

Advantech AE Technical Share Document

Date	2021 / 11 / 03	Release Note	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Category	<input checked="" type="checkbox"/> FAQ <input type="checkbox"/> SOP	Related OS	Windows 7 /8 /10
Abstract	How to use GPIO on Windows		
Keyword	GPIO		
Related Product	UNO-137, UNO-410, UNO-148		

■ Specification Description:

There are 8x digital inputs and 8x digital outputs configured from GPIO pins for on/off triggering and status reading on UNO-137 / UNO-410.

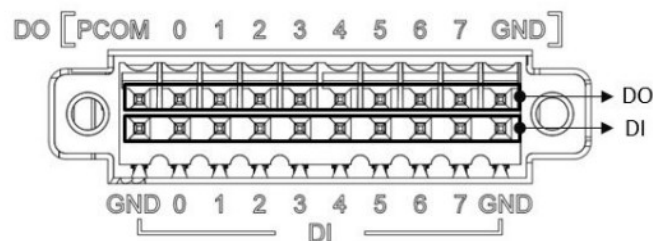


Figure 1: Pin define of digital input / output

The following table indicates the mapping for DIO and GPIO

GPIO Pin	Pin 0	Pin1	Pin2	Pin3
DI Pin	DI0	DI1	DI2	DI3
GPIO Pin	Pin 4	Pin5	Pin6	Pin7
DI Pin	DI4	DI5	DI6	DI7
GPIO Pin	Pin 8	Pin9	Pin10	Pin11
DO Pin	DO0	DO1	DO2	DO3
GPIO Pin	Pin 12	Pin13	Pin14	Pin15
DO Pin	DO4	DO5	DO6	DO7

Figure 2: DIO and GPIO mapping table

Use **SW6** to set **Wet Contact** and **Dry Contact** for Digital input.

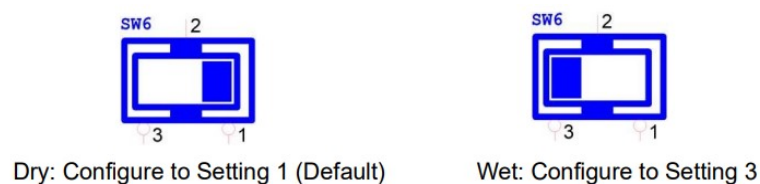


Figure 3: The define of SW6 for Dry/Wet Contact configuration.

Isolated Digital Input

Each of the 8 x isolated digital input channels accept voltages from 0 to 30 V. The following figure shows how to connect an external input source to the isolated inputs of UNO-37

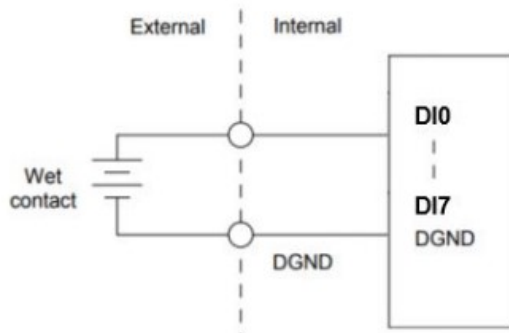


Figure 4: Isolated DI Wet Connection diagram

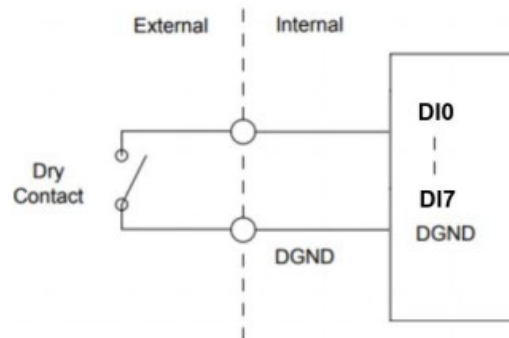


Figure 5: Isolated DI Dry Connection diagram

Isolated Digital Output

If the external voltage source (5~30 V) is connected to each isolated digital output channel and its isolated digital output turns on (500 mA max./ ch), the board's current will sink from the external voltage source. The following figure shows how to connect an external output load to the isolated outputs on UNO-137.

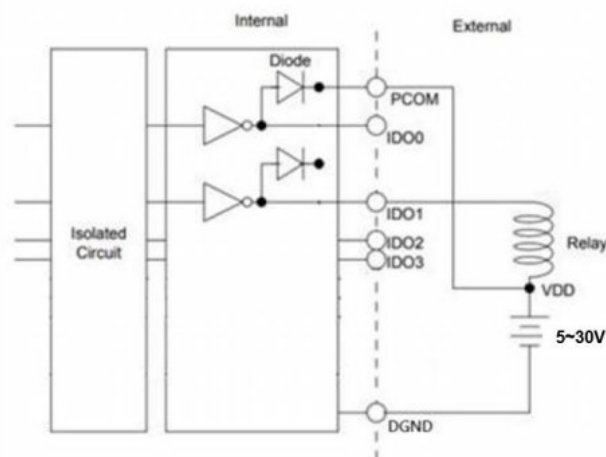


Figure 6: Isolated DO Connection diagram

For more details about GPIO specification, please refer to the user manual (**UNO-137-E13BA_EN_User Manual_Ed.1.pdf**) which can be download from Advantech official website. (Refer to Reference section)

■ **Brief Solution - Step by Step:**

1. Before using GPIO of UNO-137, you have to install the Advantech software API (PlatformSDK) first. This API is already pre-installed in Advantech Windows LTSC image, if you use this, please skip this step.

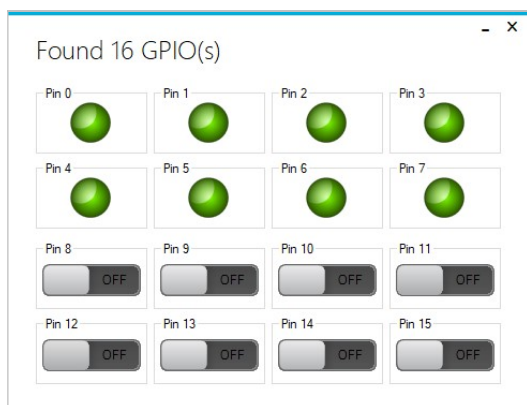
- **PlatformSDK for UNO-100_1000 series**

<https://www.advantech.tw/support/details/software-api?id=1-1W0HF4F>

2. Download and decompress the zip file, and then installing on Windows.
3. After installing the PlatformSDK, all the document and sample codes will be installed at
C:\Program Files\Advantech\PlatformSDK\
4. To manipulate with GPIO, you have to write codes with EAPI. The materials are as below:

- The EAPI developer guide is located at
C:\Program Files\Advantech\PlatformSDK\document\
- The EAPI header files are located at
C:\Program Files\Advantech\PlatformSDK\include\
- The GPIO EAPI sample code is located at
C:\Program Files\Advantech\PlatformSDK\Sample\GPIO_Sample\

5. There is also a GUI test utility can help you to test GPIO function quickly, you can launch it from
Start > Advantech > GPIO Utility.



GPIO Pin	Pin 0	Pin1	Pin2	Pin3
DI Pin	DI0	DI1	DI2	DI3
GPIO Pin	Pin 4	Pin5	Pin6	Pin7
DI Pin	DI4	DI5	DI6	DI7
GPIO Pin	Pin 8	Pin9	Pin10	Pin11
DO Pin	DO0	DO1	DO2	DO3
GPIO Pin	Pin 12	Pin13	Pin14	Pin15
DO Pin	DO4	DO5	DO6	DO7

Figure 7: GPIO utility and mapping table reference

You also can just simply connect DIs and DOs one by one via Dupont cables. E.g.

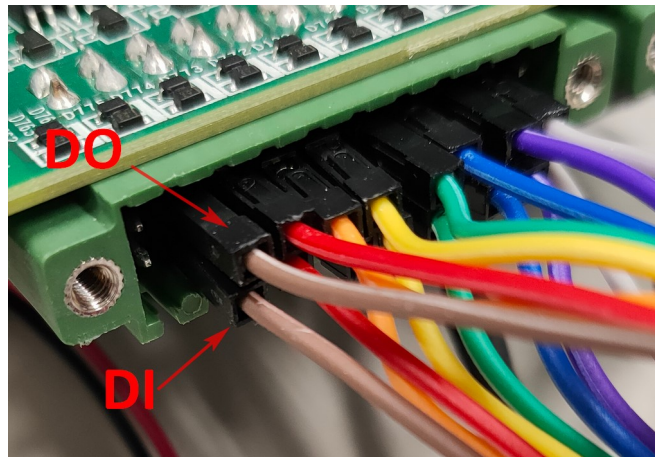


Figure 8: The hardware connection of DOs to DIs.

And then try to change DO status on the GPIO utility, the status of DI should be changed like below, (Dry contact)

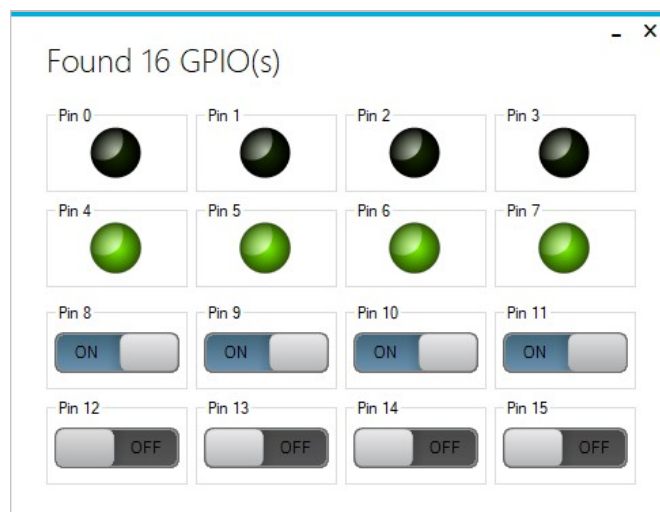


Figure 9: The status changed by connect DOs to DIs in Dry Contact configuration.

Notice the DI6 & DI7 is multiplex function that are used to remote power on and reset function which is controlled by **SW8**. Please check this configuration before you using DI6 & DI7 as GPIO function.

<div> <div>SW8 Default</div> </div>		
Description	Instruction	SW8
DI function for DI6/ DI7(Default)	Bit 2 off	
Remote Setting Function	Bit 2 on	

Figure 10: The define of SW8 for remote power on and reset setting.

■ **Reference:**

- Manual for UNO-137-E13BA
<https://www.advantech.tw/support/details/manual?id=1-1YR7G79>