Classification	DCON Utility Pro FAQ					No.	DCON_02_002
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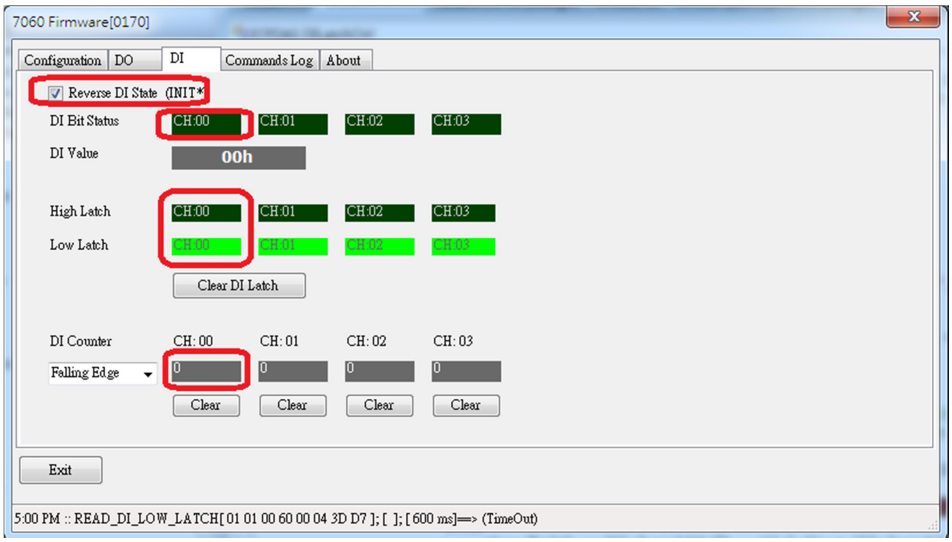
How to catch the ON/OFF signal of the distributed system DI module?

In the control application, a digital input module is needed to monitor the state of the switch for the judgment of the control logic.

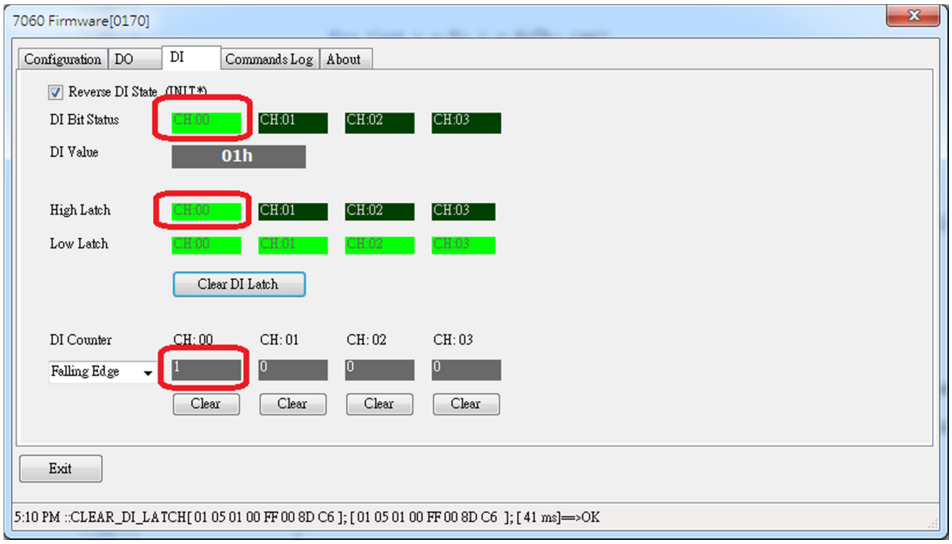
First use DI 0 of I-7060 to show the state changes when DI detects the signal.

Before DI 0 receives any signal, the states of DI 0 and DI Latch 0 are OFF, and DI Counter 0 is 0.

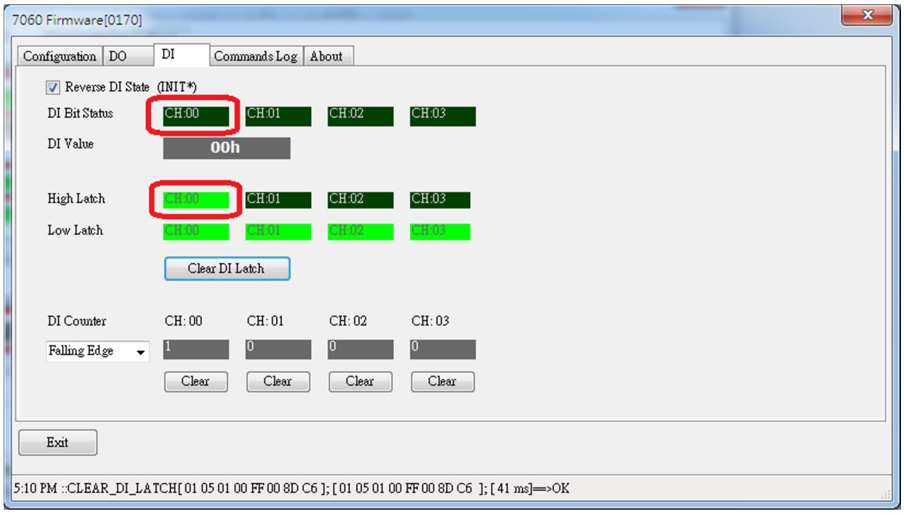
Note 1: The DI state of I-7060 is preset to High. Here, the DI logic is reversed by using Reverse DI State.



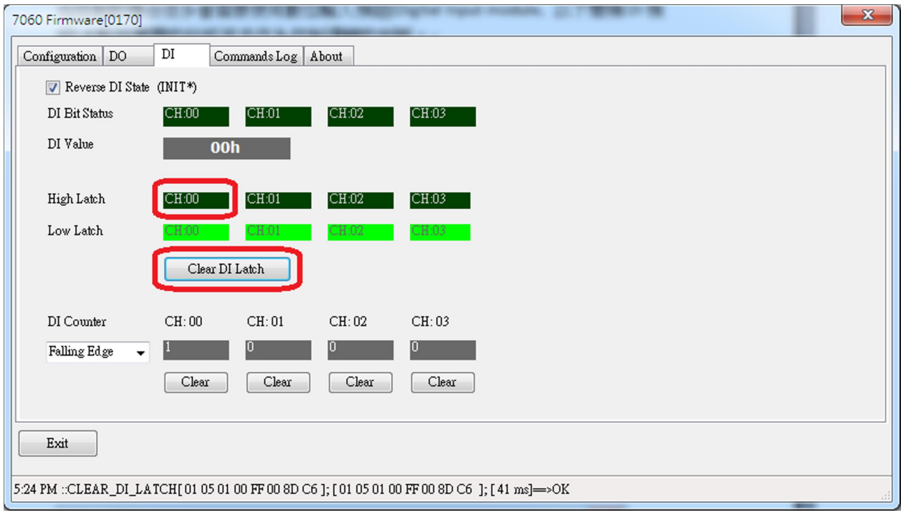
DI 0 is connected to the High signal. The states of DI0 and DI Latch 0 are turned ON. DI Counter 0 is 1.



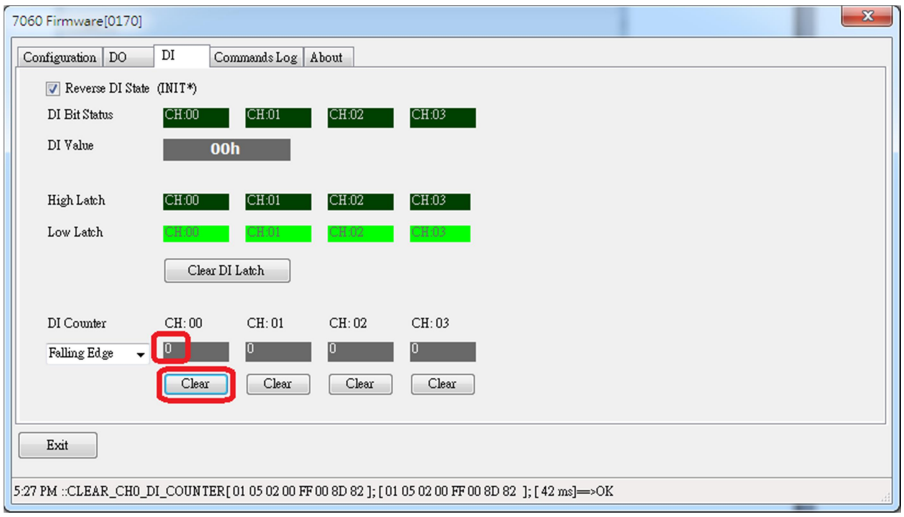
Remove the DI0 signal, DI0 is OFF, but DI Latch0 is still ON, DI Counter0 is 1.



Press "Clear DI Latch" and the state of DI Latch0 will turn OFF.



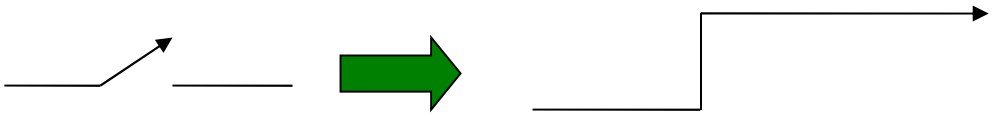
Press the "Clear" DI Counter0 of CH: 00 to change the value to 0.



After understanding the basic operation of the I-7060 DI 0, we will introduce how to use the DI module to detect the action of the switch with two typical switch applications that are most commonly seen.

The first most commonly seen switch is a switch button, the mechanism is shown below

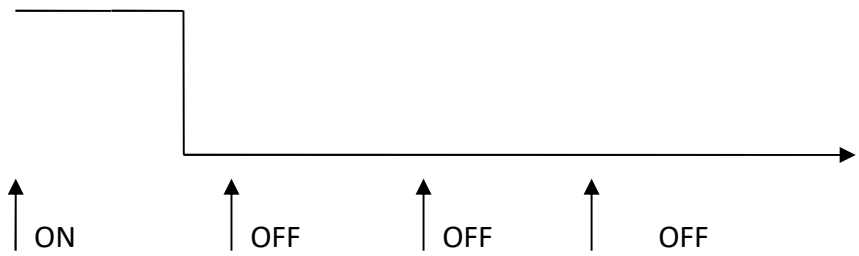
When the switch is switched from ON to OFF position, its logic level is shown in the left figure below. If the mechanical switch Bounce is considered, the actual electrical signal is shown in the right figure below.



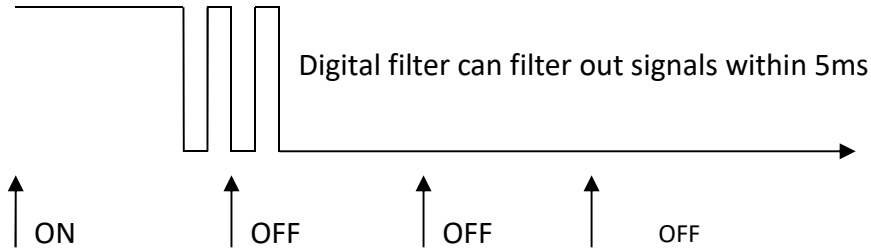
Applications that would use such a switch are,

1. Clear switch position
2. The status will be maintained for a period of time after the change

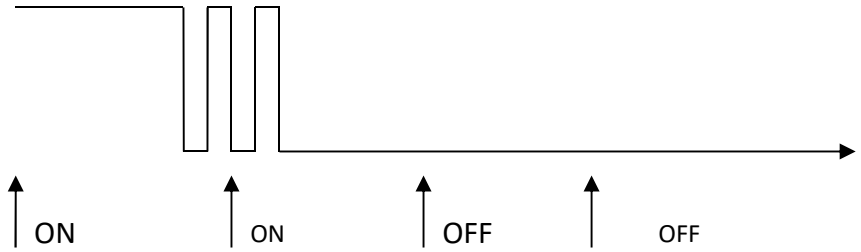
This typical application in general programs only needs to constantly ask the status of DI in the program, and then use the DI status as a control judgment.



Some people may question whether it is necessary to consider the electrical changes of mechanical bounce. DI modules have digital filtering functions. Generally, mechanical bounce noise within 5ms generated by our commonly used switches can be filtered.



Even if it is not judged at the time point when the change starts, the signal change can be judged at the time point of the next inquiry, so such an application need only keep asking the status of DI.



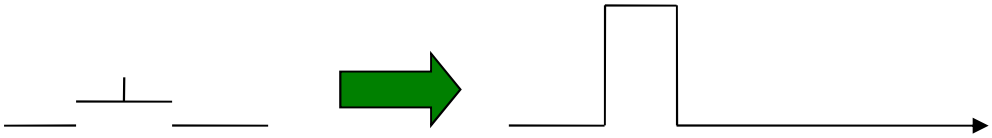
The moment the switch is switched on, it can be read off when the next read

The logic of the software is as follows

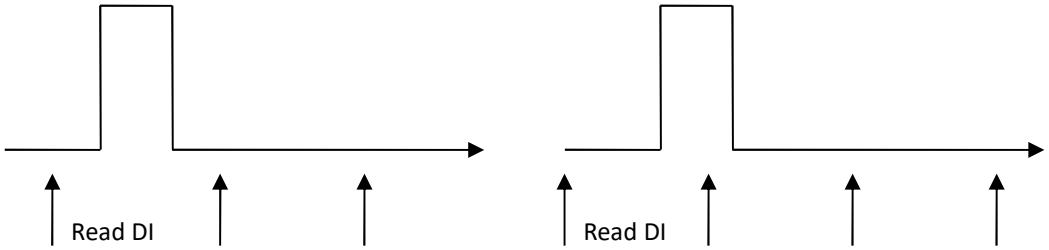
1. Read the DI status of the module, the sum of the hexadecimal bit operations of all the DI channels of the module. The value is 0xFFFF; if the signals of the 16 channels are all logic low levels, the value is 0x0000.
2. Sort the read DI value into binary value state by bit operation, 1 means logic ON,
0 with table logic OFF
3. Perform the corresponding action based on the logic ON / OFF status.

Go back to step 1, continue the next round to ask for action. Another common is a push button or push button. The mechanism is as follows

When the switch is pressed, its electrical signal level changes as shown below



In a distributed system, there may be several or dozens or even more modules on the network. If you want to detect the change in the electrical level of this action by reading the current state of the DI module and detecting the push-button switch, you will usually encounter The problem is that the user will complain that the system will not respond, otherwise the action will only be held when the switch is held down for a period of time. The program judgment will be as shown in the following two figures. It will take a bit of luck to read the change in the action of the key switch Just read) or tricks (requiring customers to hold down for more than a few seconds)

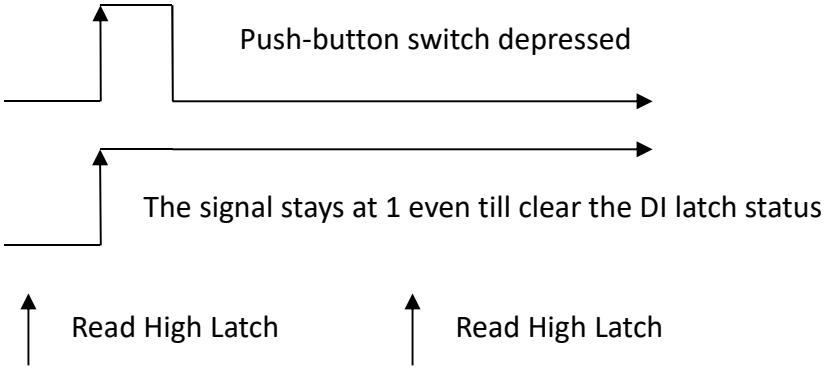


Can't read change of key switch

Just read the change of the key switch

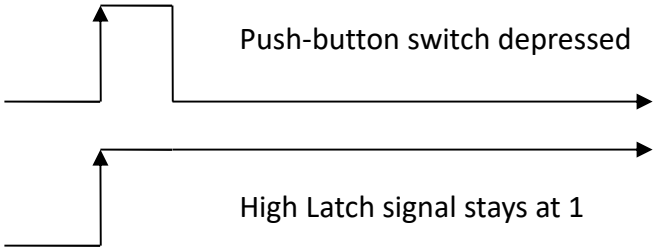
Obviously, there must be problems in the use of such a system design. When encountering such problems, customers question whether the communication speed is too slow. When encountering such applications, it is actually necessary to use the DI module DI Latch function. Judgment is the correct way. The following will introduce how to correctly use the DI Latch function to judge the action change of the push button switch.

DI Latch has DI High Latch and DI Low Latch functions

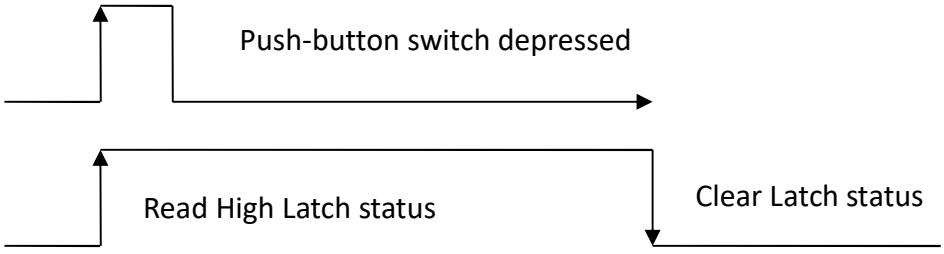


Now use DI High Latch application as software example

1. Read the module DI High Latch status, read the sum of the hexadecimal bit operations of all the DI channels of the module. For example: A 16-channel DI module if the 16-channel signal is a logical Micro Motion The value of the bit is 0xFFFF; if the 16-channel signal is a logical low level, the value is 0x0000. If the push-button switch connected to the first channel is depressed, the module reads the High Latch value of 0x0001



1. Sort the read DI value into a binary value state through bit operation. 1 represents logic ON, which means that the push-button switch has been depressed, and 0 with the table logic OFF means no change.
2. Perform the corresponding action based on the logic ON / OFF status.
3. Clear the module DI High Latch status by command and wait for the next switch status change.



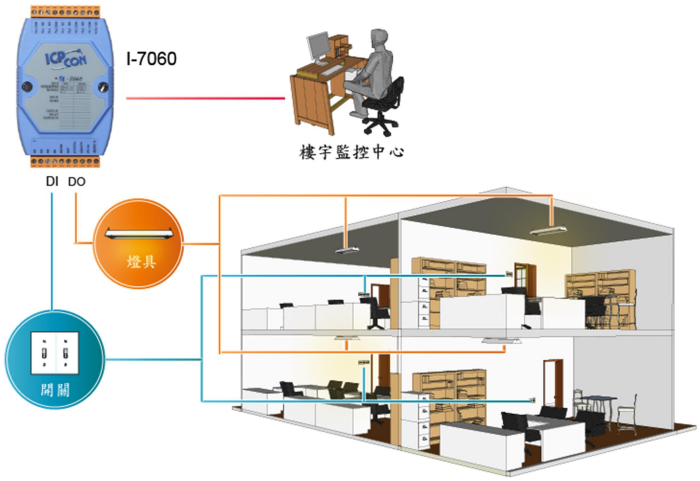
4. 4. Go back to step 1 and continue the next round to ask for action.

Practical application description:

General light switch control:

If the DI module is detected to switch the switch output, such as general indoor lighting control, this switch gear will maintain a considerable length of time.This type of application is typically reading the DI status as the basis for logic control.

偵測 DI 狀態應用範例



Power-saving switch control:

In some special occasions, only short-term lighting is needed, such as the stairwell lighting control. In this case, an infrared sensor can be used to connect the DI module. When someone is detected, the stairwell lighting can be activated for a while. Detection is quite suitable.

偵測 DI Latch 應用範例