

M-7000 Module Quick Start Guide

This document describes the methods used to quickly set up and test the ICPDAS M-7000 series modules using the ICPDAS DCON Utility. After confirming that the module is operational, more applications or software support can be found by referring to the following links:

For Win32:

ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/

For Linux:

ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_linux/

SDK tool:

Active X: ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_activex/

DDE server: ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_dde/

DLL: ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_dll/

Indusoft: ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_indusoft/

Labview: ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_labview/

Downloading the DCON utility

The required installation file can be downloaded from:

ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/setup/

The release history and supported modules of the DCON utility can be obtained from

ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/

Setting up and testing the module

1. Before you installing the DCON Utility, please make sure that your desktop/laptop has a RS-485 port. If not, you can install an i-7520, RS-232 to RS-485 converter, or i-7561, USB to RS-485 converter, to have a RS-485 port. Please refer to the following web site for more product information.
http://www.icpdas.com/products/Remote_IO/i-7000/i-7520.htm
http://www.icpdas.com/products/Remote_IO/i-7000/i-7561.htm
2. After installing the DCON Utility, there will be a shortcut icon for the DCON

Utility located on the Windows desktop. Double click this icon to launch the DCON Utility to set the module's configuration to fit with your application. After double clicking the icon, the following screen will be shown:

The tool bars are used to set the serial port parameters, search for connected modules, data logs, etc.

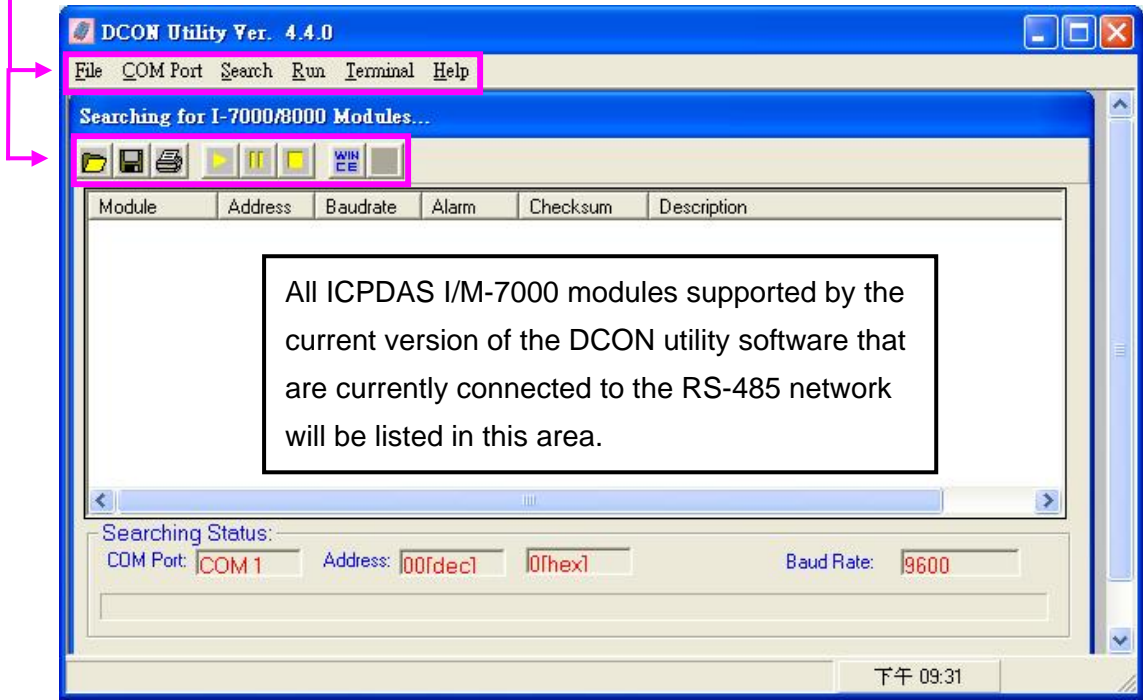


Figure 2-1

3. Before searching for the module, the serial port parameters should be set by selecting the "COM port" menu item. After clicking the "COM port" item, the following dialog will be shown:

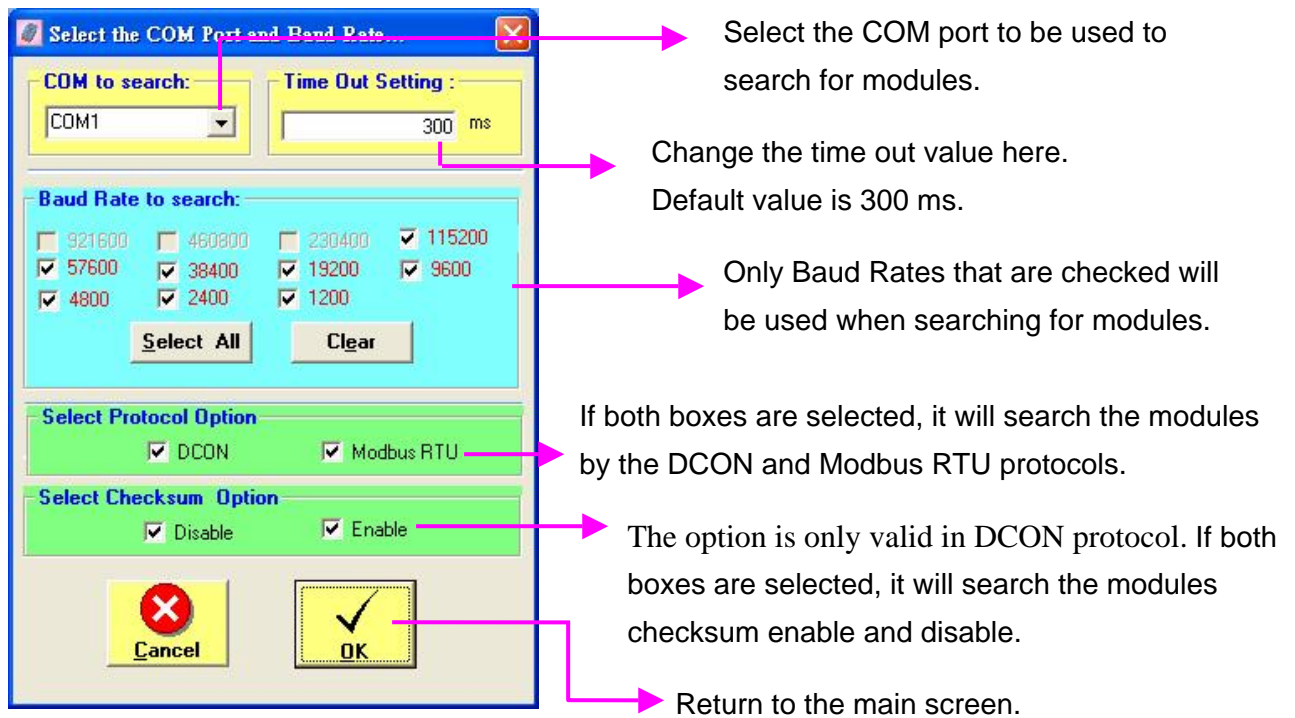




Figure 2-2

- Click the  button to search for all the ICPDAS M-7000 modules connected to the RS-485 network. Once a module is found the relevant information will be shown in the list area, as shown in Figure 2-3:

Module	Address	Baudrate	Alarm	Checksum	Description
7017	1[1]	9600		Disable	8*AI (mA,mV,V)(Modbus RTU)

Figure 2-3

Click the  button to stop searching, and then click the module name, shown as 7017 in Figure 2-3, to configure and test the module. The dialog shown in Figure 2-4 will then be opened.

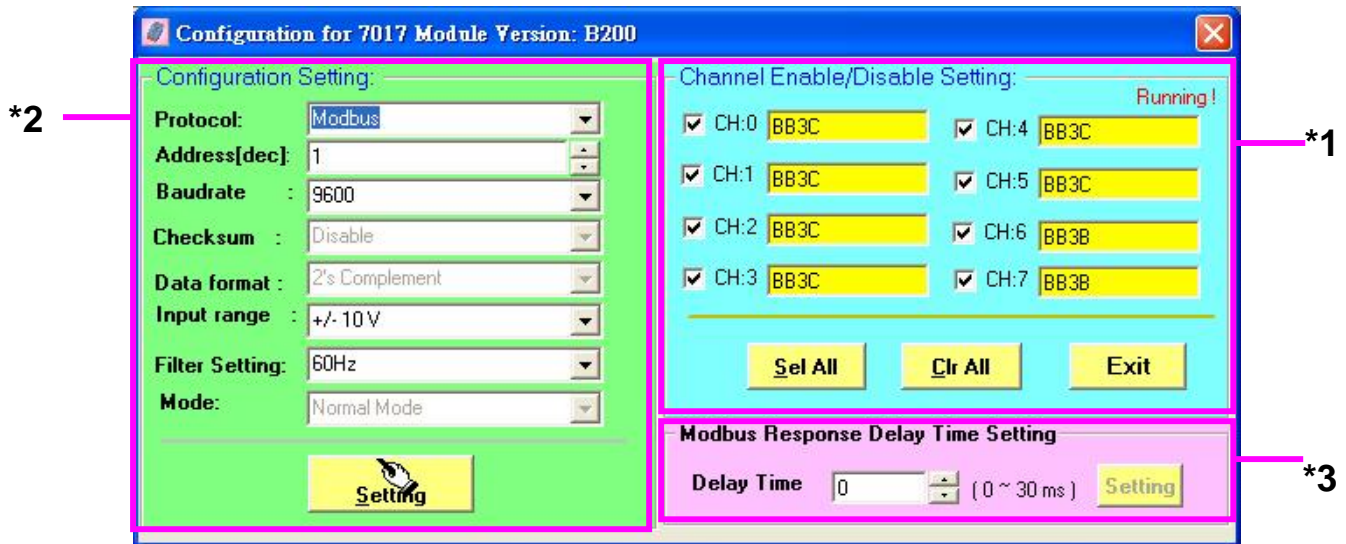


Figure 2-4

- *1 Function test: The check boxes allow you to enable or disable showing the channel returned value in the yellow field.
 - *2 Basic configuration: The protocol, module address, baud rate and other settings can be changed here. Please note that when changing protocol, baud rate or checksum setting, the module must be in *init mode.
 - *3 The M-7000 AIO modules support Modbus response delay time setting. It allows you to increase M-7000 response time for some Modbus master that cannot receive M-7000 faster response.
5. The default configuration for ICPDAS M-7000 module is as follows:

Protocol	Modbus RTU
Address	01
Baud Rate	9600 bps

If you have more than one M-7000 module and want to set their configuration for your application on the same RS-485 network, then you can use the DCON utility to change the configuration of each module individually. Please make sure that all modules are configured properly. Please be noted that all modules' address are set to 01 by default and two modules with the same address in an RS-485 network will cause network conflict. All of the modules' addresses must be set to different.

How do I set the configuration of a module in my program or application?

The format of configuration command for M-7000 module is as follows:

Field ①	Field ②	Field ③	Field ④ ~ Field *n	Field (④+*n)
Module Address	Function code	Sub function	Configuration field	CRC16

*n: This value depends on the Sub-function code. Please refer to the M-7000 user's manual for more details.

Ex: To change the address of the module which address is 01 to 02, the following command should be sent:

01 46 04 02 63 0C
 ① ② ③ ④ ⑤ CRC16

Ex: To change the baud rate of the module which address is 01 to 115200bps, the following command should be sent:

01 46 06 00 *0A 00 00 00 01 00 00 63 0C
 ① ② ③ ④ ⑤ CRC16

*Baud Rate code: Please refer to the following table for details:

Value	03	04	05	06	07	08	09	0A
Baud Rate	1200	2400	4800	9600	19200	38400	57600	115200

Note: The new Baud Rate will become effective after the module is restarted.

The data bits are fixed at one start bit, eight data bits, no parity and one stop bit for the M-7000 series.

The standard Modbus RTU command functions supported by M-7000 are as follows:

Function code	Description
0x01	Read coils
0x02	Read discrete inputs
0x03	Read multiple registers
0x04	Read multiple input registers
0x05	Write single coils

0x0F	Write multiple coils
0x10	Write multiple registers

Ex: To read the current DI value of channels 0 to 7, the following command should be sent:

01 02 00 00 00 07 39 C8

Ex: To write the DO value 0xFF from channels 0 to 8, the following command should be sent:

01 0F 00 00 00 07 01 FF 39 C8

Ex: To only set the DO value of channel 2 to 1, the following command should be sent:

01 05 00 02 FF 00 2D FA

M-7000 module DI/O mapping table

32 addresses are reserved for reading the DI values and writing the DO values. The mapping table is as follows:

Address 0xxxx	Channel	Item	Attribute
00001~00032	DO 0 ~ DO 31	Current DO value	R
00033~00064	DI 0 ~ DI 31	Current DI value	R
00065~00096	0~31	DIO Latch high value	R
00097~00128	0~31	DIO Latch low value	R

The effective bit values depend on the module, and the extra bit values will be filled with 0.

For example: M-7060 is a 4-channel relay output and 4-channel digital input module. The mapping table is as follows:

Address	Channel	Item	Attribute
00001	DO 0	Current DO value	R/W
00002	DO 1	Current DO value	R/W
00003	DO 2	Current DO value	R/W
00004	DO 3	Current DO value	R/W
00005~00032	Reserved		

00033	DI 0	Current DI value	R
00034	DI 1	Current DI value	R
00035	DI 2	Current DI value	R
00036	DI 3	Current DI value	R
00037~00064	Reserved		

For details of M-7000 DIO command functions, refer to the following document.

<ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/7000/manual/modbusdio.pdf>

M-7000 RS-485 connection

