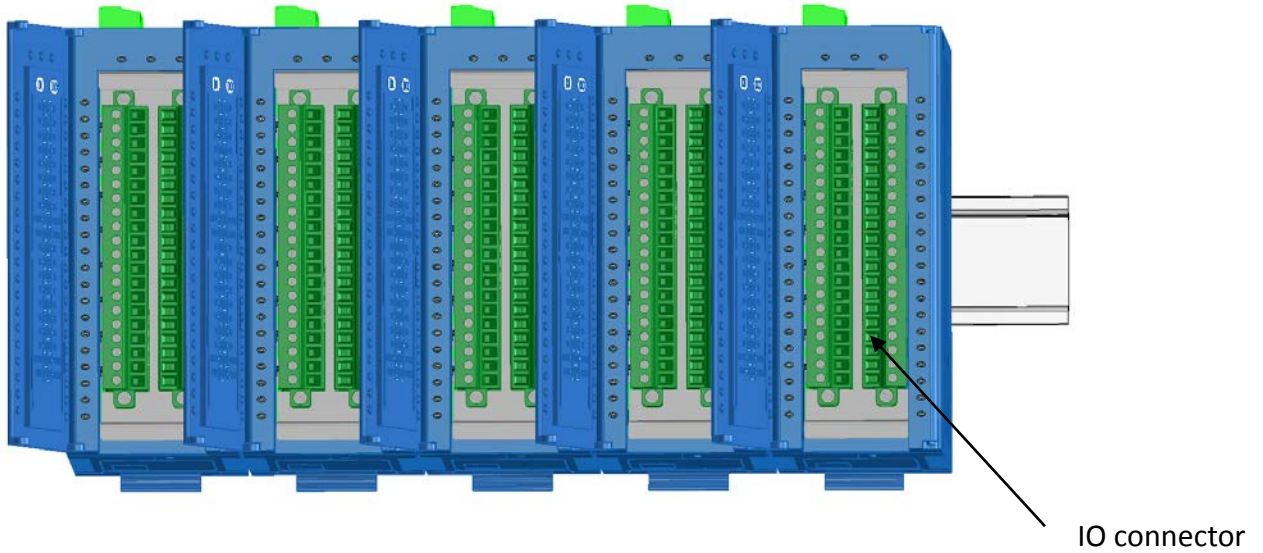
Wolf M1B series modules follow the standard RS-485 to support communication. The RS-485 port and placement as following figure Besides, the next figure is show the RS-485 connection..



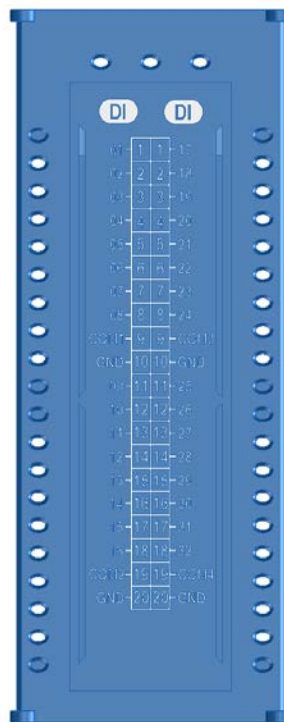
- ※ When DIN rail mounting with modules alongside and the mounting base are connected to the dock connector RS485 Signals can enter from the first module only and out from the last module only. It is prohibited to use the intermediate module for the pick out to avoid communication instability.
- ※ If the base is not connected to the dock connector, then every module need to be connected with input communication cables for communication.

2.1.6 IO Connection

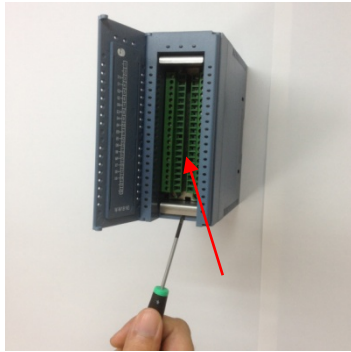
User can choose the suitable I/O feature on module to fit specified application. Please refer to the section of module information and check if each I/O channel has been assigned appropriately.



The description of each I/O channels on the back-side of cover. It is for user quick reference easily:



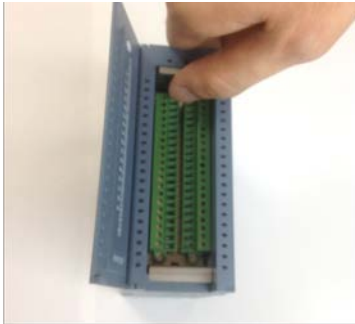
Procedures of removing I/O terminal



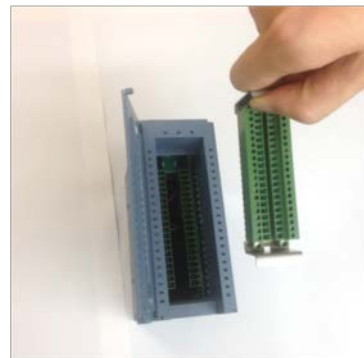
1. Insert the flathead screwdriver into the position as shown as above.



2. Push down the screwdriver



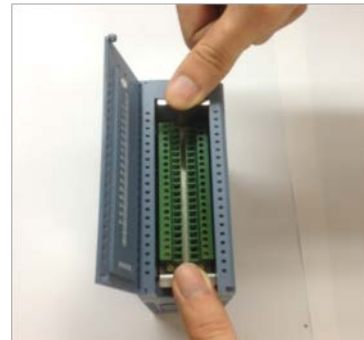
3. Remove the terminal by pulling the hook of up side.



4. Terminal removed



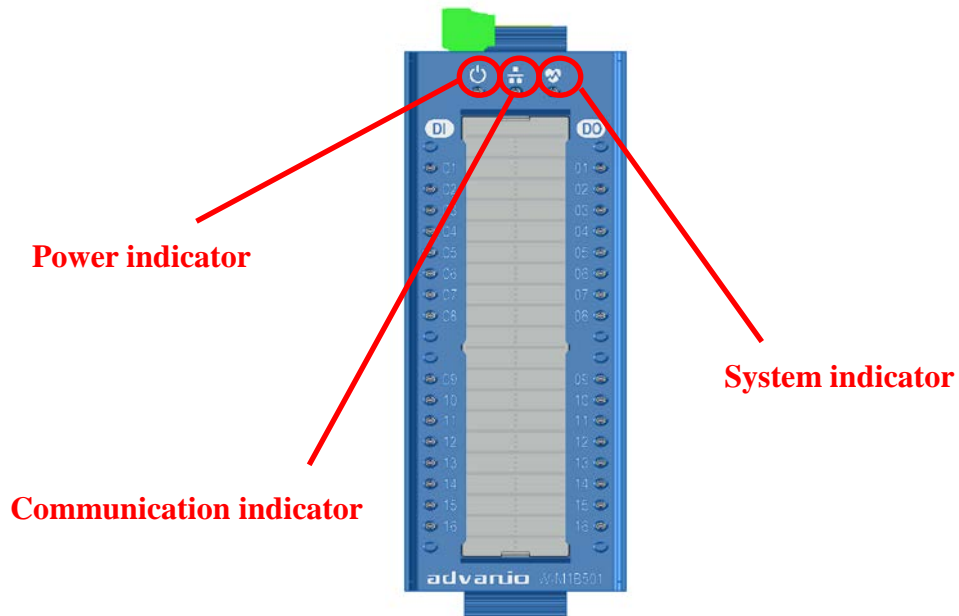
1. Put the terminal on module



2. Push the top side and bottom side by two hands then complete.

2.1.7 Indicators

The functions of each indicator are described in the attached table:

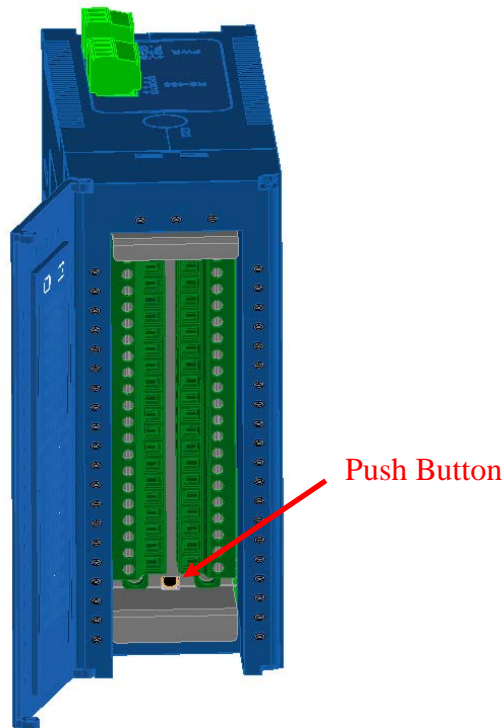


Power	COM.	SYS.	Indication	Status
☉	☉	☉	Flash 3 times in 0.5 sec.	System initial completed.
☉			Lighting	Power good and system ready.
	☉		Flashing	Communication
	☉		Lighting	Polling timeout
		☉	Flashing every 0.5 sec	Normal
		☉	Lighting	Abnormal
		☉	A flash pattern as Lighting 2 sec · Off 1 sec · Lighting 0.5 sec · Off 1sec	EEPROM module accessing fail.
		☉	Flash pattern as~ Lighting 2 sec. Off 1 sec. Lighting 0.5 sec. 2 times Off 1 sec	EEPROM accessing failed. If it is new part or not be initialized, please perform EEPROM initial procedures as appendix section 1.
		☉	Flashing pattern as ~	The stored parameter in EEPROM not

			Lighting 2 sec. Off 1 sec. Lighting 0.5 sec. 3 times Off 1 sec	matched as system. Please re-initial it.
--	--	--	---	--

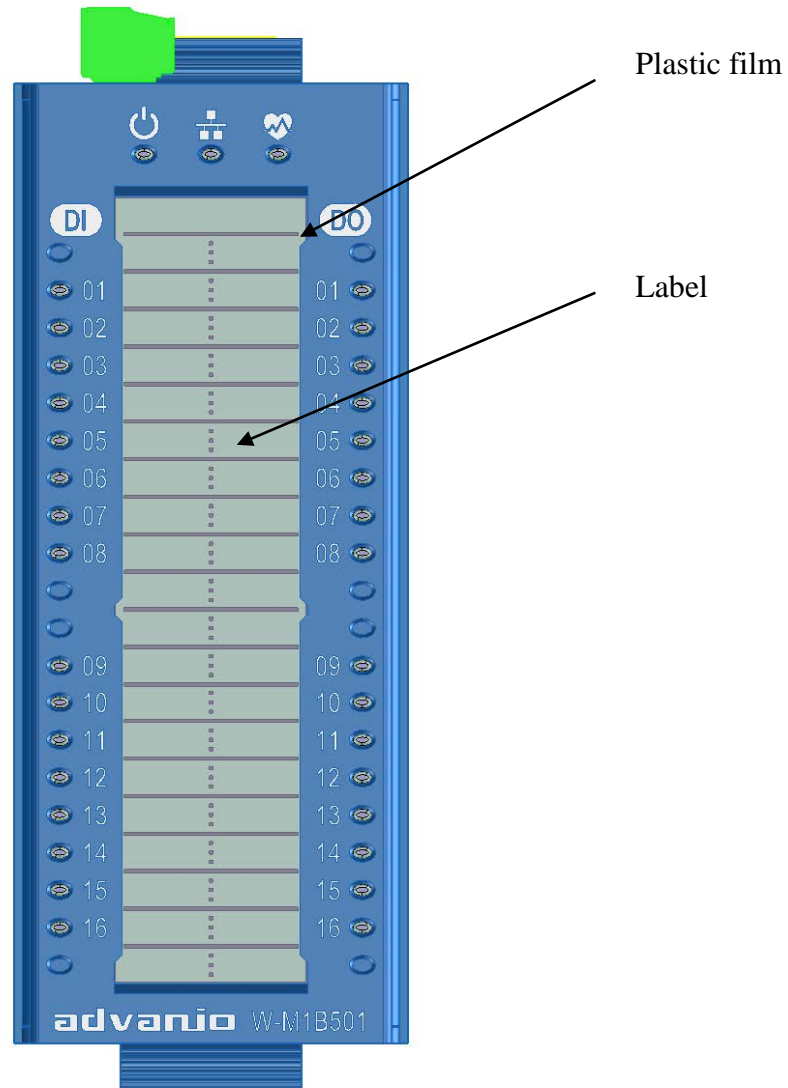
Remark 1:

The re-initial procedure of change new EEPROM module is same as module initial procedure. Push the button on up side of connector board 3 sec then module would perform init procedure and store new parameter into EEPROM. Keeping the parameters which are in EEPROM same as system.



2.1.8 Channel Label

Tabs under the plastic film are accessible for user to record the assignment of each channel. If you want to change the tabs, please download Excel file via Advanio official website, print it and cut out the tabs. Remove the plastic film, insert the tab(s) and put the plastic film back.



2.1.9 Setup Utility

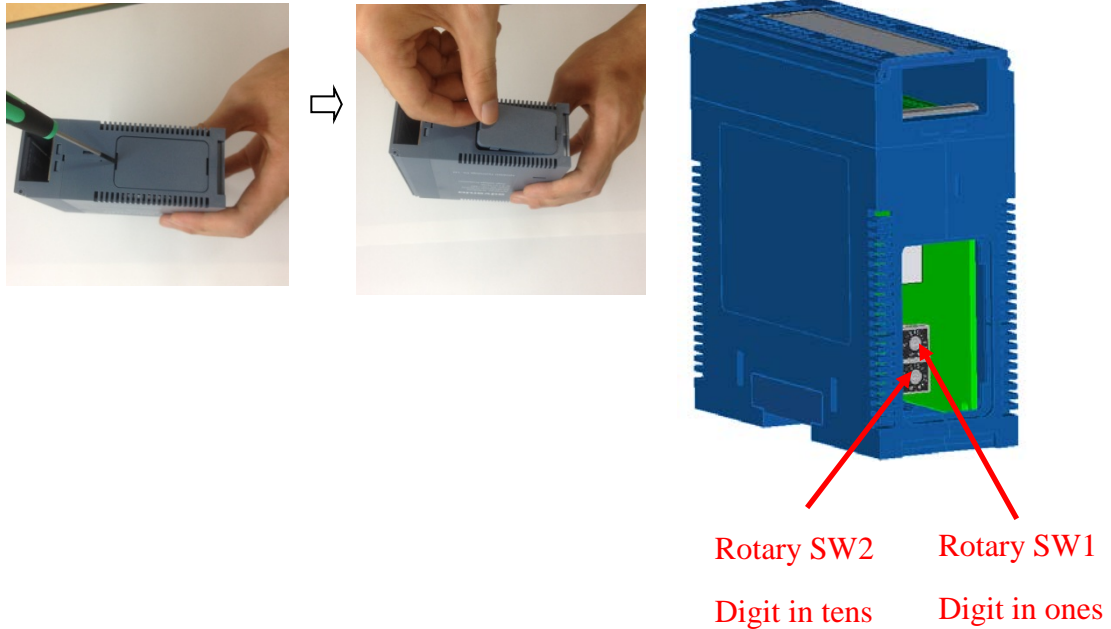
Wolf series module could be configured via setup utility directly on the PC workstation equipped with RS-485. Or, use a RS-232 port through RS-485 converter, USB to RS-485 converter. Utility and setup guideline could be obtained from Advanio website.

2.1.10 Communication Setup

To setup Wolf series module, MODBUS node address should be determined first.

The factory default to the node address of Wolf M1B series module is 01. The node address could be setup by two hexadecimal coded rotary switches. The range of node address is from 0x01 to 0xF7 (1 to 247).

This setup should turn off the power, then use a screwdriver to rotate the rotary switches, when complete the setup and power on module then the node address should be determined.



The factory default setting of RS-485 on Wolf series module is 9600bpsN,8,1.

The frame format and baud rate could be changed via utility or MODBUS command. The baud rate range is from 1200bps to 115.2Kbps. Even and Odd parity check. The setup utility could be downloaded via-Advanio official website, set up MODBUS command of RS-485 as the following:

Address	Function	R/W	Initial value
44107 (0x100A)	Com port parameter : 2 bytes High Byte Low Byte 0x00: 8-N-1 0x03:1.2K 0x01: 8-N-2 0x04:2.4K 0x02: 8-E-1 0x05:4.8K 0x03: 8-O-1 0x06:9.6K 0x07:19.2K 0x08:38.4K 0x09:57.6K 0x0A:115.2K	R/W	0x0006

2.1.11 Factory Reset

Use factory reset if modules failed to communicate. Press “Push Button” to complete INIT. “Push Button” functions are described as follows:

Push INIT and hold for 3 seconds, the LED indication of power, communication and system will flash 3 times at 0.5 second interval.

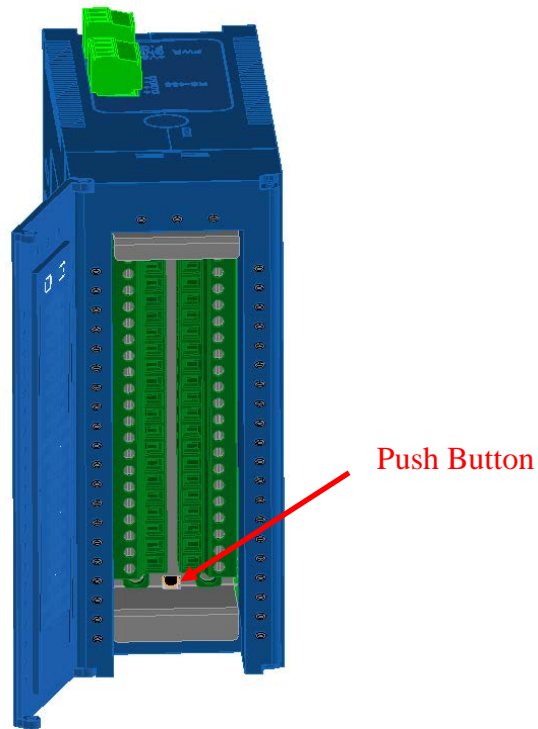
After initial operation:

Resume factory default and reset modules:

Baud rate: 9600bps

Data format: N,8,1

Refer to chapter 4 for factory default setting:



2.1.12 Isolated Type RS-232/RS-485 Converter

(Optional)

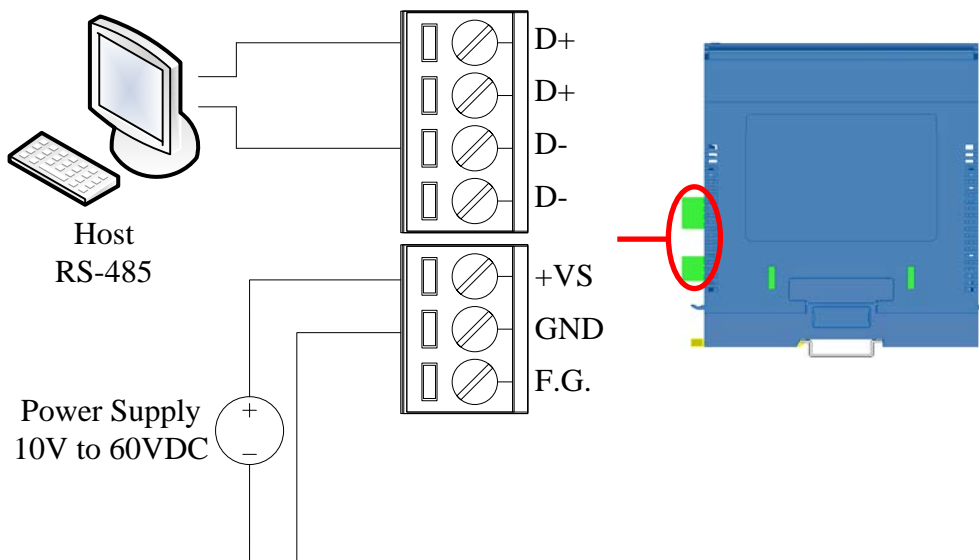
If only RS232 port is available, a converter to isolate RS232/RS485 will be needed. Setup of module address for the converter is not required.

2.1.13 Repeater (Optional)

With a communication distance surpasses 4000 feet (1200m) or more than 32 modules are used, expanding repeaters may be needed. Maximum number of modules is 247 by 8 repeaters.

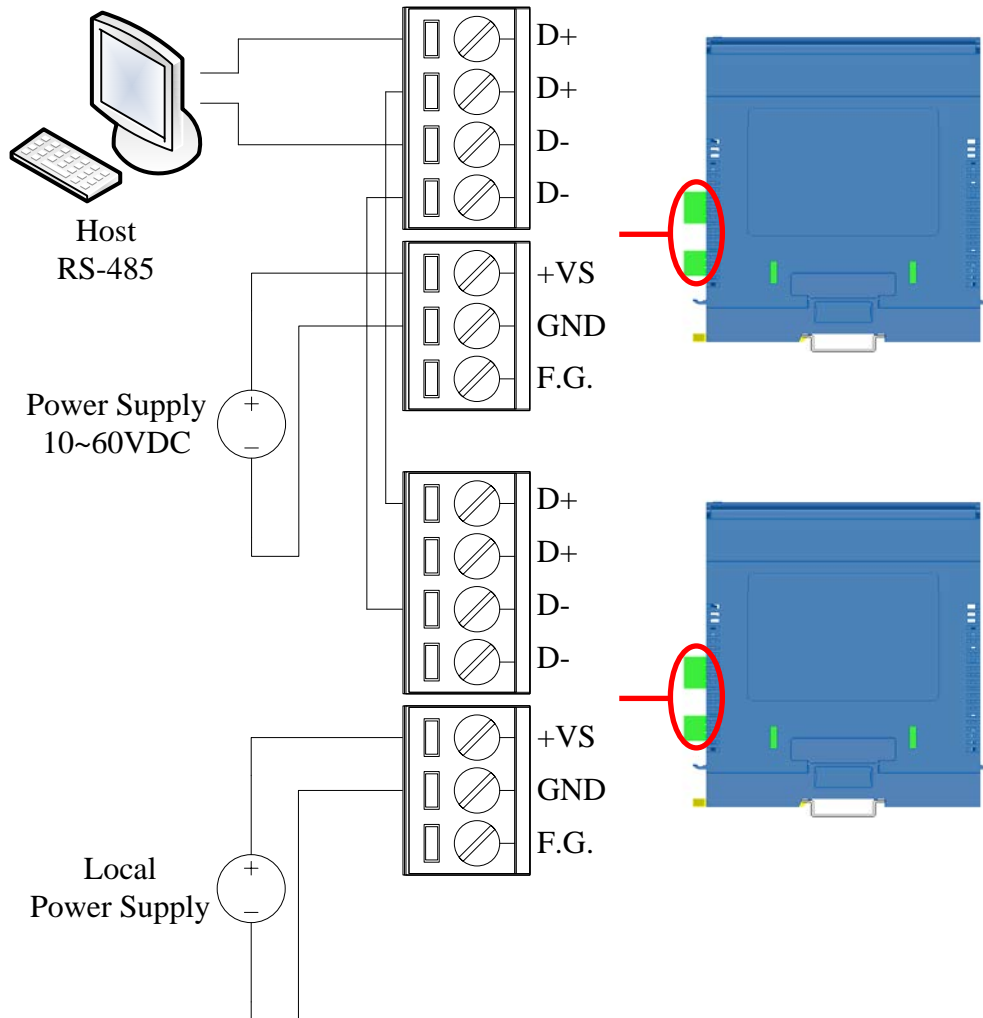
2.2 Example: Single Module

Construction of basic modules featuring network connecting of Wolf series module (single) is show as figures below.



2.3 Example: Multiple Modules

Construction of multiple modules featuring network connecting of Wolf series modules is show as figures below.

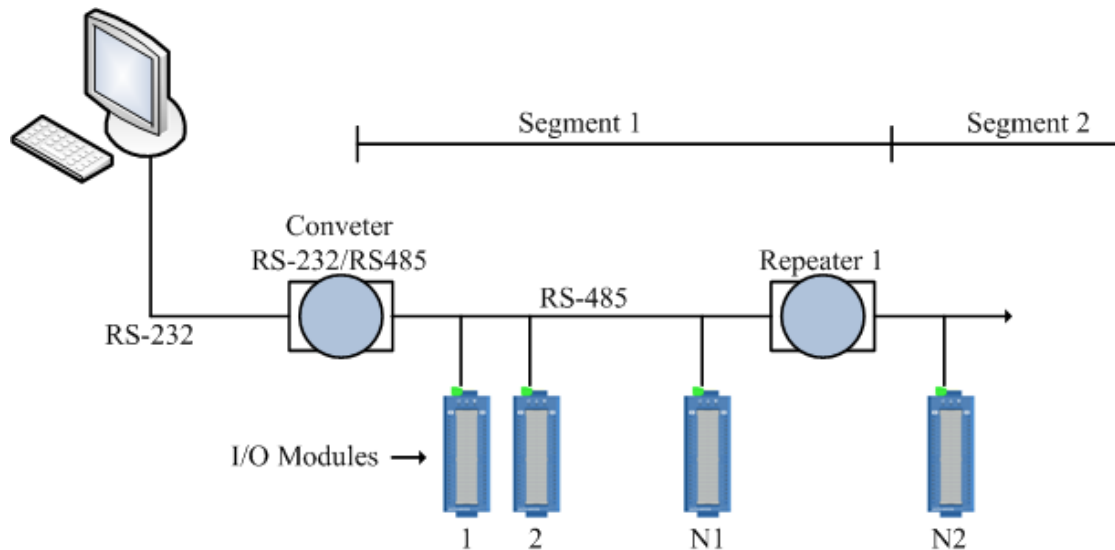


2.4 System Configuration

Wolf series modules are all connected in parallel by cables. Thus, failing of one segment does not affect the entire network system. The modules applied are based on RS485 interface and MODBUS protocol. When communicating via host or terminal is required, RS485 would be taken in consideration in term of different system architecture. Star topology, daisy chain and random topology will be briefed in the next sections.

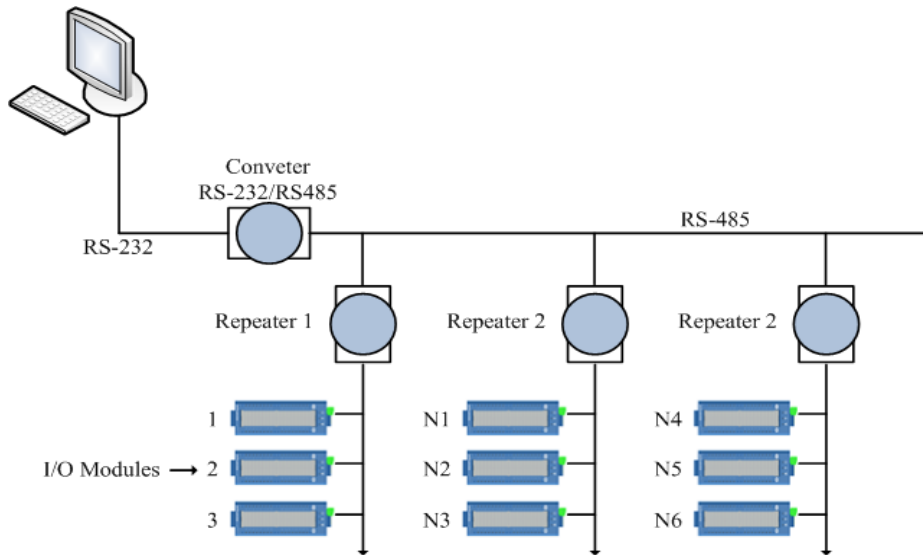
2.4.1 Daisy Chain

In each segment, the last node to connect modules must be repeater, with another end connected to the main cable, it served as an important medium. Each repeater can be connected by 32 modules at most, otherwise, the low current might result in communication error.



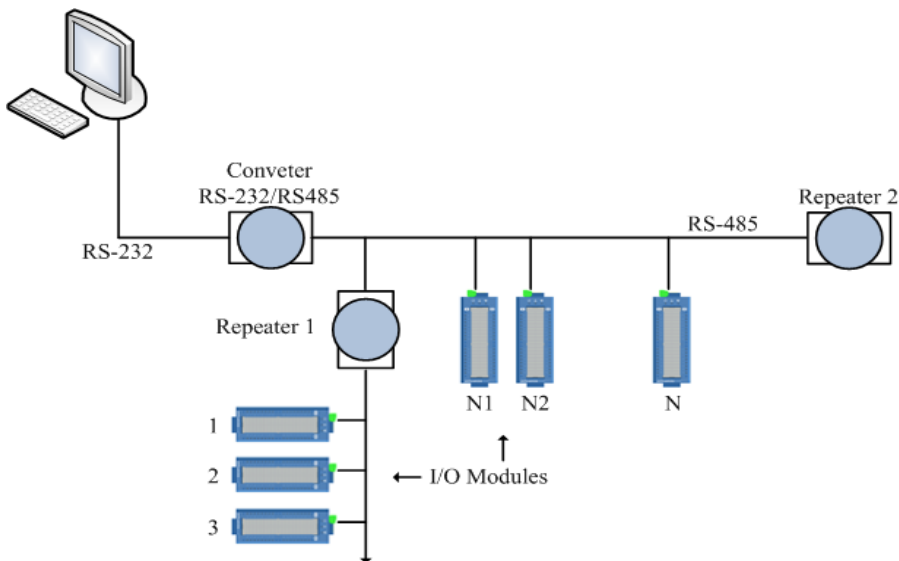
2.4.2 Star Topology

All the repeaters are connected to the main network through a cable and the modules are connected to the repeaters. It forms a tree.



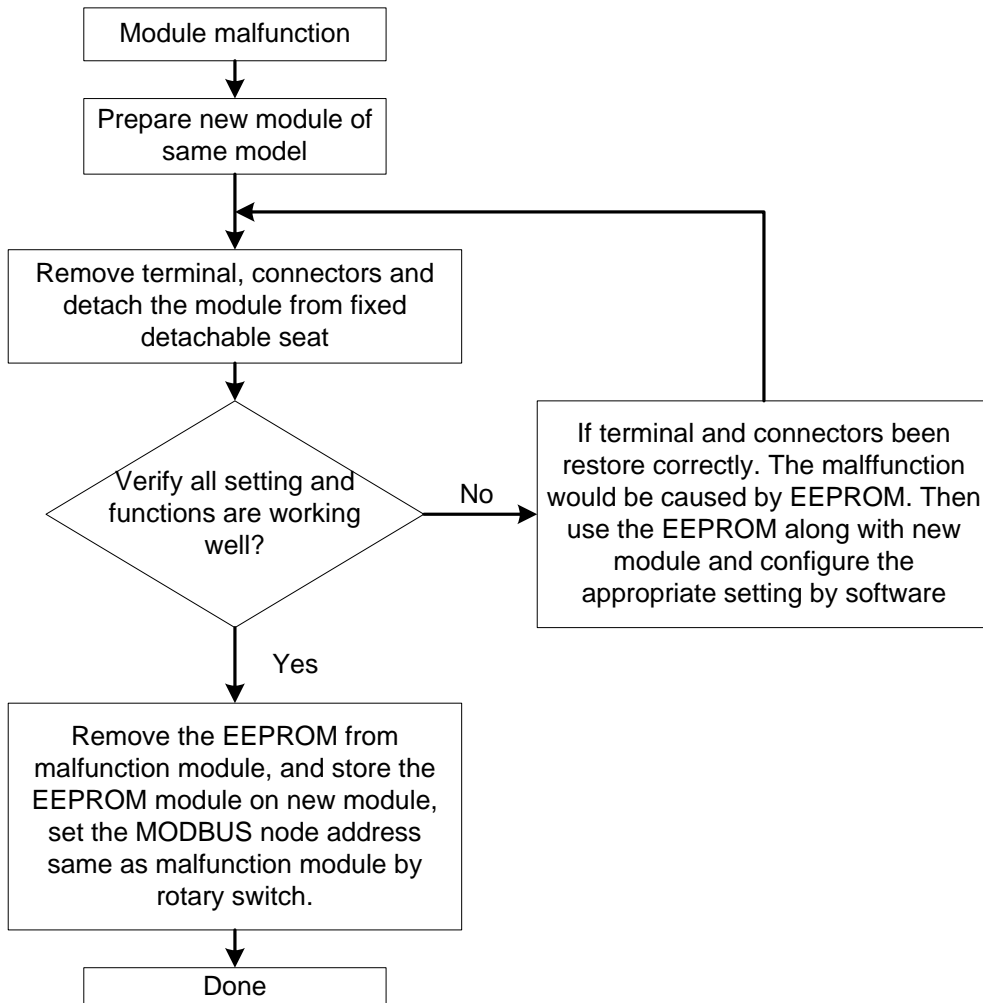
2.4.3 Random Topology

A combination of star and daisy chain topologies can be designated for every requirement.



2.5 Module Replacement

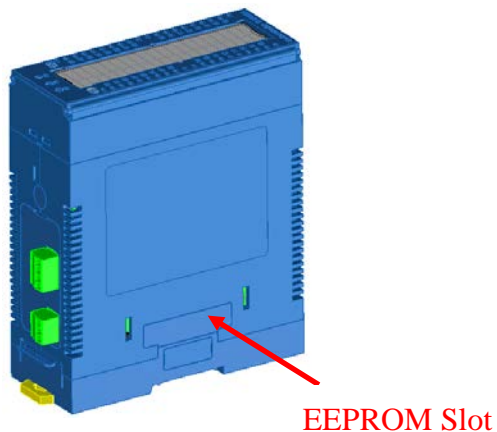
A quick replacement on site in case of module failure is indicated as follows:



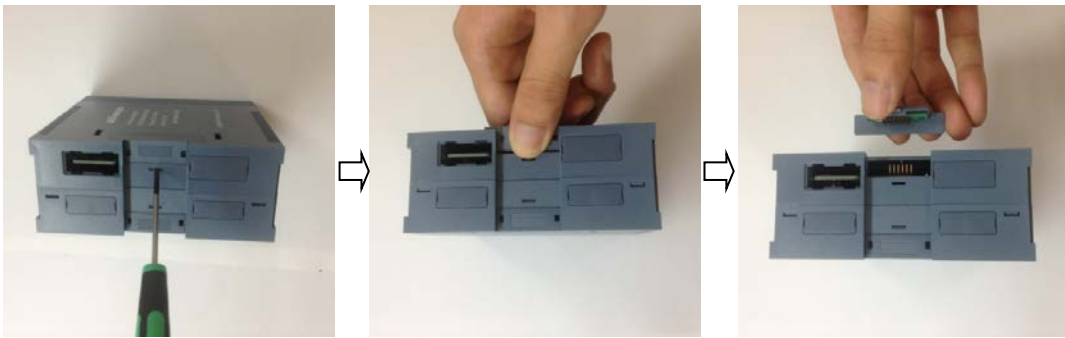
EEPROM Replacement:

EEPROM location is marked in the following figure.

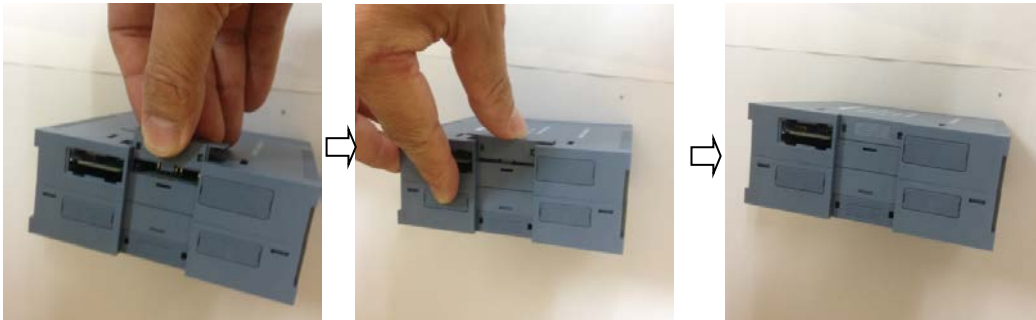
Wolf Series module is an isolated module, under certain circumstances, if I/O is damaged, the parameter stored in EEPROM will remain intact. You can simply replace EEPROM and resume the setting.



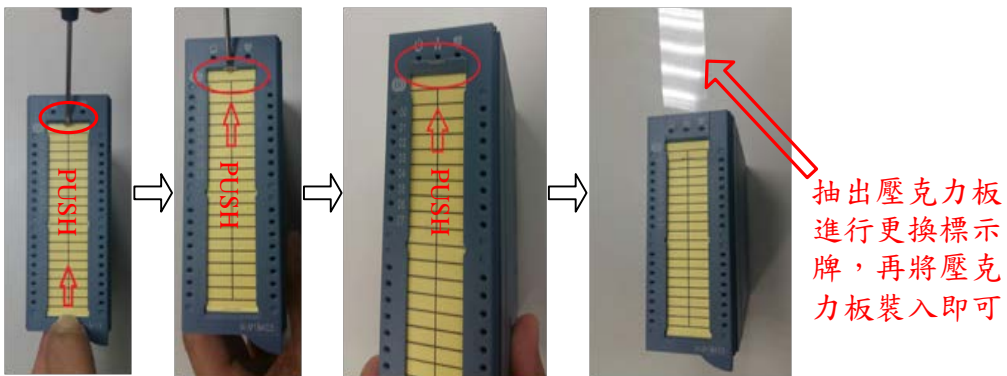
Procedures of remove EEPROM : To remove EEPROM, follow the steps below:



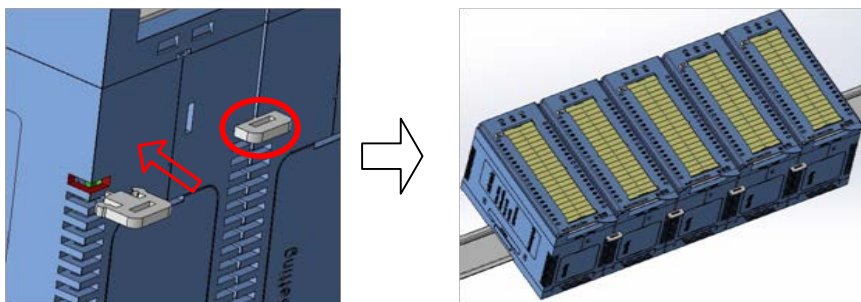
Procedures of restore EEPROM: To restore EEPROM, follow the steps below:



更換 IO 標示牌步驟：



安裝模組川接塑膠扣步驟：



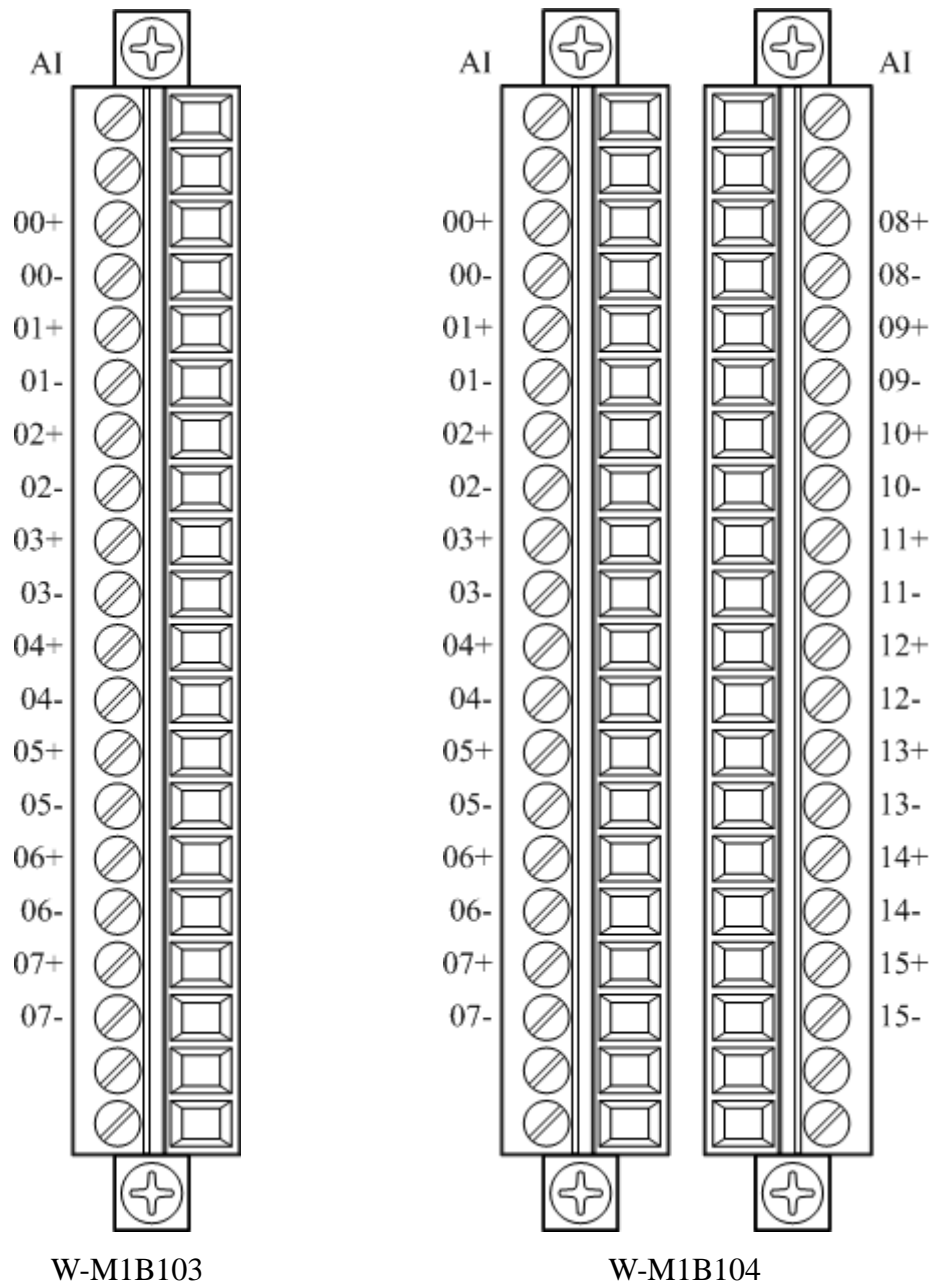
Chapter 3. Analog Module Information

3.1 W-M1B101 (Coming Soon)

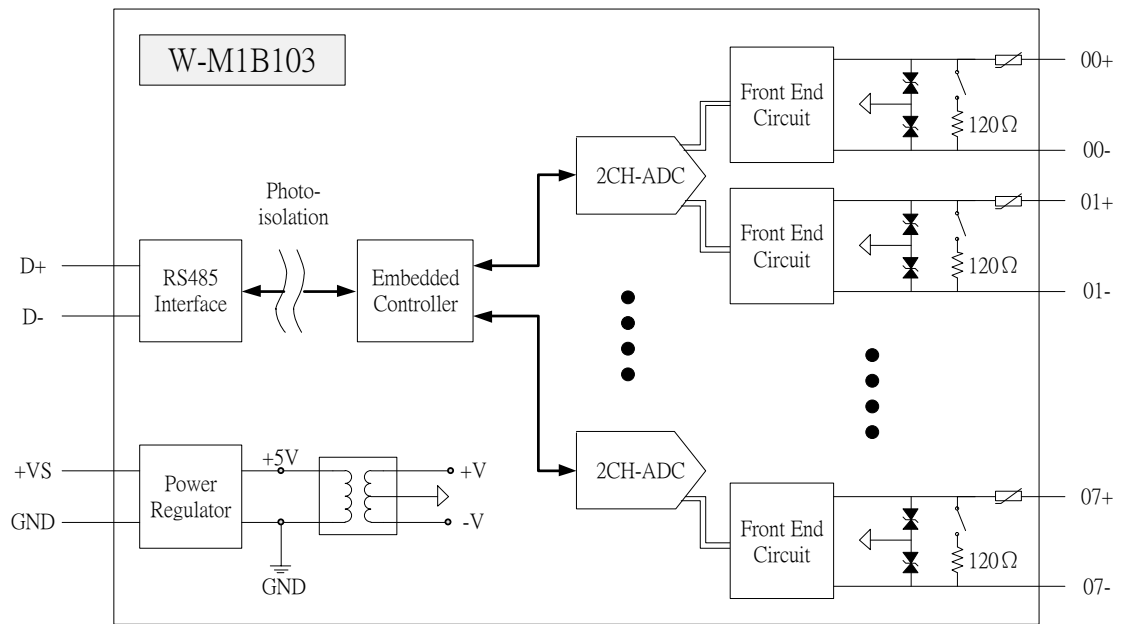
3.2 W-M1B102 (Coming Soon)

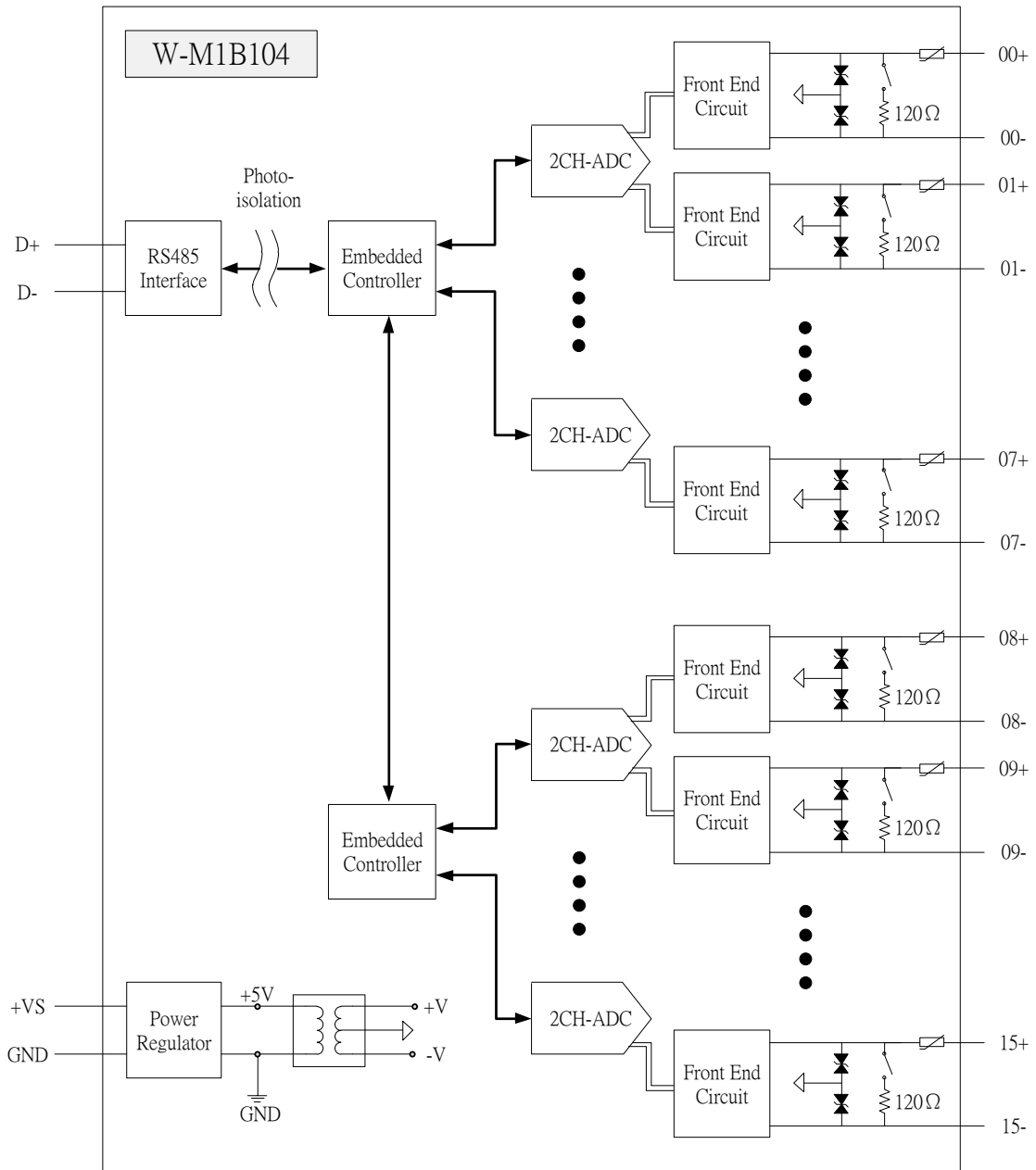
3.3 W-M1B103/104 8/16 Channel Universal Analog Input Module with High Voltage Protection

3.3.1 Terminal Assignment

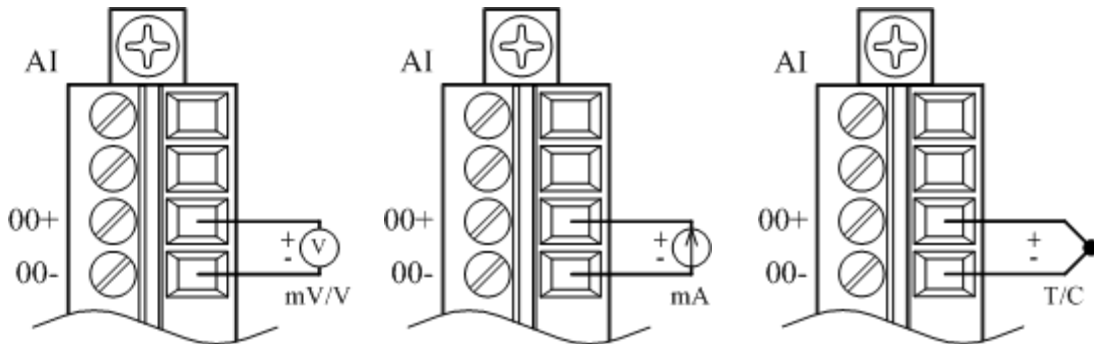


3.3.2 Block Diagram





3.3.3 Channel Connecting



3.3.4 IO Specifications

	W-M1B103	W-M1B104
Channels	8 channels	16 channel
Voltage Range	$\pm 100\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$, $0\sim 100\text{mV}$, $0\sim 500\text{mV}$, $0\sim 1\text{V}$, $0\sim 5\text{V}$, $0\sim 10\text{V}$	
Current Input	$\pm 20\text{mA}$, $4\sim 20\text{mA}$, $0\sim 20\text{mA}$ (Slide switch select)	
Direct Sensor Input	J, K, T, E, R, S, B, N	
Burn-out Detection	Yes (all V, $4\sim 20\text{mA}$ & all T/C)	
Channel Independent Configuration	Yes	
Sampling Rates	2.5 samples/second per channel	
Resolution	16-bit	
Accuracy	$\pm 0.1\%$ FSR	
Input Impedance	Voltage: $2\text{M}\Omega$ Current: $120\ \Omega$	
Span Drift	$\pm 25\text{ ppm}/^\circ\text{C}$	
Zero Drift	$\pm 6\ \mu\text{V}/^\circ\text{C}$	
Input Voltage Protection	$\pm 240\text{V}$	
Common Mode Voltage	240V	
Power Consumption	$1.6\text{W @ } 24\text{V}$	$2.8\text{W @ } 24\text{V}$

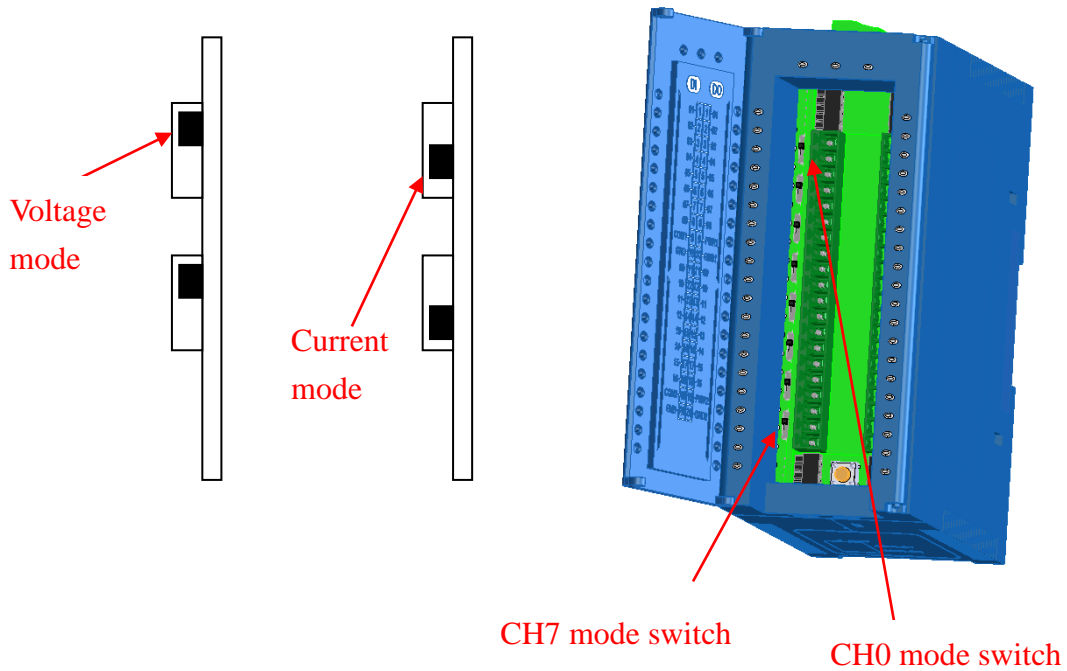
3.3.5 Related Reference

3.3.5.1 Input Signal Type Setup

Input ranges & type for each analog signal is adjustable. Modbus command is shown below.

Address	Function	R/W	Initial value
40705~40720 (0x02C0~0x02CF)	CH0~CH15 Input signal type setup	R/W	0x0106

※**Caution:** If “Current” input is selected, please turn the switch to “Current” Input by a flathead screwdriver. While switching to voltage and thermocouple, it is required to turn the switch to the appropriate mode. (See figure below)



Signals detect range:

Value	Input range	Initial value
Voltage Input		
0x0101	0~10 V	
0x0102	0~5 V	
0x0103	0~1 V	

0x0104	0-500mV	
0x0105	0-100mV	
0x0106	± 10 V	⊙
0x0107	± 5 V	
0x0108	± 1 V	
0x0109	± 500 mV	
0x010A	± 100 mV	
Current Input		
0x0201	4~20mA	
0x0202	0~20 mA	
0x0203	± 20 mA	
Thermocouple Input		
0x0301	Type J Thermocouple -210 ~ 1200 °C	
0x0302	Type K Thermocouple -270 ~ 1372 °C	
0x0303	Type T Thermocouple -270 ~ 400 °C	
0x0304	Type E Thermocouple -270 ~ 1000 °C	
0x0305	Type R Thermocouple -50 ~ 1768 °C	
0x0306	Type S Thermocouple -50 ~ 1768 °C	
0x0307	Type B Thermocouple 0 ~ 1820 °C	
0x0308	Type N Thermocouple -270 ~ 1300 °C	

3.3.5.2 CJC (Cold Junction Compensation)

There is thermal sensor built in the module, the purpose is cold junction compensation to thermocouple. Modbus command is shown below.

Address	Function	R/W	Initial value
00524 (0x020B)	CJC Enable 0: disable 1: enable	R/W	0
40609~40624 (0x0240~0x0247)	CH0~CH15 CJC Scale, Unit: 0.01 °C Range: -50.0°C ~ 50.0°C	R/W	0x0000
40641 (0x0280)	CJC Value, Unit 0.01 °C	R	-
40642 (0x0281)	CH8~CH15 Value, Unit 0.01 °C	R	-
40657 (0x0290)	Module CJC Scale, Unit: 0.01 °C Range: -50.0°C ~ 50.0°C	R/W	0

3.3.5.3 Hexadecimal / Engineering Unit

Setup the output value on Hexadecimal, or customer scaling. Modbus command is shown below.

Address	Function	R/W	Initial value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-

Hex Unit data range:

Value	Range	Min. value	Max. value
Voltage Input			
0x0101	0~10 V	0 (0)	FFFF (65535)
0x0102	0~5 V	0 (0)	FFFF (65535)
0x0103	0~1 V	0 (0)	FFFF (65535)
0x0104	0-500mV	0 (0)	FFFF (65535)
0x0105	0-100mV	0 (0)	FFFF (65535)
0x0106	± 10 V	8000 (-32768)	7FFF (32767)
0x0107	± 5 V	8000 (-32768)	7FFF (32767)
0x0108	± 1 V	8000 (-32768)	7FFF (32767)
0x0109	± 500 mV	8000 (-32768)	7FFF (32767)
0x010A	± 100 mV	8000 (-32768)	7FFF (32767)
Current Input			
0x0201	4~20mA	0 (0)	FFFF (65535)
0x0202	0~20 mA	0 (0)	FFFF (65535)
0x0203	± 20 mA	8000 (-32768)	7FFF (32767)
Thermocouple Input			
0x0301	Type J Thermocouple -210 ~ 1200 °C	E999 (-5735)	7FFF (32767)
0x0302	Type K Thermocouple -270 ~ 1372 °C	E6CF (-6449)	7FFF (32767)
0x0303	Type T Thermocouple -270 ~ 400 °C	A99A (-22118)	7FFF (32767)
0x0304	Type E Thermocouple -270 ~ 1000 °C	DD70 (-8848)	7FFF (32767)
0x0305	Type R Thermocouple -50 ~ 1768 °C	FC61 (-927)	7FFF (32767)
0x0306	Type S Thermocouple -50 ~ 1768 °C	FC61 (-927)	7FFF (32767)
0x0307	Type B Thermocouple 0 ~ 1820 °C	0 (0)	7FFF (32767)
0x0308	Type N Thermocouple -270 ~ 1300 °C	E56A (-6806)	7FFF (32767)

Engineering Unit data range:

Value	Range	Min. value	Max. value
Voltage Input			
0x0101	0~10 V	0	10000
0x0102	0~5 V	0	50000
0x0103	0~1 V	0	10000
0x0104	0-500mV	0	50000
0x0105	0-100mV	0	10000
0x0106	± 10 V	-10000	10000
0x0107	± 5 V	-5000	5000
0x0108	± 1 V	-10000	10000
0x0109	± 500 mV	-5000	5000
0x010A	± 100 mV	-10000	10000
Current Input			
0x0201	4~20mA	4000	20000
0x0202	0~20 mA	0	20000
0x0203	± 20 mA	-20000	20000
Thermocouple Input			
0x0301	Type J Thermocouple -210 ~ 1200 °C	-2100	12000
0x0302	Type K Thermocouple -270 ~ 1372 °C	-2700	13720
0x0303	Type T Thermocouple -270 ~ 400 °C	-2700	4000
0x0304	Type E Thermocouple -270 ~ 1000 °C	-2700	10000
0x0305	Type R Thermocouple -50 ~ 1768 °C	-500	17680
0x0306	Type S Thermocouple -50 ~ 1768 °C	-500	17680
0x0307	Type B Thermocouple 0 ~ 1820 °C	0	18200
0x0308	Type N Thermocouple -270 ~ 1300 °C	-270	13000

3.3.5.4 Signal Value

Once completing the setup, please enter the measured value. This is to enable/disable the channel(s) and check if the value is out-of-range (voltage, 4~20mA or thermocouple contact loss is deemed to be “out of range”). Modbus command as following:

Address	Function	R/W	Initial Value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
00641~00646	CH0~CH15 Out of range	R	0

(0x0280~0x028F)	0: normal 1: out of range		
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-

3.3.5.5 Temperature Offset

Setting the temperature offset register with in the module. When selecting thermocouple input mdoe, register can fine-tuning of temperature. Setting address is show below:

Address	Function	R/W	Initial Value
40577~40592 (0x0240~0x024F)	CH0~CH15 temp offset, Unit 0.01°C Range : -50.00°C ~ 50.00°C	R/W	0x0000

3.3.6 MODBUS Address

3.3.6.1 W-M1B103 Modbus Address Table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00524 (0x020B)	CJC Enable 0: Disable 1: Enable	R/W	0
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00648 (0x0280~0x0287)	CH0~CH7 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value				
30513~30520 40513~40520 (0x0200~0x0207)	AI CH0 ~ CH7 Value	R	-				
40577~40584 (0x0240~0x0247)	Temperature Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40609~40616 (0x0260~0x0267)	CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40641 (0x0280)	CJC Value, Unit : 0.01°C	R	-				
40657 (0x0290)	Module CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0				
40705~40712 (0x02C0~0x02C7)	CH0~CH7 Input signal type	R/W	0x0106				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH7 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH7 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH7 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH7 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				

44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0	
44107 (0x100A)	COM port setting: 2bytes	R/W	0x0006	
	High Byte			Low Byte
	0x00: 8-N-1			0x03: 1.2K
	0x01: 8-N-2			0x04: 2.4K
	0x02: 8-E-1			0x05: 4.8K
0x03: 8-O-1	0x06: 9.6K			
	0x07: 19.2K			
	0x08: 38.4K			
	0x09: 57.6K			
	0x0A: 115.2K			
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000	
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000	
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-	
44111 (0x100E)	Counter of communication frame	R	0x0000	

3.3.6.2 W-M1B104 Modbus Address Table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00524 (0x020B)	CJC Enable 0: Disable 1: Enable	R/W	0
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00656 (0x0280~0x028F)	CH0~CH15 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

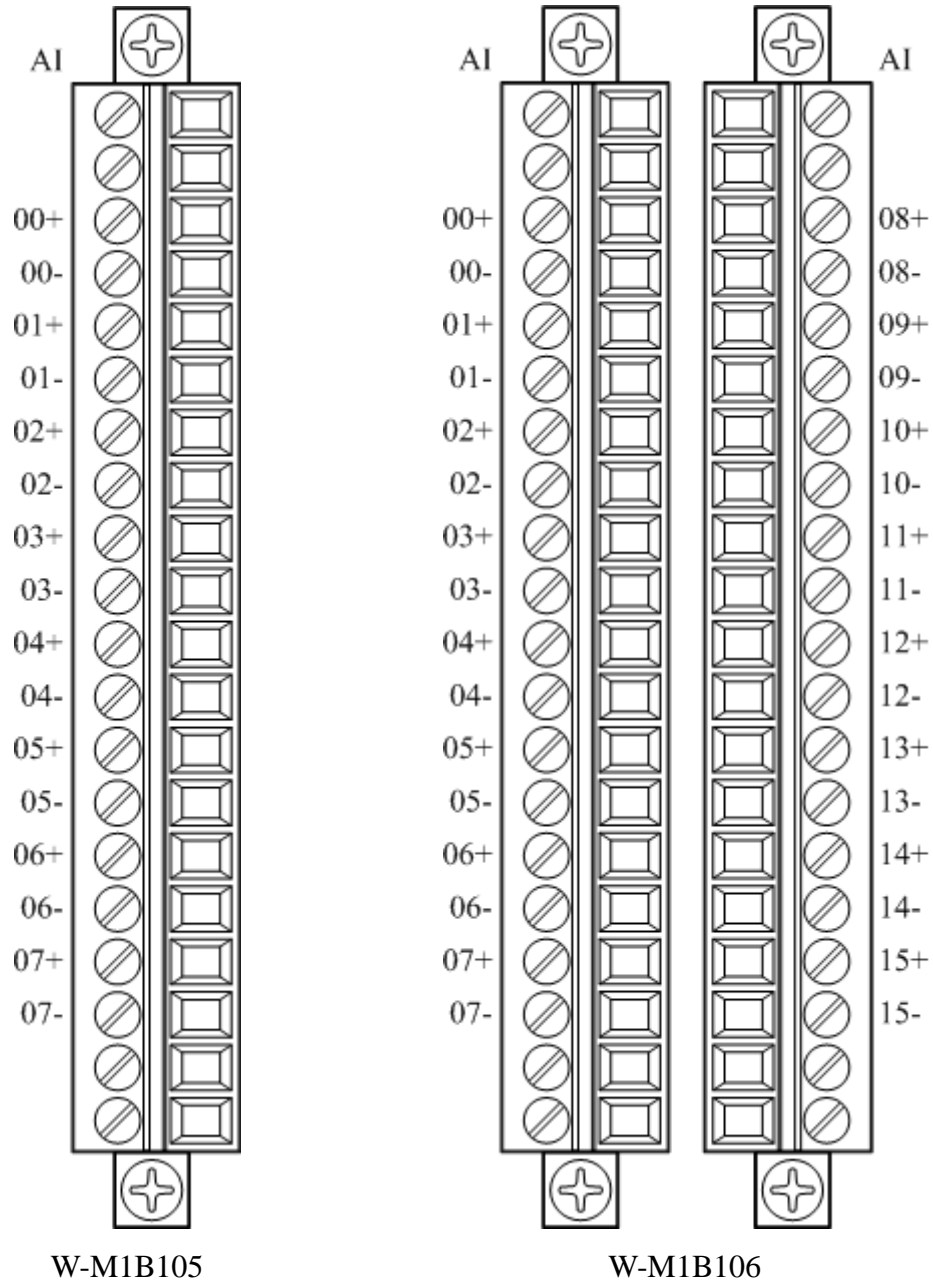
Address	Function	R/W	Initial Value
30513~30528 40513~40528	AI CH0 ~ CH15 Value	R	-

(0x0200~0x020F)							
40577~40584 (0x0240~0x0247)	Temperature Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40609~40616 (0x0260~0x0267)	CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40641 (0x0280)	CJC Value, Unit : 0.01°C	R	-				
40642 (0x0281)	CH8~CH15 Value, Unit : 0.01°C						
40657 (0x0290)	Module CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0				
40705~40720 (0x02C0~0x02C7)	CH0~CH15 Input signal type	R/W	0x0106				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH15 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH7 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH7 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH7 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0				

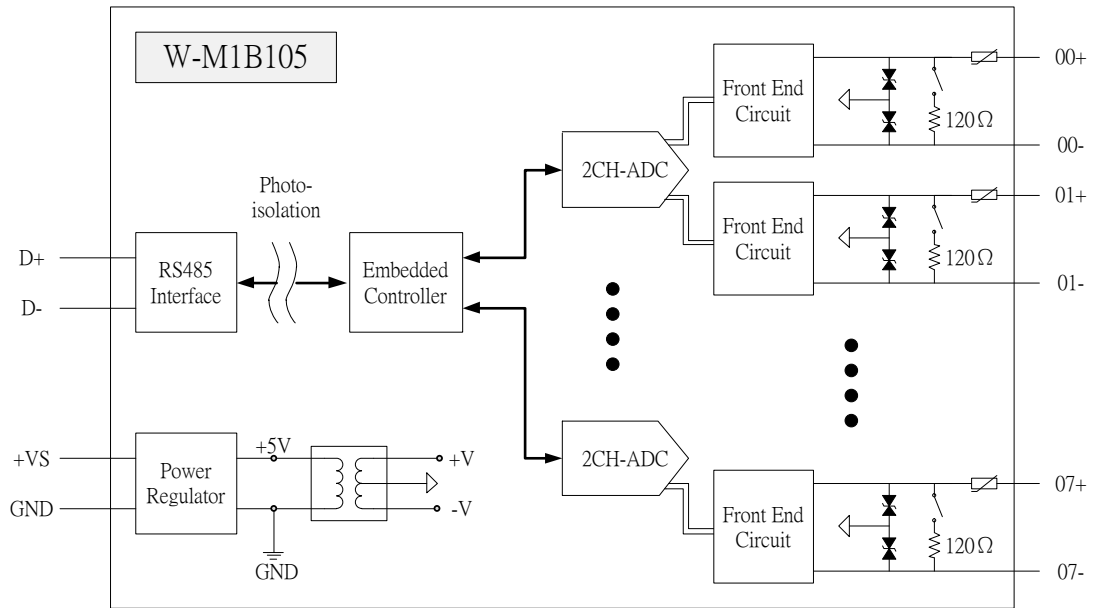
44107 (0x100A)	COM port setting: 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03: 1.2K		
	0x01: 8-N-2	0x04: 2.4K		
	0x02: 8-E-1	0x05: 4.8K		
	0x03: 8-O-1	0x06: 9.6K		
		0x07: 19.2K		
		0x08: 38.4K		
		0x09: 57.6K		
		0x0A: 115.2K		
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

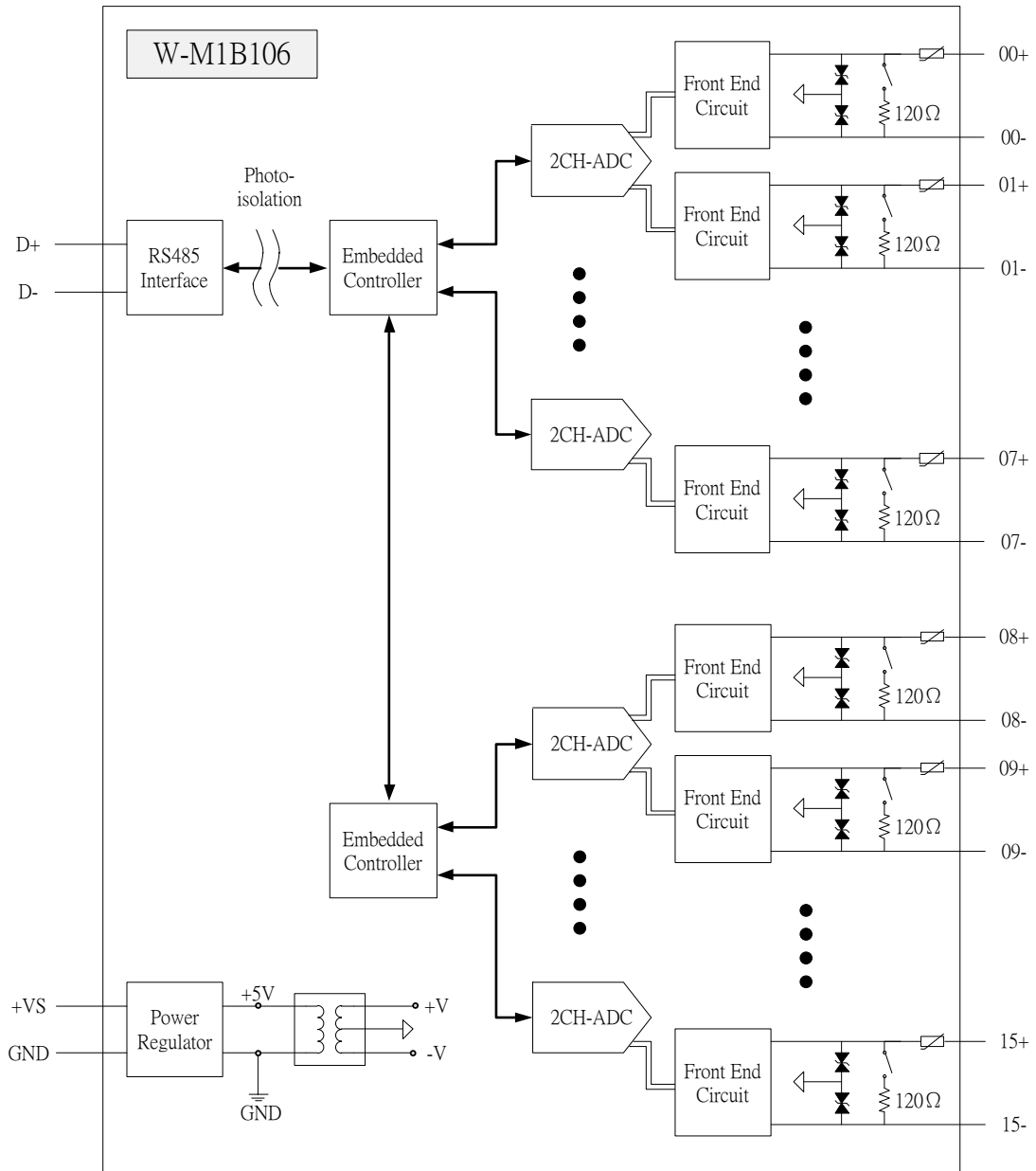
3.4 W-M1B105/106 8/16 Channel Universal Analog Input Module

3.4.1 Terminal Assignment

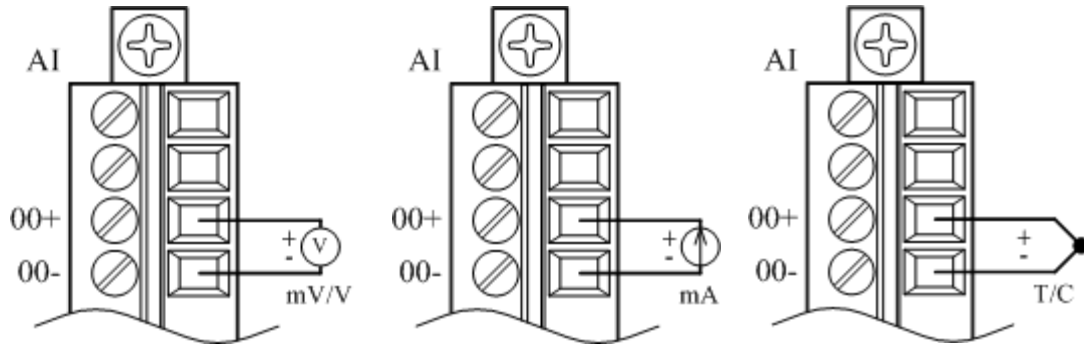


3.4.2 Block Diagram





3.4.3 Channel Connecting



3.4.4 IO Specifications

	W-M1B105	W-M1B106
Channels	8 channels	16 channel
Voltage Range	±100mV, ±500mV, ±1V, ±5V, ±10V, 0~100mV, 0~500mV, 0 ~ 1V, 0 ~ 5V, 0 ~ 10V	
Current Input	±20mA, 4~20mA, 0~20mA (Slide switch select)	
Direct Sensor Input	J, K, T, E, R, S, B, N	
Burn-out Detection	Yes (all V, 4 ~ 20 mA & all T/C)	
Channel Independent Configuration	Yes	
Sampling Rates	2.5 samples/second per channel	
Resolution	16-bit	
Accuracy	±0.1% FSR	
Input Impedance	Voltage: 2MΩ Current: 120 Ω	
Span Drift	±25 ppm/ °C	
Zero Drift	±6 μV/ °C	
Input Voltage Protection	±35V	
Power Consumption	1.6W @ 24V	2.8W @ 24V

3.4.5 Related Reference

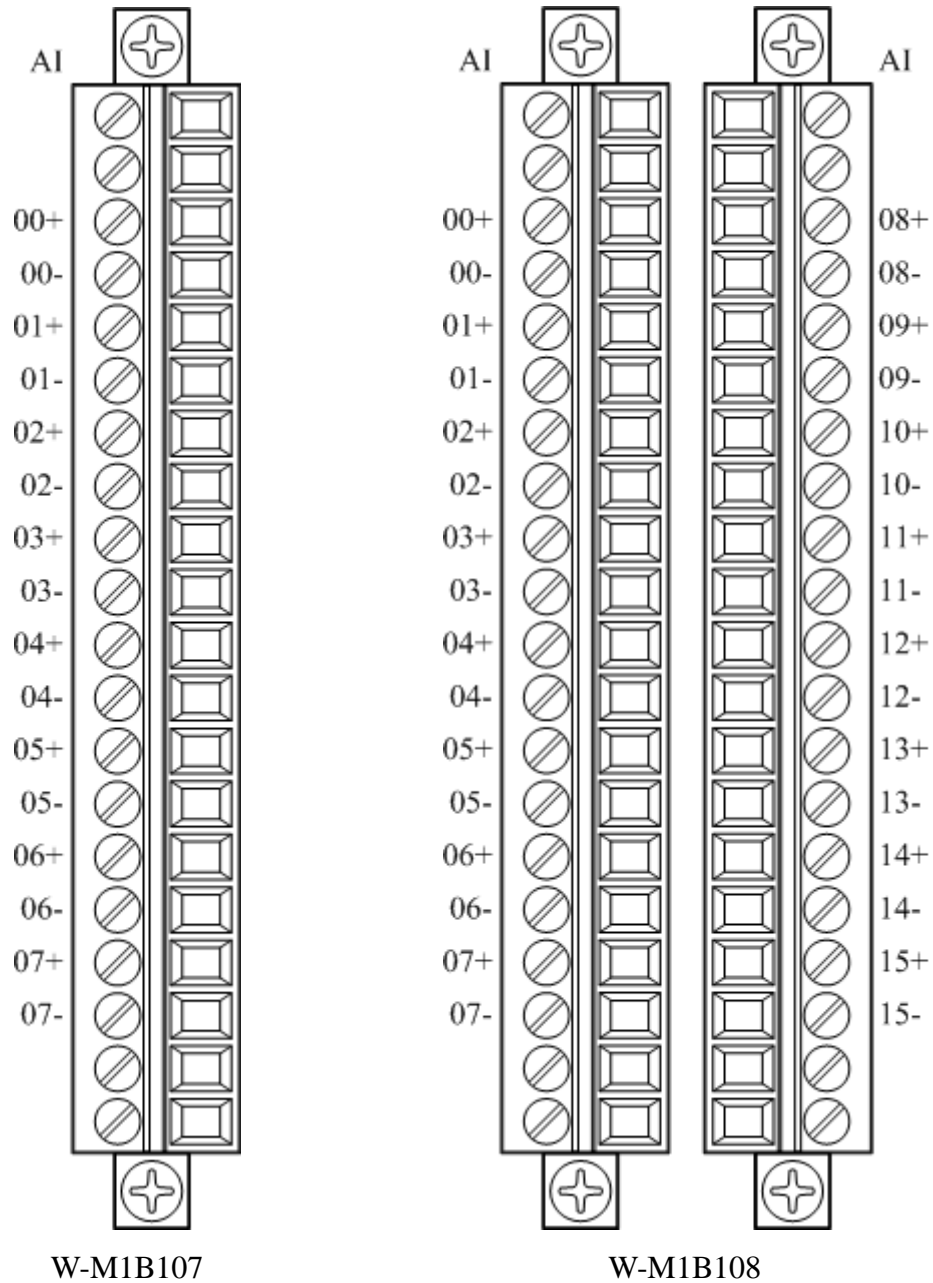
3.4.6 MODBUS Address

Function of W-M1B105 is the same with W-M1B103, function of W-M1B106 is the same with W-M1B104, please refer to section 3.3.5 ~ 3.3.6

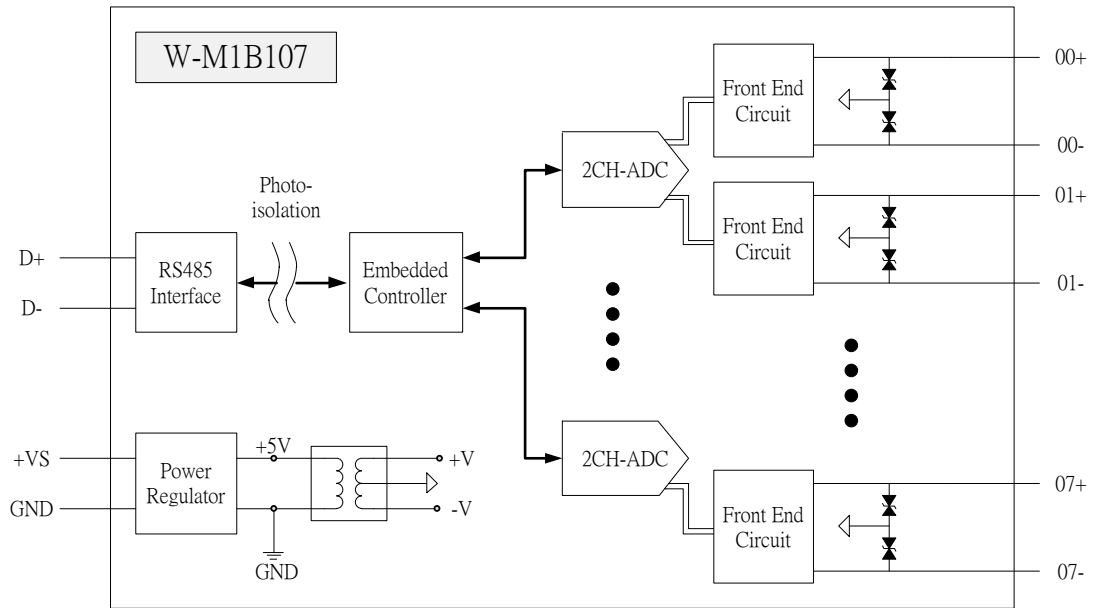
3.5 W-M1B107/108 8/16 Channels

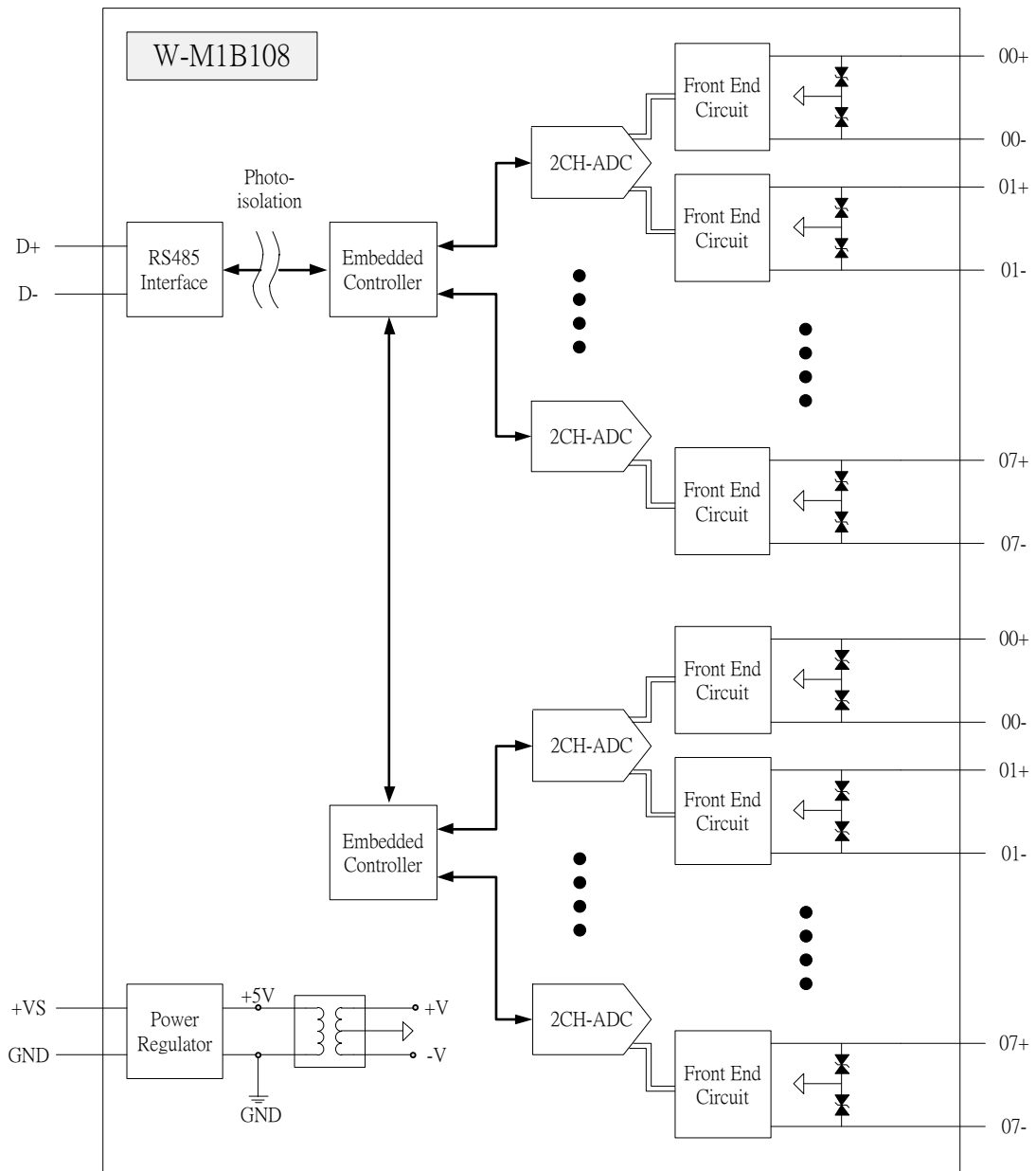
Thermocouple Input Module

3.5.1 Terminal Assignment

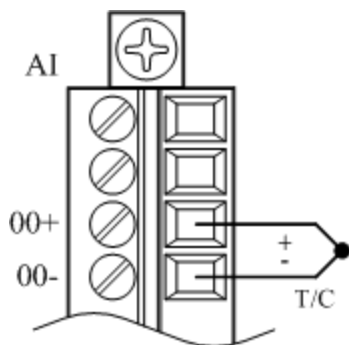


3.5.2 Block Diagram





3.5.3 Channel Connecting



3.5.4 IO Specifications

	W-M1B107	W-M1B108
Channels	8 channels	16 channels
Direct Sensor Input	J, K, T, E, R, S, B, N	
Burn-out Detection	Yes	
Channel Independent Configuration	Yes	
Sampling Rates	2.5 samples/second per channel	
Resolution	16-bit	
Accuracy	±0.1% FSR	
Input Impedance	2MΩ	
Span Drift	±25 ppm/°C	
Zero Drift	±6 μV/°C	
Input Voltage Protection	±35V	
Power Consumption	1.6W @ 24V	2.8W @ 24V

3.5.5 Related Reference

3.5.5.1 Input Signal Type Setup

Input ranges & type for each analog signal is adjustable. Modbus command is shown below.

Address	Function	R/W	Initial value
40705~40712 (0x02C0~0x02CF)	CH0~CH15 Input signal type setup	R/W	0x0301

Signals detect range:

Value	Input range	Initial value
Thermocouple Input		
0x0301	Type J Thermocouple -210 ~ 1200 °C	⊙
0x0302	Type K Thermocouple -270 ~ 1372 °C	
0x0303	Type T Thermocouple -270 ~ 400 °C	
0x0304	Type E Thermocouple -270 ~ 1000 °C	
0x0305	Type R Thermocouple -50 ~ 1768 °C	
0x0306	Type S Thermocouple -50 ~ 1768 °C	
0x0307	Type B Thermocouple 0 ~ 1820 °C	
0x0308	Type N Thermocouple -270 ~ 1300 °C	

3.5.5.2 CJC (Cold Junction Compensation)

There is thermal sensor built in the module, the purpose is cold junction compensation to thermocouple. Modbus command is shown below.

Address	Function	R/W	Initial value
00524 (0x020B)	CJC Enable 0: disable 1: enable	R/W	0
40609~40624 (0x0260~0x026F)	CH0~CH15 CJC Scale, Unit: 0.01°C Range: -50.00°C ~ 50.00°C	R/W	0x0000
40641 (0x0280)	CJC Value, Unit 0.1°C	R	-
40642 (0x0281)	CH8~CH15 CJC Value, 0.01°C	R	-
40657 (0x0290)	Module CJC Scale, Unit: 0.01°C Range: -50.00°C ~ 50.00°C	R/W	0

3.5.5.3 Hexadecimal / Engineering Unit

Setup the output value on Hexadecimal, or customer scaling. Modbus command is shown below.

Address	Function	R/W	Initial value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000

30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-
---	---------------------	---	---

Hex Unit data range:

Value	Range	Min. value	Max. value
Thermocouple Input			
0x0301	Type J Thermocouple -210 ~ 1200 °C	E999 (-5735)	7FFF (32767)
0x0302	Type K Thermocouple -270 ~ 1372 °C	E6CF (-6449)	7FFF (32767)
0x0303	Type T Thermocouple -270 ~ 400 °C	A99A (-22118)	7FFF (32767)
0x0304	Type E Thermocouple -270 ~ 1000 °C	DD70 (-8848)	7FFF (32767)
0x0305	Type R Thermocouple -50 ~ 1768 °C	FC61 (-927)	7FFF (32767)
0x0306	Type S Thermocouple -50 ~ 1768 °C	FC61 (-927)	7FFF (32767)
0x0307	Type B Thermocouple 0 ~ 1820 °C	0 (0)	7FFF (32767)
0x0308	Type N Thermocouple -270 ~ 1300 °C	E56A (-6806)	7FFF (32767)

Engineering Unit data range:

Value	Range	Min. value	Max. value
Thermocouple Input			
0x0301	Type J Thermocouple -210 ~ 1200 °C	-2100	12000
0x0302	Type K Thermocouple -270 ~ 1372 °C	-2700	13720
0x0303	Type T Thermocouple -270 ~ 400 °C	-2700	4000
0x0304	Type E Thermocouple -270 ~ 1000 °C	-2700	10000
0x0305	Type R Thermocouple -50 ~ 1768 °C	-500	17680
0x0306	Type S Thermocouple -50 ~ 1768 °C	-500	17680
0x0307	Type B Thermocouple 0 ~ 1820 °C	0	18200
0x0308	Type N Thermocouple -270 ~ 1300 °C	-270	13000

3.5.5.4 Signal Value

Once completing the setup, please enter the measured value. This is to enable/disable the channel(s) and check if the value is out-of-range (voltage, 4~20mA or thermocouple contact loss is deemed to be “out of range”). Modbus command as following:

Address	Function	R/W	Initial Value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000

00641~00656 (0x0280~0x0287)	CH0~CH15 Out of range 0: normal 1: out of range	R	0
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-

3.5.5.5 Temperature Offset

Setting the temperature offset register with in the module. Setting address is show below:

Address	Function	R/W	Initial Value
40577~40592 (0x0240~0x024F)	CH0~CH15 temp offset, Unit 0.01°C Range : -50.00°C ~ 50.00°C	R/W	0x0000

3.5.6 MODBUS Address

3.5.6.1 W-M1B107 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00524 (0x020B)	CJC Enable 0: Disable 1: Enable	R/W	0
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00648 (0x0280~0x0287)	CH0~CH7 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
30513~30520	AI CH0 ~ CH7 Value	R	-

40513~40520 (0x0200~0x0207)							
40577~40584 (0x0240~0x0247)	Temperature Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40609 ~ 40616 (0x0260~0x0267)	CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40641 (0x0280)	CJC Value, Unit : 0.01°C	R	-				
40657 (0x0290)	Module CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0				
40705~40712 (0x02C0~0x02C7)	CH0~CH7 Input signal type	R/W	0x0106				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH7 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH7 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH7 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH7 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0				

44107 (0x100A)	COM port setting: 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03: 1.2K		
	0x01: 8-N-2	0x04: 2.4K		
	0x02: 8-E-1	0x05: 4.8K		
0x03: 8-O-1	0x06: 9.6K			
		0x07: 19.2K		
		0x08: 38.4K		
		0x09: 57.6K		
		0x0A: 115.2K		
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

3.5.6.2 W-M1B108 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00524 (0x020B)	CJC Enable 0: Disable 1: Enable	R/W	0
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00656 (0x0280~0x028F)	CH0~CH15 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

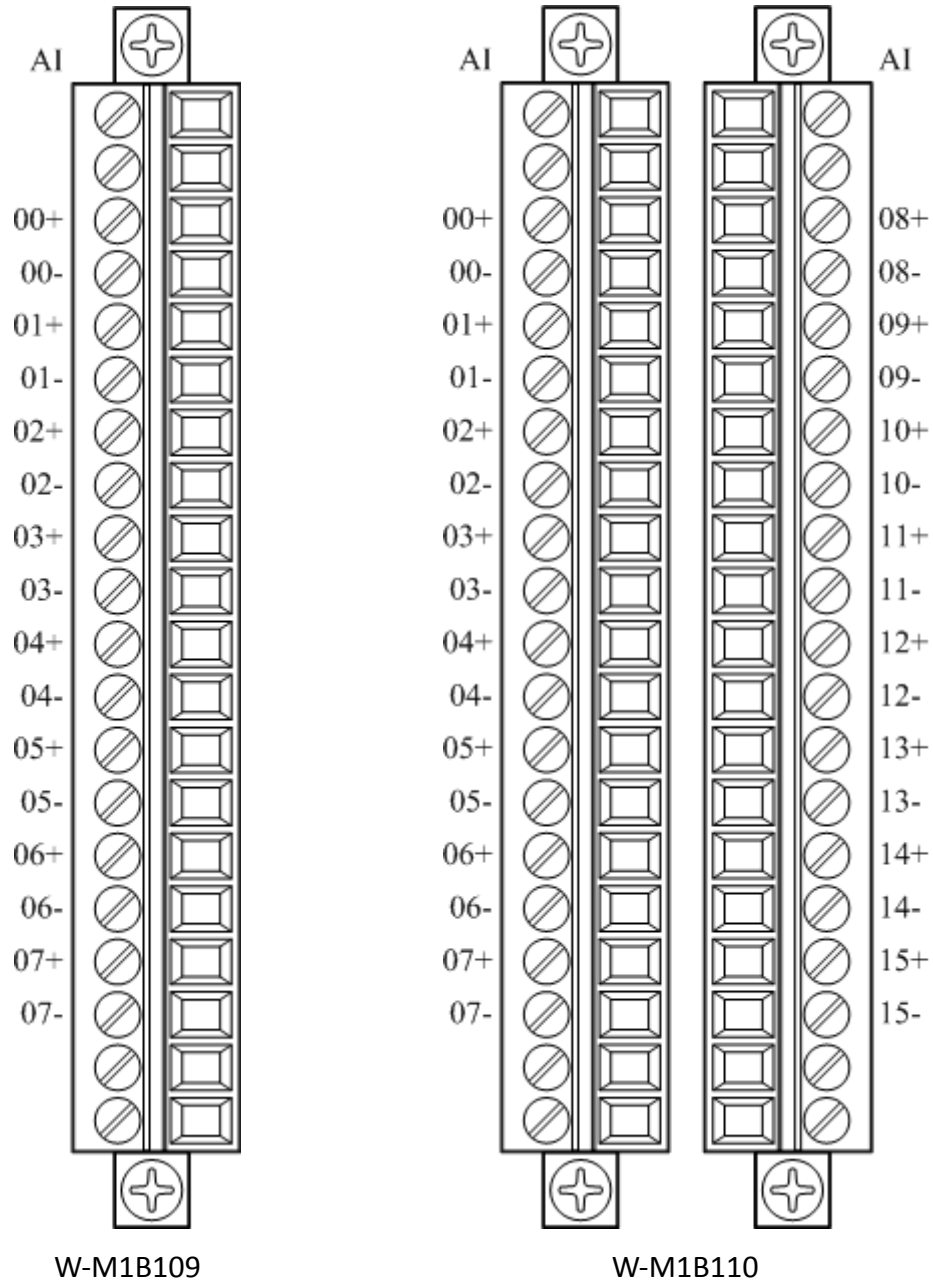
Address	Function	R/W	Initial Value
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-
40577~40584	Temperature Compensation	R/W	0x0000

(0x0240~0x0247)	unit: 0.01°C, Range: -50.0°C ~ 50.0°C						
40609 ~ 40616 (0x0260~0x0267)	CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40641 (0x0280)	CJC Value, Unit : 0.01°C	R	-				
40642 (0x0281)	CH8~CH15 CJC Value, Unit : 0.01°C						
40657 (0x0290)	Module CJC Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C						
40705~40720 (0x02C0~0x02CF)	CH0~CH15 Input signal type	R/W	0x0106				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH7 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH15 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH15 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH15 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0				

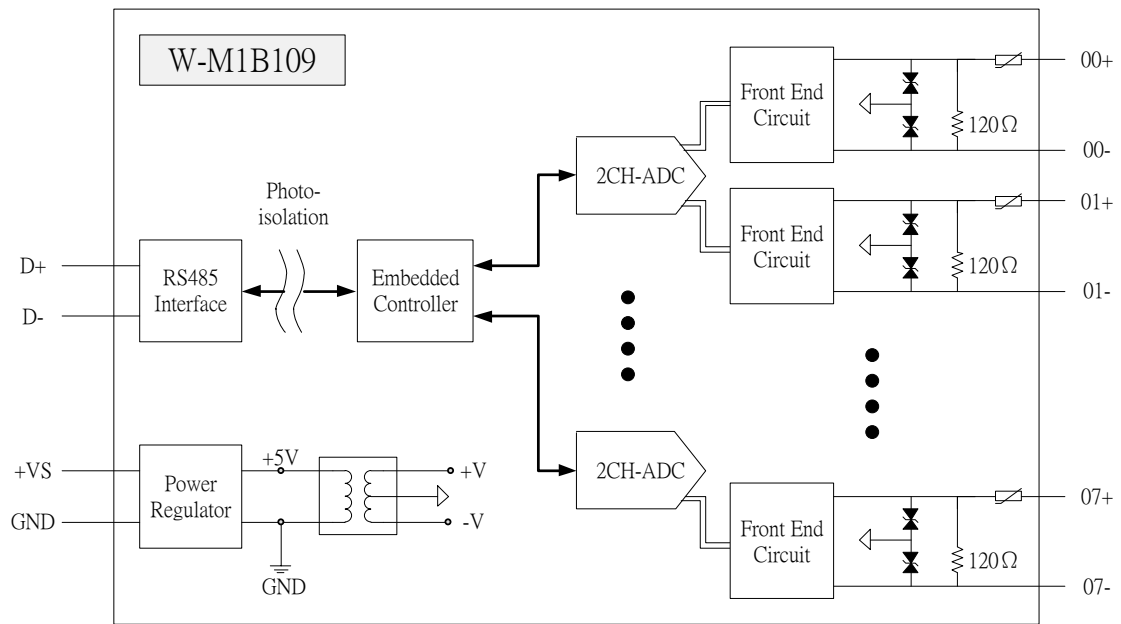
44107 (0x100A)	COM port setting: 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03: 1.2K		
	0x01: 8-N-2	0x04: 2.4K		
	0x02: 8-E-1	0x05: 4.8K		
0x03: 8-O-1	0x06: 9.6K			
		0x07: 19.2K		
		0x08: 38.4K		
		0x09: 57.6K		
		0x0A: 115.2K		
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

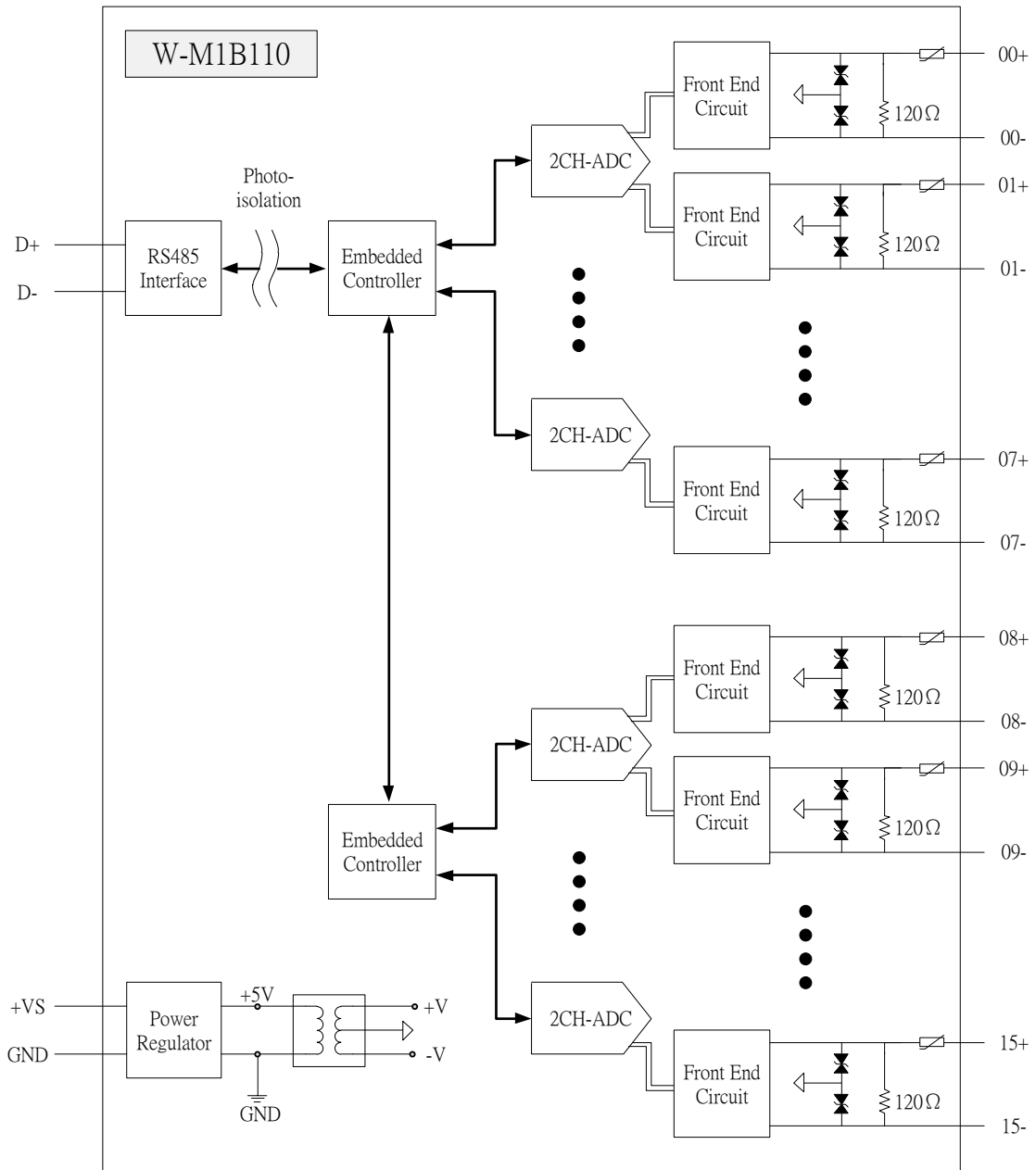
3.6 W-M1B109/110 8/16-channel Current Input Module

3.6.1 Terminal Assignment

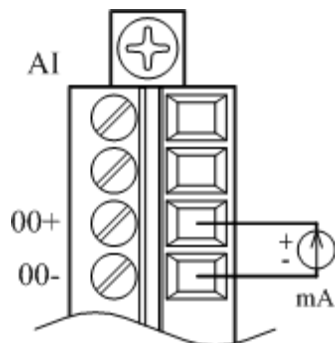


3.6.2 Block Diagram





3.6.3 Channel Connecting



3.6.4 IO Specifications

	W-M1B109	W-M1B110
Channels	8 channels	16 channels
Current Input	±20mA, 4~20mA, 0~20mA	
Burn-out Detection	4~20mA	
Channel Independent Configuration	Yes	
Sampling Rates	2.5 samples/second per channel	
Resolution	16-bit	
Accuracy	±0.1% FSR	
Input Impedance	120Ω	
Span Drift	±25 ppm/°C	
Zero Drift	±6 μV/°C	
Power Consumption	1.6W @ 24V	2.8W @ 24V

3.6.5 Related Reference

3.6.5.1 Input Signal Type Setup

Input ranges & type for each analog signal is adjustable. Modbus command is shown below.

Address	Function	R/W	Initial value
40705~40712 (0x02C0~0x02CF)	CH0~CH15 Input signal type setup	R/W	0x0201

Signals detect range:

Value	Input range	Initial value
Current Input		
0x0201	4~20mA	⊙
0x0202	0~20 mA	
0x0203	± 20 mA	

3.6.5.2 Hexadecimal / Engineering Unit

Setup the output value on Hexadecimal, or customer scaling. Modbus command is shown below.

Address	Function	R/W	Initial value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH7 Value	R	-

Hex Unit data range:

Value	Range	Min. value	Max. value
Current Input			
0x0201	4~20mA	0 (0)	FFFF (65535)
0x0202	0~20 mA	0 (0)	FFFF (65535)
0x0203	± 20 mA	8000 (-32768)	7FFF (32767)

Engineering Unit data range:

Value	Range	Min. value	Max. value
Current Input			
0x0201	4~20mA	4000	20000
0x0202	0~20 mA	0	20000
0x0203	± 20 mA	-20000	20000

3.6.5.3 Signal Value

Once completing the setup, please enter the measured value. This is to enable/disable the channel(s) and check if the value is out-of-range (4~20mA contact loss is deemed to be “out of range”). Modbus command as following:

Address	Function	R/W	Initial Value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
00641~00656 (0x0280~0x0287)	CH0~CH15 Out of range 0: normal 1: out of range	R	0
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-

3.6.6 MODBUS Address

3.6.6.1 W-M1B109 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00648 (0x0280~0x0287)	CH0~CH7 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
30513~30520 40513~40520 (0x0200~0x0207)	AI CH0 ~ CH7 Value	R	-
40705~40712 (0x02C0~0x02C7)	CH0~CH7 Input signal type	R/W	0x0201
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000
40577 (0x02F4)	CH0~CH7 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000

40578 (0x02F5)	CH0~CH7 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000																		
40579 (0x02F6)	CH0~CH7 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000																		
40580 (0x02F7)	CH0~CH7 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting: 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03: 1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04: 2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05: 4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06: 9.6K</td> </tr> <tr> <td></td> <td>0x07: 19.2K</td> </tr> <tr> <td></td> <td>0x08: 38.4K</td> </tr> <tr> <td></td> <td>0x09: 57.6K</td> </tr> <tr> <td></td> <td>0x0A: 115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03: 1.2K	0x01: 8-N-2	0x04: 2.4K	0x02: 8-E-1	0x05: 4.8K	0x03: 8-O-1	0x06: 9.6K		0x07: 19.2K		0x08: 38.4K		0x09: 57.6K		0x0A: 115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03: 1.2K																				
0x01: 8-N-2	0x04: 2.4K																				
0x02: 8-E-1	0x05: 4.8K																				
0x03: 8-O-1	0x06: 9.6K																				
	0x07: 19.2K																				
	0x08: 38.4K																				
	0x09: 57.6K																				
	0x0A: 115.2K																				
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-																		
44111 (0x100E)	Counter of communication frame	R	0x0000																		

3.6.6.2 W-M1B110 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00656 (0x0280~0x028F)	CH0~CH15 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

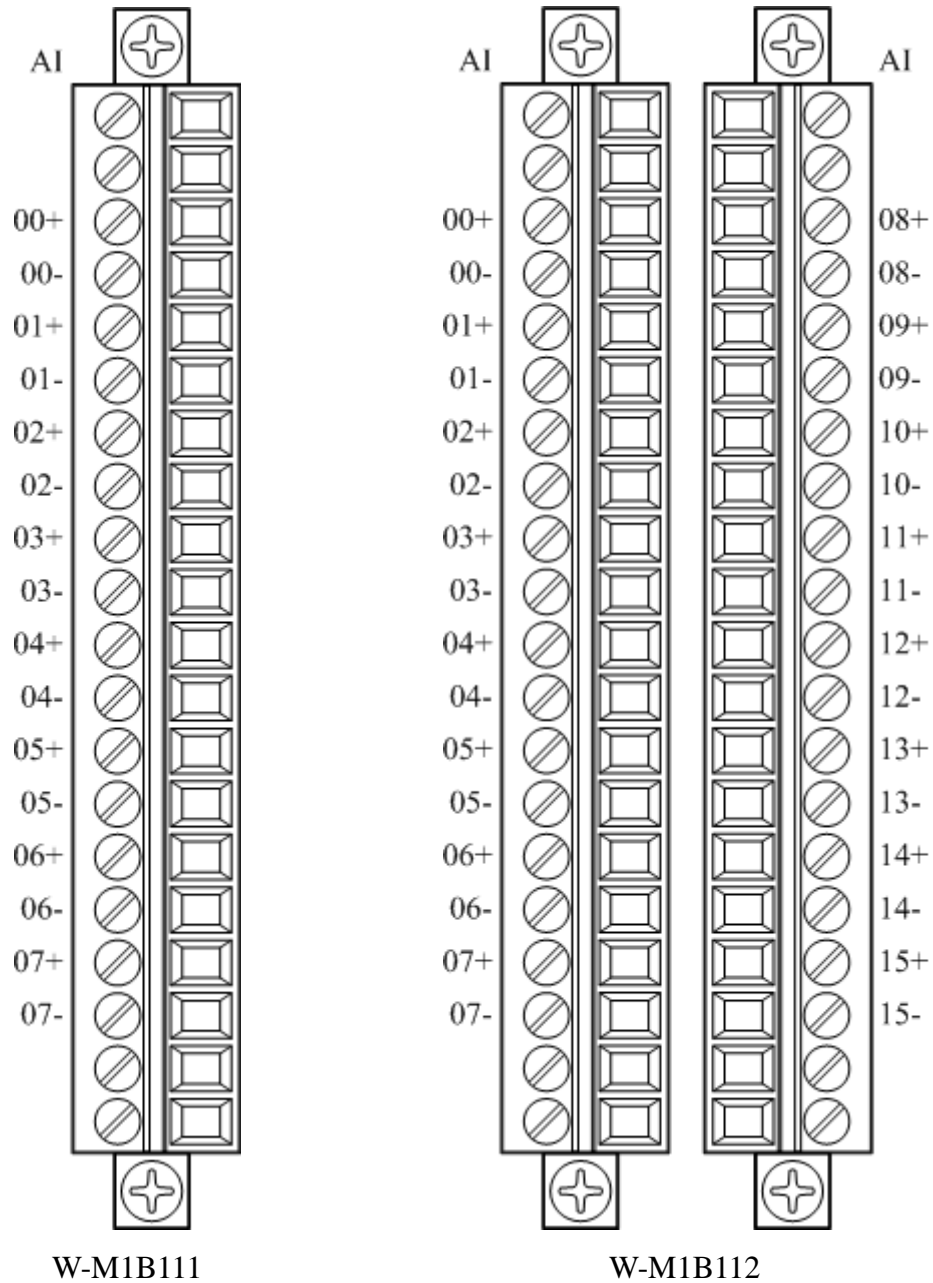
Address	Function	R/W	Initial Value				
30513~30528 40513~40528 (0x0200~0x0207)	AI CH0 ~ CH15 Value	R	-				
40705~40712 (0x02C0~0x02C7)	CH0~CH15 Input signal type	R/W	0x0201				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH15 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH15 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH15 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH15 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						

44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-	
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0	
44107 (0x100A)	COM port setting: 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03: 1.2K		
	0x01: 8-N-2	0x04: 2.4K		
	0x02: 8-E-1	0x05: 4.8K		
	0x03: 8-O-1	0x06: 9.6K		
		0x07: 19.2K		
		0x08: 38.4K		
		0x09: 57.6K		
		0x0A: 115.2K		
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000	
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000	
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-	
44111 (0x100E)	Counter of communication frame	R	0x0000	

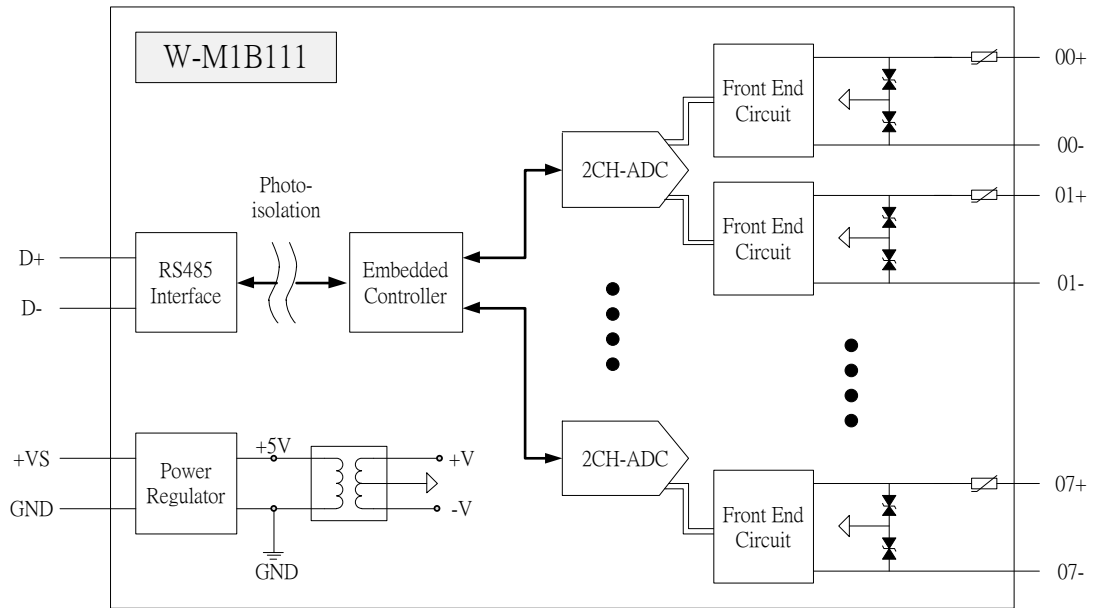
3.7 W-M1B111/112 8/16-Channel Voltage

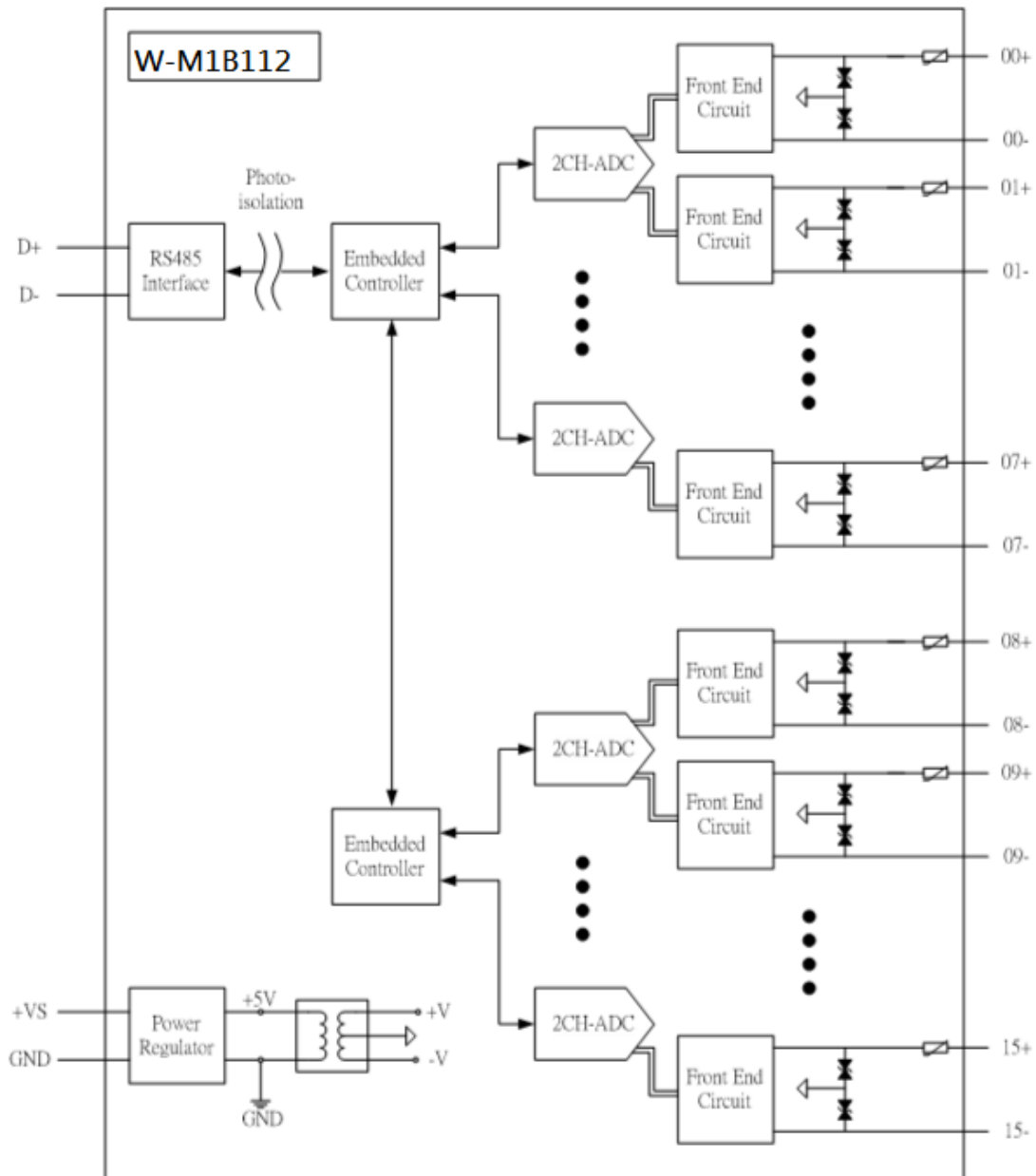
Input Module

3.7.1 Terminal Assignment

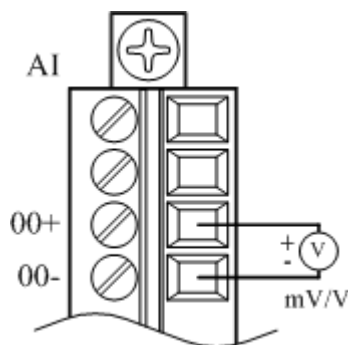


3.7.2 Block Diagram





3.7.3 Channel Connecting



3.7.4 IO Specifications

	W-M1B111	W-M1B112
Channels	8 channels	16 channels
Voltage Range	±1V, ±5V, ±10V, 0 ~ 1V, 0 ~ 5V, 0 ~ 10V	
Burn-out Detection	No	
Channel Independent Configuration	Yes	
Sampling Rates	2.5 samples/second per channel	
Resolution	16-bit	
Accuracy	±0.1% FSR	
Input Impedance	1MΩ	
Span Drift	±25 ppm/°C	
Zero Drift	±6 μV/°C	
Power Consumption	1.6W @ 24V	2.8W @ 24V

3.7.5 Related Reference

3.7.5.1 Input Signal Type Setup

Input ranges & type for each analog signal is adjustable. Modbus command is shown below.

Address	Function	R/W	Initial value
40705~40720 (0x02C0~0x02CF)	CH0~CH15 Input signal type setup	R/W	0x0106

Signals detect range:

Value	Input range	Initial value
Voltage Input		
0x0101	0~10 V	
0x0102	0~5 V	
0x0103	0~1 V	
0x0106	± 10 V	⊙
0x0107	± 5 V	
0x0108	± 1 V	

3.7.5.2 Hexadecimal / Engineering Unit

Setup the output value on Hexadecimal, or customer scaling. Modbus command is shown below.

Address	Function	R/W	Initial value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-

Hex Unit data range:

Value	Range	Min. value	Max. value
Voltage Input			
0x0101	0~10 V	0 (0)	FFFF (65535)
0x0102	0~5 V	0 (0)	FFFF (65535)
0x0103	0~1 V	0 (0)	FFFF (65535)
0x0106	± 10 V	8000 (-32768)	7FFF (32767)
0x0107	± 5 V	8000 (-32768)	7FFF (32767)
0x0108	± 1 V	8000 (-32768)	7FFF (32767)

Engineering Unit data range:

Value	Range	Min. value	Max. value
Voltage Input			
0x0101	0~10 V	0	10000
0x0102	0~5 V	0	50000
0x0103	0~1 V	0	10000
0x0106	± 10 V	-10000	10000
0x0107	± 5 V	-5000	5000

0x0108	± 1 V	-10000	10000
--------	-------	--------	-------

3.7.5.3 Signal Value

Once completing the setup, please enter the measured value. This is to enable/disable the channel(s) and check if the value is out-of-range (voltage contact loss is deemed to be “out of range”). Modbus command as following:

Address	Function	R/W	Initial Value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
00641~00656 (0x0280~0x028F)	CH0~CH15 Out of range 0: normal 1: out of range	R	0
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH7 Value	R	-

3.7.6 MODBUS Address

3.7.6.1 W-M1B111 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00648 (0x0280~0x0287)	CH0~CH7 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
30513~30520 40513~40520 (0x0200~0x0207)	AI CH0 ~ CH7 Value	R	-
40705~40712 (0x02C0~0x02C7)	CH0~CH7 Input signal type	R/W	0x0106

40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000																		
40577 (0x02F4)	CH0~CH7 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000																		
40578 (0x02F5)	CH0~CH7 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000																		
40579 (0x02F6)	CH0~CH7 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000																		
40580 (0x02F7)	CH0~CH7 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting: 2bytes <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>High Byte</th> <th>Low Byte</th> </tr> </thead> <tbody> <tr> <td>0x00: 8-N-1</td> <td>0x03: 1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04: 2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05: 4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06: 9.6K</td> </tr> <tr> <td></td> <td>0x07: 19.2K</td> </tr> <tr> <td></td> <td>0x08: 38.4K</td> </tr> <tr> <td></td> <td>0x09: 57.6K</td> </tr> <tr> <td></td> <td>0x0A: 115.2K</td> </tr> </tbody> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03: 1.2K	0x01: 8-N-2	0x04: 2.4K	0x02: 8-E-1	0x05: 4.8K	0x03: 8-O-1	0x06: 9.6K		0x07: 19.2K		0x08: 38.4K		0x09: 57.6K		0x0A: 115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03: 1.2K																				
0x01: 8-N-2	0x04: 2.4K																				
0x02: 8-E-1	0x05: 4.8K																				
0x03: 8-O-1	0x06: 9.6K																				
	0x07: 19.2K																				
	0x08: 38.4K																				
	0x09: 57.6K																				
	0x0A: 115.2K																				
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		

44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-
44111 (0x100E)	Counter of communication frame	R	0x0000

3.7.6.2 W-M1B112 Modbus address table

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00656 (0x0280~0x028F)	CH0~CH15 Out of range 0: normal 1: out of range	R	0

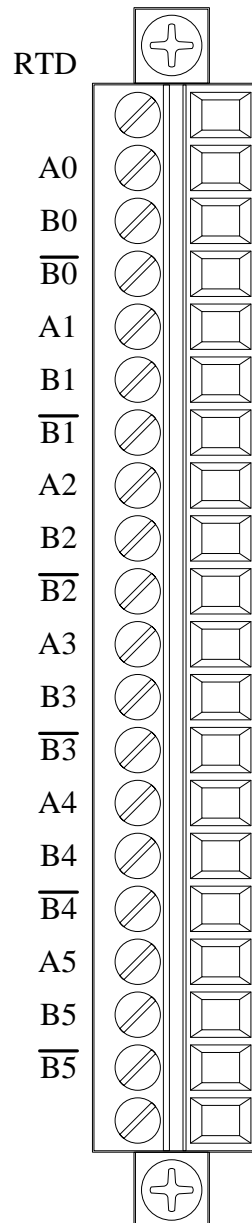
Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
30513~30528 40513~40528 (0x0200~0x020F)	AI CH0 ~ CH15 Value	R	-
40705~40720 (0x02C0~0x02CF)	CH0~CH15 Input signal type	R/W	0x0106
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000
40577 (0x02F4)	CH0~CH15 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000
40578 (0x02F5)	CH0~CH15 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000
40579 (0x02F6)	CH0~CH15 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000

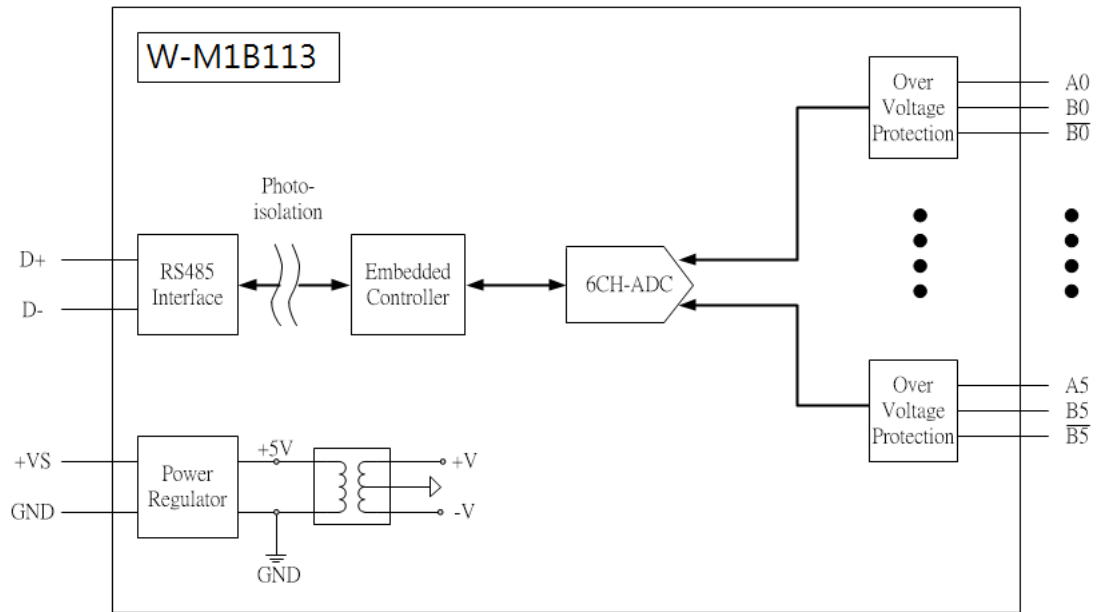
40580 (0x02F7)	CH0~CH15 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-	
44097 0x1000	Firmware version 2 Bytes	R	-	
	High Byte			Low Byte
	Main version			Sub-version
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-	
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0	
44107 (0x100A)	COM port setting: 2bytes	R/W	0x0006	
	High Byte			Low Byte
	0x00: 8-N-1			0x03: 1.2K
	0x01: 8-N-2			0x04: 2.4K
	0x02: 8-E-1			0x05: 4.8K
	0x03: 8-O-1			0x06: 9.6K 0x07: 19.2K 0x08: 38.4K 0x09: 57.6K 0x0A: 115.2K
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000	
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000	
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-	
44111 (0x100E)	Counter of communication frame	R	0x0000	

3.8 W-M1B113 6-Channel RTD Input Module

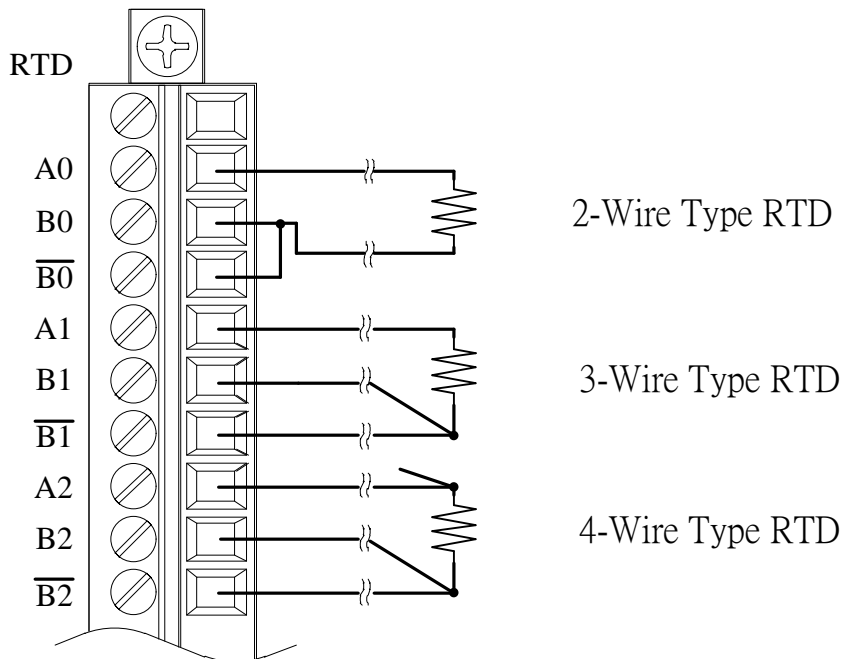
3.8.1 Terminal Assignment



3.8.2 Block Diagram



3.8.3 Channel Connecting



3.8.4 IO Specifications

Channels	6 channels
Sensor Types	Platinum 100 $\alpha= 0.00385$ (IEC) $-200 \sim 600^{\circ}\text{C}$ Platinum 100 $\alpha= 0.00392$ (JIS) $-200 \sim 600^{\circ}\text{C}$ Platinum 1000 $\alpha= 0.00385$ (IEC) $-200 \sim 600^{\circ}\text{C}$ Cu 100@ 0°C $\alpha= 0.00421$ $-20 \sim 150^{\circ}\text{C}$ Cu 1000@ 0°C $\alpha= 0.00421$ $-20 \sim 150^{\circ}\text{C}$ Cu 50@@ 0°C $-0 \sim 200^{\circ}\text{C}$ Nickel 100 Ω $\alpha= 0.00618$ $-60 \sim 180^{\circ}\text{C}$ Nickel 120 Ω $\alpha= 0.00672$ $-80 \sim 260^{\circ}\text{C}$ Nickel 507.5 Ω $\alpha= 0.00520$ $-80 \sim 260^{\circ}\text{C}$ Nickel 604 Ω $\alpha= 0.00518$ $-200 \sim 200^{\circ}\text{C}$ BALCO 500 $-40 \sim 150^{\circ}\text{C}$
Disconnection Detection	Yes
Channel Independent Configuration	Yes
Sampling Rates	12 samples/second (Total)
Resolution	16-bit
Accuracy	$\pm 0.1\%$ FSR
Span Drift	± 25 ppm/ $^{\circ}\text{C}$
Zero Drift	± 6 $\mu\text{V}/^{\circ}\text{C}$
OverVoltage Protection	$\pm 55\text{V}$
Power Consumption	2.8W @ 24V

3.8.5 Related Reference

3.8.5.1 Input Signal Type Setup

Each channel of the module can be independently set various analog signal input range. Modbus command is shown below.

Address	Function	R/W	Initial value
40705~40710 (0x02C0~0x02C5)	CH0~CH5 Input signal type setup	R/W	0x0401

Signals detect range:

Value	Input range	Initial value
Resistance Input		
0x0401	Platinum 100 $\alpha=0.00385$ (IEC); -200 ~ 600 °C (18.52 Ω ~ 313.71 Ω)	⊙
0x0402	Platinum 100 $\alpha=0.00392$ (JIS); -200 ~ 600 °C (17.08 Ω ~ 317.59 Ω)	
0x0403	Platinum 1000 $\alpha=0.00385$; -200 ~ 600 °C (185.2 Ω ~ 3137.1 Ω)	
0x0404	Cu 100@0°C $\alpha=0.00421$; -20 ~ 150 °C (91.564 Ω ~ 163.168 Ω)	
0x0405	Cu 1000@0°C $\alpha=0.00421$; -20 ~ 150 °C (915.64 Ω ~ 1631.68 Ω)	
0x0406	Cu 100@25°C $\alpha=0.00427$; 0 ~ 200 °C (90.346 Ω ~ 167.750 Ω)	
0x0407	Cu 50@0°C; -50 ~ 150 °C (39.242 Ω ~ 82.134 Ω)	
0x0408	Nickel 100 $\Omega\alpha=0.00618$; -60 ~ 180 °C (69.520 Ω ~ 223.221 Ω)	
0x0409	Nickel 120 $\Omega\alpha=0.00672$; -80 ~ 260 °C (66.60 Ω ~ 380.31 Ω)	
0x040A	Nickel 507.5 $\Omega\alpha=0.00520$; -80 ~ 260 °C (344.10 Ω ~ 1328.16 Ω)	
0x040B	Nickel604 $\Omega\alpha=0.00518$; -200 ~ 200 °C (245.34 Ω ~ 1301.9 Ω)	
0x040C	BALCO 500 ; -40 ~ 150 °C (379.35 Ω ~ 802.36 Ω)	

3.8.5.2 Hexadecimal / Engineering Unit

Setup the output value on Hexadecimal, or customer scaling. Modbus command is shown below.

Address	Function	R/W	Initial value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
30513~30518 40513~40518 (0x0200~0x0205)	AI CH0 ~ CH5 Value	R	-

Hex Unit data range:

Value	Range	Min. value	Max. value
Resistance Input			
0x0401	Platinum 100 $\alpha=0.00385$ (IEC); -200 ~ 600 °C (18.52 Ω ~ 313.71 Ω)	0xD556	0x7FFF
0x0402	Platinum 100 $\alpha=0.00392$ (JIS); -200 ~ 600 °C (17.08 Ω ~ 317.59 Ω)	0xD556	0x7FFF
0x0403	Platinum 1000 $\alpha=0.00385$; -200 ~ 600 °C (185.2 Ω ~ 3137.1 Ω)	0xD556	0x7FFF
0x0404	Cu 100@0°C $\alpha=0.00421$; -20 ~ 150 °C (91.564 Ω ~ 163.168 Ω)	0xEEEF	0x7FFF
0x0405	Cu 1000@0°C $\alpha=0.00421$; -20 ~ 150 °C (915.64 Ω ~ 1631.68 Ω)	0xEEEF	0x7FFF
0x0406	Cu 100@25°C $\alpha=0.00427$; 0 ~ 200 °C (90.346 Ω ~ 167.750 Ω)	0x0000	0x7FFF
0x0407	Cu 50@0°C; -50 ~ 150 °C (39.242 Ω ~ 82.134 Ω)	0xD556	0x7FFF
0x0408	Nickel 100 $\Omega\alpha=0.00618$; -60 ~ 180 °C (69.520 Ω ~ 223.221 Ω)	0xD556	0x7FFF
0x0409	Nickel 120 $\Omega\alpha=0.00672$; -80 ~ 260 °C	0xD89E	0x7FFF

	(66.60Ω~ 380.31 Ω)		
0x040A	Nickel 507.5Ωα=0.00520 ; -80 ~ 260 °C (344.10Ω~ 1328.16 Ω)	0xD89E	0x7FFF
0x040B	Nickel604Ωα=0.00518 ; -200 ~ 200 °C (245.34Ω~ 1301.9 Ω)	0xFFFE	0x7FFF
0x040C	BALCO 500 ; -40 ~ 150 °C (379.35Ω~ 802.36 Ω)	0xDDDE	0x7FFF

Engineering Unit data range:

Value	Range	Min. value	Max. value
Resistance Input			
0x0401	Platinum 100 α= 0.00385(IEC); -200 ~ 600 °C (18.52Ω~ 313.71 Ω)	-200.0	600.0
0x0402	Platinum 100α= 0.00392(JIS); -200 ~ 600 °C (17.08Ω~ 317.59 Ω)	-200.0	600.0
0x0403	Platinum 1000α=0.00385; -200 ~ 600 °C (185.2Ω~ 3137.1 Ω)	-200.0	600.0
0x0404	Cu 100@0°Cα=0.00421; -20 ~ 150 °C (91.564Ω~ 163.168 Ω)	-20.00	150.00
0x0405	Cu 1000@0°Cα=0.00421; -20 ~ 150 °C (915.64Ω~ 1631.68 Ω)	-20.00	150.00
0x0406	Cu 100@25°Cα=0.00427; 0 ~ 200 °C (90.346Ω~ 167.750 Ω)	0.00	200.00
0x0407	Cu 50@0°C; -50 ~ 150 °C (39.242Ω~ 82.134 Ω)	-50.00	150.00
0x0408	Nickel 100Ωα=0.00618; -60 ~ 180 °C (69.520Ω ~ 223.221Ω)	-60.00	180.00
0x0409	Nickel 120Ωα=0.00672; -80 ~ 260 °C (66.60Ω~ 380.31 Ω)	-80.00	180.00
0x040A	Nickel 507.5Ωα=0.00520 ; -80 ~ 260 °C (344.10Ω~ 1328.16 Ω)	-80.00	260.00
0x040B	Nickel604Ωα=0.00518 ; -200 ~ 200 °C (245.34Ω~ 1301.9 Ω)	-200.00	200.00
0x040C	BALCO 500 ; -40 ~ 150 °C (379.35Ω~ 802.36 Ω)	-40.00	150.00

3.8.5.3 Signal Value

Once completing the setup, please enter the measured value. This is to enable/disable the channel(s) and check if the value is out-of-range. Modbus command as following:

Address	Function	R/W	Initial Value
40737 (0x02E0)	AI Value format 0x0000: Hex 0x0001: Engineering	R/W	0x0000
00641~00646 (0x0280~0x0285)	CH0~CH5 Out of range 0: normal 1: out of range	R	0
30513~30518 40513~40518 (0x0200~0x0205)	AI CH0 ~ CH5 Value	R	-

3.8.5.4 Temperature Offset

Setting the temperature offset register with in the module. Setting address is show below:

Address	Function	R/W	Initial Value
40577~40582 (0x0240~0x0245)	CH0~CH5 temp offset, Unit 0.01°C Range : -50.00°C ~ 50.00°C	R/W	0x0000

3.8.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00524 (0x020B)	CJC Enable 0: Disable 1: Enable	R/W	0

00537 (0x0218)	Allow calibration 0: Disallow 1: Allow	R/W	0
00641~00646 (0x0280~0x0285)	CH0~CH5 Out of range 0: normal 1: out of range	R	0

Holding Register(4xxxx) / Input Register(3xxxx)

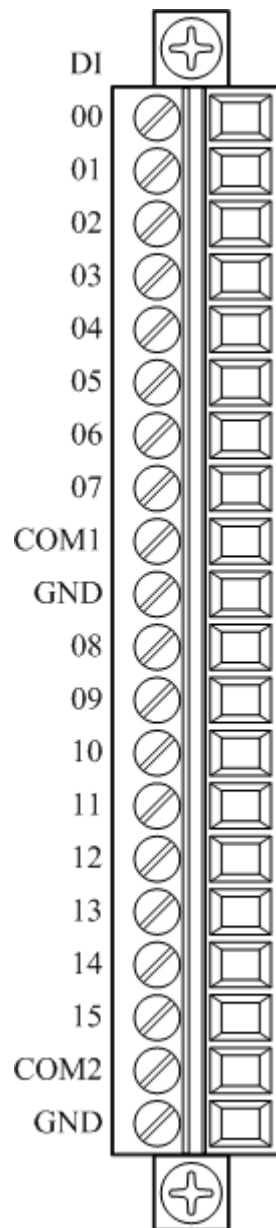
Address	Function	R/W	Initial Value				
30513~30518 40513~40518 (0x0200~0x0205)	AI CH0 ~ CH5 Value	R	-				
40577~40582 (0x0240~0x0245)	Temperature Compensation unit: 0.01°C, Range: -50.0°C ~ 50.0°C	R/W	0x0000				
40705~40710 (0x02C0~0x02C5)	CH0~CH5 Input signal type	R/W	0x0401				
40737 (0x02E0)	AI Result format of measurement 0x0000: Hex 0x0001: Engineering	R/W	0x0000				
40577 (0x02F4)	CH0~CH5 Calibrate maximum value to each channel. (Each bit map to corresponding channel) Ex. Bit 0 = 1, Calibrate CH0. Bit 1 = 1, Calibrate CH1.	W	0x0000				
40578 (0x02F5)	CH0~CH5 Calibrate 0 level to each channel. (Each bit map to corresponding channel)	W	0x0000				
40579 (0x02F6)	CH0~CH5 Perform internal calibration to each channel. (Each bit map to corresponding channel)	W	0x0000				
40580 (0x02F7)	CH0~CH5 Calibration in process (Each bit map to corresponding channel) 0: No operation 1: Calibration in process	R	-				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0				

44107 (0x100A)	COM port setting: 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03: 1.2K		
	0x01: 8-N-2	0x04: 2.4K		
	0x02: 8-E-1	0x05: 4.8K		
	0x03: 8-O-1	0x06: 9.6K		
		0x07: 19.2K		
		0x08: 38.4K		
		0x09: 57.6K		
		0x0A: 115.2K		
44108 (0x100B)	Watch dog timer (unit: 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

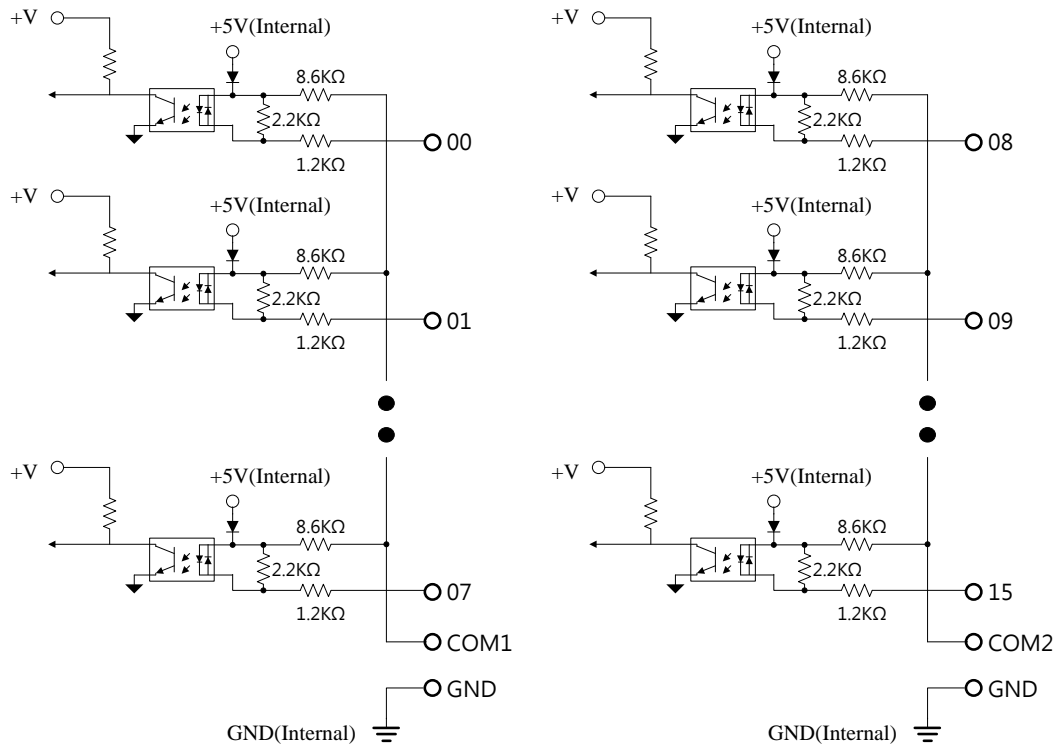
Chapter 4. Digital Module Information

4.1 W-M1B301 16-Channel Digital Input MOdule

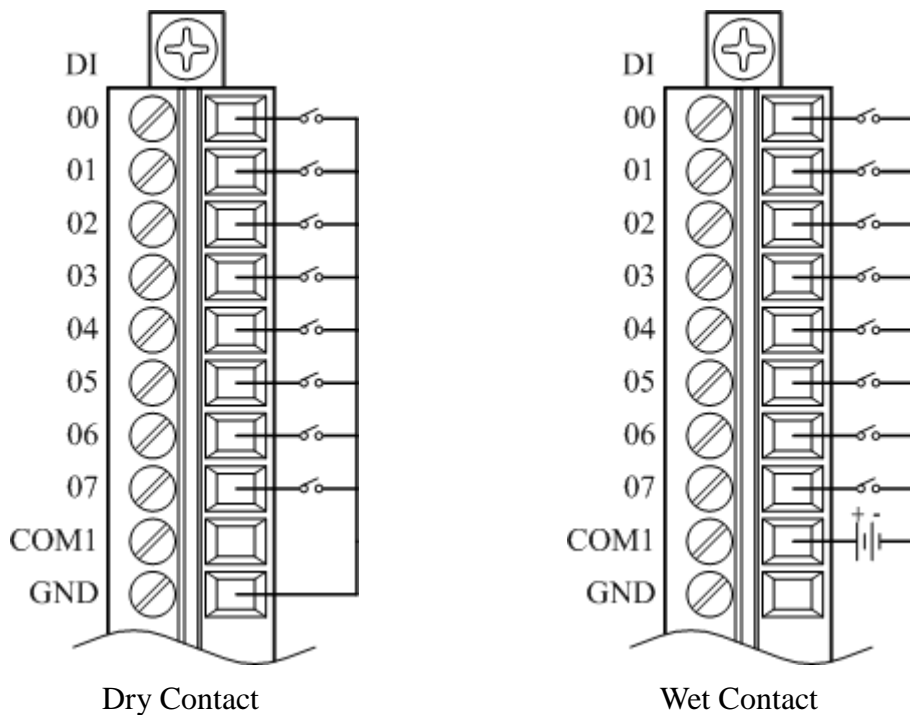
4.1.1 Terminal Assignment



4.1.2 Block Diagram



4.1.3 Channel Connecting



4.1.4 IO Specifications

Digital Input		
Digital Input Channels		16
Dry Contact	Logic Level 0	Open
	Logic Level 1	Close to GND
Wet Contact	Logic Level 0	3V maximum
	Logic Level 1	10 to 50V
Input resistance		10kΩ
Isolation voltage		2500Vdc
Over-voltage Protection		70 VDC
Counter Input Range		Max.100Hz (16 bit)
Latch Value Read		Yes
Power Consumption		1.6W @ 24V

4.1.5 Related Reference

4.1.5.1 Digital Input Active State

Wolf series digital module supports invert DI status, when setting is 0x0000, if the external signal is logic level high, the DI status is 1, if the external signal is logic level low, the reading value is 0; when setting is 0x0001, if the external signal s logic level high, the reading value is 0, if the external signal s logic level low, the DI status is 1. The Modbus setting address is as below:

Address	Function	R/W	Initial Value
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000

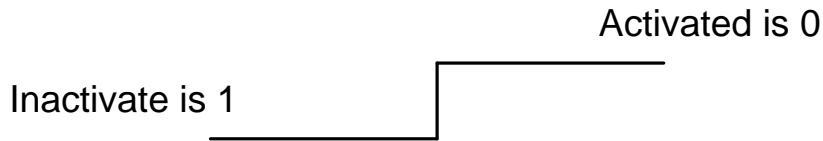
When Input Active Value Define as 0 :

External signal:



When Input Active Value Define as 1:

External signal:



4.1.5.2 Digital Input Status

Following Modbus address can be used to read digital input channel status:

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0

4.1.5.3 Read/Clear the Digital Input Counter

Module has the function of counting the external pulse number of the digital signal. The maximum frequency must be less than 100Hz. Following Modbus address can be used to read or clear current counter.

Address	Function	R/W	Initial Value
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000
40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000

Refer following description for how counter works:

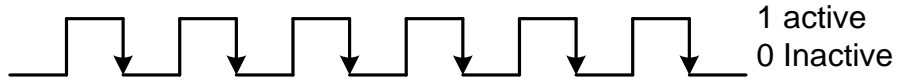
When Input Active Value Define is 0:

External signal :

Rising edge counter:



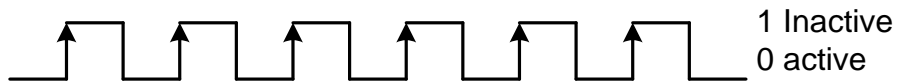
Falling edge counter:



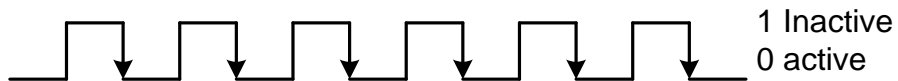
When Input Active Value Define is 1:

External signal :

Rising edge counter:



Falling edge counter:



4.1.5.4 Read/Clear Latch Status

Module has the function of latch the external pulse of the digital signal.

Following Modbus address can be used to read or clear current latch status:

Address	Function	R/W	Initial Value
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0

When Input Active Value Define is 0:

External signal:



When Input Active Value Define is 1:

External signal



4.1.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0

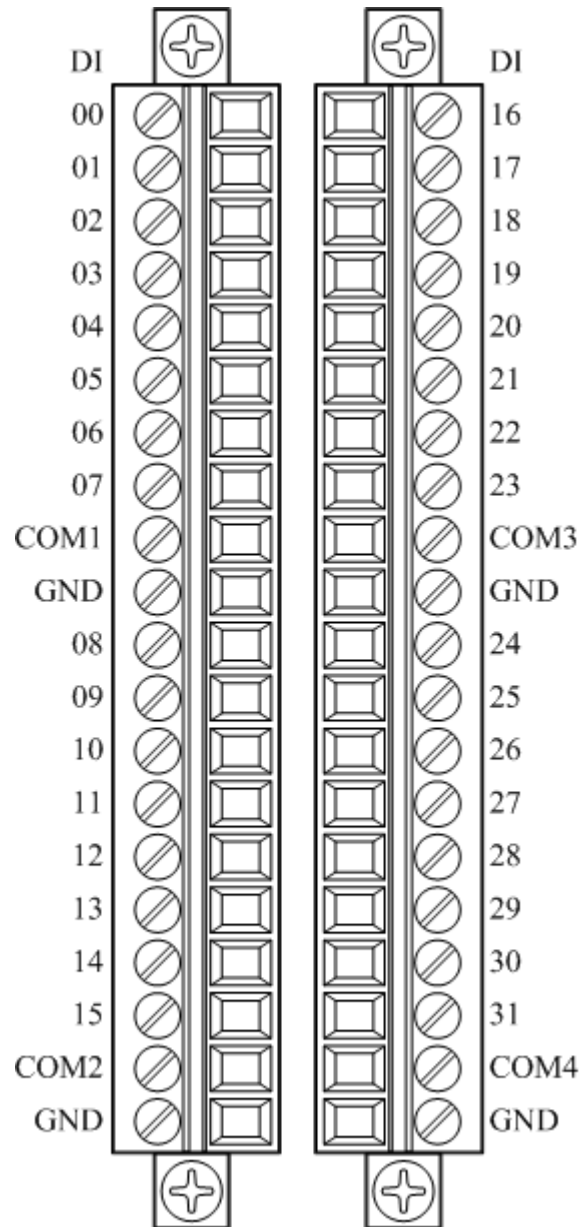
Holding Register (4xxxx) / Input Register (3xxxx)

Address	Function	R/W	Initial Value
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000

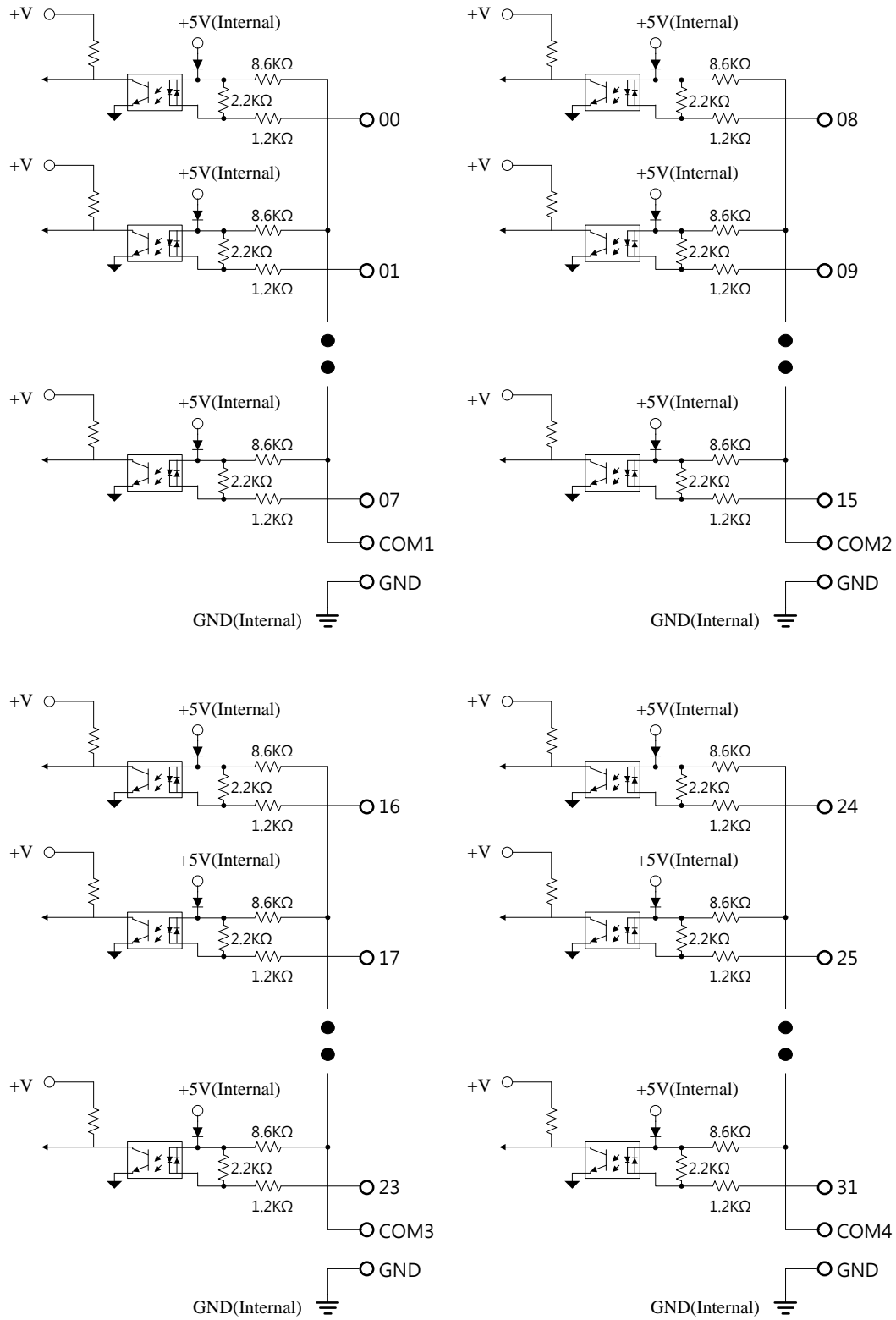
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000																		
40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting : 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K		0x09:57.6K		0x0A:115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03:1.2K																				
0x01: 8-N-2	0x04:2.4K																				
0x02: 8-E-1	0x05:4.8K																				
0x03: 8-O-1	0x06:9.6K																				
	0x07:19.2K																				
	0x08:38.4K																				
	0x09:57.6K																				
	0x0A:115.2K																				
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-																		
44111 (0x100E)	Counter of communication frame	R	0x0000																		

4.2 W-M1B302 32-Channel Digital Input Module

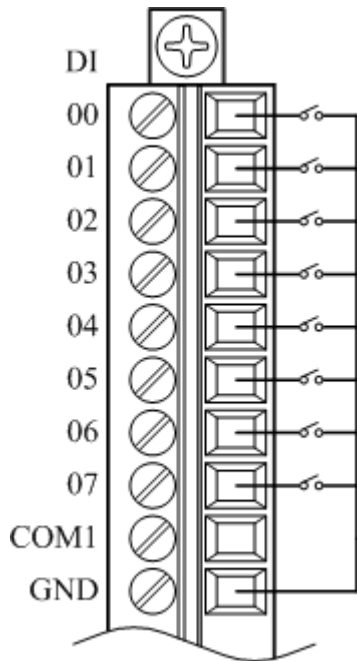
4.2.1 Terminal Assignment



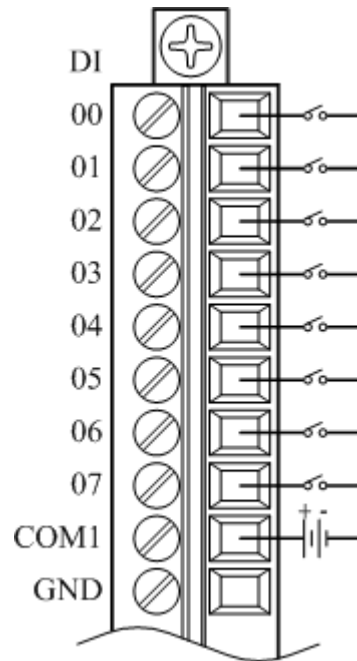
4.2.2 Block Diagram



4.2.3 Channel Connecting



Dry Contact



Wet Contact

4.2.4 IO Specifications

Digital Input		
Digital Input Channels		32
Dry Contact	Logic Level 0	Open
	Logic Level 1	Close to GND
Wet Contact	Logic Level 0	3V maximum
	Logic Level 1	10 to 50V
Input resistance		10kΩ
Isolation voltage		2500Vdc
Over-voltage Protection		70 VDC
Counter Input Range		Max.100Hz (16 bit)
Latch Value Read		Yes
Power Consumption		2W @ 24V

4.2.5 Related Reference

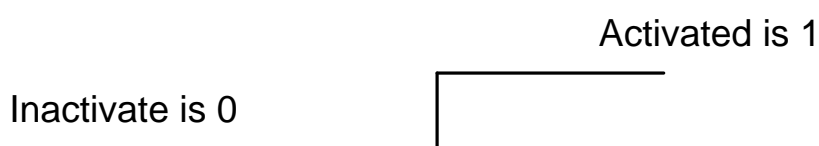
4.2.5.1 Digital Input Active State

Wolf series digital module supports invert DI status, when setting is 0x0000, if the external signal is logic level high, the DI status is 1, if the external signal is logic level low, the reading value is 0; when setting is 0x0001, if the external signal s logic level high, the reading value is 0, if the external signal s logic level low, the DI status is 1. The Modbus setting address is as below:

Address	Function	R/W	Initial Value
40129 (0x0080)	DI CH0~CH31 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000

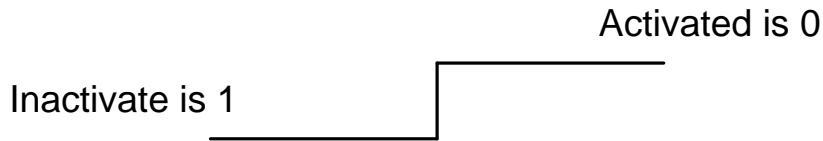
When Input Active Value Define as 0 :

External signal:



When Input Active Value Define as 1:

External signal:



4.2.5.2 Digital Input Status

Following Modbus address can be used to read digital input channel status:

Address	Function	R/W	Initial Value
00001~00032 10001~10032 (0x0000~0x001F)	DI CH0~CH31 Input Status	R	All 0

4.2.5.3 Read/Clear the Digital Input Counter

Module has the function of counting the external pulse number of the digital signal. The maximum frequency must be less than 100Hz. Following Modbus address can be used to read or clear current counter.

Address	Function	R/W	Initial Value
000145~000176 (0x0090~0x00AF)	DI CH0~CH31 Counter Clear	W	All 0
30001~30032 40001~40032 (0x0000~0x001F)	DI CH0~CH31 DI Counter Value	R	All 0x0000
40137 (0x0088)	DI CH0~CH31 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000

Refer following description for how counter works:

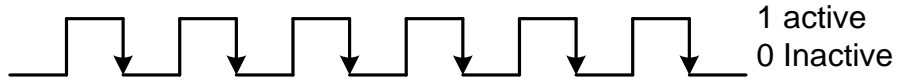
When Input Active Value Define is 0:

External signal :

Rising edge counter:



Falling edge counter:



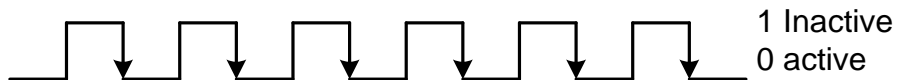
When Input Active Value Define is 1:

External signal :

Rising edge counter:



Falling edge counter:



4.2.5.4 Read/Clear Latch Status

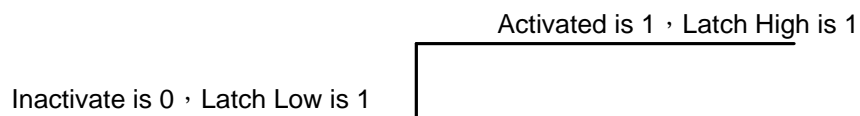
Module has the function of latch the external pulse of the digital signal.

Following Modbus address can be used to read or clear current latch status:

Address	Function	R/W	Initial Value
00033~00064 (0x0020~0x003F)	DI CH0~CH31 Latch High Value	R	All 0
00065~00096 (0x0040~0x005F)	DI CH0~C31 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH31 Latch Clear	W	0

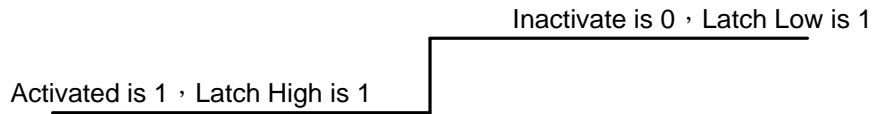
When Input Active Value Define is 0:

External signal:



When Input Active Value Define is 1:

External signal



4.2.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00001~00032 10001~10032 (0x0000~0x001F)	DI CH0~CH31 Input Status	R	All 0
00033~00064 (0x0020~0x003F)	DI CH0~CH31 Latch High Value	R	All 0
00065~00096 (0x0040~0x005F)	DI CH0~C31 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH31 Latch Clear	W	0
000145~000176 (0x0090~0x00AF)	DI CH0~CH31 Counter Clear	W	All 0

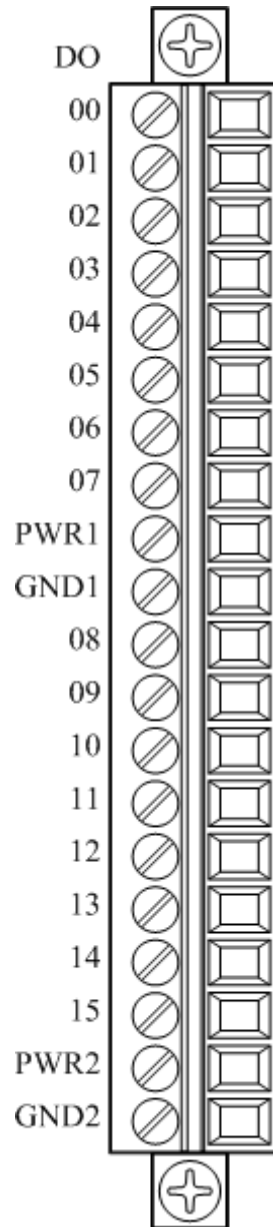
Holding Register (4xxxx) / Input Register (3xxxx)

Address	Function	R/W	Initial Value
30001~30032 40001~40032 (0x0000~0x000F)	DI CH0~CH31 DI Counter Value	R	All 0x0000
40129 (0x0080)	DI CH0~CH31 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000

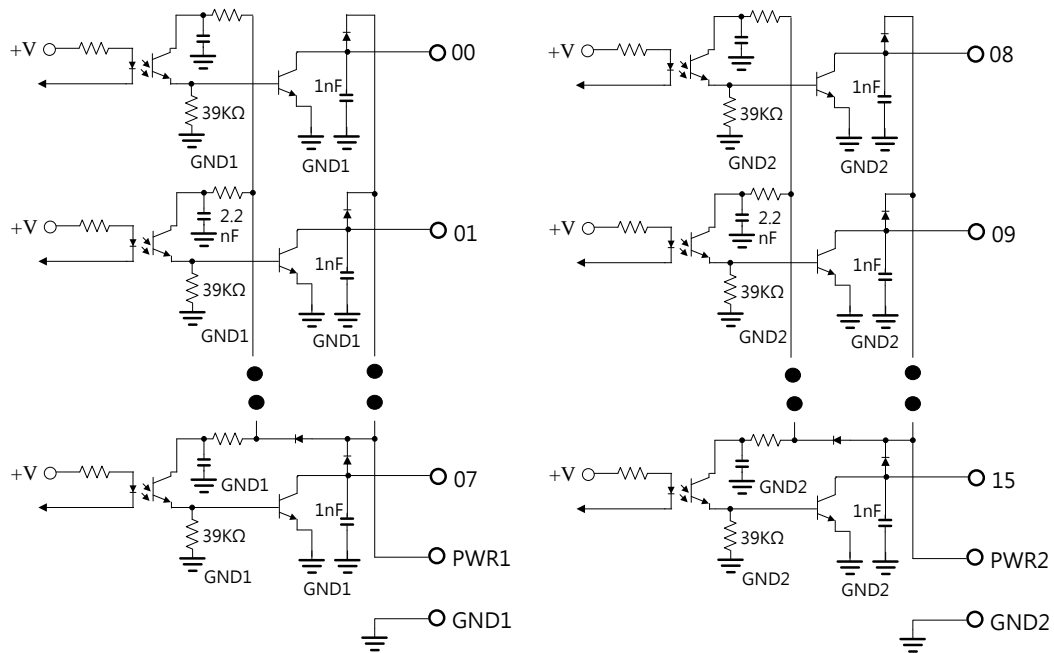
40137 (0x0088)	DI CH0~CH31 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting : 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K		0x09:57.6K		0x0A:115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03:1.2K																				
0x01: 8-N-2	0x04:2.4K																				
0x02: 8-E-1	0x05:4.8K																				
0x03: 8-O-1	0x06:9.6K																				
	0x07:19.2K																				
	0x08:38.4K																				
	0x09:57.6K																				
	0x0A:115.2K																				
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-																		
44111 (0x100E)	Counter of communication frame	R	0x0000																		

4.3 W-M1B401 16-Channel Digital Output Module

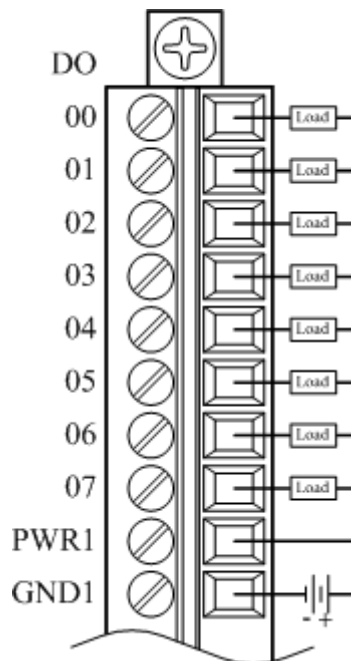
4.3.1 Terminal Assignment



4.3.2 Block Diagram



4.3.3 Channel Connecting



4.3.4 IO Specifications

Digital Output	
Digital Output Channels	16
Output Type	NPN
Output Voltage Range	3.5~30V
Normal Output Current	500mA
Startup Value Setting	Yes
Communication Safety Value Setting	Yes
Power Consumption	0.5W @ 24V

4.3.5 Related Reference

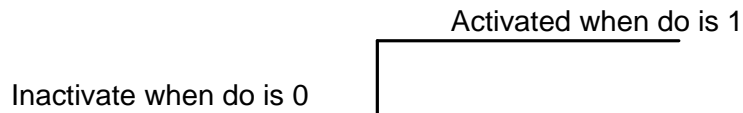
4.3.5.1 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

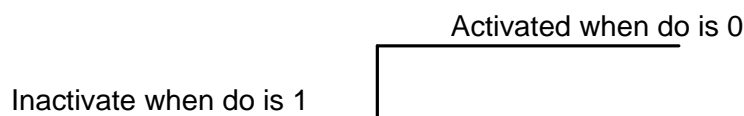
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.3.5.2 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

4.3.5.3 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH15 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.3.5.4 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device.

Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH15 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.3.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

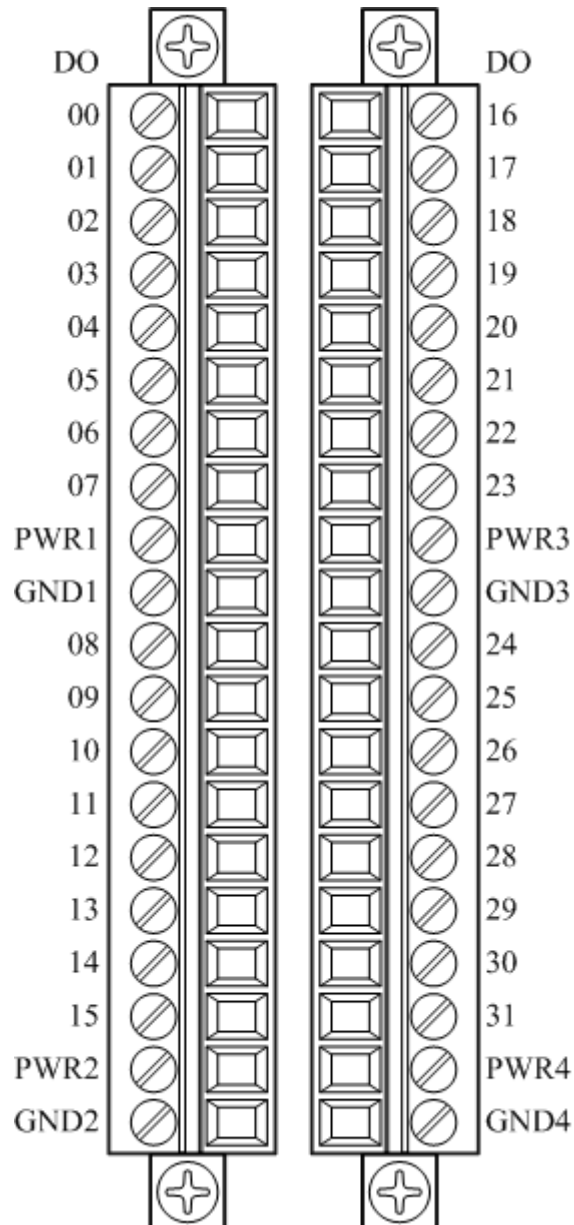
Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
---------	----------	-----	---------------

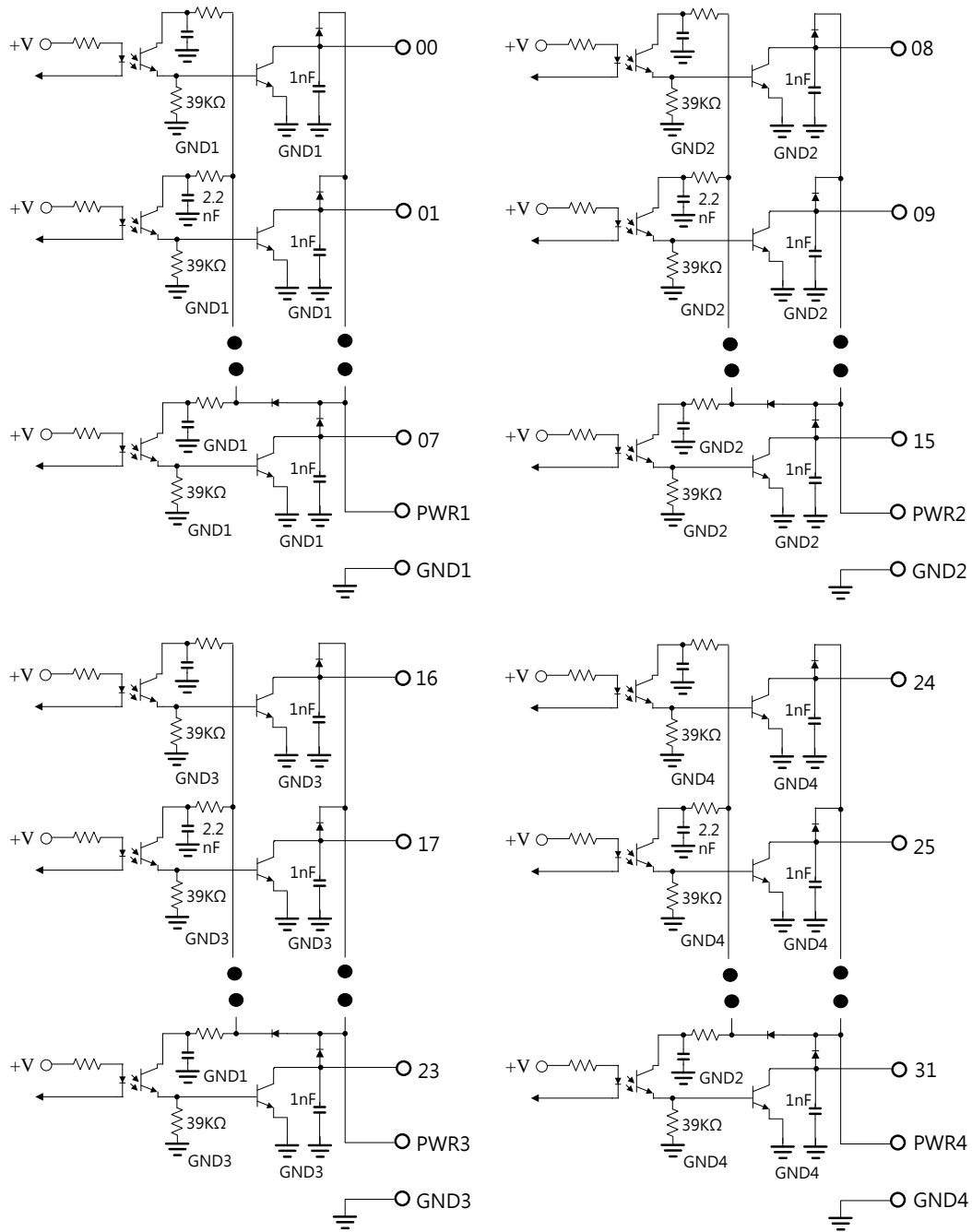
40257 (0x0100)	DO CH0~CH15 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40259 (0x0102)	DO CH0~CH15 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting : 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K		0x09:57.6K		0x0A:115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03:1.2K																				
0x01: 8-N-2	0x04:2.4K																				
0x02: 8-E-1	0x05:4.8K																				
0x03: 8-O-1	0x06:9.6K																				
	0x07:19.2K																				
	0x08:38.4K																				
	0x09:57.6K																				
	0x0A:115.2K																				
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-																		
44111 (0x100E)	Counter of communication frame	R	0x0000																		

4.4 W-M1B402 32-Channel Digital Output Module

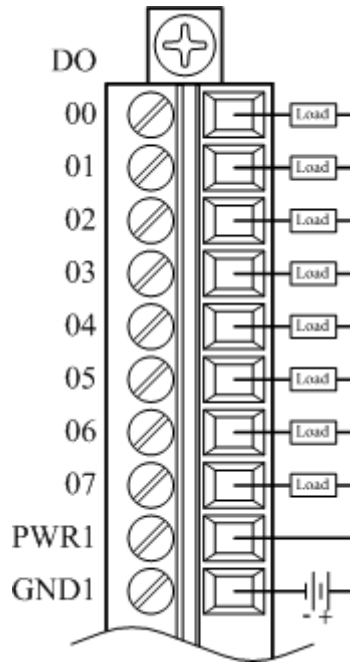
4.4.1 Terminal Assignment



4.4.2 Block Diagram



4.4.3 Channel Connecting



4.4.4 IO Specifications

Digital Output	
Digital Output Channels	32
Output Type	NPN
Output Voltage Range	3.5~30V
Normal Output Current	500mA
Startup Value Setting	Yes
Communication Safety Value Setting	Yes
Power Consumption	0.7W @ 24V

4.4.5 Related Reference

4.4.5.1 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH31 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

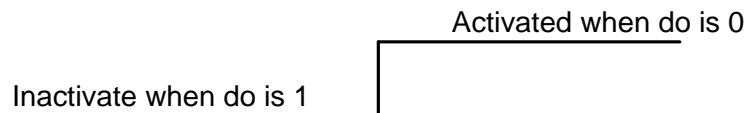
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.4.5.2 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00288 (0x0100~0x011F)	DO CH0~CH31 Output Status	R/W	-

4.4.5.3 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH31 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.4.5.4 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device.

Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH31 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.4.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00257~00288 (0x0100~0x010F)	DO CH0~CH31 Output Status	R/W	-

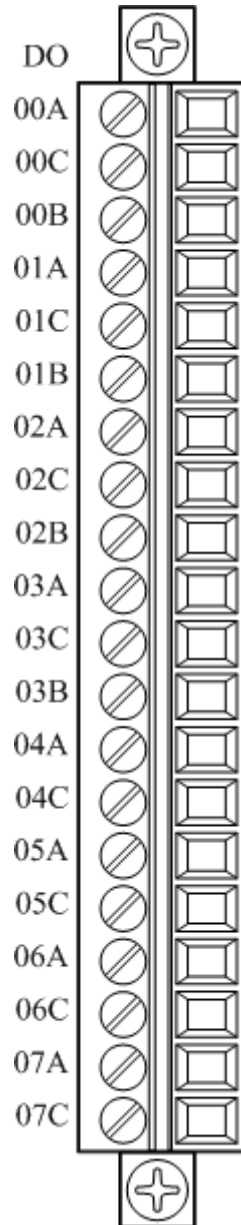
Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH31 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000
40259 (0x0102)	DO CH0~CH31 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000
40385 (0x0180)	DO CH0~CH31 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

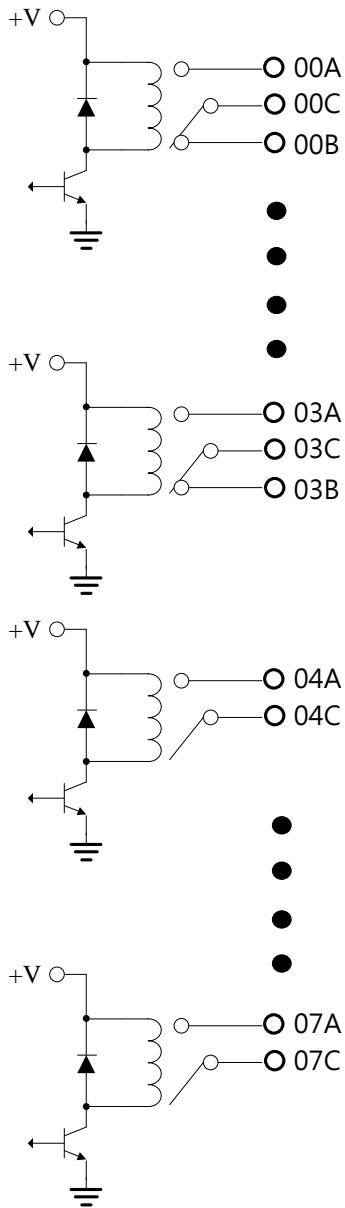
44097 (0x1000)	Firmware version 2 Bytes		R	-
	High Byte	Low Byte		
	Main version	Sub-version		
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)		R	-
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30		R/W	0
44107 (0x100A)	COM port setting : 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03:1.2K		
	0x01: 8-N-2	0x04:2.4K		
	0x02: 8-E-1	0x05:4.8K		
0x03: 8-O-1	0x06:9.6K			
		0x07:19.2K		
		0x08:38.4K		
		0x09:57.6K		
		0x0A:115.2K		
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

4.5 W-M1B403 8-Channel Relay Output Module

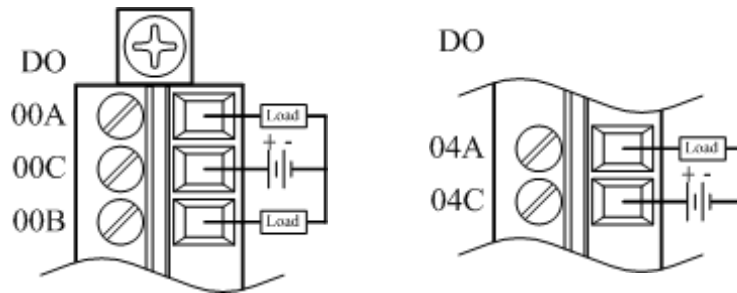
4.5.1 Terminal Assignment



4.5.2 Block Diagram



4.5.3 Channel Connecting



4.5.4 IO Specifications

Digital Output	
Relay Output Channels	4 Form A, 4 Form C
Contact Rating	5A 250VAC/30VDC
Dielectric Strength	3KV
Operate Time	10ms Max.
Release Time	5ms Max.
Electrical Endurance	1x10 ⁵ ops@3A 250VAC/30VDC
Power Consumption	2.4W @ 24V

4.5.5 Related Reference

4.5.5.1 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH7 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

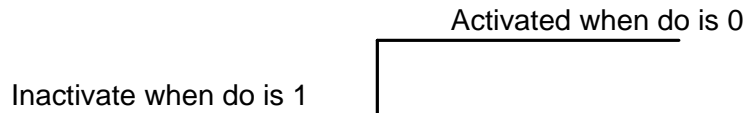
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.5.5.2 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00264 (0x0100~0x0107)	DO CH0~CH7 Output Status	R/W	-

4.5.5.3 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH7 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.5.5.4 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device.

Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH7 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.5.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00257~00264 (0x0100~0x0107)	DO CH0~CH7 Output Status	R/W	-

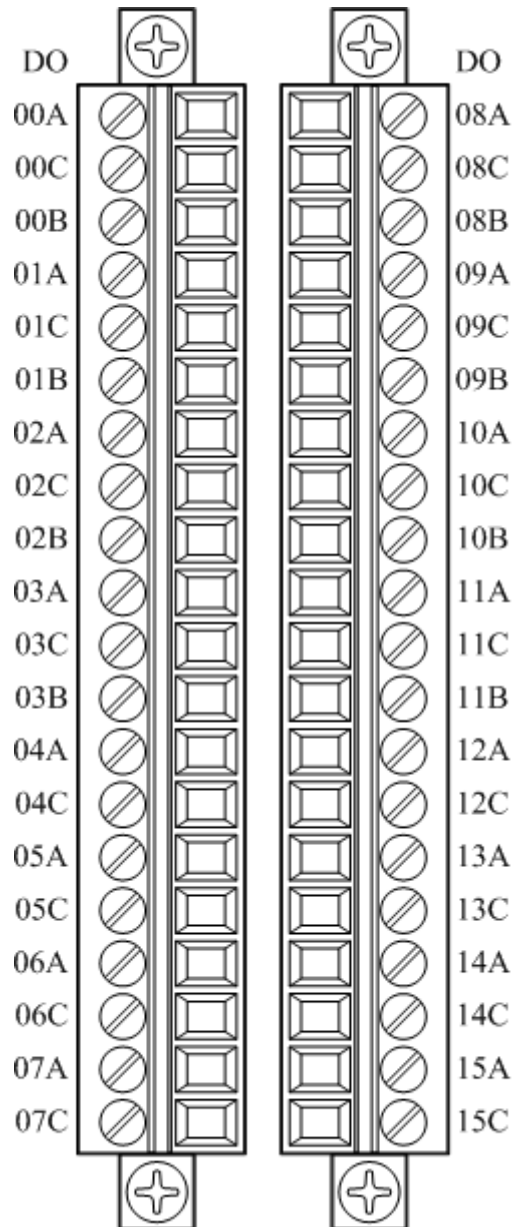
Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value																		
40257 (0x0100)	DO CH0~CH7 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40259 (0x0102)	DO CH0~CH7 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40385 (0x0180)	DO CH0~CH7 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting : 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K		0x09:57.6K		0x0A:115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03:1.2K																				
0x01: 8-N-2	0x04:2.4K																				
0x02: 8-E-1	0x05:4.8K																				
0x03: 8-O-1	0x06:9.6K																				
	0x07:19.2K																				
	0x08:38.4K																				
	0x09:57.6K																				
	0x0A:115.2K																				
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		

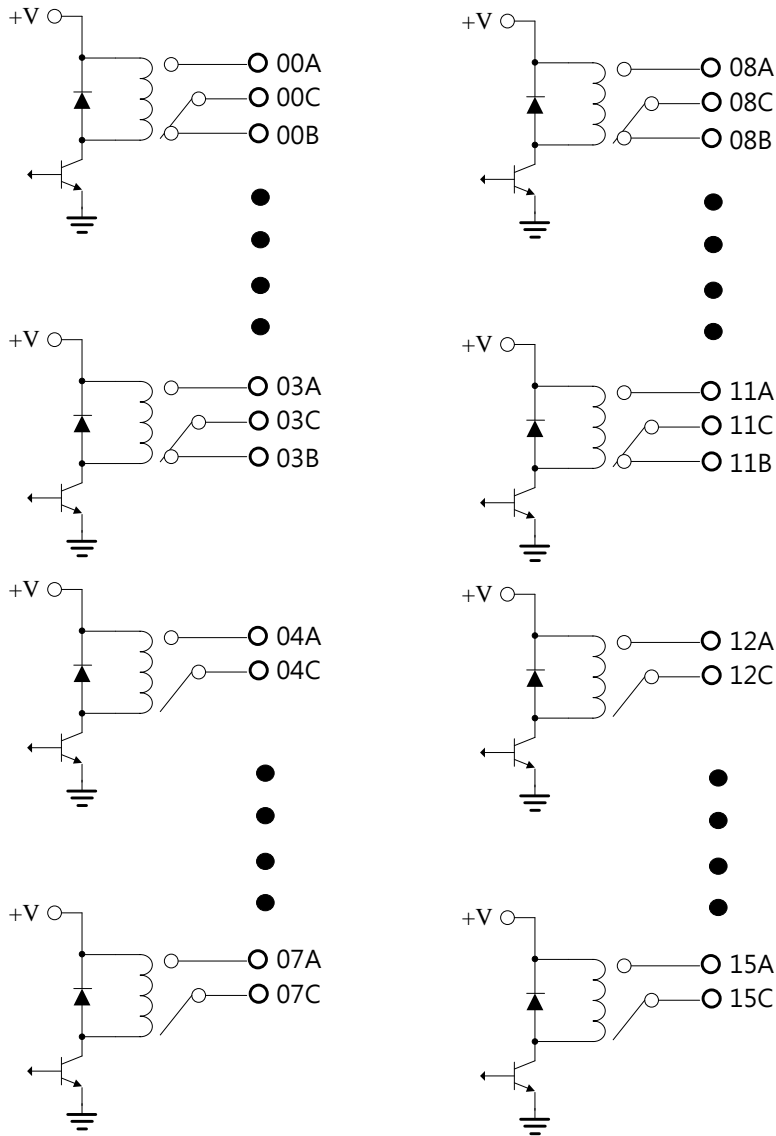
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-
44111 (0x100E)	Counter of communication frame	R	0x0000

4.6 W-M1B404 16-Channel Relay Output Module

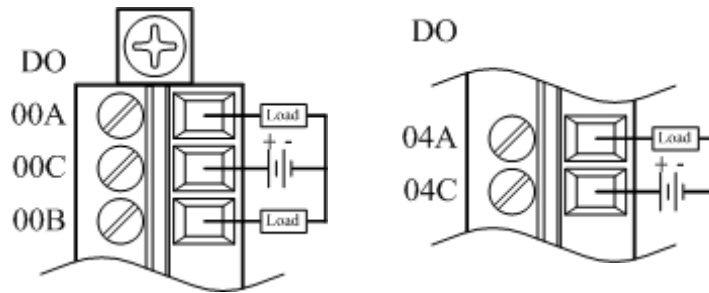
4.6.1 Terminal Assignment



4.6.2 Block Diagram



4.6.3 Channel Connecting



4.6.4 IO Specifications

Digital Output	
Relay Output Channels	8 Form A, 8 Form C
Contact Rating	5A 250VAC/30VDC
Dielectric Strength	3KV
Operate Time	10ms Max.
Release Time	5ms Max.
Electrical Endurance	1x10 ⁵ ops@3A 250VAC/30VDC
Power Consumption	4.8W @ 24V

4.6.5 Related Reference

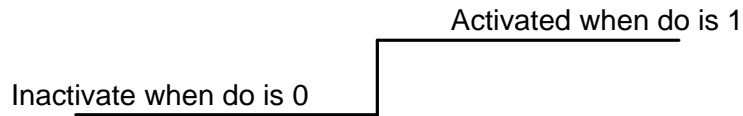
4.6.5.1 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

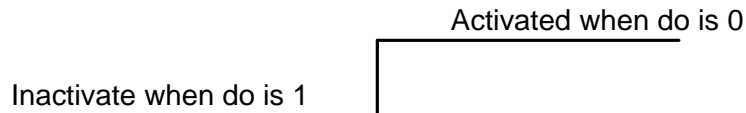
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.6.5.2 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

4.6.5.3 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH15 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.6.5.4 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device.

Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH15 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.6.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

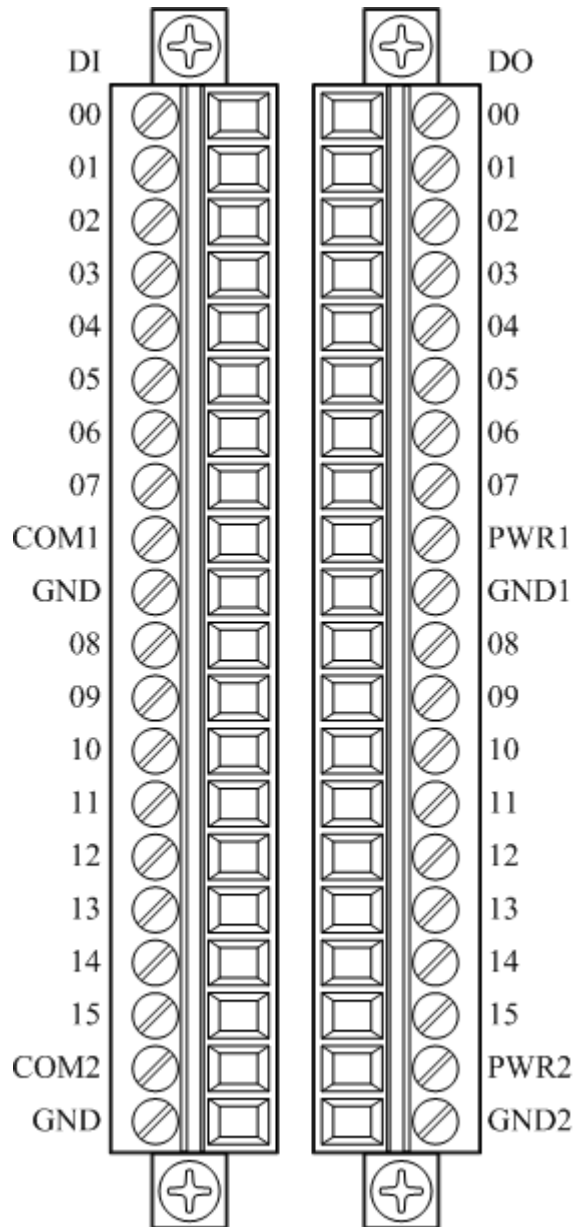
Holding Register(4xxxx) / Input Register(3xxxx)

Address	Function	R/W	Initial Value																		
40257 (0x0100)	DO CH0~CH15 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40259 (0x0102)	DO CH0~CH15 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000																		
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000																		
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-														
High Byte	Low Byte																				
Main version	Sub-version																				
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-																		
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0																		
44107 (0x100A)	COM port setting : 2bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </table>	High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K		0x09:57.6K		0x0A:115.2K	R/W	0x0006
High Byte	Low Byte																				
0x00: 8-N-1	0x03:1.2K																				
0x01: 8-N-2	0x04:2.4K																				
0x02: 8-E-1	0x05:4.8K																				
0x03: 8-O-1	0x06:9.6K																				
	0x07:19.2K																				
	0x08:38.4K																				
	0x09:57.6K																				
	0x0A:115.2K																				
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000																		
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000																		

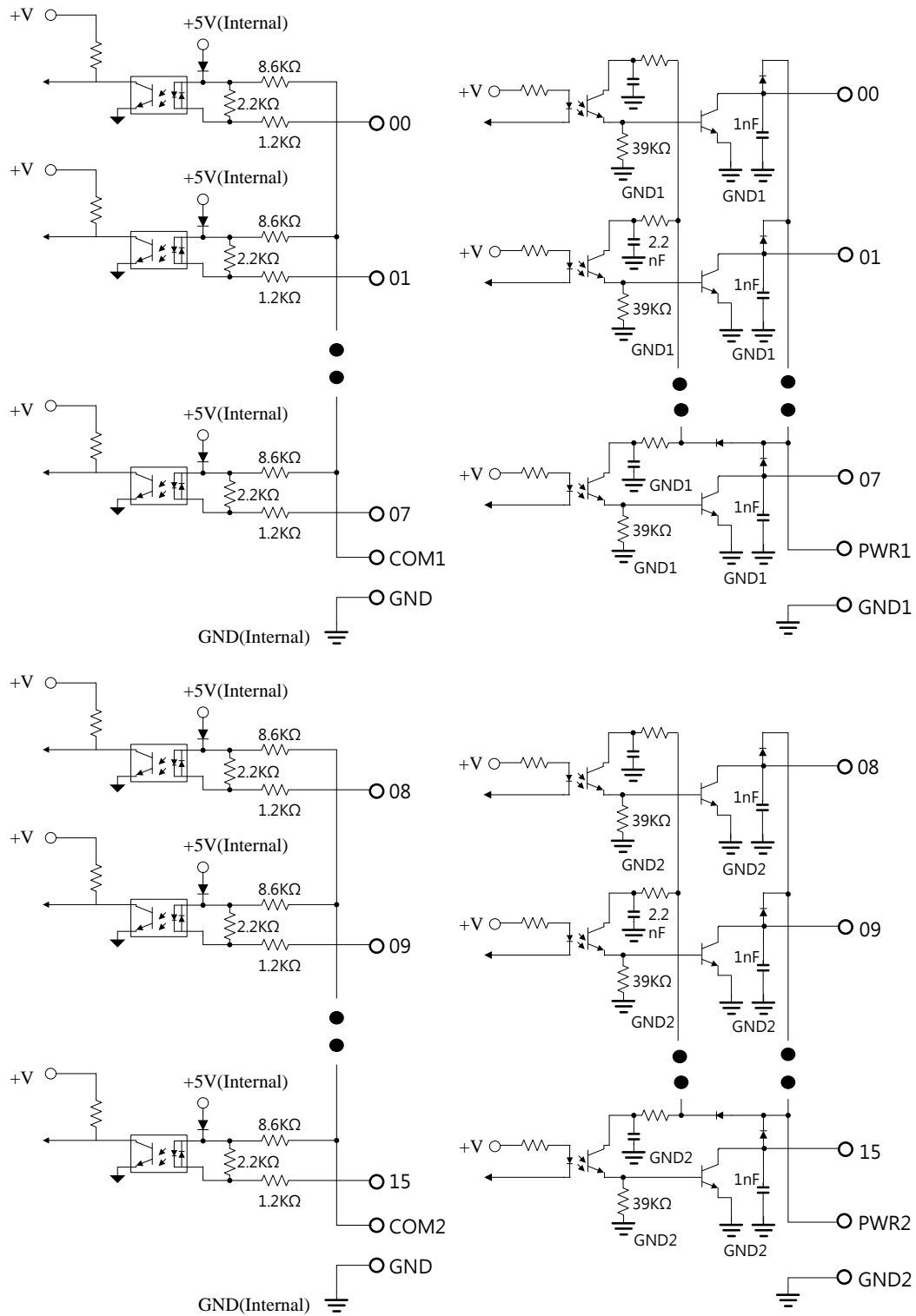
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-
44111 (0x100E)	Counter of communication frame	R	0x0000

4.7 W-M1B501 16-Channel Digital Input/16-Channel Digital Output Module

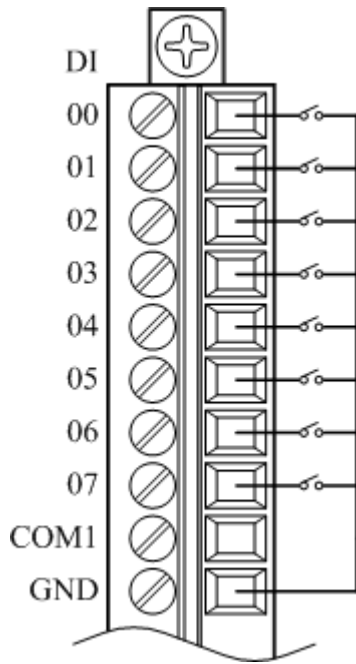
4.7.1 Terminal Assignment



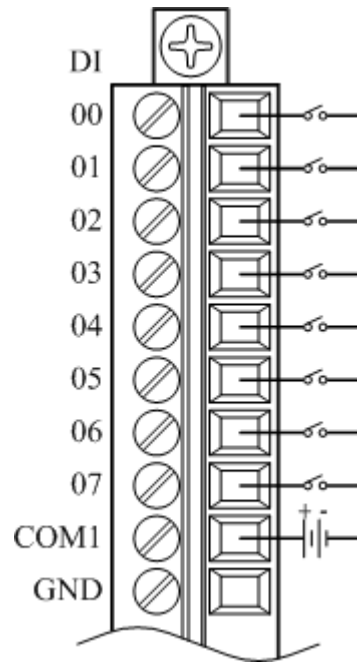
4.7.2 Block Diagram



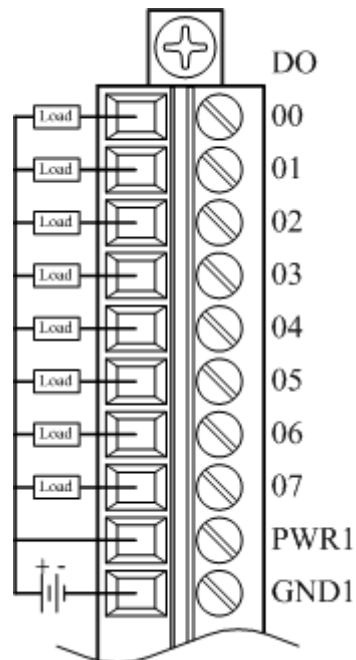
4.7.3 Channel Connecting



Dry Contact



Wet Contact



4.7.4 IO Specifications

Digital Input		
Digital Input Channels		16
Dry Contact	Logic Level 0	Open
	Logic Level 1	Close to GND
Wet Contact	Logic Level 0	+3V maximum
	Logic Level 1	+10 to 50V
Input resistance		10k Ω
Isolation voltage		2500Vdc
Over-voltage Protection		70 VDC
Counter Input Range		Max.100Hz(16 bit)
Latch Value Read		Yes
Digital Output		
Digital Output Channels		16
Output Type		NPN
Output Voltage Range		3.5~30V
Normal Output Current		500mA
Startup Value Setting		Yes
Communication Safety Value Setting		Yes
Power Consumption		2.8W @ 24V

4.7.5 Related Reference

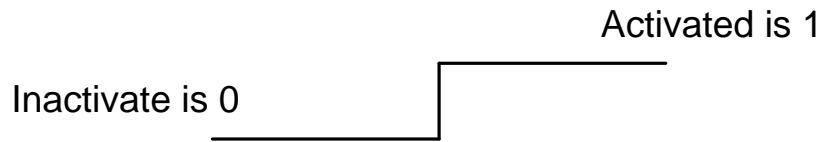
4.7.5.1 Digital Input Active State

Wolf series digital module supports invert DI status, when setting is 0x0000, if the external signal is logic level high, the DI status is 1, if the external signal is logic level low, the reading value is 0; when setting is 0x0001, if the external signal s logic level high, the reading value is 0, if the external signal s logic level low, the DI status is 1. The Modbus setting address is as below:

Address	Function	R/W	Initial Value
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000

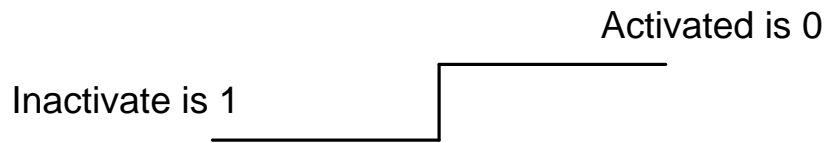
When Input Active Value Define as 0 :

External signal:



When Input Active Value Define as 1:

External signal:



4.7.5.2 Digital Input Status

Following Modbus address can be used to read digital input channel status:

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0

4.7.5.3 Read/Clear the Digital Input Counter

Module has the function of counting the external pulse number of the digital signal. The maximum frequency must be less than 100Hz. Following Modbus address can be used to read or clear current counter.

Address	Function	R/W	Initial Value
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000

40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000
-------------------	--	-----	--------

Refer following description for how counter works:

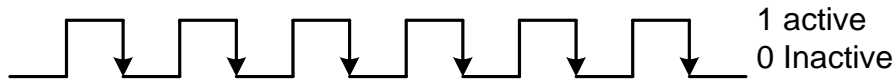
When Input Active Value Define is 0:

External signal :

Rising edge counter:



Falling edge counter:



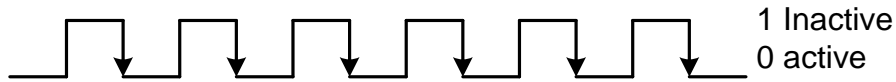
When Input Active Value Define is 1:

External signal :

Rising edge counter:



Falling edge counter:



4.7.5.4 Read/Clear Latch Status

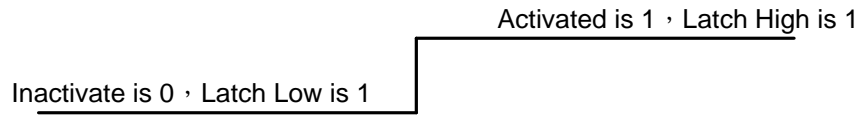
Module has the function of latch the external pulse of the digital signal.

Following Modbus address can be used to read or clear current latch status:

Address	Function	R/W	Initial Value
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0

When Input Active Value Define is 0:

External signal:



When Input Active Value Define is 1:

External signal



4.7.5.5 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

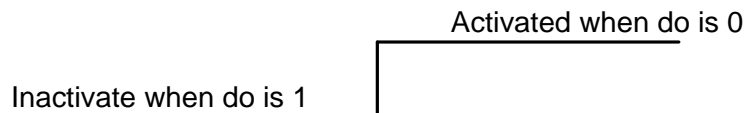
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.7.5.6 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

4.7.5.7 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH15 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.7.5.8 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device. Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH15 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.7.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0

000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0
00257~00272 (0x0100~0x010F)	DO CH0~CH15 Output Status	R/W	-

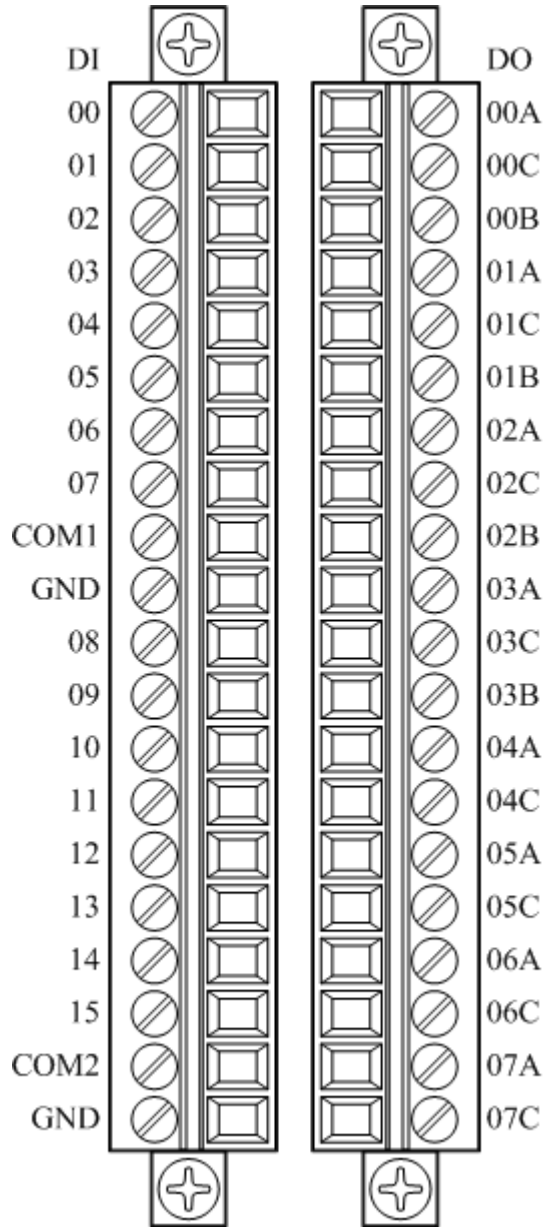
Holding Register (4xxxx) / Input Register (3xxxx)

Address	Function	R/W	Initial Value				
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000				
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000				
40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000				
40257 (0x0100)	DO CH0~CH15 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000				
40259 (0x0102)	DO CH0~CH15 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000				
40385 (0x0180)	DO CH0~CH15 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000				
44097 0x1000	Firmware version 2 Bytes <table border="1" style="margin-left: 20px;"> <tr> <td>High Byte</td> <td>Low Byte</td> </tr> <tr> <td>Main version</td> <td>Sub-version</td> </tr> </table>	High Byte	Low Byte	Main version	Sub-version	R	-
High Byte	Low Byte						
Main version	Sub-version						
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)	R	-				
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30	R/W	0				

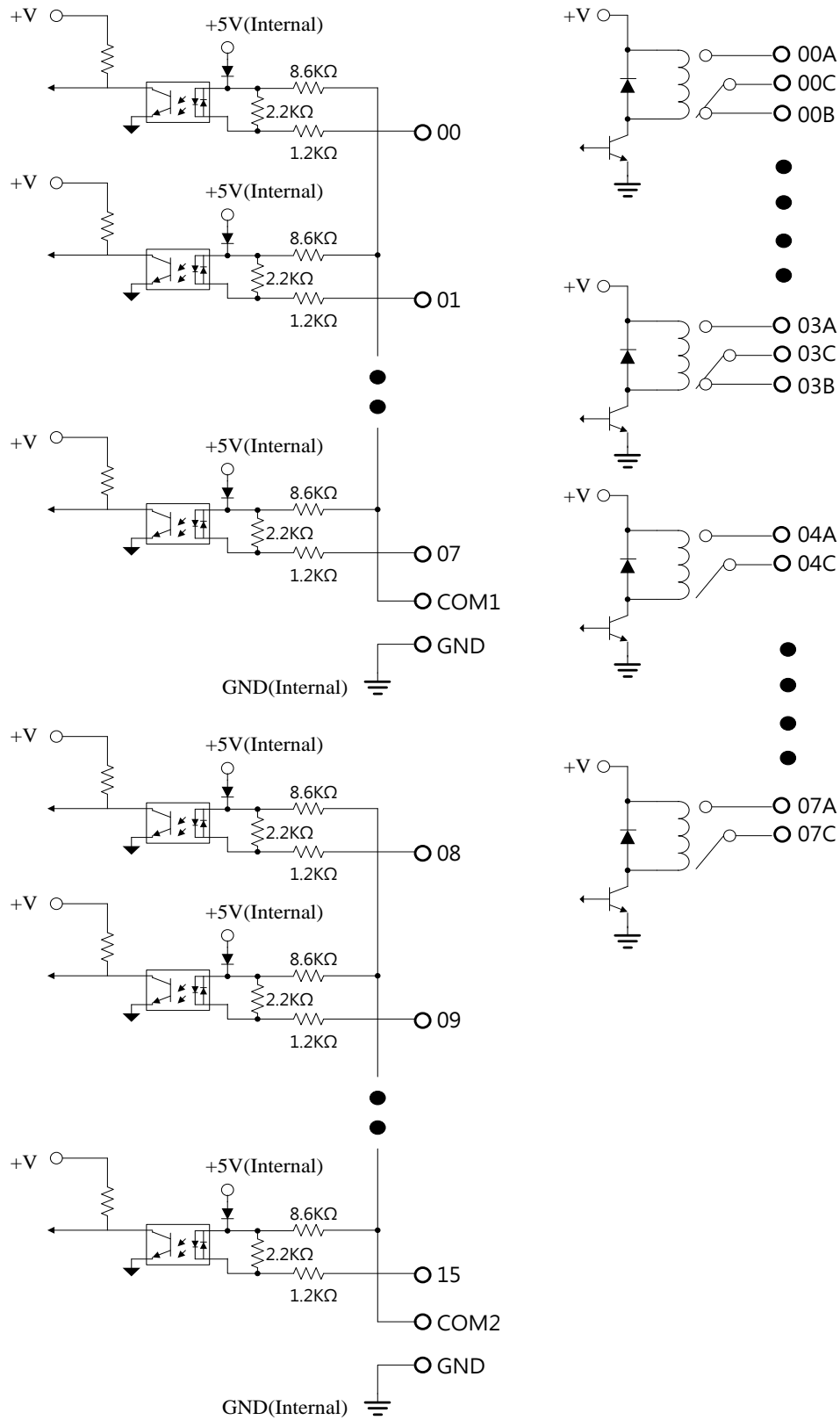
44107 (0x100A)	COM port setting : 2bytes	R/W	0x0006															
	<table border="1"> <thead> <tr> <th>High Byte</th> <th>Low Byte</th> </tr> </thead> <tbody> <tr> <td>0x00: 8-N-1</td> <td>0x03:1.2K</td> </tr> <tr> <td>0x01: 8-N-2</td> <td>0x04:2.4K</td> </tr> <tr> <td>0x02: 8-E-1</td> <td>0x05:4.8K</td> </tr> <tr> <td>0x03: 8-O-1</td> <td>0x06:9.6K</td> </tr> <tr> <td></td> <td>0x07:19.2K</td> </tr> <tr> <td></td> <td>0x08:38.4K</td> </tr> <tr> <td></td> <td>0x09:57.6K</td> </tr> <tr> <td></td> <td>0x0A:115.2K</td> </tr> </tbody> </table>			High Byte	Low Byte	0x00: 8-N-1	0x03:1.2K	0x01: 8-N-2	0x04:2.4K	0x02: 8-E-1	0x05:4.8K	0x03: 8-O-1	0x06:9.6K		0x07:19.2K		0x08:38.4K	
High Byte	Low Byte																	
0x00: 8-N-1	0x03:1.2K																	
0x01: 8-N-2	0x04:2.4K																	
0x02: 8-E-1	0x05:4.8K																	
0x03: 8-O-1	0x06:9.6K																	
	0x07:19.2K																	
	0x08:38.4K																	
	0x09:57.6K																	
	0x0A:115.2K																	
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF	R/W	0x0000															
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable	R/W	0x0000															
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal	R/W	-															
44111 (0x100E)	Counter of communication frame	R	0x0000															

4.8 W-M1B502 16-Channel Digital Input/8-Channel Relay Output Module

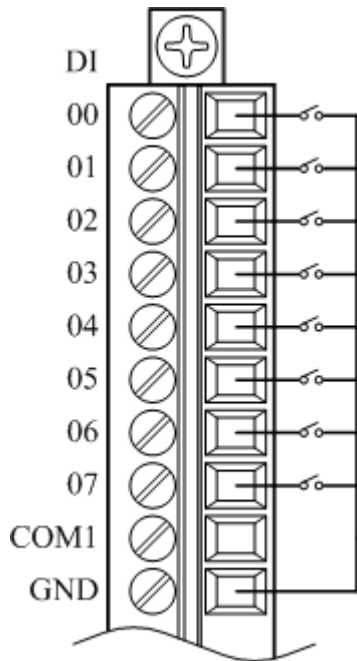
4.8.1 Terminal Assignment



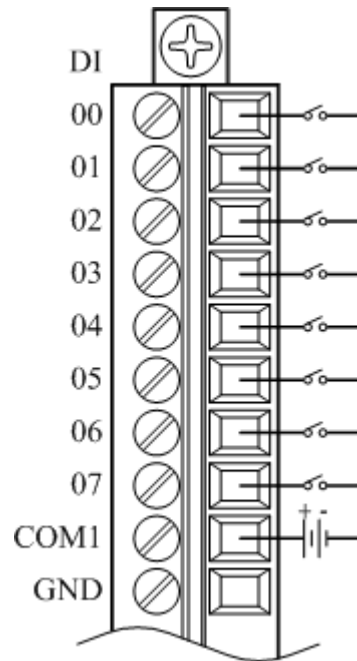
4.8.2 Block Diagram



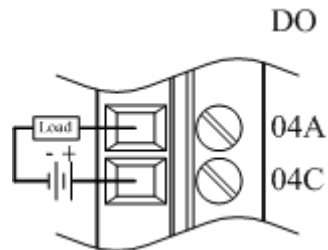
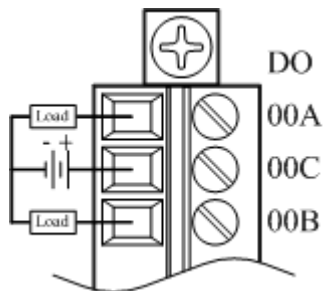
4.8.3 Channel Connecting



Dry Contact



Wet Contact



4.8.4 IO Specifications

Digital Input		
Digital Input Channels		16
Dry Contact	Logic Level 0	Open
	Logic Level 1	Close to GND
Wet Contact	Logic Level 0	3V maximum
	Logic Level 1	10 to 50V
Input resistance		10kΩ
Isolation voltage		2500Vdc
Over-voltage Protection		70 VDC

Counter Input Range	Max.100Hz(16 bit)
Latch Value Read	Yes
Digital Output	
Relay Output Channels	4 Form A, 4 Form C
Contact Rating	5A 250VAC/30VDC
Dielectric Strength	3KV
Operate Time	10ms Max.
Release Time	5ms Max.
Electrical Endurance	1x10 ⁵ ops@3A 250VAC/30VDC
Power Consumption	3W @ 24V

4.8.5 Related Reference

4.8.5.1 Digital Input Active State

Wolf series digital module supports invert DI status, when setting is 0x0000, if the external signal is logic level high, the DI status is 1, if the external signal is logic level low, the reading value is 0; when setting is 0x0001, if the external signal s logic level high, the reading value is 0, if the external signal s logic level low, the DI status is 1. The Modbus setting address is as below:

Address	Function	R/W	Initial Value
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000

When Input Active Value Define as 0 :

External signal:



When Input Active Value Define as 1:

External signal:



4.8.5.2 Digital Input Status

Following Modbus address can be used to read digital input channel status:

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0

4.8.5.3 Read/Clear the Digital Input Counter

Module has the function of counting the external pulse number of the digital signal. The maximum frequency must be less than 100Hz. Following Modbus address can be used to read or clear current counter.

Address	Function	R/W	Initial Value
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000
40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000

Refer following description for how counter works:

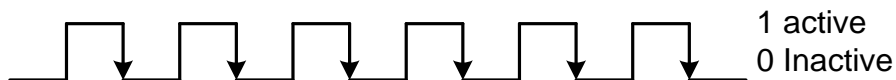
When Input Active Value Define is 0:

External signal :

Rising edge counter:



Falling edge counter:



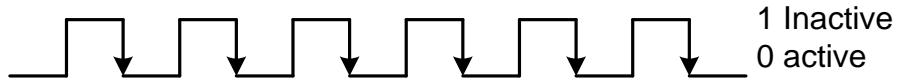
When Input Active Value Define is 1:

External signal :

Rising edge counter:



Falling edge counter:



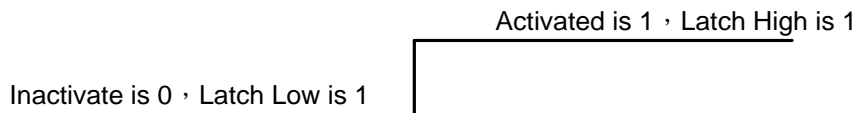
4.8.5.4 Read/Clear Latch Status

Module has the function of latch the external pulse of the digital signal. Following Modbus address can be used to read or clear current latch status:

Address	Function	R/W	Initial Value
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0

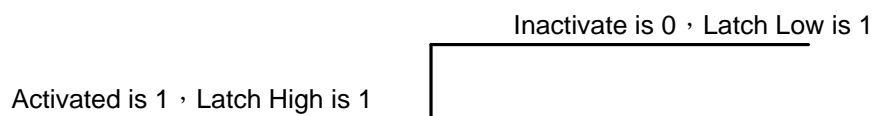
When Input Active Value Define is 0:

External signal:



When Input Active Value Define is 1:

External signal



4.8.5.5 Digital Output Active State

Digital Output module supports invert digital output status, when the state is 0x0000, if the output channel is configured as 1, the digital output will be activated, if the output channel is configured as 0, the digital output will be inactivate; when setting is 0x0001, if the output channel is configured as 0, the digital output will be activated, if the output channel is configured as 1, the digital output will be inactivated. The Modbus address setting is as below:

Address	Function	R/W	Initial Value
40385 (0x0180)	DO CH0~CH7 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

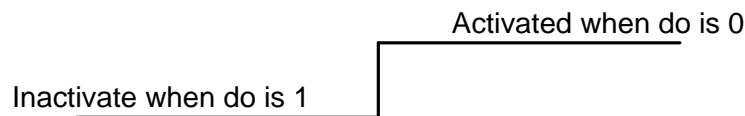
When Output Active Value Define is 0:

Digital output



When Output Active Value Define is 1

Digital output



4.8.5.6 Digital Output Status

Following Modbus address can be used to read digital output status:

Address	Function	R/W	Initial Value
00257~00264 (0x0100~0x0107)	DO CH0~CH7 Output Status	R/W	-

4.7.5.7 Power-on Value

Module has the function of power-on value. Following Modbus address can be used to configure the power-on value for all channel:

Address	Function	R/W	Initial Value
40257 (0x0100)	DO CH0~CH7 Power On Value Bit 0 is CH0	R/W	All 0x0000

4.7.5.8 Host Watchdog Timer

When the host watchdog function is enabled and timeout occurs, the module will reset all outputs to a safe state in order to ensure the safety of system or device.

Following Modbus address can be used to configure the safe value of digital output:

Address	Function	R/W	Initial Value
40259 (0x0102)	DO CH0~CH7 Safety Output Value Bit 0 is CH0	R/W	All 0x0000

4.7.6 MODBUS Address

Coil (0xxxx) / (1xxxx)

Address	Function	R/W	Initial Value
00001~00016 10001~10016 (0x0000~0x000F)	DI CH0~CH15 Input Status	R	All 0
00033~00048 (0x0020~0x002F)	DI CH0~CH15 Latch High Value	R	All 0
00065~00080 (0x0040~0x004F)	DI CH0~C15 Latch Low Value	R	All 0
000129 (0x0080)	DI CH0~CH15 Latch Clear	W	0
000145~000160 (0x0090~0x009F)	DI CH0~CH15 Counter Clear	W	All 0
00257~00264 (0x0100~0x0107)	DO CH0~CH7 Output Status	R/W	-

Holding Register (4xxxx) / Input Register (3xxxx)

Address	Function	R/W	Initial Value
30001~30016 40001~40016 (0x0000~0x000F)	DI CH0~CH15 DI Counter Value	R	All 0x0000
40129 (0x0080)	DI CH0~CH15 Input Active Value Define 0x0000: input value 0 for non-signal; 0x0001: input value 1 for non-signal;	R/W	0x0000
40137 (0x0088)	DI CH0~CH15 Counter Edge Define (Each bit map to corresponding channel) 1=rising edge 0=falling edge	R/W	0x0000
40257 (0x0100)	DO CH0~CH7 Power On Value (Each bit map to corresponding channel)	R/W	All 0x0000
40259 (0x0102)	DO CH0~CH7 Safety Output Value (Each bit map to corresponding channel)	R/W	All 0x0000
40385 (0x0180)	DO CH0~CH7 Output Active Value 0x0000: output value 1 for relay active; 0x0001: output value 0 for relay active;	R/W	All 0x0000

44097 0x1000	Firmware version 2 Bytes		R	-
	High Byte	Low Byte		
	Main version	Sub-version		
44098~44105 (0x1001~0x1008)	Module name 16 Bytes (16 ASCII char)		R	-
44106 (0x1009)	Modbus response delay time (unit: ms) Range: 0~30		R/W	0
44107 (0x100A)	COM port setting : 2bytes		R/W	0x0006
	High Byte	Low Byte		
	0x00: 8-N-1	0x03:1.2K		
	0x01: 8-N-2	0x04:2.4K		
	0x02: 8-E-1	0x05:4.8K		
	0x03: 8-O-1	0x06:9.6K		
		0x07:19.2K		
	0x08:38.4K			
	0x09:57.6K			
	0x0A:115.2K			
44108 (0x100B)	Watch dog timer (unit : 0.1s) Range: 0 ~ 0x00FF		R/W	0x0000
44109 (0x100C)	System watch dog 0x0001: Enable 0x0000: Disable		R/W	0x0000
44110 (0x100D)	Status of system watch dog 0x0001: Timeout 0x0000: Normal		R/W	-
44111 (0x100E)	Counter of communication frame		R	0x0000

Chapter 5. FAQ

If you have difficulty in using Wolf Series module, please look up the related information in this manual. Shall you have any unsolved issues, comment or suggestion, please visit our website and contact us. With the greatest enthusiasm and endeavor, we will be always ready to serve you.

Email: service@advanio.com.tw

Website: <http://www.advanio.com.tw>

5.1 Communication

If you failed in communicating with the module, please proceed with the following steps:

1. Confirm the power supply voltage range is set at +10 to + 60V DC, otherwise, make sure the power LED indicators on the module is normal.
2. Upon receiving the command, the Power LED will flash once. Follow this procedure to check if the module receives command from the host.
3. Under permissive conditions, other equipment may also be used to detect whether the host PC can be communicate with a normal communication protocol which based on RS485 communication network equipment.
4. If the host is a PC with Windows Operation System installed,-user can execute Utility software to check the availability of I/O module. (please download the software via Advanio official site. <http://www.advanio.com>) .
5. Setup the module into INIT mode, and have it communicate with the following parameters: address number **01**, serial transmission rate is 9600bps, no parity bit and the communication protocol is Modbus.

5.2 Read data

If data collected from I/O module are abnormal, perform the following steps to check it:

Abnormal data read may be resulted from the abnormal parameter storage in Memory, please use Utility software to check it or reset it to INIT mode.

Please refer to 2.1.11 (Factory Reset) to solve I/O module abnormality.

Chapter 6. Technical support

If any problem encountered during the application, please look up the user manual or contact us via Advanio website.

Email: service@advanio.com

Website: <http://www.advanio.com>

Before Contacting our Technical Support, please prepare information as follows:

1. Serial number can be found on the bar code labeled on the cover of module.
2. Firmware version: For more details, please refer to MODBUS command about read firmware version command.
3. Host configuration (type and operating system).
4. If the problem is repeated, please provide full problem description and related applications.
5. For particular error messages display, please provide full content in Dialog Box including title and original text.
6. Any problem with program and hardware device concerned, please fully describe the details.
7. Your comments and suggestions will be highly appreciated.

You will have your feedback via Email within 2 working days.