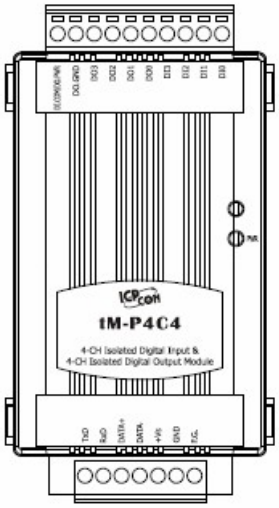
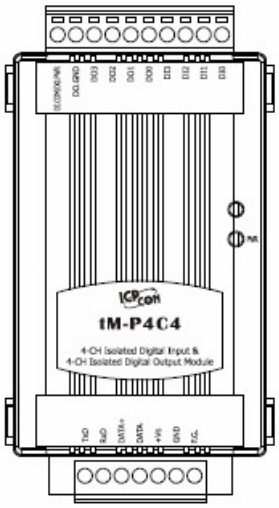
ICP DAS tM-P4C4 4-Channel Isolated DI and 4-Channel Isolated DO Module User Guide

Quick Start Guide for tM-P4C4



Congratulations!
Congratulations on purchasing the tM-P4C4 – the most popular automation solution for remote monitoring and control applications. This Quick Start Guide will provide the information needed to get started with the tM-P4C4. Please also consult the User Manual for detailed information on the setup and use of the tM-P4C4.

What's in the shipping box?



In addition to this guide, the shipping box includes the following items: tM-P4C4

Technical Support

- ICP DAS Website

  http://www.icpdas.com/

Contents

Understanding the Hardware Specifications and Wiring Diagrams

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

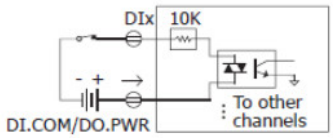
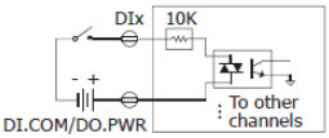
System Specifications

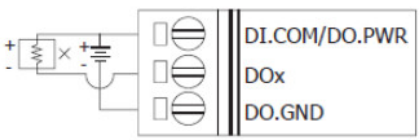
Communication	
Interface	RS-485
Format	(N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)
Baud Rate	1200 ~ 115200 bps
Protocol	DCON, Modbus/RTU, Modbus/ASCII
Dual Watchdog	Yes, Module (2.3 seconds), Communication (Programmable)
LED Indicators	
Power	1 LED as Power Indicator
Isolation	
Intra-module Isolation, Field-to-Logic	3750 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
Power Requirements	
Reverse Polarity Protection	Yes
Powered from Terminal Block	Yes, 10 ~ 30 V_{DC}
Consumption	0.5 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:

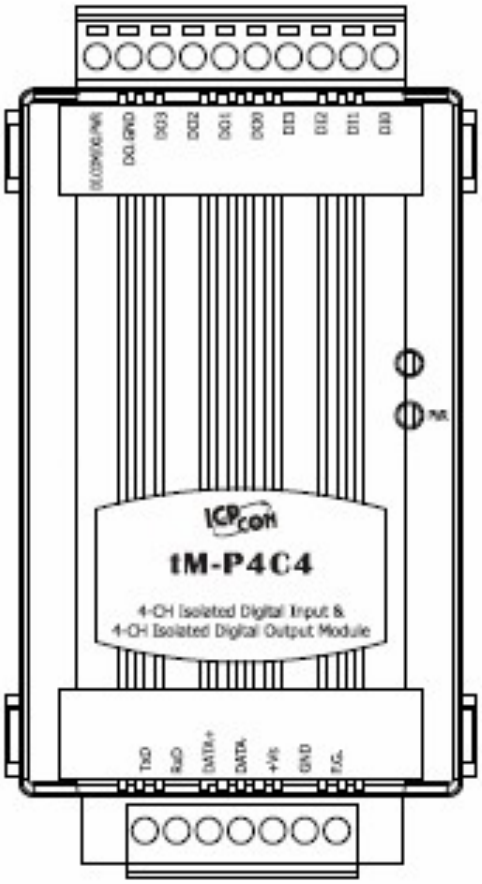
Digital Input/Counter		
Input Channels		4
Type		Wet Contact (Source)
On Voltage Level		+3.5 V_{DC} ~ 50 V_{DC}
Off Voltage Level		+1 V max.
Input Impedance		10 KΩ, 0.66 W
Counters	Channels	4
	Max. Count	65535 (16-bit)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Overvoltage Protection		70 V_{DC}
Digital Output		
Output Channels		4
Type		Isolated Open Collector (Sink)
Max. Load Current		700 mA/channel
Load Voltage		3.5 V_{DC} ~ 50 V_{DC}
Overvoltage Protection		60 V_{DC}
Overload Protection		Yes
Short Circuit Protection		Yes
Power-on Value		Yes, Programmable
Safe Value		Yes, Programmable

Wire Connection:

Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
	+3.5 ~ +50 V_{DC}	OPEN or <1 V_{DC}
Source		

Output Type	ON State Readback as 1	OFF State Readback as 0
	Relay ON	Relay OFF
Drive Relay		
Resistance Load		

Pin Assignment

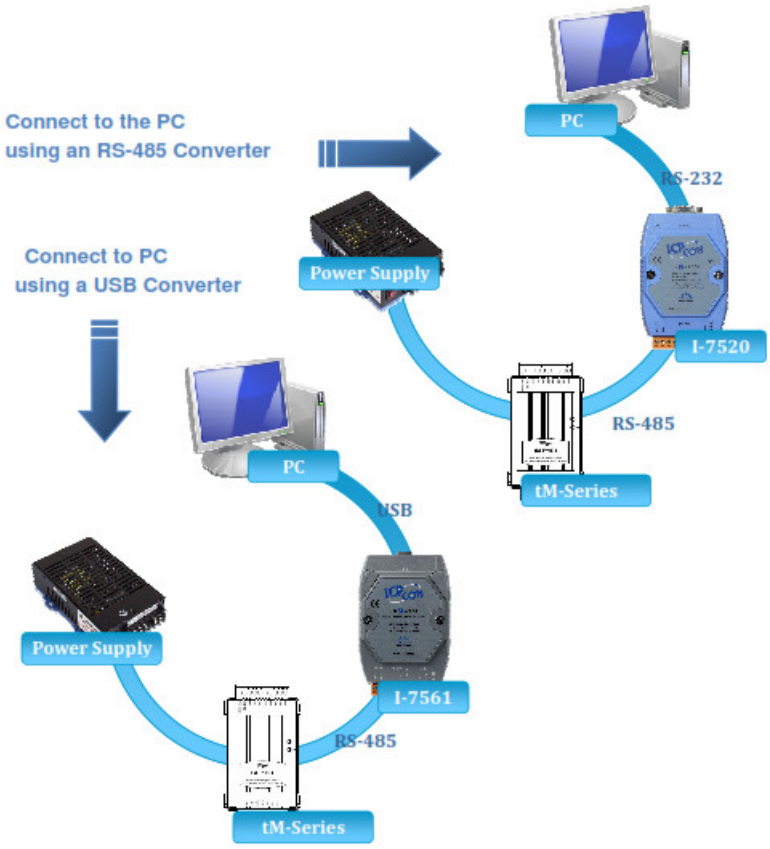


Booting the tM-P4C4 in Init Mode

Make sure the switch is placed in the “Init” position.

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



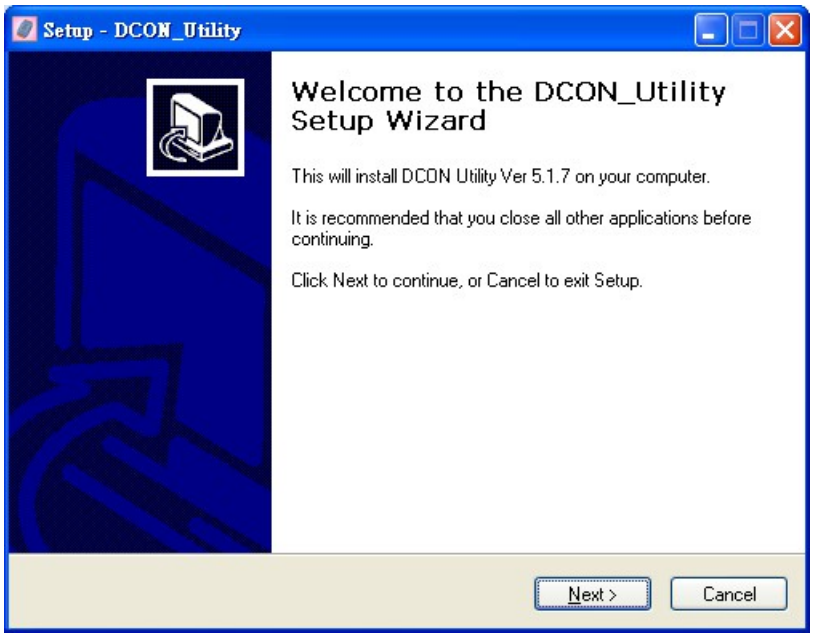
Installing the DCON Utility

The DCON Utility is an easy-to-use tool designed to enable the 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

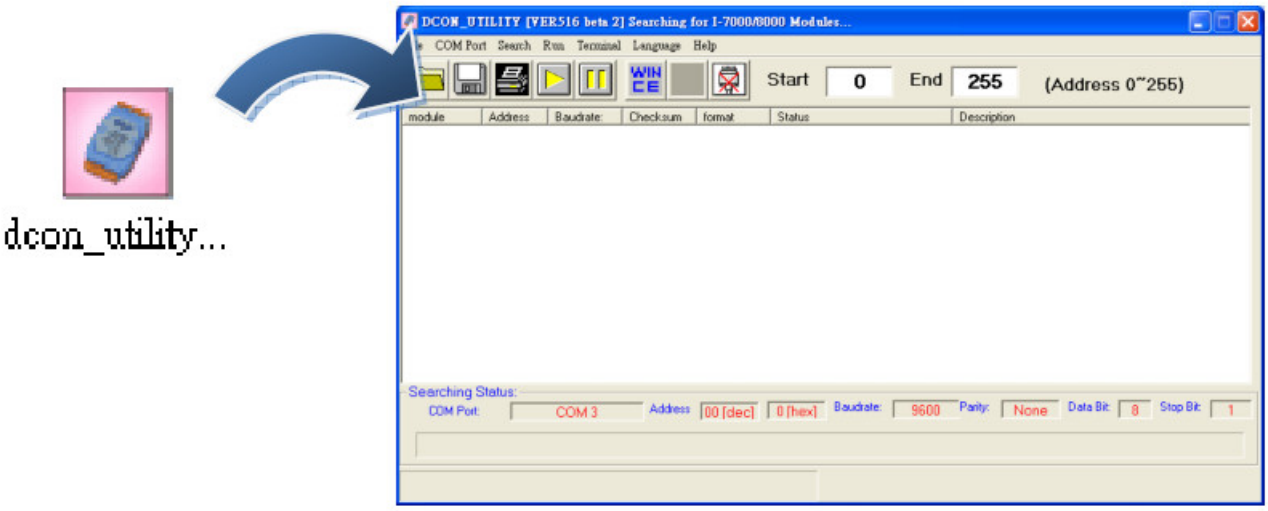
After the installation has been completed, there will be a new shortcut to the DCON Utility on the desktop.



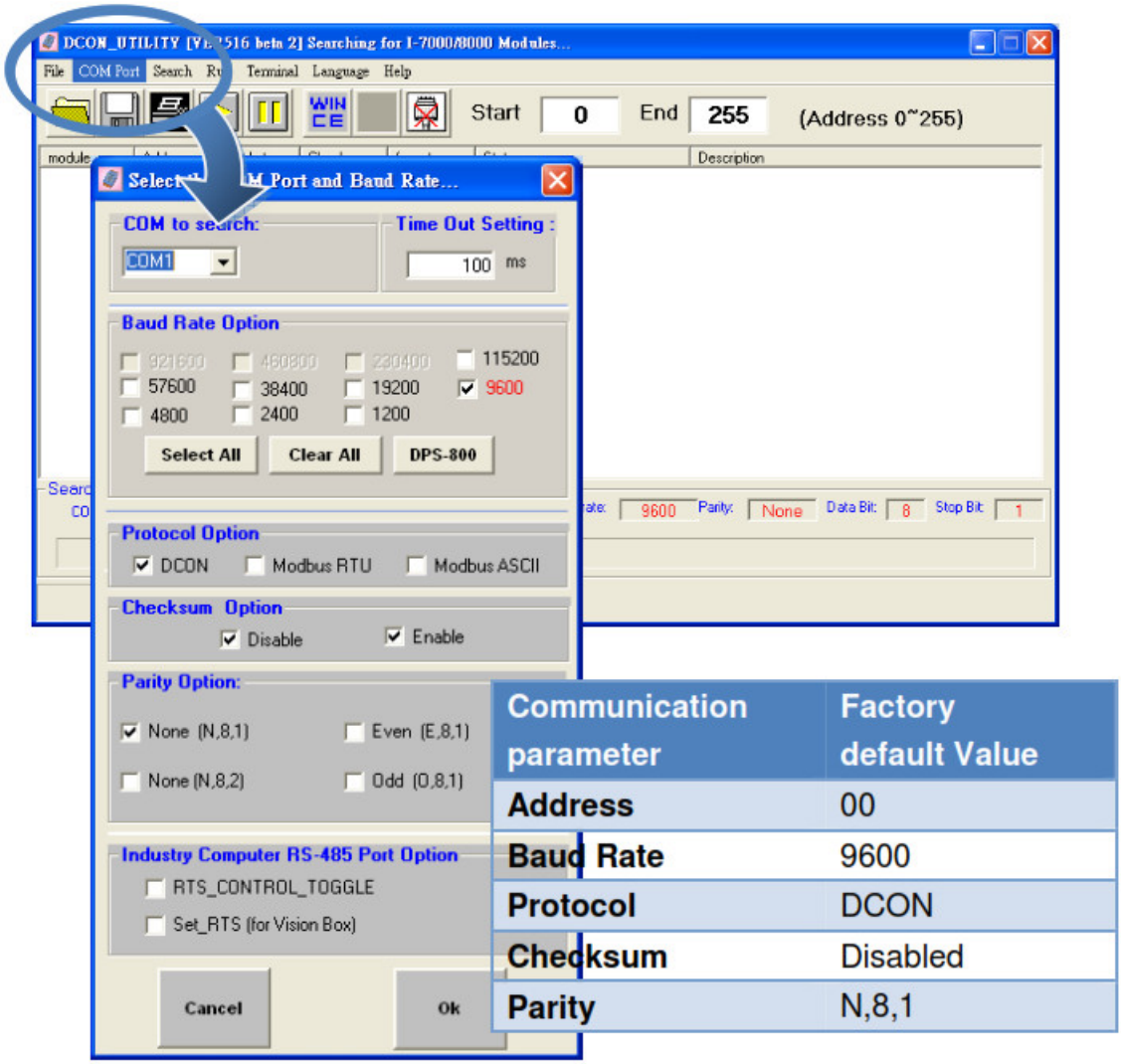
Using the DCON Utility to Initialize the tM-Series Module

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



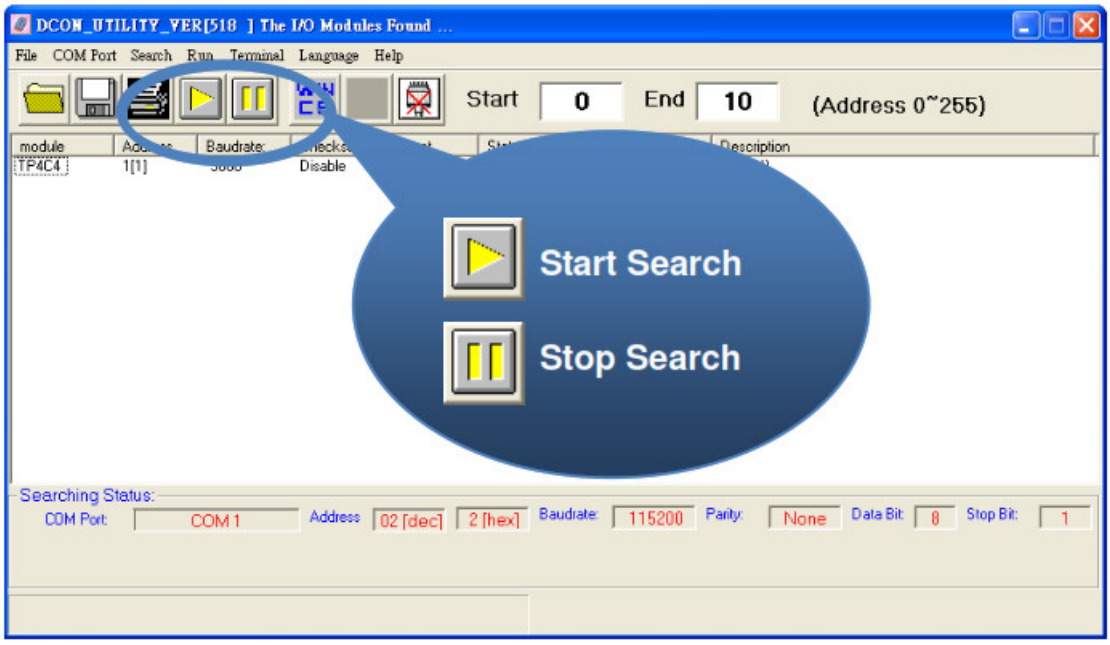
Double-click the DCON Utility shortcut on your desktop.
Step 2: Use the COM1 port to communicate with the tM-Series
Click the “COM Port” option from the menu and a dialog box will be displayed that will allow you to set the communication parameters as described in the table below.



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

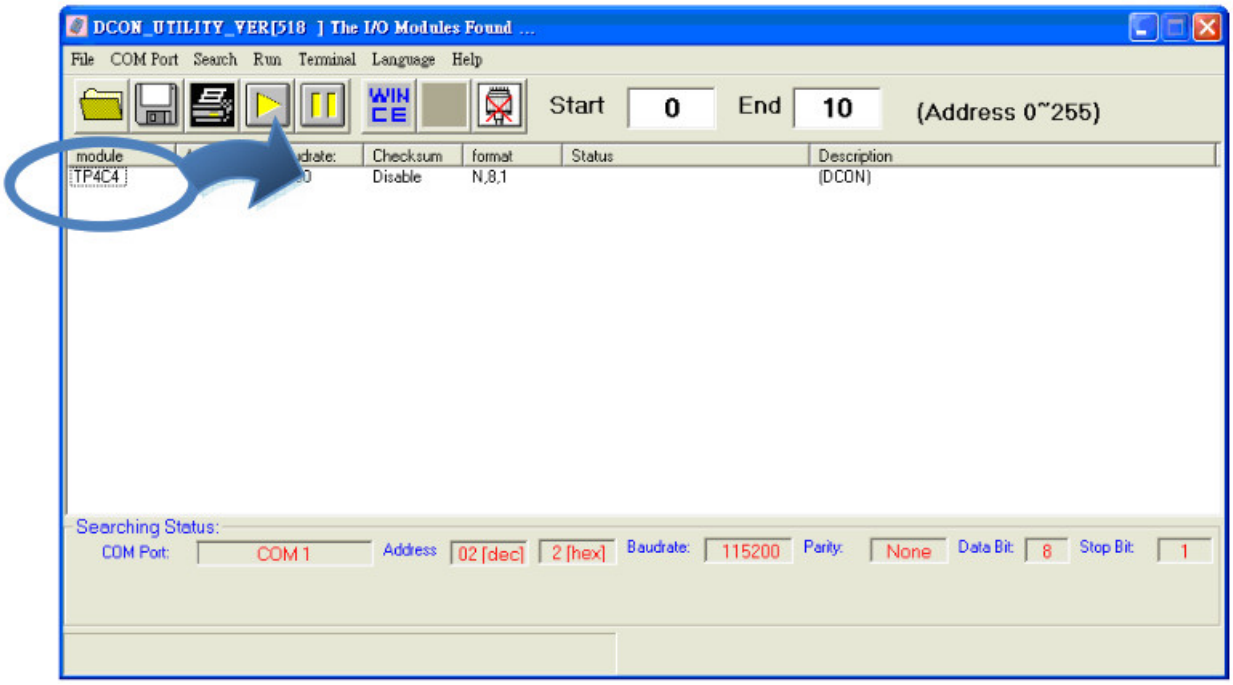
Step 3: Search for the tM-Series module

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

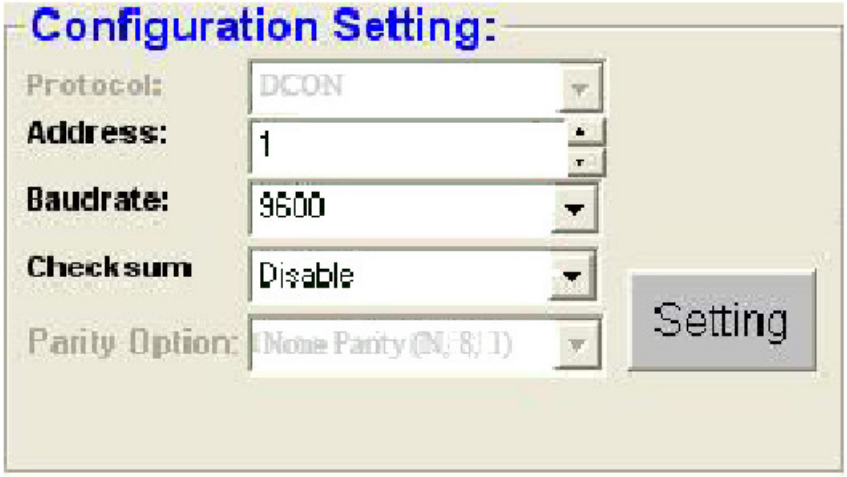


Step 4: Connect to the tM-Series

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 the “Setting” button to save the settings.

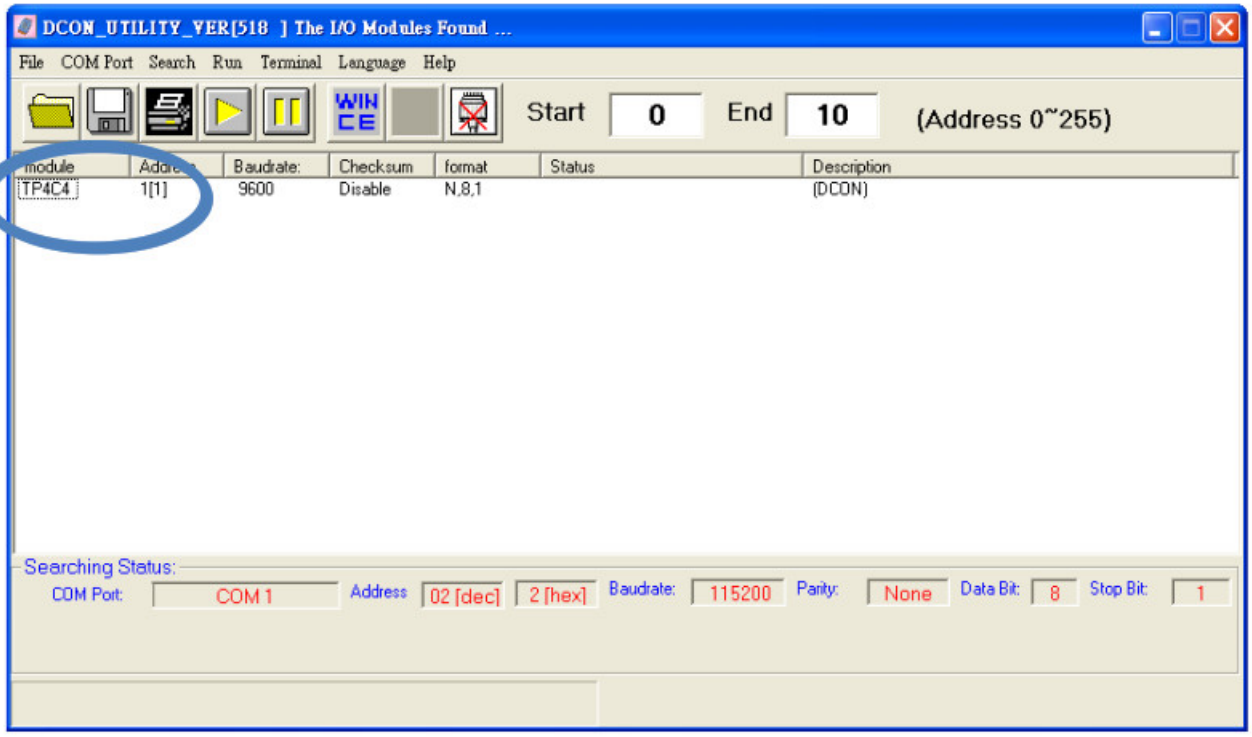


Rebooting the tM-Series Module in Normal Mode

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

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.



Modbus Address Mapping

Address	Description	Attribute
30001 – 30004	The counter value of digital input	R
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	FWV
40486	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	FtNV
40488	Modbus response delay time in ms. valid range: 0 – 30	FINN
40489	Host watchdog timeout value. 0 – 255. in 0.1s	FLAN
40492	Host watchdog timeout count, write 0 to clear	RAN
10033 – 10036	Digital input value of channel 0 – 3	R
10065 – 10068	High latched values of DI	R
10073 – 10076	High latched values of DO	R
10097 – 10100	Low latched values of DI	R
10105 – 10108	Low latched values of DO	R
00001 – 00004	The digital output value of channel 0 ~3	FLAN
00129 – 00132	Safe value of digital output channel 0 ~ 3	RAN
00161 – 00164	Power on the value of digital output channel 0 ~3	FINV
00193 – 00196	Counter update trigger edge of channel 0 ~3	FtNV
00513 – 00518	Write 1 to clear counter value of channel 0 ~ 3	W
257	Protocol selection. 0: DCON. 1: Modbus	RNV
258	1: Modbus ASCII. 0: Modbus RTU	RAN
260	Modbus host watchdog mode 0: same as 1-7000 1: can use AO and DO command to clear host watchdog timeout statu s	

Address	Description	Attribute
261	1: enable, 0: disable host watchdog	RAN
264	Write 1 to clear latched DIO	W
265	DI active state, 0: normal, 1: inverse	R/W
266	DO active state, 0: normal, 1:inverse	R/W
270	Host watchdog timeout status, write 1 to clear host watchdog timeout s tatus	RAN
273	Reset status, 1: first read after powered on, 0: not the first read after po wering on	R

Note: For tM DIO modules, Modbus registers to start at 00033 or 10033 can be used to read the digital input values. For M-7000 DIO modules, they are 00033 or 10001.

E-mail: service@icpdas.com

Documents / Resources

	ICP DAS tM-P4C4 4-Channel Isolated DI and 4-Channel Isolated DO Module [pdf] User Guide tM-P4C4, 4-Channel Isolated DI and 4-Channel Isolated DO Module, tM-P4C4 4-Channel Isolated DI and 4-Channel Isolated DO Module