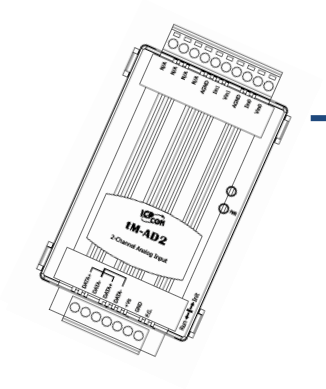


Quick Start for tM-AD2

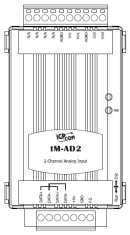
Dec 2015, Version 1.0.0

Congratulations!

Congratulations on purchasing the tM-AD2 the most popular automation solution for remote monitoring and control applications. This Quick Start Guide will provide information needed to get started with the tM-AD2. Please also consult the User Manual for detailed information on the setup and use of the tM-AD2.

What's in the shipping box?

In addition to this guide, the shipping box includes the following items:



tM-AD2

Technical Support

- **ICP DAS Website**
  http://www.icpdas.com/

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Understanding the Hardware Specifications and Wiring Diagrams

Before installing the hardware, you should have a basic understanding of hardware specification and the wiring diagrams.

System Specifications：

System Specifications

Communication	
Interface	RS-485
Format	(N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)
Baud Rate	1200 ~ 115200 bps
Protocol	DCON, Modbus/RTU, Modbus/ASCII
Dual Watchdog	Yes, Module (2.3 seconds), Communication (Programmable)
LED Indicators	
Power	1 LED as Power Indicator
Isolation	
Intra-module Isolation, Field-to-Logic	3000 V_{DC}
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)	±3 kV for Power
Power Requirements	
Reverse Polarity Protection	Yes
Powered from Terminal Block	Yes, 10 ~ 30 V_{DC}
Consumption	0.8 W Max.
Mechanical	
Dimensions (W x L x H)	52 mm x 98 mm x 27 mm
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +75°C
Humidity	10 ~ 95% RH, Non-condensing

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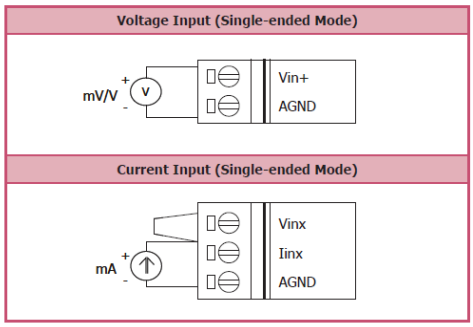
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I/O Specifications：

I/O Specifications

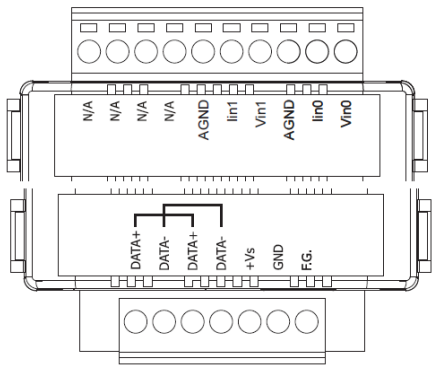
Analog Input		
Input Channels		2 Single-ended
Type		0 ~ 500 mV, 0 ~ 1 V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
Resolution	Normal Mode	14-bit
	Fast Mode	12-bit
Sampling Rate	Normal Mode	10 Hz total
	Fast Mode	200 Hz total
Accuracy	Normal Mode	+/-0.1%
	Fast Mode	+/-0.5%
Zero Drift		+/-20 uV/°C
Span Drift		+/-25 ppm/°C
Input Impedance	Voltage	10 MΩ
	Current	125 Ω
Overvoltage Protection		120 V_{DC}
Overcurrent Protection		Yes, 50 mA at 110 V_{DC}
Open Wire Detection for 4 ~ 20 mA		Yes

Wire Connection：



Pin Assignment：

Pin Assignments



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2 Booting the tM-Series in Init Mode

Make sure the switch placed in the "Init" position.

3 Connecting to the PC and the Power Supply

The tM-Series series is equipped with an RS-485 port for connection to a 232/USB converter to PC

Connect to the PC using an RS-485 Converter





Connect to PC using a USB Converter



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4 Installing the DCON Utility

The DCON Utility is an easy-to-use tool designed to enable simple configuration of I/O modules that use the DCON protocol.

Step 1: Locate the DCON Utility



The DCON Utility can be obtained from the companion CD or from the ICPDAS FTP site:
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/
CD:\Napdos\Driver\DCON_Utility

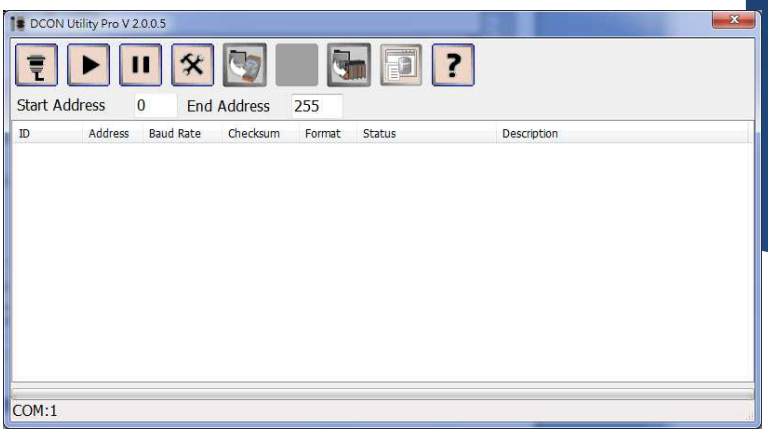
5 Using the DCON Utility to Initialize the tM-Series Module

The tM-Series is an I/O module based on the DCON protocol, meaning that you can use the DCON Utility to easily initialize it.

Step 1: Run the DCON Utility_Pro



Double-click the DCON Utility Pro

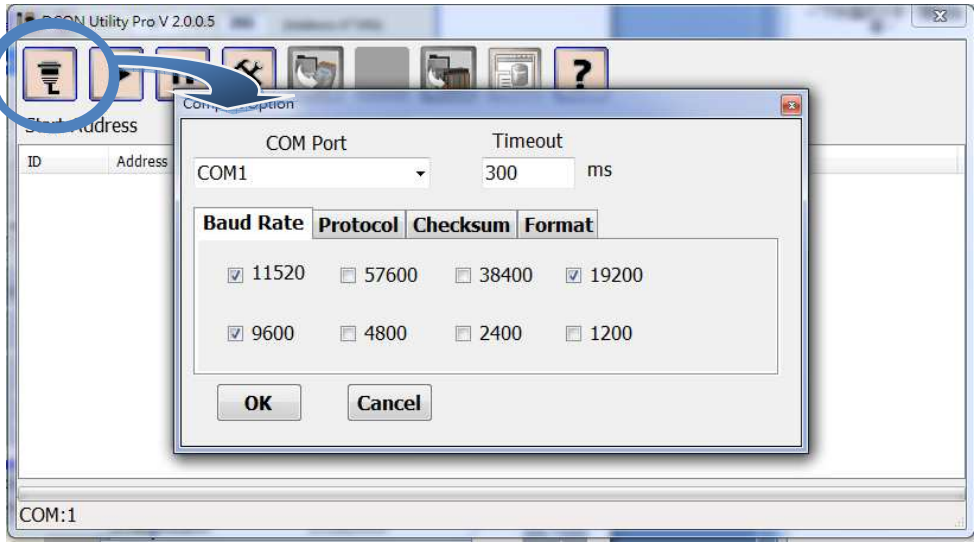


Step 2: Use the COM1 port to communicate with the tM-Series

Click the “COM Port” option from the menu and a dialog box will be displayed that will allow you to set the communication parameters as described in the table below.

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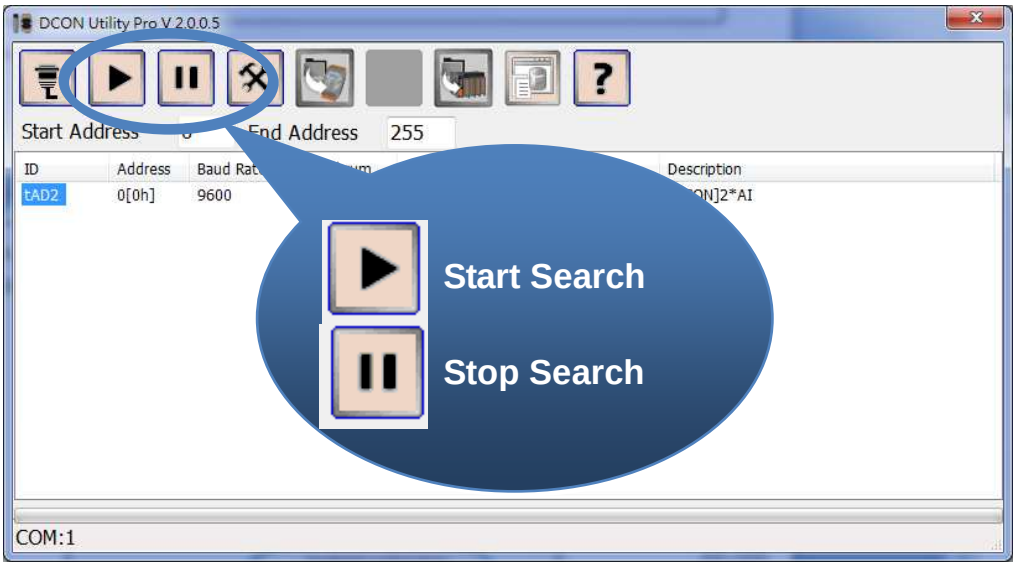
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Communication parameter	Factory default Value
Address	00
Baud Rate	9600
Protocol	DCON
Checksum	Disabled
Parity	N,8,1

Step 3: Search for the tM-Series module

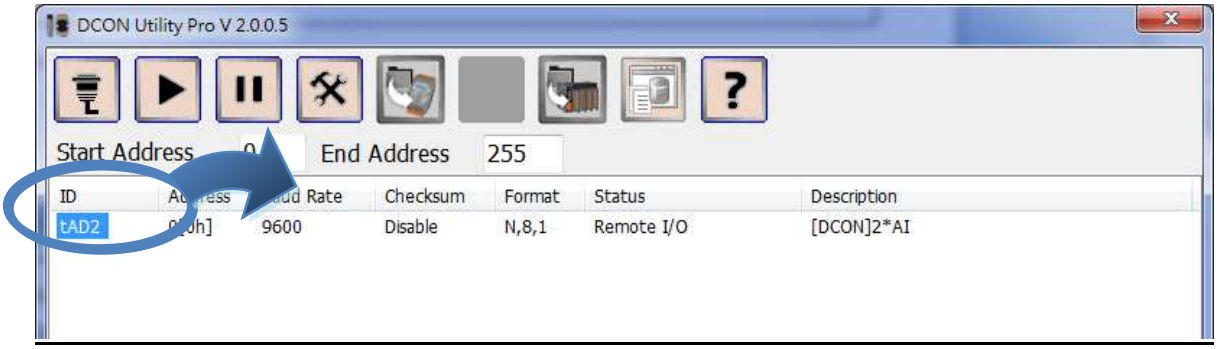
Click “Start Search” button from the toolbox to search for the tM-Series module. After the tM-Series module is displayed in the list, click “Stop Search” button.



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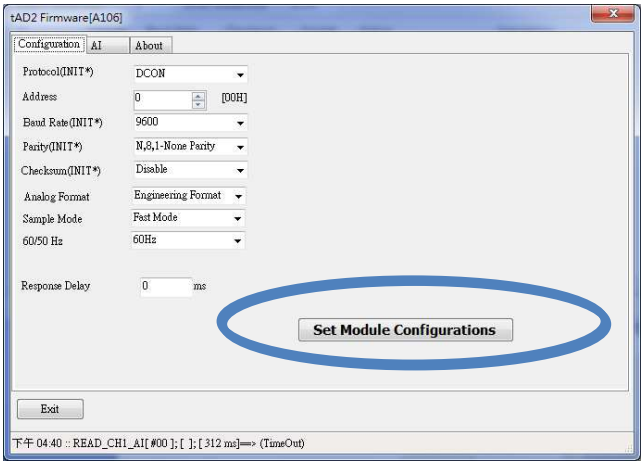
Step 4: Connect to the tM-Series

After clicking on the name of the module in the list, a dialog box will be displayed.



Step 5: Initialize the tM-Series module

Set the “Address” field in the dialog box to 1 and then click “Setting Module Configurations ” button to save the settings.





6 Rebooting the tM-Series Module in Normal Mode

Make sure the INIT switch is placed in the “Normal” position.

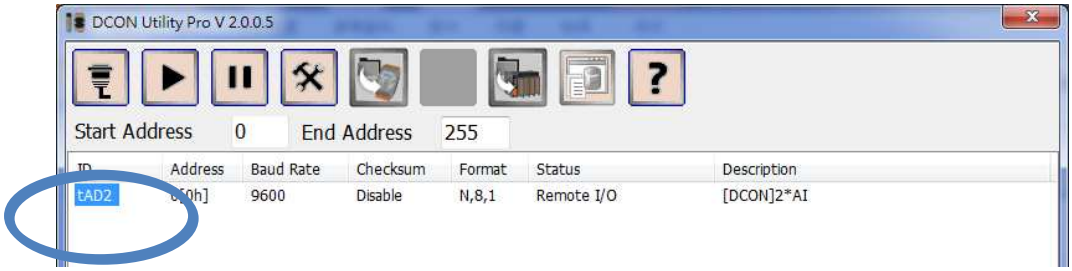
7 Starting the Module Operation

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After rebooting the tM-Series module, search for the module to make sure the settings have been changed. You can double click on the name of the module in the list to open

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the configuration dialog box.



8 Modbus Address Mapping

Address	Description	Attribute
30001 ~ 30002 40001 ~ 40002	Analog input value of channel 0 to 1	R
40257 ~ 40258	Analog input type code of channel 0 to 1	R/W
40481	Firmware version (low word)	R
40482	Firmware version (high word)	R
40483	Module name (low word) , 0x2001	R
40484	Module name (high word) , 0x0700	R
40485	Module address, valid range: 1 ~ 247	R/W
40486	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	R/W
40488	Modbus response delay time in ms, valid range: 0 ~ 30	R/W
40489	Host watchdog timeout value, 0 ~ 255, in 0.1s	R/W
40490	Channel enable/disable, 00h ~ 03h	R/W
40492	Host watchdog timeout count, write 0 to clear	R/W
40494	4mA under range threshold in 0.1mA, 0 ~ 40	R/W

Address	Description	Attribute
10129 ~ 10130 00129 ~ 00130	Over/under range status of channel 0 to 1 for 4 ~ 20mA or 0 ~ 20mA ranges	R
00257	Protocol, 0: DCON, 1: Modbus RTU	R/W
00258	Protocol, 0: determined by 00257, 1: Modbus ASCII	R/W
00261	1: enable, 0: disable host watchdog	R/W
00269	Modbus data format, 0: hex, 1: engineering	R/W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status	R/W
00271	1: enable, 0: disable fast mode	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on	R

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