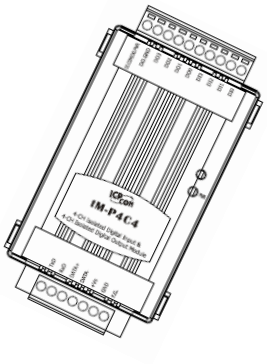


Quick Start Guide for tM-TH8

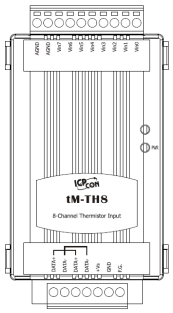
Sep. 2012, Version 1.0.0

Congratulations!

Congratulations on purchasing the tM-TH8 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-TH8. Please also consult the User Manual for detailed information on the setup and use of the tM-TH8.

What's in the shipping box?

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



tM-TH8

Technical Support

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

1 Understanding the Hardware Specifications and Wiring Diagrams

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

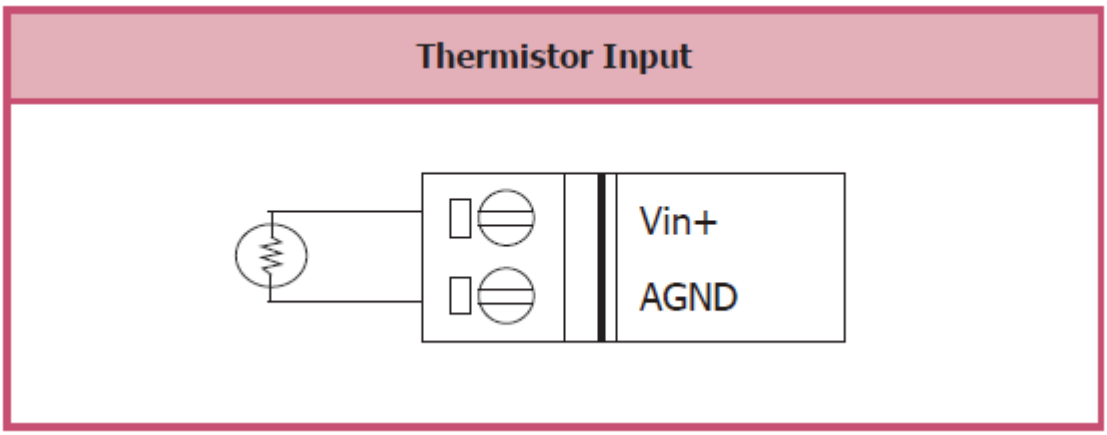
System Specifications：

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	2500 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±2 kV Contact for Each Terminal
	±3 kV Air for Random Point
EFT (IEC 61000-4-4)	±2 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 VDC
Consumption	1 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

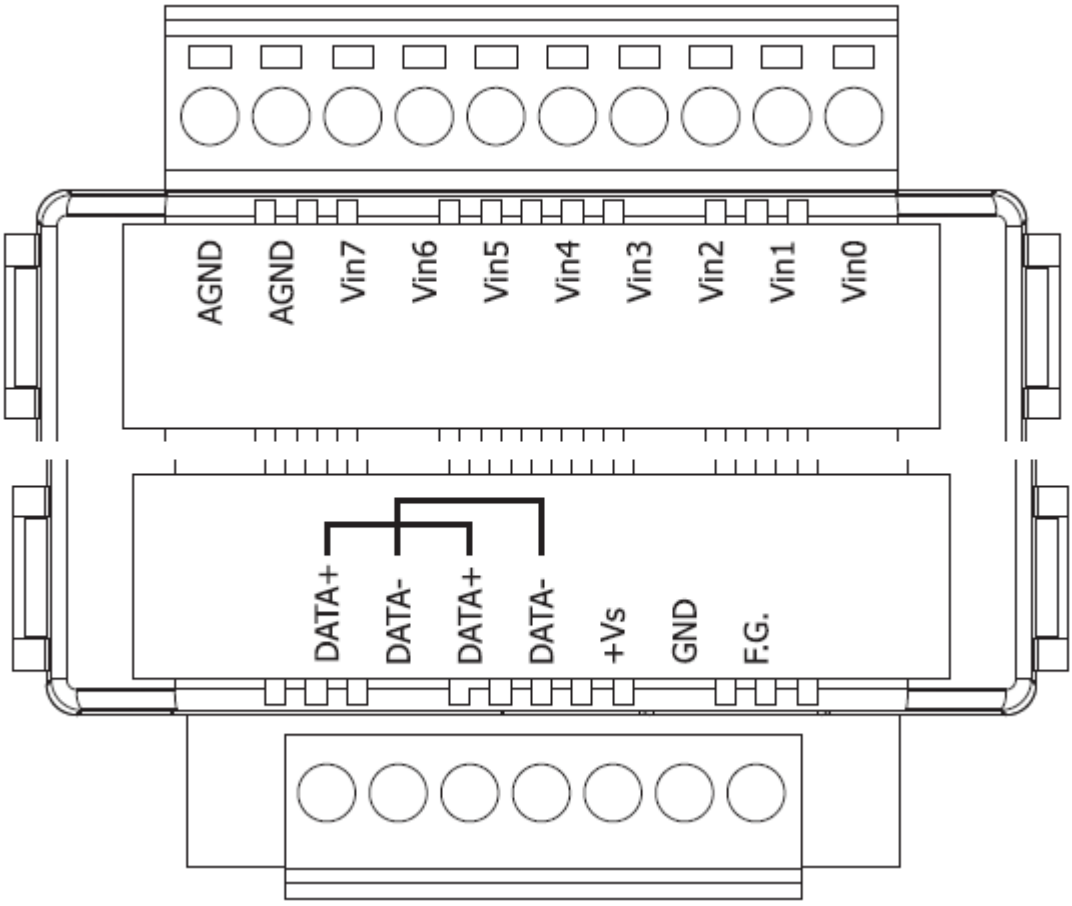
I/O Specifications：

Analog Input	
Input Channels	8
Type	Thermistor
Thermistor Type	Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined
Resolution	16-bit
Sampling Rate	8 Hz total
Accuracy	+/-0.5%
Zero Drift	+/-20 uV/°C
Span Drift	+/-25 ppm/°C
Overvoltage Protection	120 V_{DC}
Open Wire Detection	Yes

Wire Connection：



Pin Assignment：

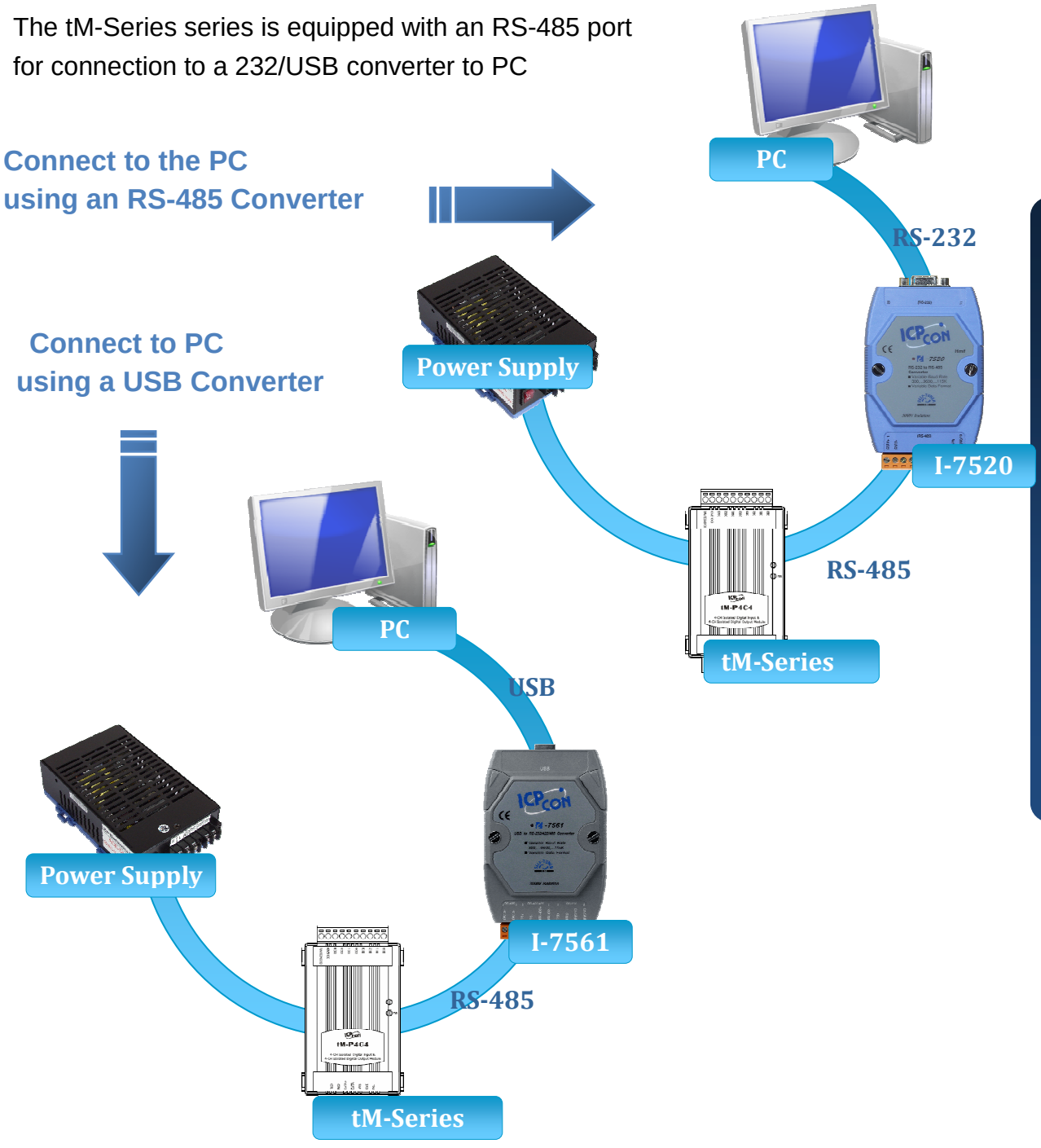


2 Booting the tM-Series in Init Mode

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



4 Installing the DCON Utility

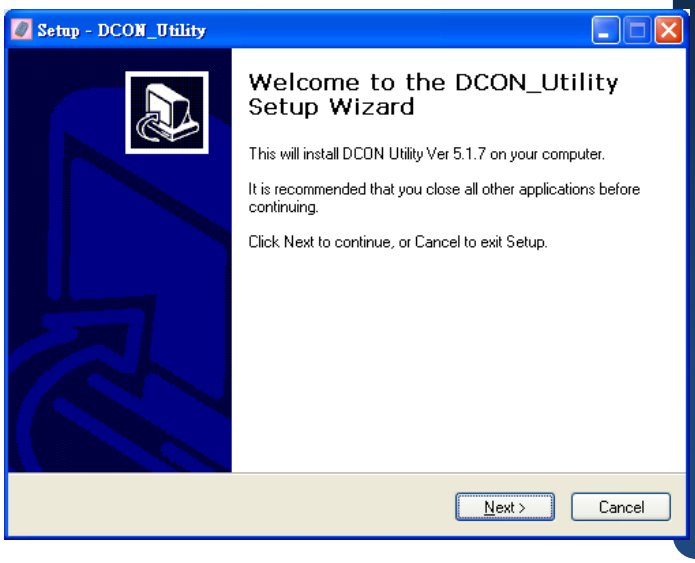
The DCON Utility is an easy-to-use tool designed to enable simple configuration of I/O modules that use the DCON protocol.

Step 1: Locate the DCON Utility

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

Step 2: Follow the prompts to complete the installation

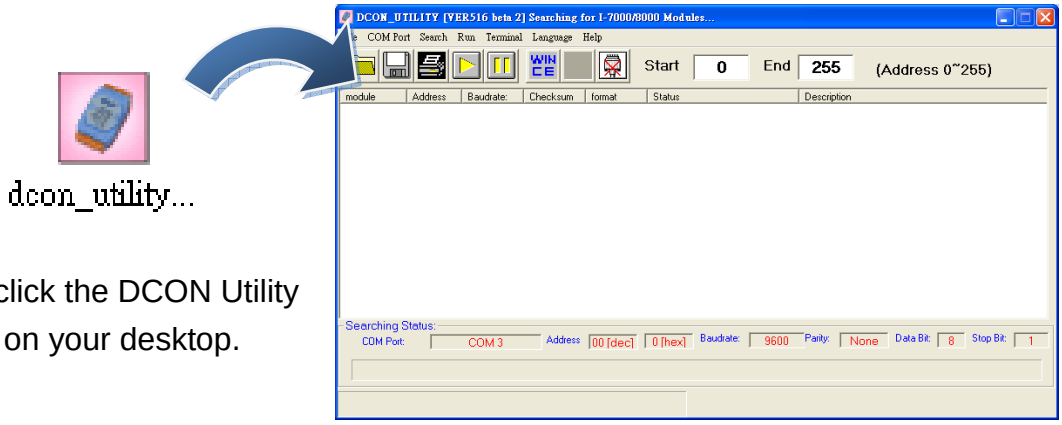
After the installation has been completed, there will be a new shortcut to the DCON Utility on the desktop.



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.

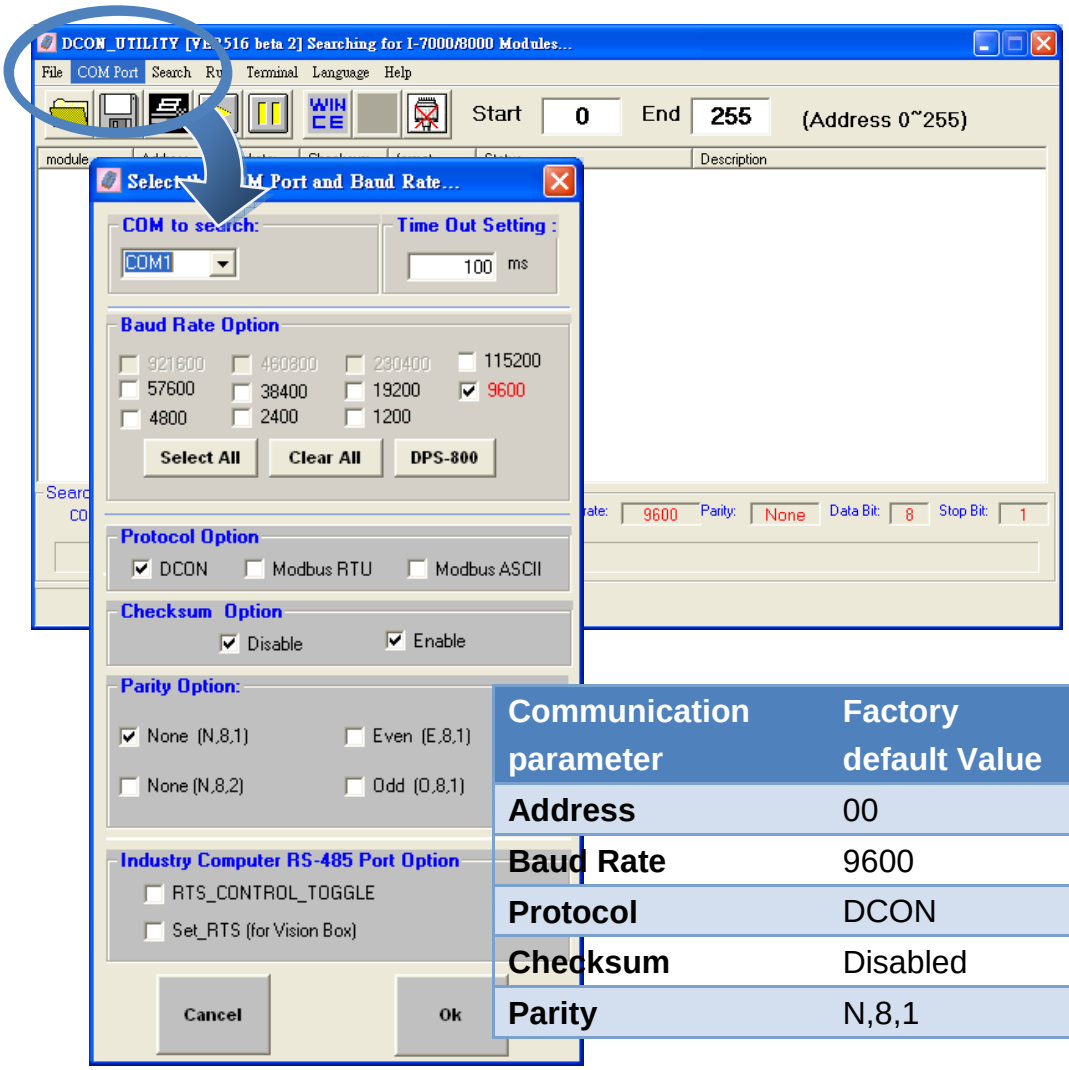
Step 1: Run the DCON Utility



Double-click the DCON Utility shortcut on your desktop.

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

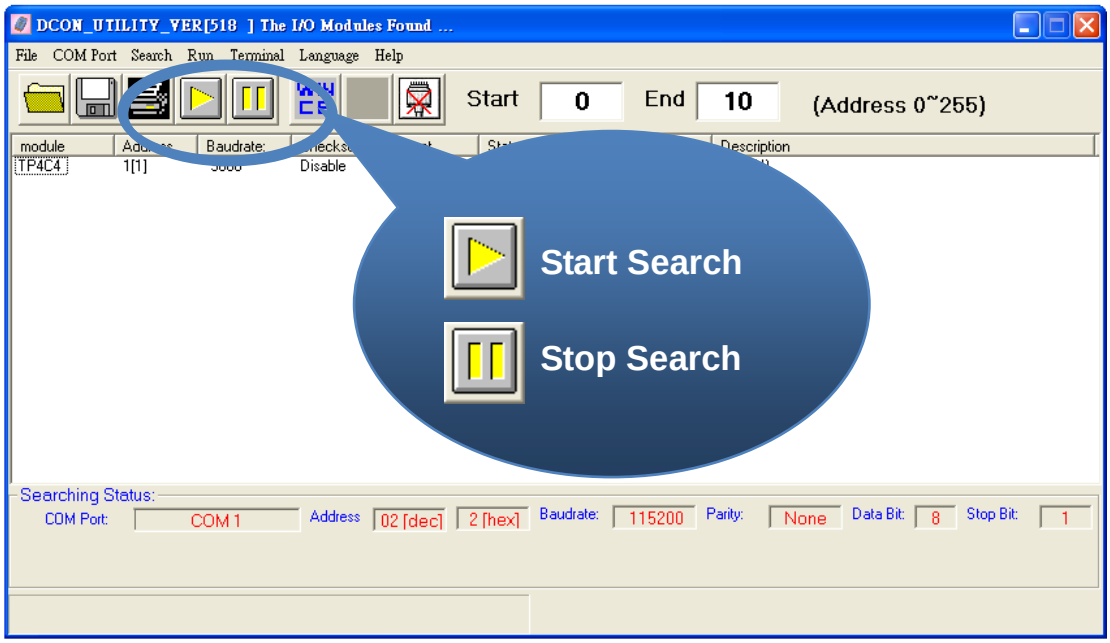
Click the “COM Port” option from the menu and a dialog box will be displayed that will allow you to set the communication parameters as described in the table below.



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

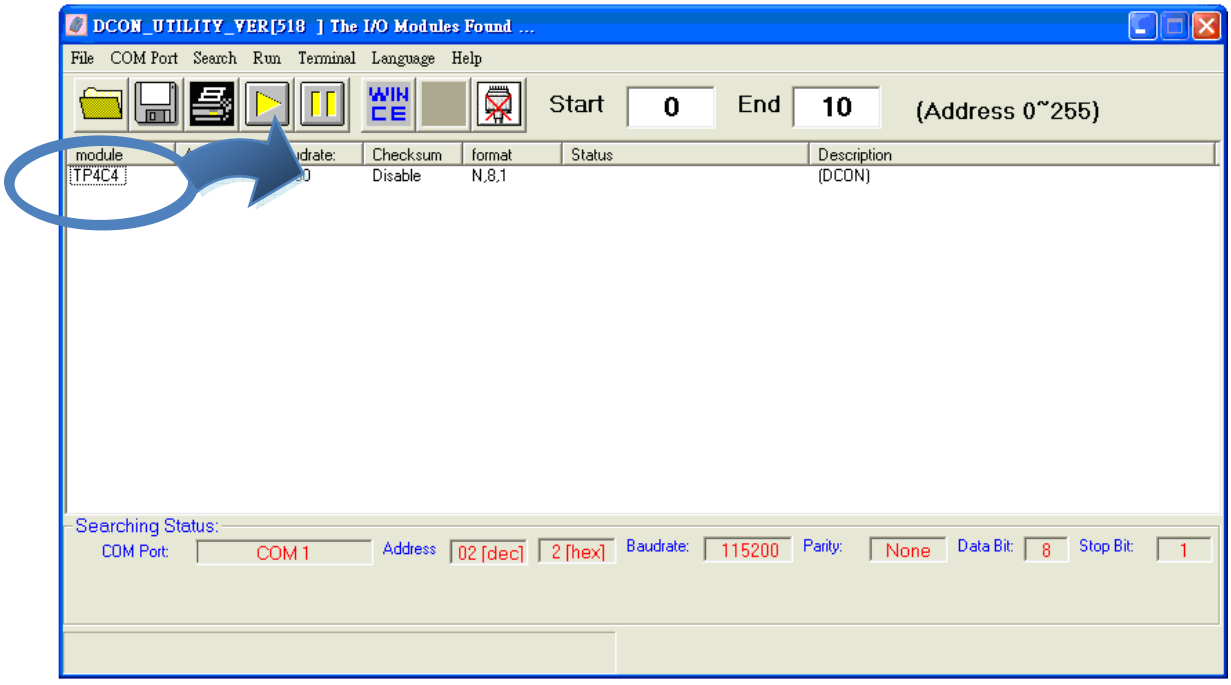
Step 3: Search for the tM-Series module

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.



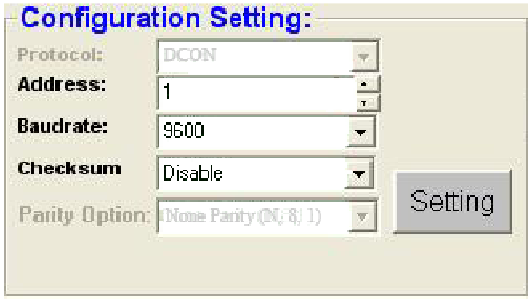
Step 4: Connect to the tM-Series

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” button to save the settings.

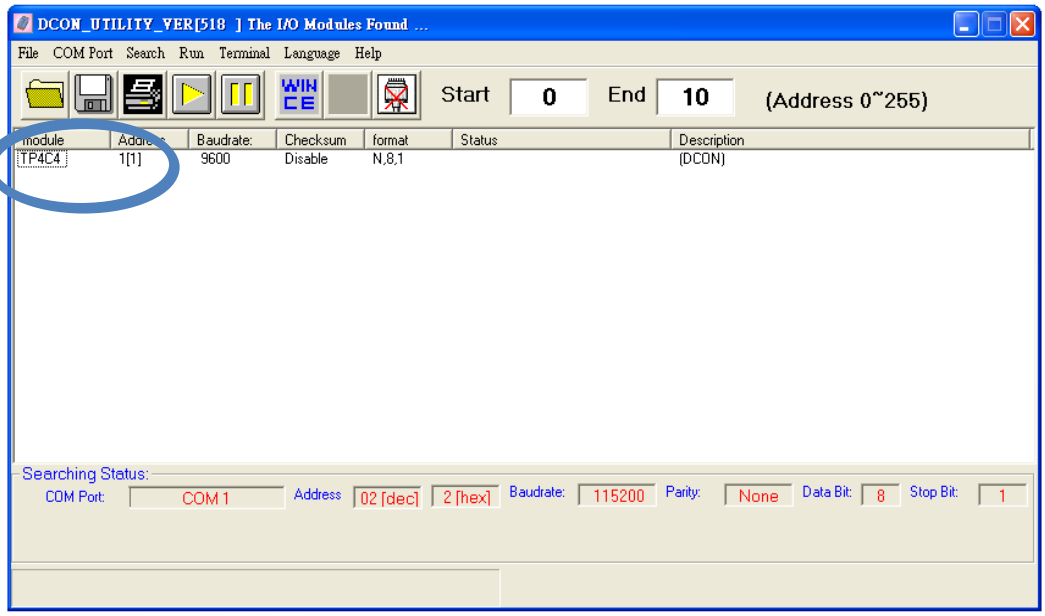


6 Rebooting the tM-Series Module in Normal Mode

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

7 Starting the Module Operation

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 the configuration dialog box.



8 Modbus Address Mapping

Address	Description	Attribute
00257	Protocol, 0: DCON, 1: Modbus	R/W
00258	Modbus protocol, 0: RTU, 1: ASCII	
00261	1: enable, 0: disable host watchdog	R/W
00267	Temperature scale, 0: Fahrenheit, 1: Celsius	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
00272	Write 1 to load factory calibration parameters	W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on	R
10129 ~ 10136 00129 ~ 00136	Over/under range status of channel 0 to 7	R
30001 ~ 30008 40001 ~ 40008	Analog input value of channel 0 to 7	R
40257 ~ 40264	Type code of channel 0 to 7	R/W
40449 ~ 40456	Temperature offset of channel 0 to 7 in 0.1℃/℉, valid range: -128 ~ 127	R/W
40385 ~ 40392	Resistance offset of channel 0 to 7 in 0.1 ohms, valid range: 0 ~ 255	R/W
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	Module address, valid range: 1 ~ 247	R/W

<table>
<tr><th>Address</th><th>Description</th><th>Attribute</th></tr>
<tr><td>40486</td><td>Bits 5:0
Baud rate, 0x03 ~ 0x0A
<table>
<tr><td>Code</td><td>0x03</td><td>0x04</td><td>0x05</td><td>0x06</td></tr>
<tr><td>Baud</td><td>1200</td><td>2400</td><td>4800</td><td>9600</td></tr>
<tr><td>Code</td><td>0x07</td><td>0x08</td><td>0x09</td><td>0x0A</td></tr>
<tr><td>Baud</td><td>19200</td><td>38400</td><td>57600</td><td>115200</td></tr>
</table>
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</td><td>R/W</td></tr>
<tr><td>40488</td><td>Modbus response delay time in ms, valid range: 0 ~ 30</td><td>R/W</td></tr>
<tr><td>40489</td><td>Host watchdog timeout value, 0 ~ 255, in 0.1s</td><td>R/W</td></tr>
<tr><td>40490</td><td>Channel enable/disable</td><td>R/W</td></tr>
<tr><td>40492</td><td>Host watchdog timeout count, write 0 to clear</td><td>R/W</td></tr>
<tr><td>40769 ~ 40784</td><td>Steinhart Coefficient A of type code 70 to 77</td><td>R/W</td></tr>
<tr><td>40801 ~ 40816</td><td>Steinhart Coefficient B of type code 70 to 77</td><td>R/W</td></tr>
<tr><td>40833 ~ 40848</td><td>Steinhart Coefficient C of type code 70 to 77</td><td>R/W</td></tr>
</table>