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How to manage and maintain all configured modules by using Save/Load project function?

DCON Utility Pro provides the Save Project function from V4.0.0.1.

The main purposes of saved project data are

- Save all modules' communication parameters, it helps restore the original search result quickly if there are many modules on RS-485 network.
- Saving module settings in detail, it helps to understand what functions the module has and saves paperwork time for recording module settings.

Usage scenario:

Suppose a case is arranged with many modules scattered in a building, and these modules will be configured with different configurations according to requirements. There are usually the following requirements

- Need to save the communication parameter records of each module (COM Port, Protocol, Baud Rate, Checksum, Parity format, etc.).
- Need to have detailed records for each module (Power On Value, Safe Value, Watchdog, AI input range, AO output range, etc.).
- Ensure that the correct settings can be provided for comparison when updating and replacing modules due to damage in the future.

When the case is completed, everything is ready. After a few years, some modules will be damaged and updated. Whether the updated module settings are correct can use the "Load Project" function to help check on-site whether the updated module settings are the same as the data stored at the beginning. This is a very important task for the follow-up maintenance and operation of the case.

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The following will introduce how to operate the above two functions.

1. Save project function

Step 1. Complete the module search

The top screenshot shows the 'COM13' module search results. The module list on the left includes: RU-87P4:01:A:0:N81:0, -87017Z:02:A:0:N81:0, -87082:03:A:0:N81:0, -87028U:04:A:0:N81:0, -87013:05:A:0:N81:0, and tR5:03:6:0:N81:1. The table on the right lists the following modules:

ID	Address	Baud Rate	Checksum	Format	Status	Description	Comments
RU-87P4	1[01h]	115200	Disabled	N,8,1	Auto Config. Ena...	[DCON]4*Slot Auto Configuration Remote ...	Supported
-87017Z	2[02h]	115200	Disabled	N,8,1	87PN Slot 0	[DCON]10/20 *AI(mA,mV,V)Differential/Si...	Supported
-87082	3[03h]	115200	Disabled	N,8,1	87PN Slot 1	[DCON]2*Counter/Frequency + 2*DO	Supported
-87028U	4[04h]	115200	Disabled	N,8,1	87PN Slot 2	[DCON]8*AO (V)	Supported
-87013	5[05h]	115200	Disabled	N,8,1	87PN Slot 3	[DCON]4*AI (RTD)	Supported
tR5	3[03h]	9600	Disabled	N,8,1	Remote I/O	[Modbus RTU]5*DO (Relay DO)	Supported

The bottom screenshot shows the 'COM1' module search results. The module list on the left includes: 7028:01:6:0:N81:1 and 7026:03:6:0:N81:1. The table on the right lists the following modules:

ID	Address	Baud Rate	Checksum	Format	Status	Description	Comments
7028	1[01h]	9600	Disabled	N,8,1	Remote I/O	[Modbus RTU]8*AO (V/mA)	Supported
7026	3[03h]	9600	Disabled	N,8,1	Remote I/O	[Modbus RTU]2*AO + 6*AI + 3*DO + 3*...	Supported

Step 2: Select the searched module ID one by one and open the configuration form to complete the module configuration.

The top screenshot shows the '7026 Firmware[0A01]' configuration form. The 'CH: [03] +/- 10 V' dropdown menu is highlighted with a red arrow. The 'CH: [03] +/- 10 V' dropdown menu is set to 'immediate'. The 'AO Value' is 0000, 'ReadBack' is 0000, 'Range' is 8000~, and 'Output' is 0000. The 'Set Channel Type Code As CH' button is highlighted.

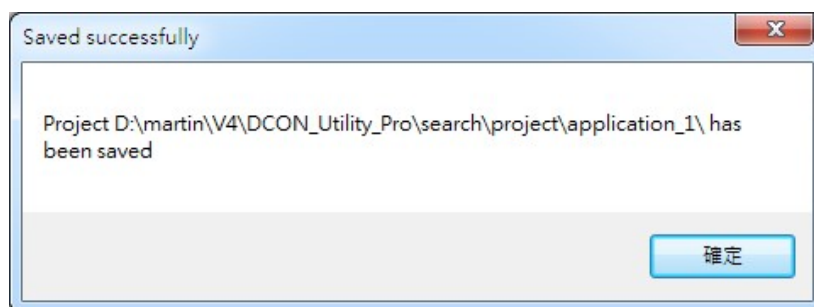
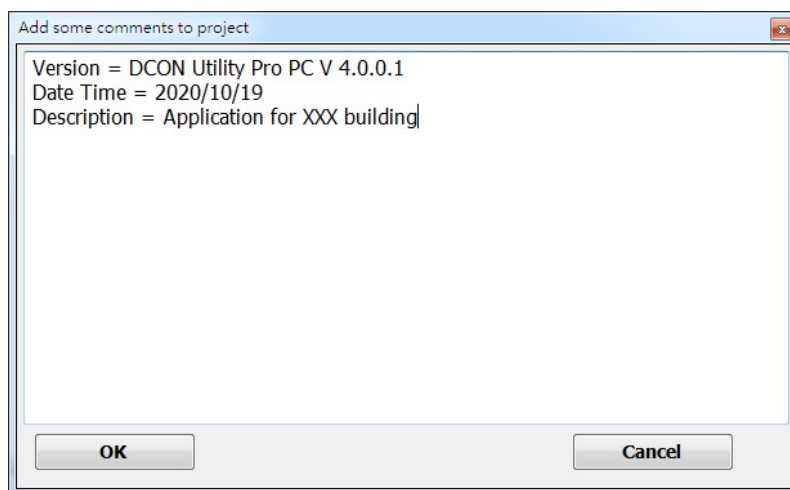
The bottom screenshot shows the 'tR5 Firmware[A106]' configuration form. The 'CH:01' checkbox is highlighted with a red arrow. The 'DO Value' is 03h. The 'Read DO' radio button is selected.

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Step 3: Select the "Save Project" function

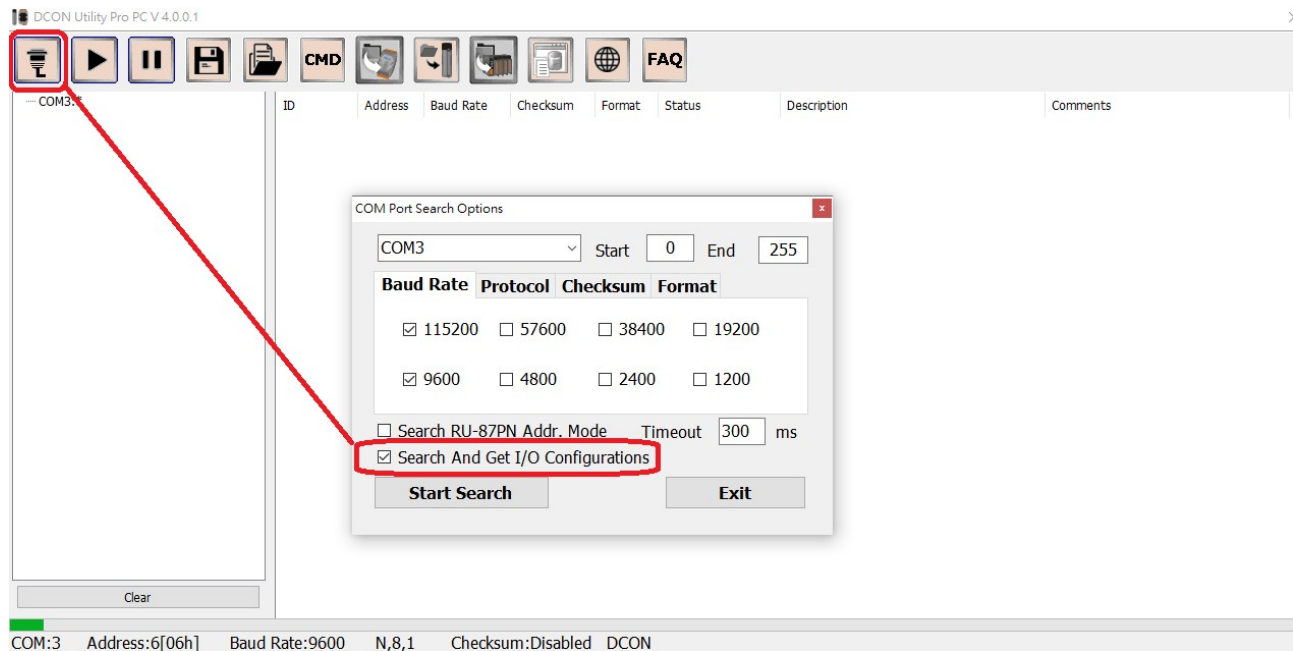


When saving the I/O settings as a project and saving related files, enter some project remarks, which will help you understand the content of the project in the future. It will display the path of the project file after saving.



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The “Search and Get I/O Configurations” in COM Port search options.



If all the modules have been configured before running DCON Utility Pro, we can enable the COM port search option “Search and Get I/O Configurations” function, it can directly read the settings of the I/O module at the moment when the I/O module is searched, and can directly save the configuration results as a project after searching process is finished, which can save much time because we don’t need to open the configuration form for each module.

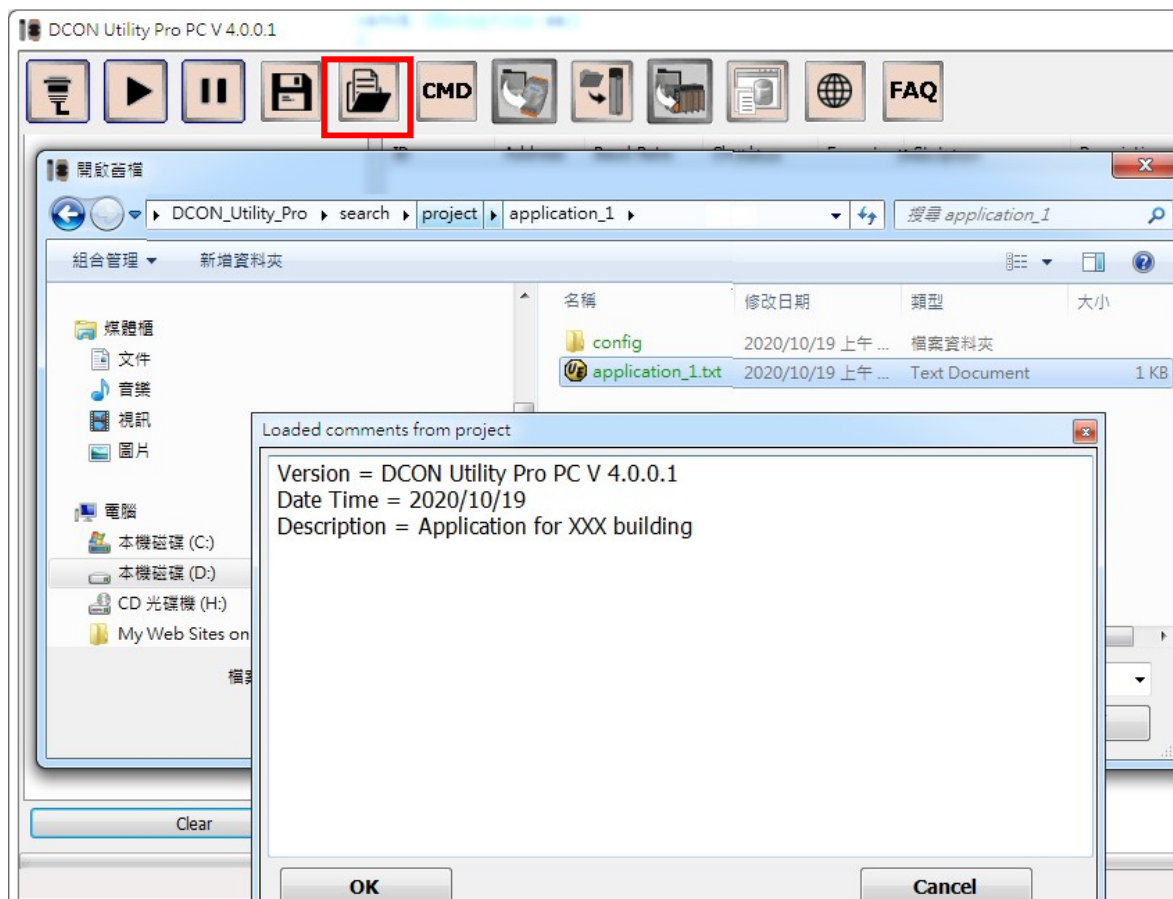
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2. Load project function



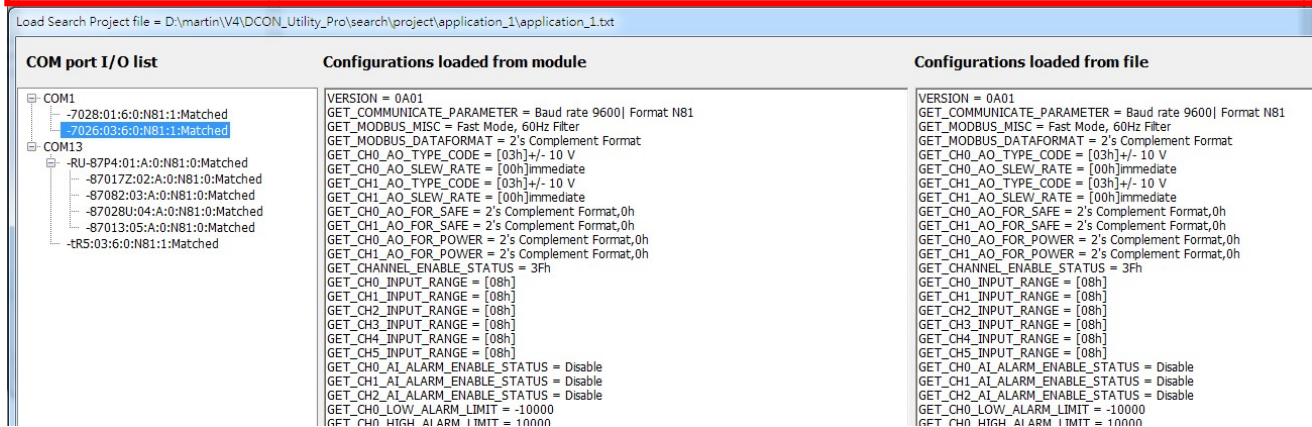
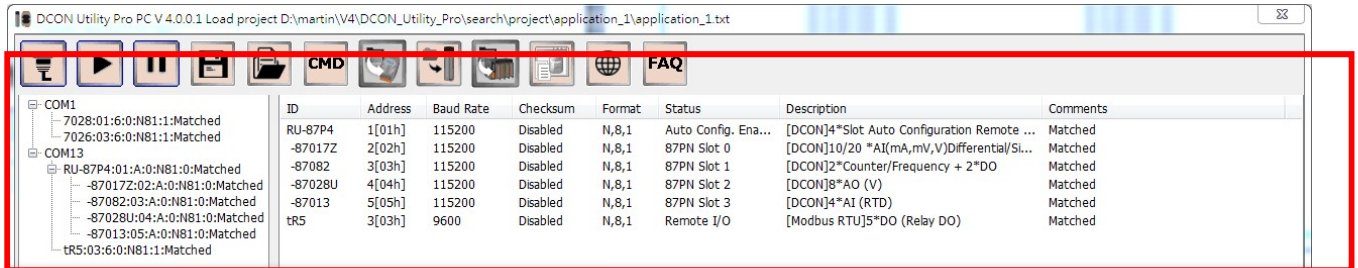
To execute the “Load Project” function, you will need to open the COM Port and check whether the module and settings are consistent with the status when the project was previously saved. Therefore, to execute the function of loading the project, it needs to shut down the program in order to make sure the COM port is closed.

Step 1: View the previous comments.

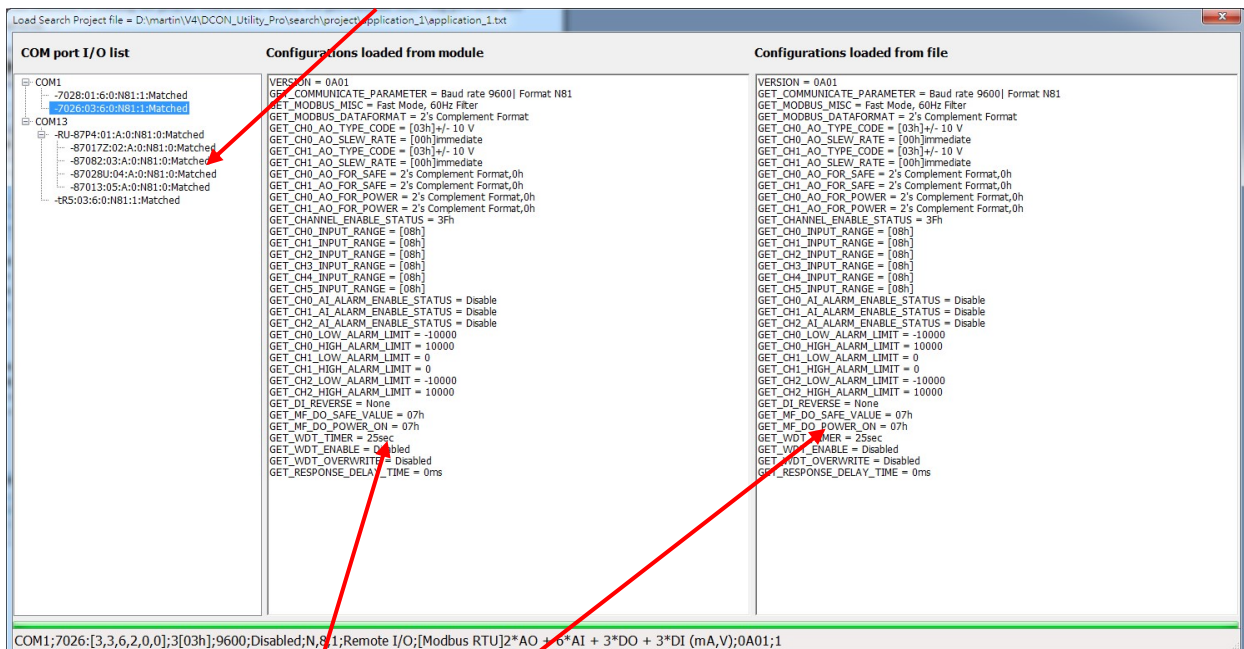


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Step 2: Restore the previous search results, and check whether the internal settings of the module are the same as the project content



On the left is the project's COM port and I/O tree list.



The setting details obtained from the module.

Details of the module settings loaded from project file.

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Abnormal situations which will be found when using the load project function

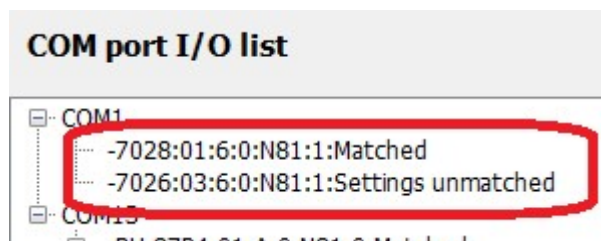
Condition 1: All modules exist and the communication parameters are correct, but the module settings are different

If the field module has been replaced due to damage or has been adjusted, it will be checked whether the current module is the same as the previously saved setting when loading the project. If the setting does not match, it will be highlighted.

COM port I/O list	Configurations loaded from module	Configurations loaded from file
<div>COM1</div> <ul style="list-style-type: none"> -7028:01:6:0:N81:1:Matched -7026:03:6:0:N81:1:Settings unmatched <div>COM13</div> <ul style="list-style-type: none"> -RU-87P4:01:A:0:N81:0:Matched -87017Z:02:A:0:N81:0:Matched -87082:03:A:0:N81:0:Matched -87028U:04:A:0:N81:0:Matched -87013:05:A:0:N81:0:Matched -R5:03:6:0:N81:1:Matched 	<pre> VERSION = 0A01 GET_COMMUNICATE_PARAMETER = Baud rate 9600 Format N81 GET_MODBUS_MISC = Fast Mode, 60Hz Filter >> GET_MODBUS_DATAFORMAT = Engineering Format GET_CH0_AO_TYPE_CODE = [03h]+/- 10 V GET_CH0_AO_SLEW_RATE = [00h]immediate GET_CH1_AO_TYPE_CODE = [03h]+/- 10 V GET_CH1_AO_SLEW_RATE = [00h]immediate >> GET_CH0_AO_FOR_SAFE = Engineering Format,0 >> GET_CH1_AO_FOR_SAFE = Engineering Format,0 >> GET_CH0_AO_FOR_POWER = Engineering Format,0 >> GET_CH1_AO_FOR_POWER = Engineering Format,0 GET_CHANNEL_ENABLE_STATUS = 3Fh GET_CH0_INPUT_RANGE = [08h] GET_CH1_INPUT_RANGE = [08h] GET_CH2_INPUT_RANGE = [08h] GET_CH3_INPUT_RANGE = [08h] GET_CH4_INPUT_RANGE = [08h] GET_CH5_INPUT_RANGE = [08h] GET_CH0_AI_ALARM_ENABLE_STATUS = Disable GET_CH1_AI_ALARM_ENABLE_STATUS = Disable GET_CH2_AI_ALARM_ENABLE_STATUS = Disable GET_CH0_LOW_ALARM_LIMIT = -10000 GET_CH0_HIGH_ALARM_LIMIT = 10000 GET_CH1_LOW_ALARM_LIMIT = 0 GET_CH1_HIGH_ALARM_LIMIT = 0 GET_CH2_LOW_ALARM_LIMIT = -10000 GET_CH2_HIGH_ALARM_LIMIT = 10000 GET_CH1_LOW_ALARM_LIMIT = 0 GET_CH1_HIGH_ALARM_LIMIT = 0 GET_CH2_LOW_ALARM_LIMIT = -10000 GET_CH2_HIGH_ALARM_LIMIT = 10000 GET_DI_REVERSE = None GET_MF_DO_SAFE_VALUE = 07h GET_MF_DO_POWER_ON = 07h GET_WDT_TIMER = 25sec GET_WDT_ENABLE = Disabled GET_WDT_OVERWRITE = Disabled GET_RESPONSE_DELAY_TIME = 0ms </pre>	<pre> VERSION = 0A01 GET_COMMUNICATE_PARAMETER = Baud rate 9600 Format N81 GET_MODBUS_MISC = Fast Mode, 60Hz Filter >> GET_MODBUS_DATAFORMAT = 2's Complement Format GET_CH0_AO_TYPE_CODE = [03h]+/- 10 V GET_CH0_AO_SLEW_RATE = [00h]immediate GET_CH1_AO_TYPE_CODE = [03h]+/- 10 V GET_CH1_AO_SLEW_RATE = [00h]immediate >> GET_CH0_AO_FOR_SAFE = 2's Complement Format,0h >> GET_CH1_AO_FOR_SAFE = 2's Complement Format,0h >> GET_CH0_AO_FOR_POWER = 2's Complement Format,0h >> GET_CH1_AO_FOR_POWER = 2's Complement Format,0h GET_CHANNEL_ENABLE_STATUS = 3Fh GET_CH0_INPUT_RANGE = [08h] GET_CH1_INPUT_RANGE = [08h] GET_CH2_INPUT_RANGE = [08h] GET_CH3_INPUT_RANGE = [08h] GET_CH4_INPUT_RANGE = [08h] GET_CH5_INPUT_RANGE = [08h] GET_CH0_AI_ALARM_ENABLE_STATUS = Disable GET_CH1_AI_ALARM_ENABLE_STATUS = Disable GET_CH2_AI_ALARM_ENABLE_STATUS = Disable GET_CH0_LOW_ALARM_LIMIT = -10000 GET_CH0_HIGH_ALARM_LIMIT = 10000 GET_CH1_LOW_ALARM_LIMIT = 0 GET_CH1_HIGH_ALARM_LIMIT = 0 GET_CH2_LOW_ALARM_LIMIT = -10000 GET_CH2_HIGH_ALARM_LIMIT = 10000 GET_DI_REVERSE = None GET_MF_DO_SAFE_VALUE = 07h GET_MF_DO_POWER_ON = 07h GET_WDT_TIMER = 25sec GET_WDT_ENABLE = Disabled GET_WDT_OVERWRITE = Disabled GET_RESPONSE_DELAY_TIME = 0ms </pre>

Click
the

unmatched module to compare the different settings



Configurations loaded from module

```

VERSION = 0A01
GET_COMMUNICATE_PARAMETER = Baud rate 9600| Format N81
GET_MODBUS_MISC = Fast Mode, 60Hz Filter
>> GET_MODBUS_DATAFORMAT = Engineering Format
GET_CH0_AO_TYPE_CODE = [03h]+/- 10 V
GET_CH0_AO_SLEW_RATE = [00h]immediate
GET_CH1_AO_TYPE_CODE = [03h]+/- 10 V
GET_CH1_AO_SLEW_RATE = [00h]immediate
>> GET_CH0_AO_FOR_SAFE = Engineering Format,0
>> GET_CH1_AO_FOR_SAFE = Engineering Format,0
>> GET_CH0_AO_FOR_POWER = Engineering Format,0
>> GET_CH1_AO_FOR_POWER = Engineering Format,0
GET_CHANNEL_ENABLE_STATUS = 3Fh

```

Configurations loaded from file

```

VERSION = 0A01
GET_COMMUNICATE_PARAMETER = Baud rate 9600| Format N81
GET_MODBUS_MISC = Fast Mode, 60Hz Filter
>> GET_MODBUS_DATAFORMAT = 2's Complement Format
GET_CH0_AO_TYPE_CODE = [03h]+/- 10 V
GET_CH0_AO_SLEW_RATE = [00h]immediate
GET_CH1_AO_TYPE_CODE = [03h]+/- 10 V
GET_CH1_AO_SLEW_RATE = [00h]immediate
>> GET_CH0_AO_FOR_SAFE = 2's Complement Format,0h
>> GET_CH1_AO_FOR_SAFE = 2's Complement Format,0h
>> GET_CH0_AO_FOR_POWER = 2's Complement Format,0h
>> GET_CH1_AO_FOR_POWER = 2's Complement Format,0h
GET_CHANNEL_ENABLE_STATUS = 3Fh

```

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Condition 2: COM Port does not exist or has been changed

Load the project and find an error that the COM port no longer exists. This type of error usually occurs when changing to a new PC and reinstalling the USB converter. The setting content cannot be obtained from the module due to a COM port error, and the "Configuration loaded from the module" area is empty.

COM port I/O list	Configurations loaded from module	Configurations loaded from file
<ul style="list-style-type: none"> COM1 <ul style="list-style-type: none"> -7028:01:6:0:N81:1:Matched -7026:03:6:0:N81:1:Settings unmatched COM13:Not exist <ul style="list-style-type: none"> -RU-87P4:01:A:0:N81:0:Port 13 not exist -87017Z:02:A:0:N81:0:Port 13 not exist -87082:03:A:0:N81:0:Port 13 not exist -87028U:04:A:0:N81:0:Port 13 not exist -87013:05:A:0:N81:0:Port 13 not exist -tR5:03:6:0:N81:1:Port 13 not exist 		<pre> VERSION = A106 GET_COMMUNICATE_PARAMETER = Baud rate 9600 Format N81 GET_DO_POWER_ON = 3h GET_DO_SAFE_VALUE = 18h GET_WDT_TIMER = 25sec GET_WDT_ENABLE = Disabled GET_WDT_OVERWRITE = Enabled GET_RESPONSE_DELAY_TIME = 5ms </pre>

Condition 3: The original module no longer exists

Can't find the module, probably due to

1. The module is damaged and cannot communicate.
2. The communication parameters of the module are wrong (including wrong network address/ baud rate/checksum/parity format/protocol), or the module is connected to the wrong COM port. Use the search function to find the module.

COM port I/O list	Configurations loaded from module	Configurations loaded from file
<ul style="list-style-type: none"> COM1 <ul style="list-style-type: none"> -7028:01:6:0:N81:1:Module not found COM13 <ul style="list-style-type: none"> -7026:03:6:0:N81:1:Matched RU-87P4:01:A:0:N81:0:Matched <ul style="list-style-type: none"> -87017Z:02:A:0:N81:0:Matched -87082:03:A:0:N81:0:Matched -87028U:04:A:0:N81:0:Matched -87013:05:A:0:N81:0:Matched -tR5:03:6:0:N81:1:Matched 		<pre> VERSION = A202 GET_COMMUNICATE_PARAMETER = Baud rate 9600 Format N81 GET_MODBUS_DATAFORMAT = Engineering Format GET_CH0_AO_TYPE_CODE = [04h]0 ~ +5 V GET_CH0_AO_SLEW_RATE = [00h]immediate GET_CH1_AO_TYPE_CODE = [05h]+/- 5 V GET_CH1_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH2_AO_TYPE_CODE = [05h]+/- 5 V GET_CH2_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH3_AO_TYPE_CODE = [05h]+/- 5 V GET_CH3_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH4_AO_TYPE_CODE = [05h]+/- 5 V GET_CH4_AO_SLEW_RATE = [00h]immediate GET_CH5_AO_TYPE_CODE = [05h]+/- 5 V GET_CH5_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH6_AO_TYPE_CODE = [05h]+/- 5 V GET_CH6_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH7_AO_TYPE_CODE = [05h]+/- 5 V GET_CH7_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH0_AO_FOR_SAFE = Engineering Format,0 GET_CH1_AO_FOR_SAFE = Engineering Format,0 GET_CH2_AO_FOR_SAFE = Engineering Format,0 GET_CH3_AO_FOR_SAFE = Engineering Format,0 GET_CH4_AO_FOR_SAFE = Engineering Format,0 GET_CH5_AO_FOR_SAFE = Engineering Format,0 GET_CH6_AO_FOR_SAFE = Engineering Format,0 GET_CH7_AO_FOR_SAFE = Engineering Format,0 GET_CH0_AO_FOR_POWER = Engineering Format,0 GET_CH1_AO_FOR_POWER = Engineering Format,0 GET_CH2_AO_FOR_POWER = Engineering Format,0 GET_CH3_AO_FOR_POWER = Engineering Format,0 GET_CH4_AO_FOR_POWER = Engineering Format,0 GET_CH5_AO_FOR_POWER = Engineering Format,0 </pre>

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Condition 4: The original module has been replaced with another model Find another module with the same communication parameters. For example, the original project planned to use two channels of M-7028 to provide +/- 10V output. One day it was damaged. Someone used M-7024 to replace the +/- 10V output of M-7028. The system can work normally, but using the "Load Project" function will find out the differences with the project planning content.

DCON Utility Pro V4.0.0.1 Load project D:\martin\V4\DCON_Utility_Pro\search\project\application_1\application_1.txt

ID	Address	Baud Rate	Checksum	Format	Status	Description	Comments
RU-87P4	1[01h]	115200	Disabled	N,8,1	Auto Config. Ena...	[DCON]4*Slot Auto Configuration Remote ...	Matched
-87017Z	2[02h]	115200	Disabled	N,8,1	87PN Slot 0	[DCON]10/20 *AI(mA,mV,V)Differential/Si...	Matched
-87082	3[03h]	115200	Disabled	N,8,1	87PN Slot 1	[DCON]2*Counter/Frequency + 2*DO	Matched
-87028U	4[04h]	115200	Disabled	N,8,1	87PN Slot 2	[DCON]8*AO (V)	Matched
-87013	5[05h]	115200	Disabled	N,8,1	87PN Slot 3	[DCON]4*AI (RTD)	Matched
tr5	3[03h]	9600	Disabled	N,8,1	Remote I/O	[Modbus RTU]5*DO (Relay DO)	Matched

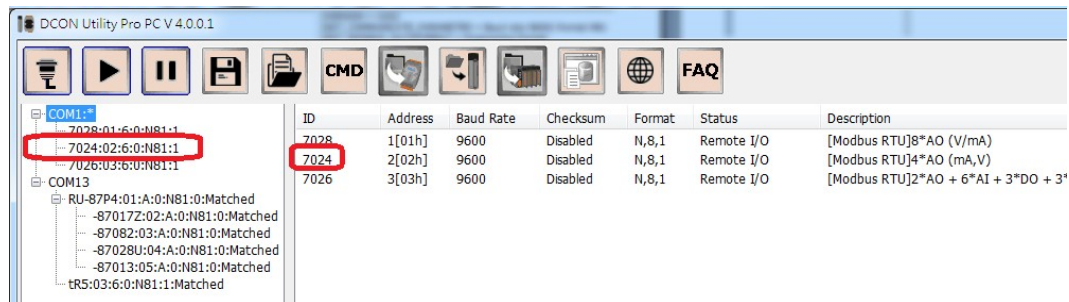
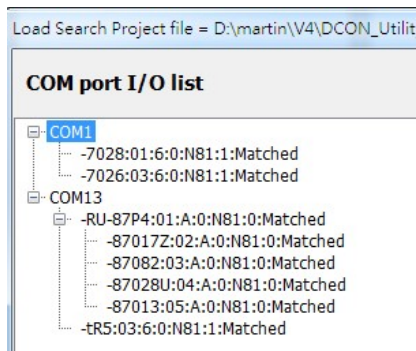
Load Search Project file = D:\martin\V4\DCON_Utility_Pro\search\project\application_1\application_1.txt

COM port I/O list	Configurations loaded from module	Configurations loaded from file
COM1	-7028:01:6:0:N81:1:[7024]Module unmatche	VERSION = A202 GET_COMMUNICATE_PARAMETER = Baud rate 9600 Format N81 GET_MODBUS_DATAFORMAT = Engineering Format GET_CH0_AO_TYPE_CODE = [04h]0 ~ +5 V GET_CH0_AO_SLEW_RATE = [00h]immediate GET_CH1_AO_TYPE_CODE = [05h]+/- 5 V GET_CH1_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH2_AO_TYPE_CODE = [05h]+/- 5 V GET_CH2_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH3_AO_TYPE_CODE = [05h]+/- 5 V GET_CH3_AO_SLEW_RATE = [01h]0.0625 V/sec GET_CH4_AO_TYPE_CODE = [05h]+/- 5 V GET_CH4_AO_SLEW_RATE = [00h]immediate GET_CH5_AO_TYPE_CODE = [05h]+/- 5 V GET_CH5_AO_SLEW_RATE = [01h]0.0625 V/sec

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Condition 5: There are additional modules added

"Load Project" can help users compare and find the differences between the site and the content of the project, but they cannot find the differences between additional modules not included in the original project. For example, initially there are two modules (M-7028 and M-7026) connected to COM1. If another M-7024 is added to COM1, there is no way to find the difference when using the "Load Project" function to check.



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Note 1:

a. Save a backup copy of DCON Utility Pro and the project.

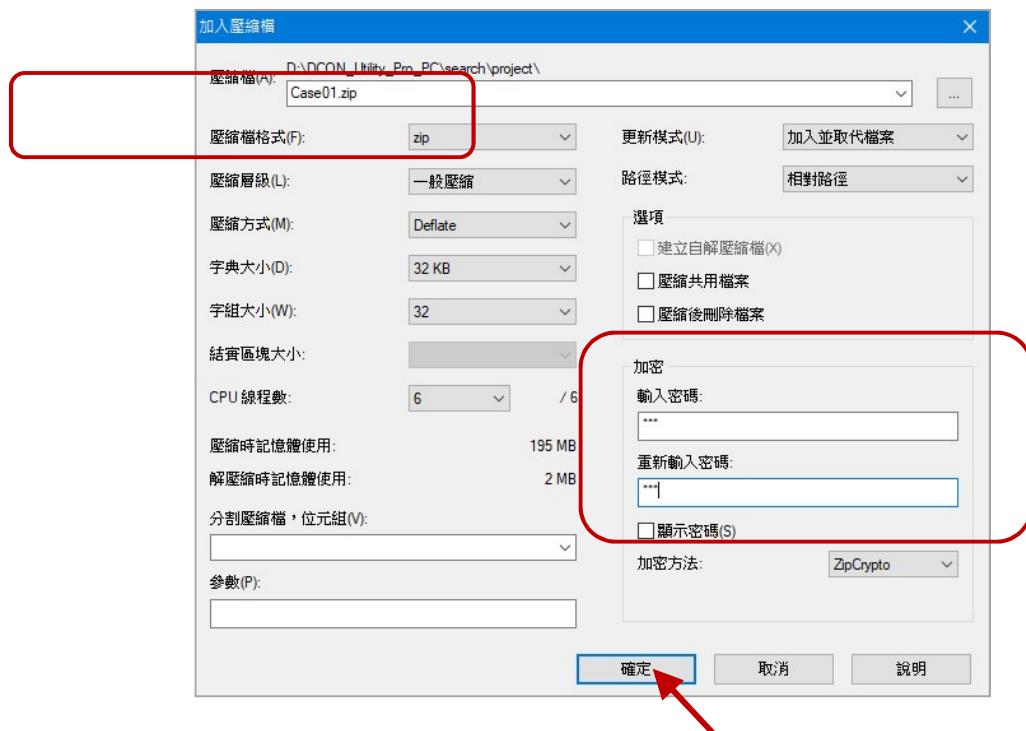
The content of the I/O project will be stored in the path

DCON_Utility_Pro \ search \ project.

It is recommended to back up DCON Utility Pro together with the stored project as a copy to avoid compatibility issues caused by future revisions of DCON Utility Pro.

b. Zip compression tool can be used to encrypt project content

Customers can put relevant project files such as configuration drawings, purchase documents, etc. together with the project folder generated by DCON Utility Pro and use a compression tool to encrypt and compress to protect the content of the relevant data.



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Note 2: If you search and set the I-87K module on the backplane slot on the PAC platform and execute the "Save Project" function, the settings of the I/O module on the backplane will be saved to the auto_config\ path at the same time.

Use the tool "Restore For Backplane I-87K I/O" can be used to restore the backplane I-87K module settings.

