M-2004 and M-7004
User Manual
Version 1.0.2/ April 2020

Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

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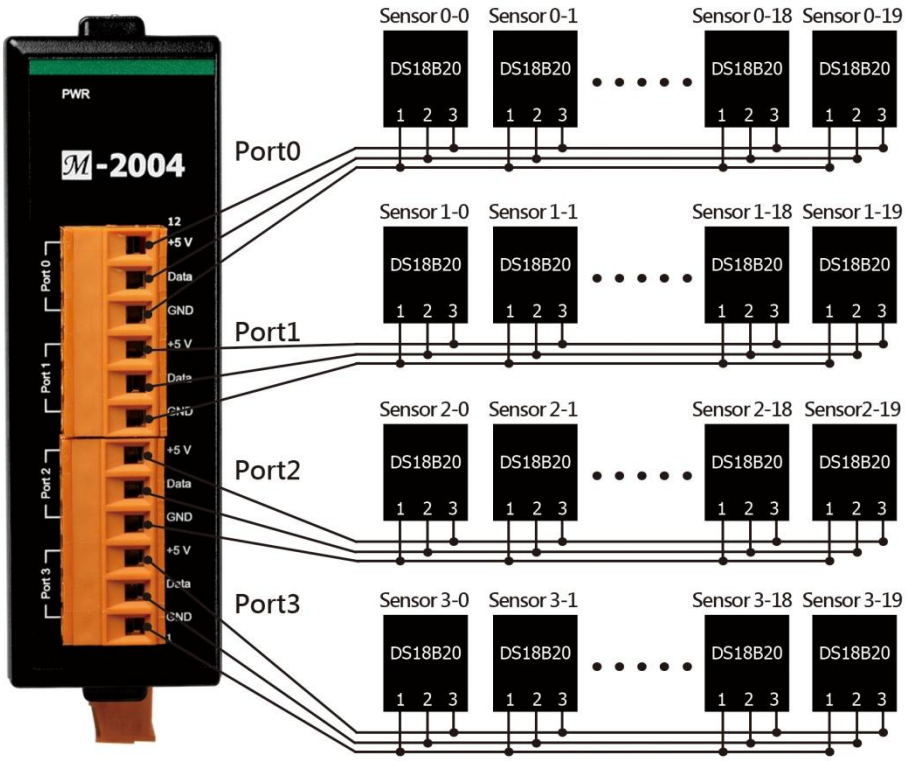
Chapter 1. Hardware

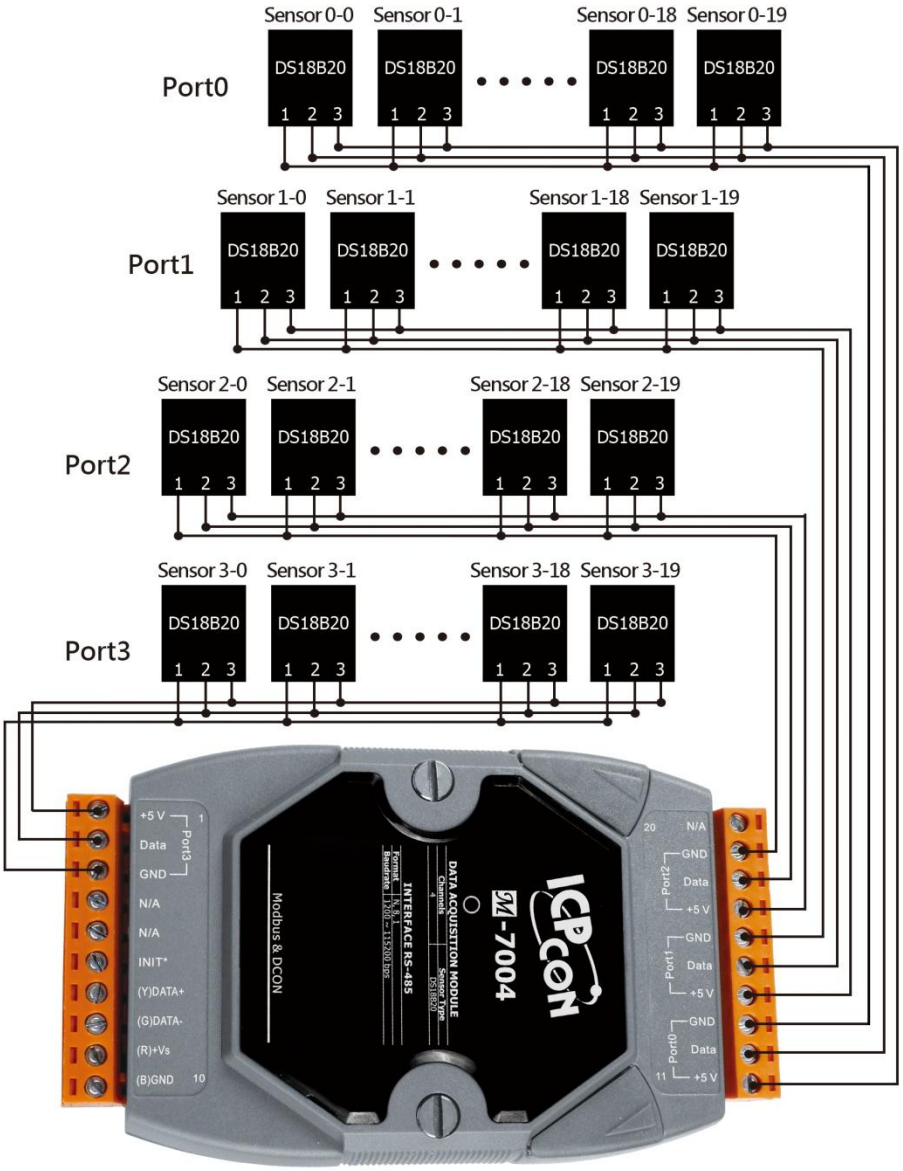
1.1. Introduction

The M-2004/M-7004 is a digital temperature sensor module that provides four ports for 2- or 3 wire DS18B20 digital temperature sensor input. The DS18B20 temperature sensor has a high accuracy of ±0.5°C when measuring temperatures between -10 and + 85°C, with a total measurement range of between -55 and +125°C. Up to 20 DS18B20 sensors can be connected to each port on the M-2004/M-7004 module in a daisy-chain arrangement with a maximum wiring distance of 100 meters. The M-2004/M-7004 module is fully RoHS compliant, and features 4 kV ESD protection as well as 3000 VDC intra-module isolation.

Applications

- Temperature Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring





1.2. Features

- 4-Port DS18B20 Sensor Input Module
- 2/3-wire DS18B20 Wire Connection
- Max 20 Ssensors per Port
- Max. Distance of 100 m per Port when using Daisy-Chain Wiring
- Measures Temperatures from -55 to +125°C
- ±0.5°C Accuracy from -10 to +85°C
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation, Field to Logic
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C

1.3. Specifications

I/O Specifications

Temperature Measurement	
Port	4
Wiring	2-wire or 3-wire
Sensor Type	DS18B20
Temperature Measurement Range	-55°C to +125°C
Resolution	12-bit
Accuracy	±0.5°C (See Note 1)
Sampling Rate	1 Hz
Number of Sensors per Port	20
Sensor Wiring Length	Max. 100 m per Port

Note 1: ±0.5°C accuracy only applies for measurements between -10°C and +85°C

System Specifications

M-2004

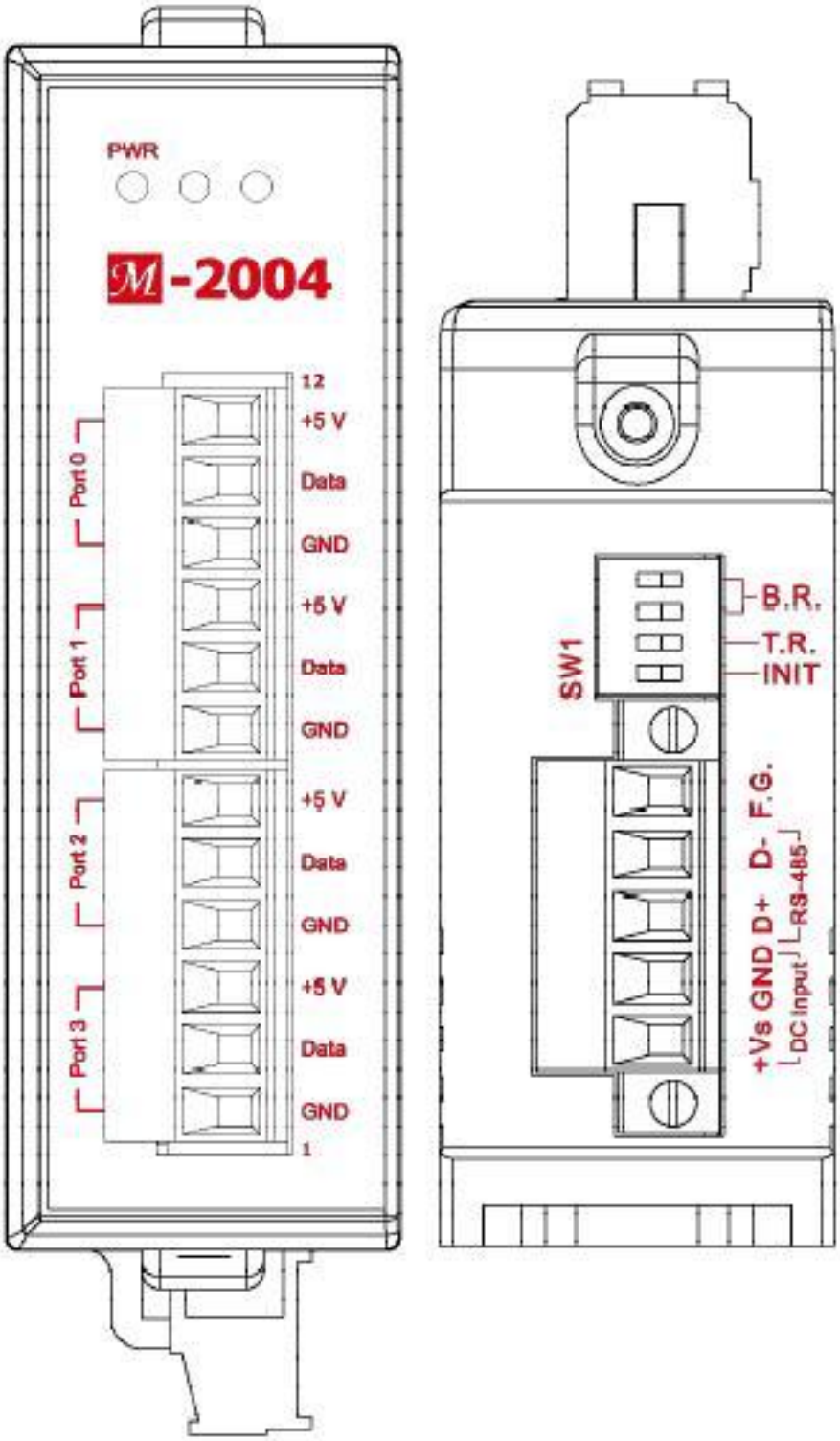
Communication Interface	
Interface	RS-485
Bias Resistor	Yes, 1k Ω bias resistor by switch selectable
Format	N81, N82, E81, O81
Baud Rate	1200 to 115200 bps
Protocol	Modbus RTU, DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicator	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolated, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
EFT (IEC 61000-4-4)	±4 kV for Power
Surge (IEC 61000-4-5)	±2 kV for power liner
Power	
Reverse Polarity Protection	Yes
Input Voltage Range	+10 ~ +48 VDC
Power Consumption	0.5 W
Mechanical	
Dimensions (L x W x H)	110 x 33 x 96 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25°C to +75°C
Storage Temperature	-30°C to +80°C
Relative Humidity	10 ~ 95% RH, Non-condensing

M-7004

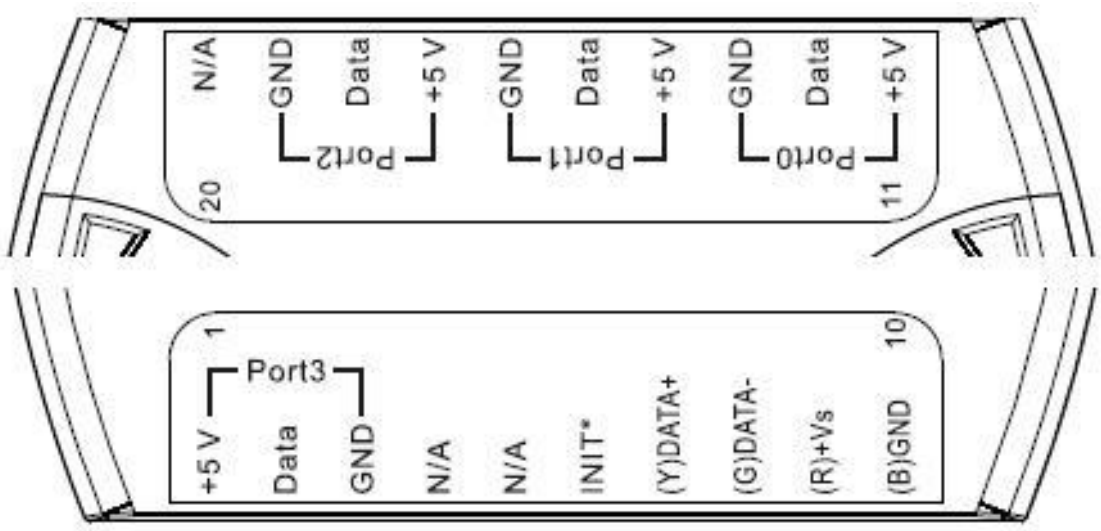
Communication	
Interface	RS-485
Bias Resistor	Yes, 1k Ω bias resistor by Jumper selectable
Format	N81, N82, E81, O81
Baud Rate	1200 to 115200 bps
Protocol	DCON Modbus/RTU
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicator	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
Isolation	
Intra-module Isolation, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal
	±8 kV Air for Random Point
EFT (IEC 61000-4-4)	±4 kV for Power
Surge (IEC 61000-4-5)	±2 kV for power liner
Power	
Reverse Polarity Protection	Yes
Input Range	+10 ~ +48 VDC
Consumption	0.5 W
Mechanical	
Dimensions (L x W x H)	123 mm x 72 mm x 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-30 to +80°C
Humidity	10 to 90% RH, Non-condensing

1.4. Pin Assignment

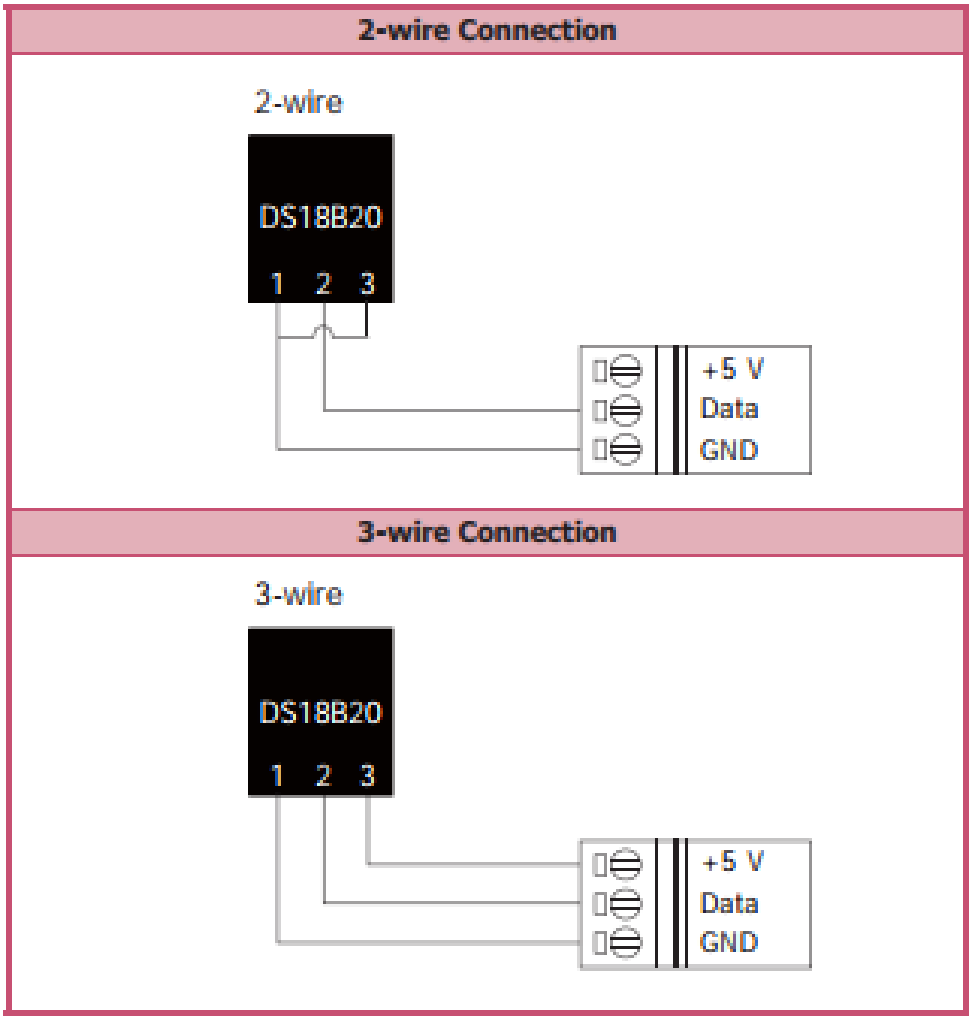
M-2004



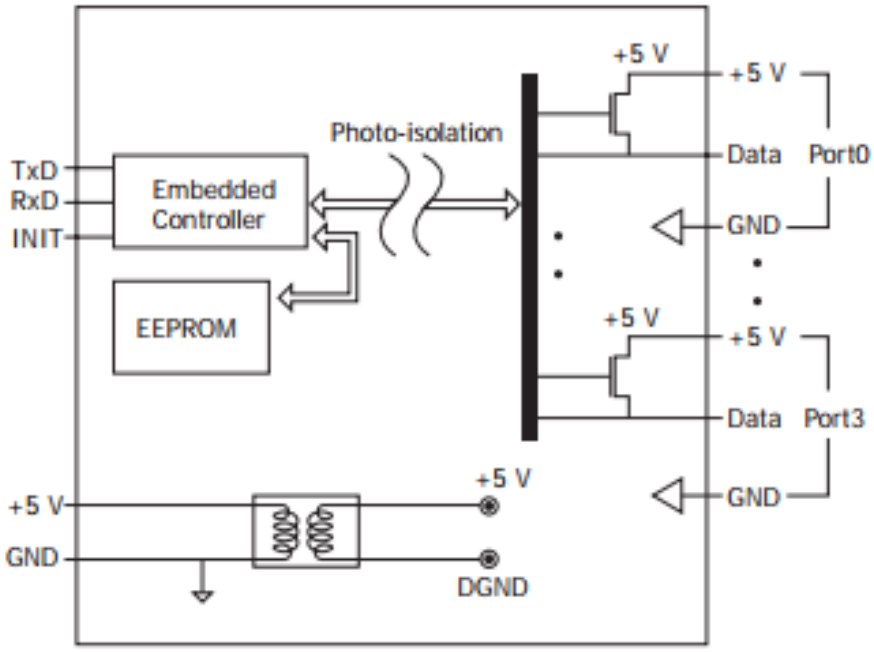
M-7004



1.5. Wiring



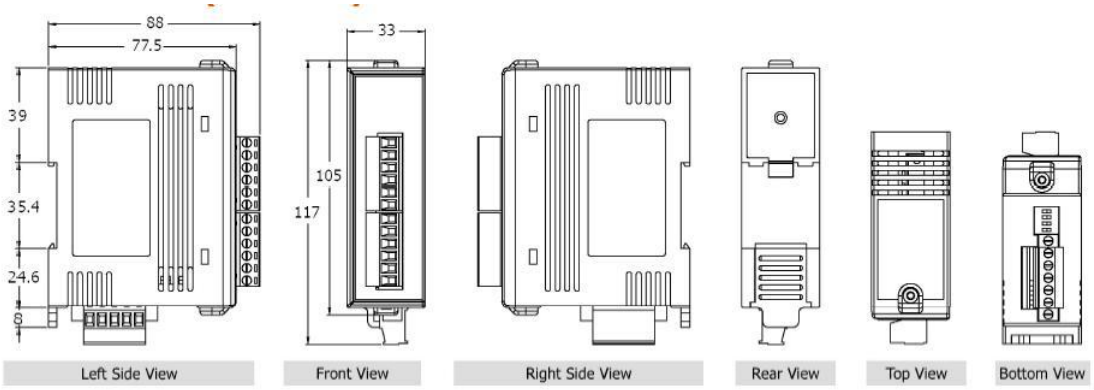
1.6. Block Diagram



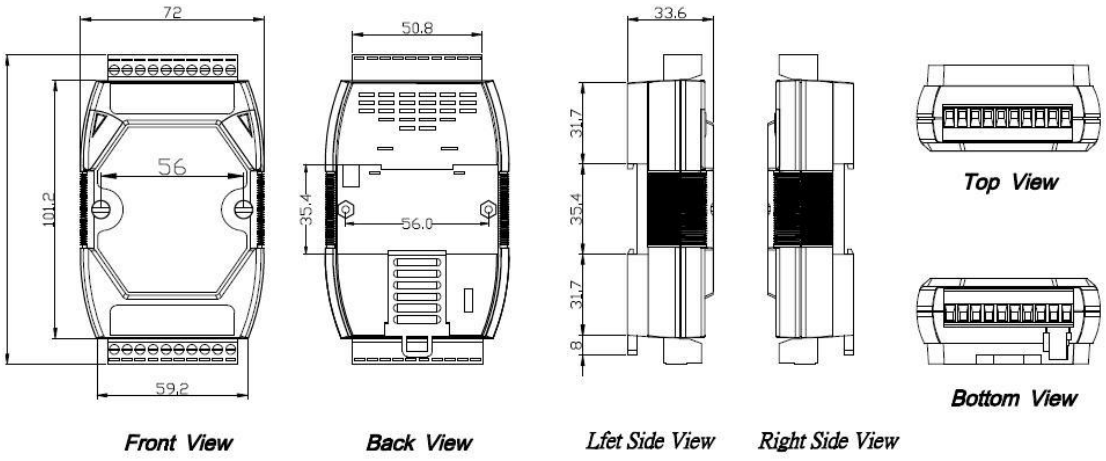
1.7. Dimensions

Dimensions (Units: mm)

M-2004

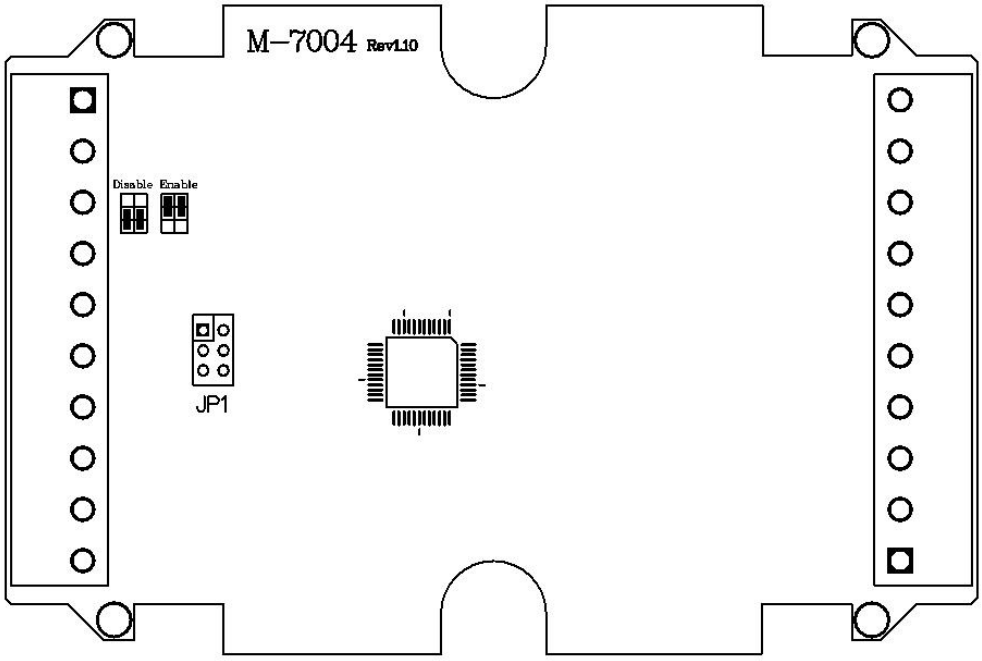


M-7004

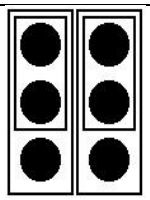
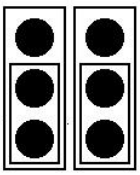


1.8. Jumper Settings

For the M-7004 modules, the JP1 jumper can be used to enable providing the RS-485 bias. The position of the JP1 jumper is shown in the figure below.



The settings for the JP1 jumper is as follows.

	Enable RS-485 bias.
	Disable RS-485 bias. (factory default)

Chapter 2. Quick start

M-2004/M-7004 is a digital temperature sensor module that supports the DCON and Modbus RTU protocols. The host needs to use some DCON or Modbus RTU commands to configure and communicate with the M-2004/M-7004. ICP DAS provides the DCON Utility Pro program that can configure and test M-2004/M-7004 without understanding any DCON and Modbus RTU command. Users can follow below steps to configure M-2004/M-7004 and read temperature readings from M-2004/M-7004.

Step 1: Install DCON Utility Pro on the host.

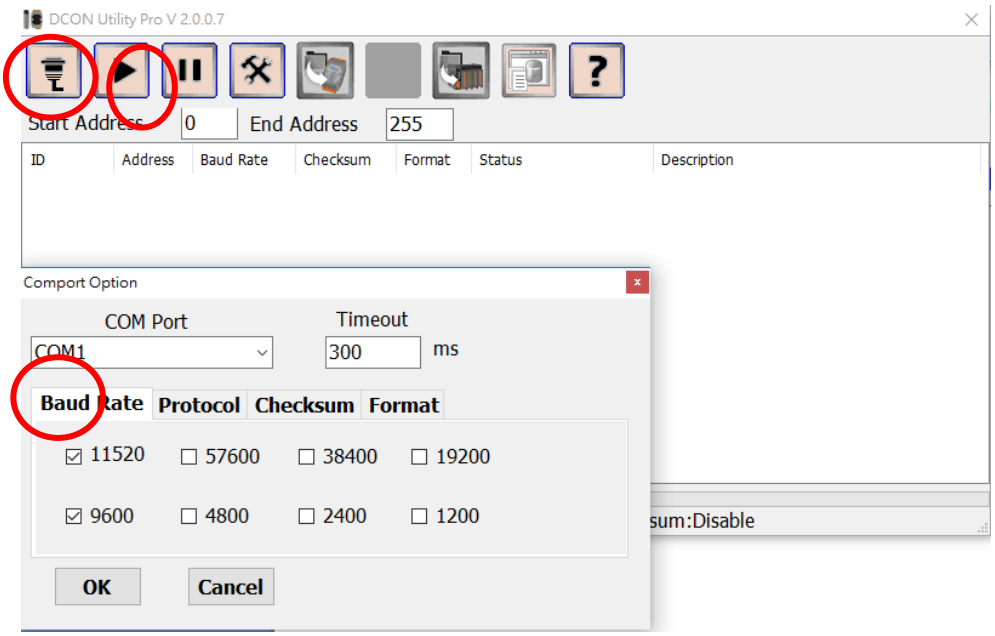
Note: DCON Utility pro supports M-2004/M-7004 for version 2.0.0.7 and later.

ICP DAS provides different versions of DCON Utility Pro for different platforms that can be used to configure and test I/O modules. The installation file locations for different platforms are as follows:

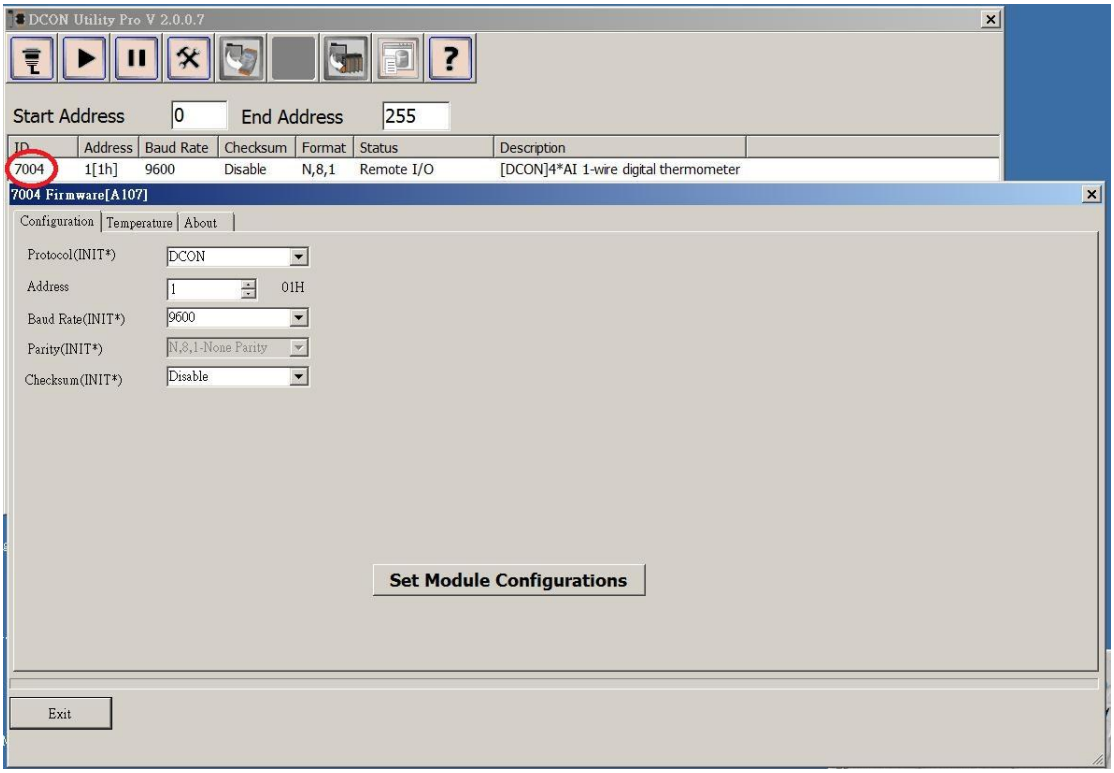
For Windows 98,NT,2000,XP,Vista,Win 7 and Win 8 on PC, laptop and etc computer	
CD	CD:\ 8000\NAPDOS\Driver\DCON_Utility
FTP	http://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/
For ICP DAS CE5 platform PAC	
CD	CD:\ napdos\wp-8x4x_ce50\Micro_SD\DCON_Utility_Pro
FTP	http://ftp.icpdas.com.tw/pub/cd/winpac/napdos/wp-8x4x_ce50/micro_sd/dcon_utility_pro/
For ICP DAS CE6 platform PAC	
CD	CD:\ XPAC\XPAC-ATOM-CE6\PC_Tools\DCON_Utility_Pro
FTP	http://ftp.icpdas.com.tw/pub/cd/xpac-atom-ce6/pc_tools/dcon_utility_pro/
For ICP DAS CE7 platform and ARM CPU PAC	
CD	CD:\WinPAC_AM335x\Wp-5231\System_Disk\Tools\DCON_Utility_Pro
FTP	http://ftp.icpdas.com.tw/pub/cd/winpac_am335x/wp-5231/system_disk/tools/dcon_utility_pro
For ICP DAS WES platform PAC	
CD	CD:\ XPAC\XPAC-Atom\tools\DCON_Utility_pro
FTP	http://ftp.icpdas.com.tw/pub/cd/xpac-atom/tools/dcon_utility_pro/

Step 2: Search and find the M-2004/M-7004 module

Select the correct COM Port and search:



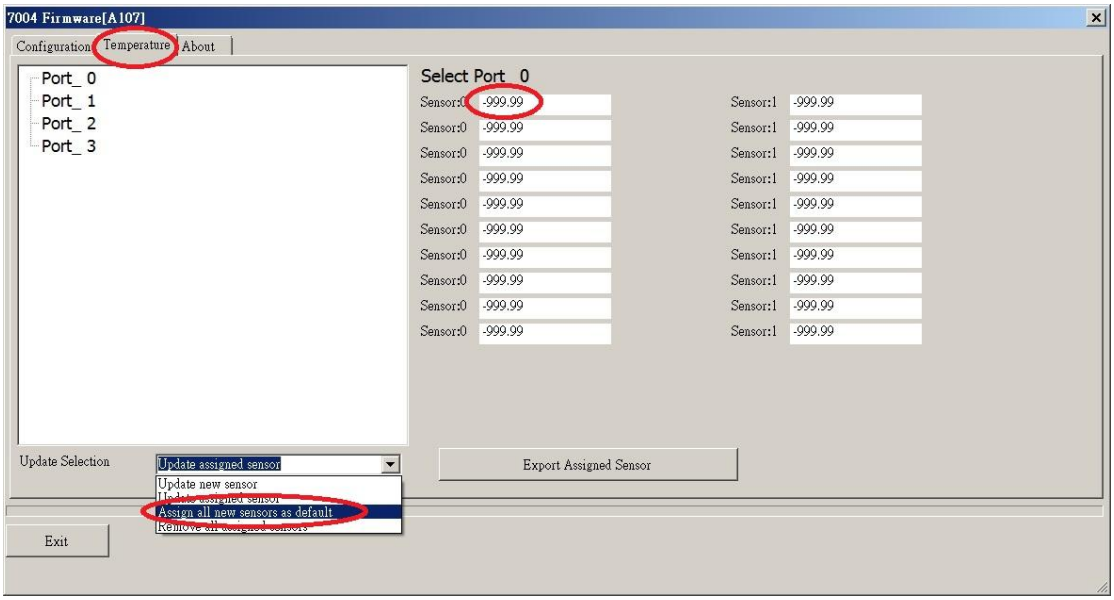
Find the M-2004/M-7004 module, click the module name to enter configuration form



Step 3: Configure M-2004/M-7004 using DCON Utility Pro

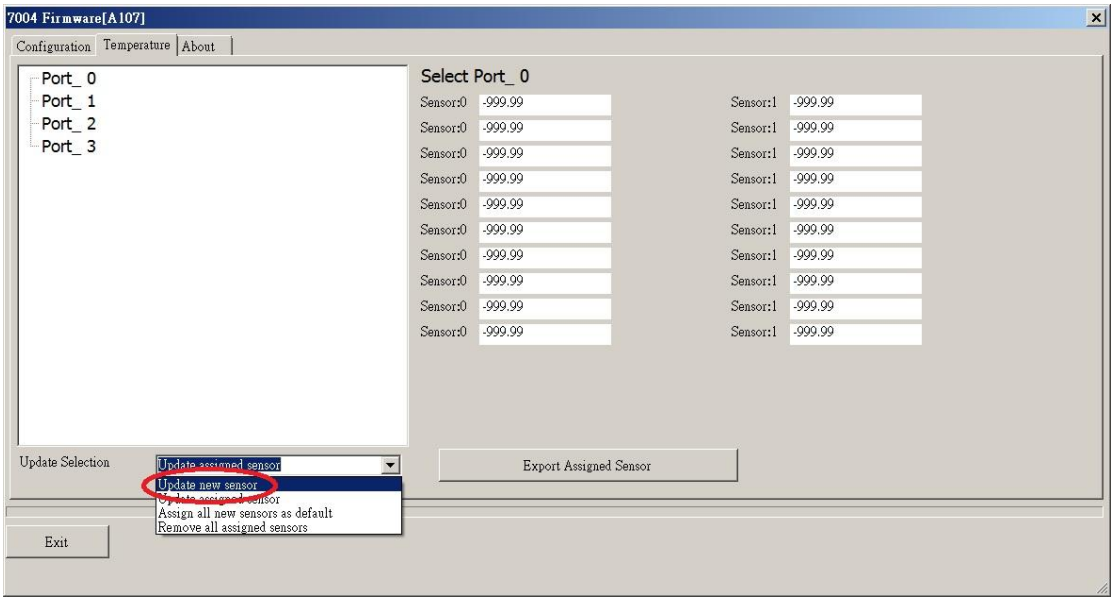
To read temperature, each sensor must be assigned a channel index. The easiest way is to select Temperature tab and select “Assign all new sensor as default”. Then, you can read the temperature for all sensors.

For the sensor which is not installed or not assigned, its temperature reading is -999.99 for DCON protocol and -32768 for Modbus RTU protocol as shown below.

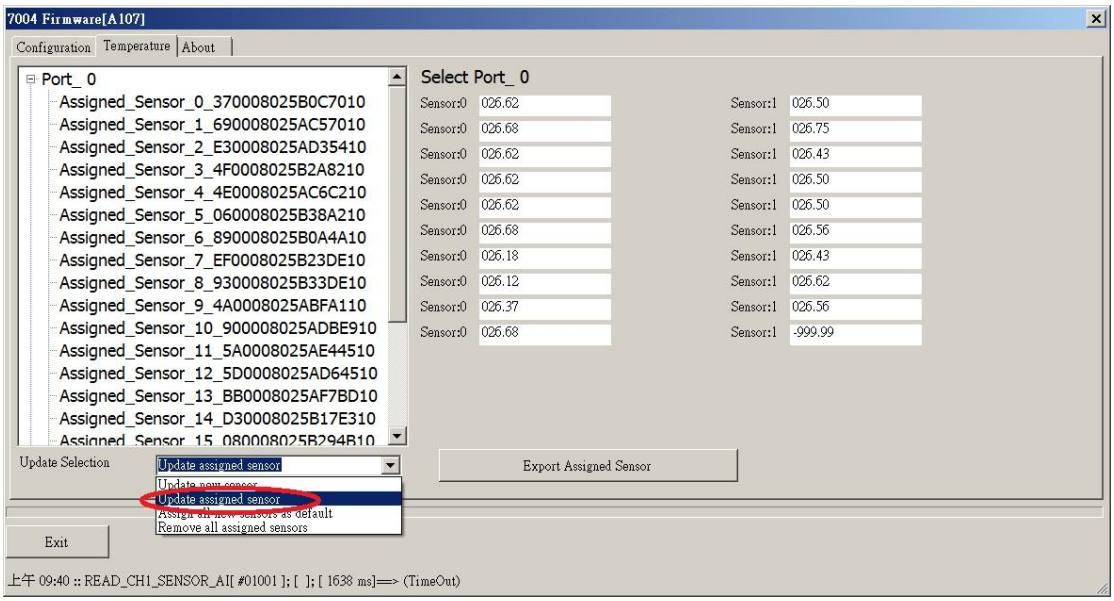


Step 4: Manual update, assign and remove sensor

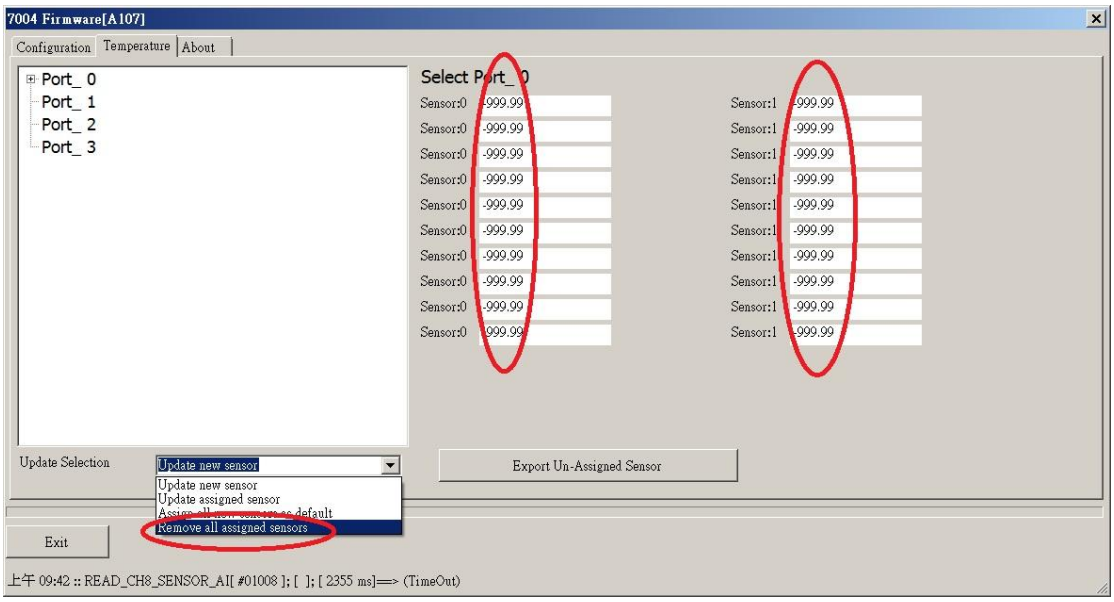
Select “Update new sensor” to manually assign sensor



Select “Update assigned sensor” then you can read temperature reported by the sensor:



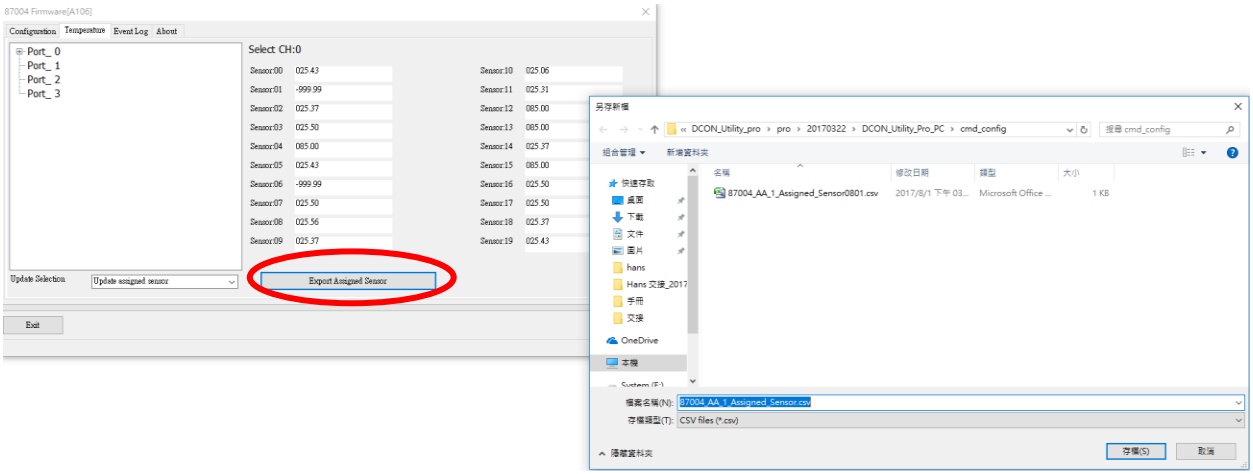
Select “Remove all assigned sensor” to remove all assigned sensor, the temperature readings of all sensors will be changed to “-999.99”



Step 5: Save the Assigned Sensor to a .csv file.

To ease checking, comparing and re-assigning sensors, DCON Utility Pro provides the “Export Assigned Sensor” function, as shown below, to save sensor data to a Excel .csv file. Then use can have more convenience to check, compare or re-assign sensor in many sensors conditions.

Use DCON Utility Pro to save assigned sensors to a file.



User can use the information saved in the file to check, compare and re-assign sensors between software and the sensors located in the field.

	A	B	C	D	E
1	Port	Sensor Index	Serial Number		
2	Port_ 0	Sensor[0]	910000078D8C1028		
3	Port_ 0	Sensor[1]	A00000078CFCE828		
4	Port_ 0	Sensor[2]	6E0000078F1E8C28		
5	Port_ 0	Sensor[3]	FC0000078DD39C28		
6	Port_ 0	Sensor[4]	820000078E383C28		
7	Port_ 0	Sensor[5]	FE0000078D033C28		
8	Port_ 0	Sensor[6]	180000078E75FC28		
9	Port_ 0	Sensor[7]	0A0000078F278228		
10	Port_ 0	Sensor[8]	CF0000078EE49E28		
11	Port_ 0	Sensor[9]	FF0000078CFCDE28		
12	Port_ 0	Sensor[10]	660000078D9B2128		
13	Port_ 0	Sensor[11]	4E0000078CA41928		
14	Port_ 0	Sensor[12]	7C0000078F109928		
15	Port_ 0	Sensor[13]	170000078E535D28		
16	Port_ 0	Sensor[14]	5C0000078E558328		
17	Port_ 0	Sensor[15]	9E0000078EA0A328		
18	Port_ 0	Sensor[16]	FC0000078C73E328		
19	Port_ 0	Sensor[17]	050000078C753B28		
20	Port_ 0	Sensor[18]	950000078C47B728		
21	Port_ 0	Sensor[19]	2C0000078D607728		
22					
23					

87004_AA_1_Assigned_Sensor

Chapter 3. Using DS18B20 Temperature Sensor

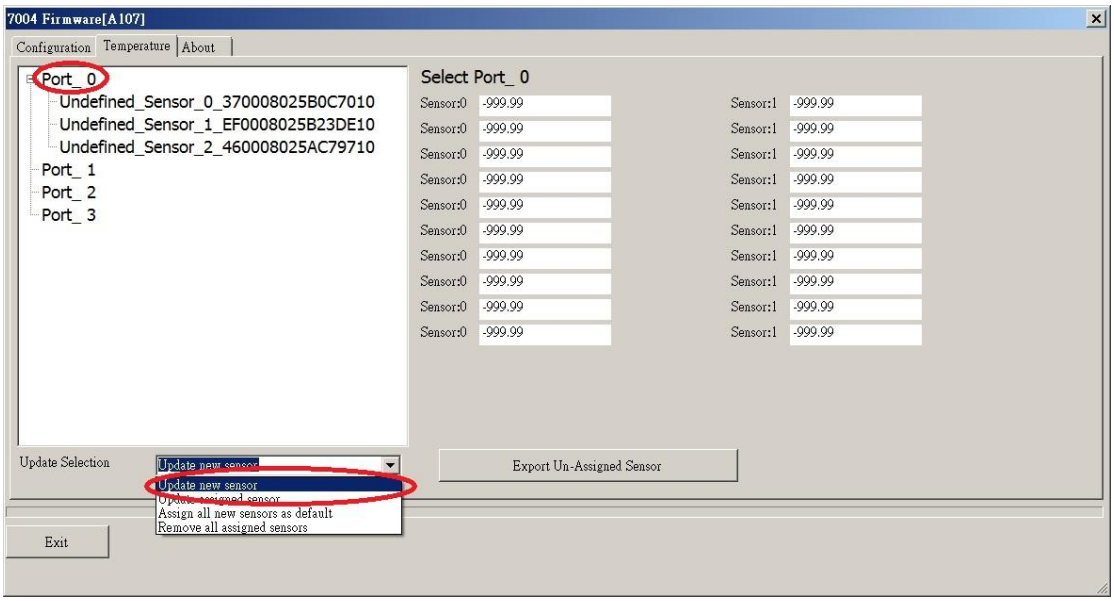
The M-2004/M-7004 provides four ports and up to 20 DS18B20 sensors can be connected to each port. Each DS18B20 has a unique 64-bit serial code, which can be represented by 16 characters in hexadecimal format. The user must know the serial code of each DS18B20 sensor and assign unique channel index to each DS18B20 when using the M-2004/M-7004 to read temperature data from DS18B20 sensors.

When the M-2004/M-7004 is powered on, it scans all the DS18B20 sensors connected for each port. Each scanned DS18B20 is checked to see whether a channel index is assigned. If it is not assigned, then the DS18B20 is added to the not assigned list. The user has to check the not assigned list and assign channel index for all members in the not assigned list. This needs to be done only once, since all of the data will be saved to the non-volatile memory.

When a DS18B20 sensor is broken and is replaced by a new one, its channel index should be removed first. Then, send command to M-2004/M-7004 to rescan DS18B20 on the port. The new DS18B20 will be found and put to the not assigned list. The user can reassign the previous channel index to the new DS18B20.

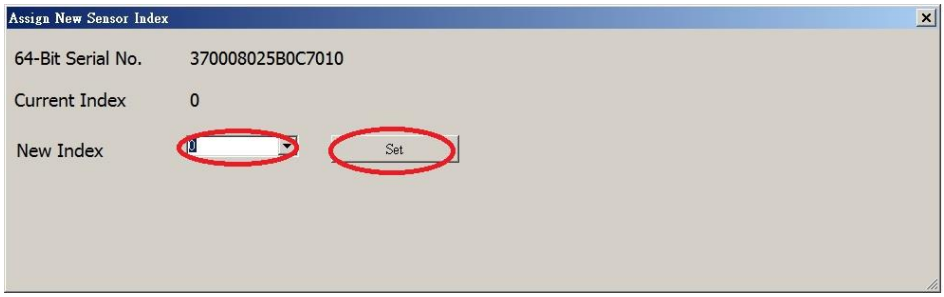
Suppose that there are three DS18B20 sensors installed at location A, B, and C and they are connected to port 0 of an M-2004/M-7004. Followings are the procedure to configure the M-2004/M-7004.

1. Refer to Chapter 2 and go through steps 1 and 2.
2. Select Temperature tab.
3. Select Port_0.
4. Select “Update new sensor” and you will see the undefined sensor list.

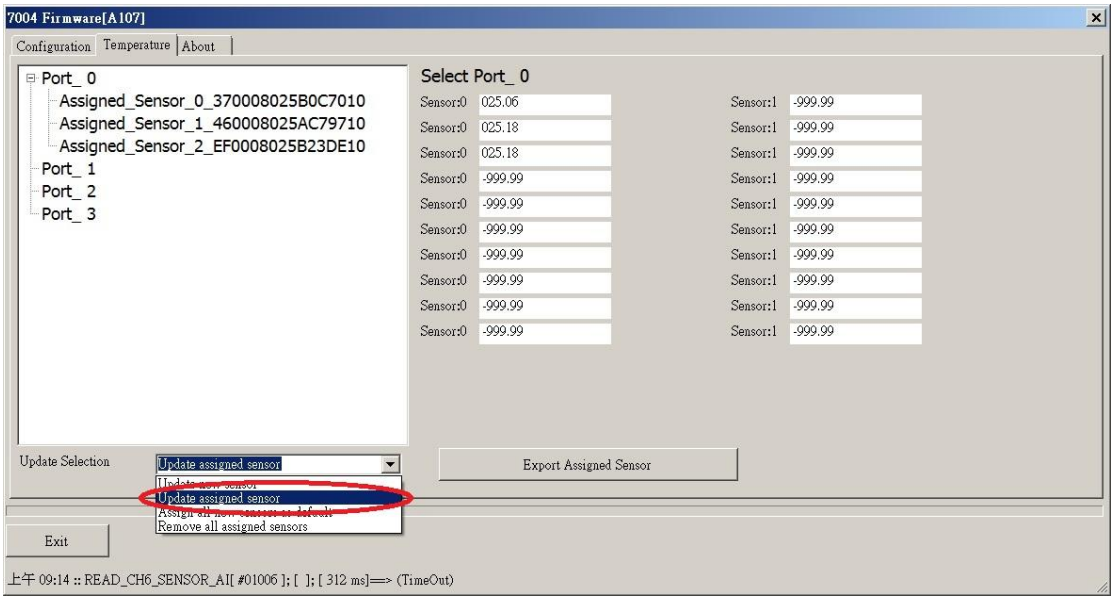


Index in undefined list	Serial Code	Location
0	370008025B0C7010	A
1	EF0008025B23DE10	C
2	460008025AC79710	B

5. Select Undefined_Sensor_X_YYYYYYYYYYYYYYY to assign channel index.
6. Set the new index and click on the Set button.



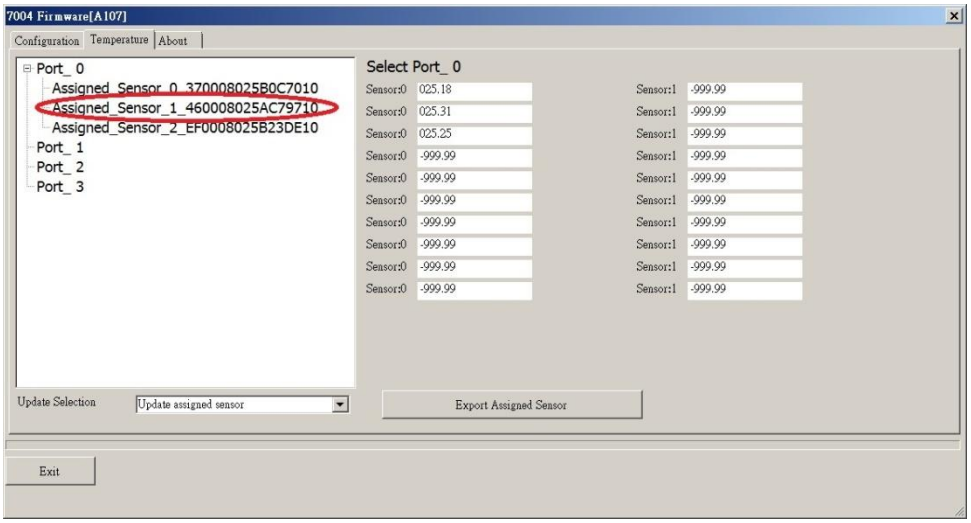
7. Repeat steps 5 and 6 until all undefined sensors are assigned with new index.
8. Select “Update assign sensor” and it will show the list of assigned sensors. We can use channel index 0 to read temperature at location A, channel index 1 to read temperature at location B, and channel index 2 to read temperature at location C.



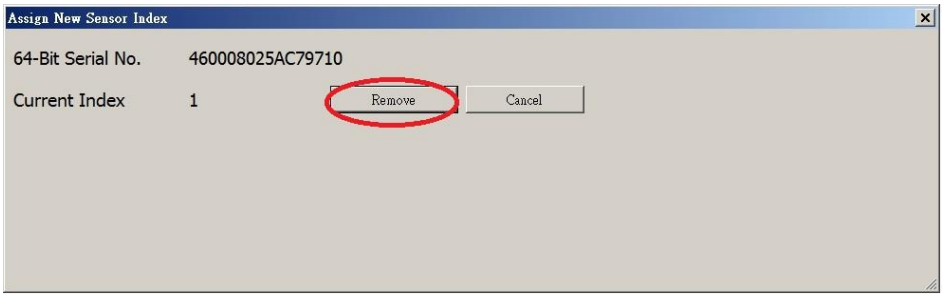
Assigned channel index	Serial Code	Location
0	370008025B0C7010	A
2	EF0008025B23DE10	C
1	460008025AC79710	B

If the sensor at location B is broken and to be replaced by a new sensor, then do the followings.

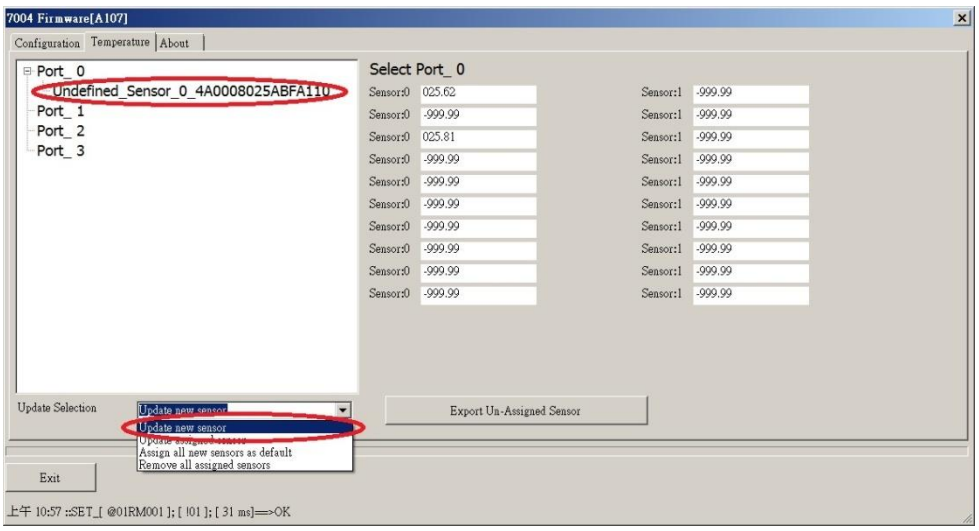
1. Select Assigned_Sensor_1_460008025AC79710.



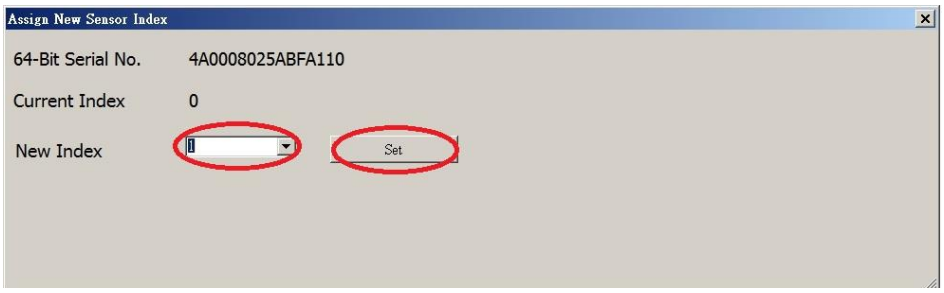
2. Select Remove.



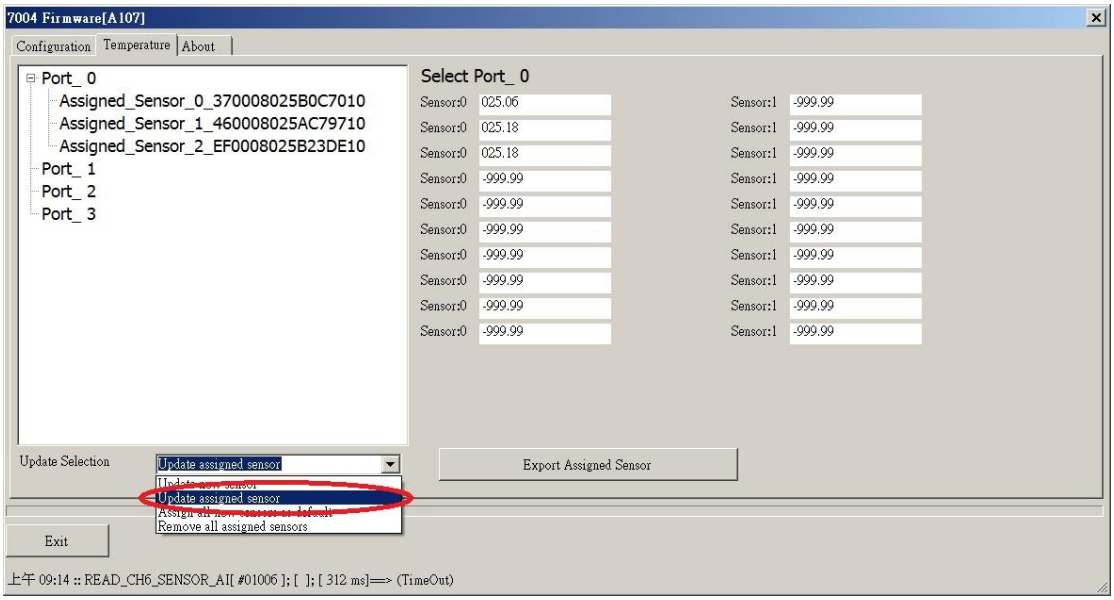
3. Disconnect the broken sensor from the port.
4. Connect the new sensor to the port.
5. Select “Update new sensor” and you will see the new sensor as undefined sensor.



6. Select Undefined_Sensor_0_4A0008025ABFA110 to assign channel index.
7. Set the new index and click on the Set button.



8. Select “Update assign sensor” and it will show the updated list of assigned sensors.



Assigned channel index	Serial Code	Location
0	370008025B0C7010	A
2	EF0008025B23DE10	C
1	4A0008025ABFA110	B

Chapter 4. DCON Command Sets

Command	Description
$AAF	read firmware version
$AAI	read INIT status response: !AA0 -> INIT short to GND !AA1 -> else
$AAM	read module name
$AAP	Read Modbus RTU/DCON protocol response: !AA0 -> DCON !AA1 -> Modbus RTU
$AAPN	Set Modbus RTU/DCON protocol N-> 0: DCON, 1: Modbus RTU
$AA2	read configuration
$AA5	read reset status !AA1 first after power on, !AA0 others
#AAP	Read temperature readings of all connected sensors of a port P: port number, 0 ~ 3 response > (sensor 0 reading in 0.01°C)(sensor 1 reading in 0.01°C)… (sensor last reading in 0.01°C)

Command	Description
#AAPNN	Read temperature reading of a sensor P: port number, 0 ~ 3 NN: sensor channel index in hex, 00 ~ 13 response > (sensor reading in 0.01°C)
%AANNTTCCFF	set configuration, NN: new address, TT = 00, CC: new baud rate FF: data format
@AAASPSSII	Assign channel index to a new sensor of a port P: port number, 0 ~ 3 SS: index of the sensor in the new list in hex, 00 ~ 13 II: channel index of the sensor in a port to be assigned in hex, 00 ~ 13
@AACH	Clear all high latched temperature readings to the current values
@AACHP	Clear all high latched temperature readings of a port to the current values P: port number, 0 ~ 3
@AACHPII	Clear high latched temperature reading of a sensor to the current value P: port number, 0 ~ 3 II: channel index of the sensor in a port in hex, 00 ~ 13
@AACL	Clear all low latched temperature readings to the current values
@AACLP	Clear all low latched temperature readings of a port to the current values P: port number, 0 ~ 3

Command	Description
@AACLPII	Clear low latched temperature reading of a sensor to the current value P: port number, 0 ~ 3 II: channel index of the sensor in a port in hex, 00 ~ 13
@AANSP	Read number of assigned sensors of a port P: port number, 0 ~ 3 response !AANN, NN in hex, 00 ~ 13
@AANSNP	Read number of not assigned sensors of a port P: port number, 0 ~ 3 response !AANN, NN in hex, 00 ~ 13
@AANSRP	Read number of removed sensors of a port P: port number, 0 ~ 3 response !AANN, NN in hex, 00 ~ 13
@AARHP	Read all high latched values of a port P: port number, 0 ~ 3 response > (sensor 0 reading in 0.01°C)(sensor 1 reading in 0.01°C)… (sensor last reading in 0.01°C)
@AARHPNN	Read high latched value of a sensor of a port P: port number, 0 ~ 3 NN: sensor channel index in hex, 00 ~ 13 response > (sensor reading in 0.01°C)

Command	Description
@AARLP	Read all low latched values of a port P: port number, 0 ~ 3 response > (sensor 0 reading in 0.01°C)(sensor 1 reading in 0.01°C)… (sensor last reading in 0.01°C)
@AARLPNN	Read low latched value of a sensor of a port P: port number, 0 ~ 3 NN: sensor channel index in hex, 00 ~ 13 response > (sensor reading in 0.01°C)
@AARMPII	Remove a sensor from a port P: port number, 0 ~ 3 II: index of the sensor in a port to be removed in hex, 00 ~ 13
@AARSP	Rescan sensors connected to a port P: port number, 0 ~ 3
@AASNPNN	Read serial code of an assigned sensor of a port P: port number, 0 ~ 3 NN: sensor channel index in hex, 00 ~ 13 response !AA (16-character serial code), FFFFFFFFFFFFFFFF for no sensor
@AASNNPNN	Read serial code of a not assigned sensor of a port P: port number, 0 ~ 3 NN: sensor index in the not assigned list in hex, 00 ~ 13 response !AA (16-character serial code), FFFFFFFFFFFFFFFF for no sensor

Command	Description
@AASNRPNN	Read serial code of a removed sensor of a port P: port number, 0 ~ 3 NN: sensor index in the removed list in hex, 00 ~ 13 response !AA (16-character serial code), FFFFFFFFFFFFFFFF for no sensor
~**	clear host watchdog timeout counter
~AA0	read host watchdog status
~AA1	clear host watchdog timeout status
~AA2	read host watchdog enable/disable status and timeout value
~AA3ETT	enable/disable host watchdog and set timeout value E-> 0: disable host watchdog, 1: enable host watchdog TT: host watchdog timeout in 0.1s in hex format
~AARD	read response delay time in ms in hex format
~AARDVV	set response delay time in ms, VV in hex format, 00 - 1E

Baud Rate Setting (CC)

Bits 5:0

Baud rate, 0x03 ~ 0x0A

Code	0x03	0x04	0x05	0x06
Baud	1200	2400	4800	9600
Code	0x07	0x08	0x09	0x0A
Baud	19200	38400	57600	115200

Bits 7:6

00: no parity, 1 stop bit

01: no parity, 2 stop bits

10: even parity, 1 stop bit

11: odd parity, 1 stop bit

Data Format Setting (FF)

Bit 6

0: checksum disabled

1: checksum enabled

Chapter 5. Modbus Address Mappings

M-20004/M-7004 Modbus Address Mappings (Base 1)

Address	Description	Attribute
30001 ~ 30020 40001 ~ 40020	Temperature readings of port 0 in 0.01°C	R
30021 ~ 30040 40021 ~ 40040	Temperature readings of port 1 in 0.01°C	R
30041 ~ 30060 40041 ~ 40060	Temperature readings of port 2 in 0.01°C	R
30061 ~ 30080 40061 ~ 40080	Temperature readings of port 3 in 0.01°C	R
30081 ~ 30084 40081 ~ 40084	Number of sensors of a port for port 0 to 3.	R
30097 ~ 30100 40097 ~ 40100	Number of not assigned sensors of a port for port 0 to 3.	R

Address	Description	Attribute
30113 ~ 30116 40113 ~ 40116	Number of removed sensors of a port for port 0 to 3.	R
30129 ~ 30132 40129 ~ 40132	Number of scanned sensors of a port for port 0 to 3.	R
30145 ~ 30148 40145 ~ 40148	Number of error counts of a port for port 0 to 3.	R
30161 ~ 30240 40161 ~ 40240	Serial number of sensors of port 0, 4 registers for a sensor	R
30241 ~ 30320 40241 ~ 40320	Serial number of sensors of port 1, 4 registers for a sensor	R
30321 ~ 30400 40321 ~ 40400	Serial number of sensors of port 2, 4 registers for a sensor	R
30401 ~ 30480 40401 ~ 40480	Serial number of sensors of port 3, 4 registers for a sensor	R

Address	Description	Attribute
40481	Firmware version (low word)	R
40482	Firmware version (high word)	R
40483	Module name (low word)	R
40484	Module name (high word)	R
40485	RS-485 module address, 1 to 247 Only for Modbus RTU protocol	R/W
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit	R/W
40488	RS-485 response delay time in ms, valid range, 0 ~ 30	R/W
40489	RS-485 host watchdog timeout value, 0 ~ 255, in 0.1s	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear	R/W
40513 ~ 40532	Assign channel index to a new sensor in the new list of port 0	W
40533 ~ 40552	Assign channel index to a new sensor in the new list of port 1	W
40553 ~ 40572	Assign channel index to a new sensor in the new list of port 2	W
40573 ~ 40592	Assign channel index to a new sensor in the new list of port 3	W

Address	Description	Attribute
30593 ~ 30612 40593 ~ 40612	High latched Temperature readings of port 0 in 0.01°C	R
30613 ~ 30632 40613 ~ 40632	High latched Temperature readings of port 1 in 0.01°C	R
30633 ~ 30652 40633 ~ 40652	High latched Temperature readings of port 2 in 0.01°C	R
30653 ~ 30672 40653 ~ 40672	High latched Temperature readings of port 3 in 0.01°C	R
30673 ~ 30692 40673 ~ 40692	Low latched Temperature readings of port 0 in 0.01°C	R
30693 ~ 30712 40693 ~ 40712	Low latched Temperature readings of port 1 in 0.01°C	R
30713 ~ 30732 40713 ~ 40732	Low latched Temperature readings of port 2 in 0.01°C	R

Address	Description	Attribute
30753 ~ 30832 40753 ~ 40832	Serial number of not assigned sensors of port 0, 4 registers for a sensor	R
30833 ~ 30912 40833 ~ 40912	Serial number of not assigned sensors of port 1, 4 registers for a sensor	R
30913 ~ 30992 40913 ~ 40992	Serial number of not assigned sensors of port 2, 4 registers for a sensor	R
30993 ~ 31072 40993 ~ 41072	Serial number of not assigned sensors of port 3, 4 registers for a sensor	R
31073 ~ 31152 41073 ~ 41152	Serial number of removed sensors of port 0, 4 registers for a sensor	R
31153 ~ 31232 41153 ~ 41232	Serial number of removed sensors of port 0, 4 registers for a sensor	R
31233 ~ 31312 41233 ~ 41312	Serial number of removed sensors of port 0, 4 registers for a sensor	R

Address	Description	Attribute
31313 ~ 31392 41313 ~ 41392	Serial number of removed sensors of port 0, 4 registers for a sensor	R
00001 ~ 00004	Write 1 to rescan sensors on a port for port 0 to 3.	W
00033 ~ 00052	Write 1 to remove the channel index of a sensor for port 0	W
00053 ~ 00072	Write 1 to remove the channel index of a sensor for port 1	W
00073 ~ 00092	Write 1 to remove the channel index of a sensor for port 2	W
00093 ~ 00112	Write 1 to remove the channel index of a sensor for port 3	W
00129 ~ 00132	Write 1 to clear all high latched temperature readings of a port for port 0 to 3	W
00161 ~ 00164	Write 1 to clear all low latched temperature readings of a port for port 0 to 3	W
00257	RS-485 Protocol, 0: DCON, 1: Modbus RTU Only for Modbus RTU protocol	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W

Address	Description	Attribute
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on	R
00280	Write 1 to clear all high latched temperature readings	W
00281	Write 1 to clear all low latched temperature readings	W
00385 ~ 00404	Write 1 to clear high latched temperature reading of a sensor of port 0	W
00405 ~ 00424	Write 1 to clear high latched temperature reading of a sensor of port 1	W
00425 ~ 00444	Write 1 to clear high latched temperature reading of a sensor of port 2	W
00445 ~ 00464	Write 1 to clear high latched temperature reading of a sensor of port 3	W
00465 ~ 00484	Write 1 to clear low latched temperature reading of a sensor of port 0	W
00485 ~ 00504	Write 1 to clear low latched temperature reading of a sensor of port 1	W
00505 ~ 00524	Write 1 to clear low latched temperature reading of a sensor of port 2	W
00525 ~ 00544	Write 1 to clear low latched temperature reading of a sensor of port 3	W

Chapter 6. Troubleshooting

If you attempt to communicate with the module and receive no response, first check the following:

- Ensure that the supplied power is within the range of +10 to +30 V DC. If the supplied power is OK, then the power LED should be on.
- Ensure that the RS-485 converter provides the bias. The RS-485 converters manufactured by ICP DAS all provide the bias. If the RS-485 converter does not provide the bias, then you can refer to section 1.8 to open the cover to adjust the jumper to enable the RS-485 bias for M-7004. For M-2004, you can turn on the two B.R. switches to provide the RS-485 bias.
- When the module receives a command, the power LED is set to "off". The power LED is shown as "on" after the module responds. This method can be used to check whether the module has received a command sent from the host.
- If possible, use another device to check whether the host can communicate with the device through the same RS-485 network.
- If the host is a PC installed with a Windows operating system, then execute the DCON Utility to determine whether the module can be found. The DCON Utility can be downloaded from the ICP DAS website http://www.icpdas.com. Please refer to Chapter 2 for details.
- Set the module to "INIT mode" and communicate with the module using the following settings: address 00, Baud Rate 9600bps and no checksum.

Revision History

Revision	Date	Changes Made
1.0.2	2020/4/1	Add section 1.8 and Chapter 6