

# Advantech AE Technical Share Document

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<b>Category</b>	<input checked="" type="checkbox"/> FAQ <input type="checkbox"/> SOP	<b>Related OS</b>	Windows 7 /8 /10
<b>Abstract</b>	How to use GPIO on Windows		
<b>Keyword</b>	GPIO		
<b>Related Product</b>	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.

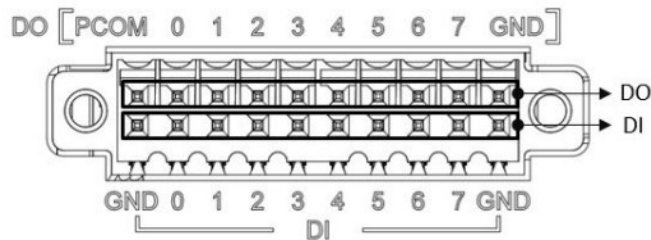


Figure 1: Pin define of digital input / output

The following table indicates the mapping for DIO and GPIO

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

Figure 2: DIO and GPIO mapping table

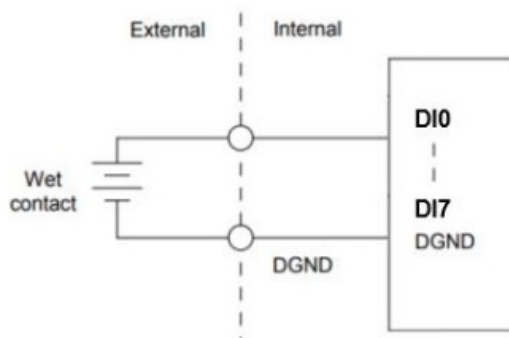
Use **SW6** to set **Wet Contact** and **Dry Contact** for Digital input.



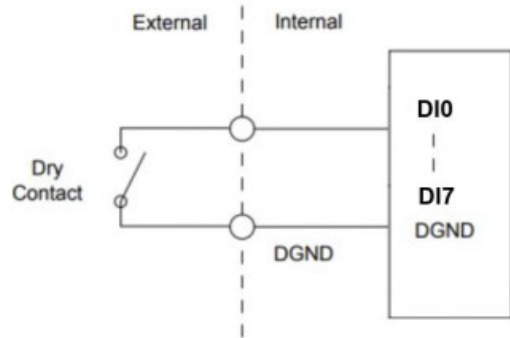
Figure 3: The define of SW6 for Dry/Wet Contact configuration.

**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



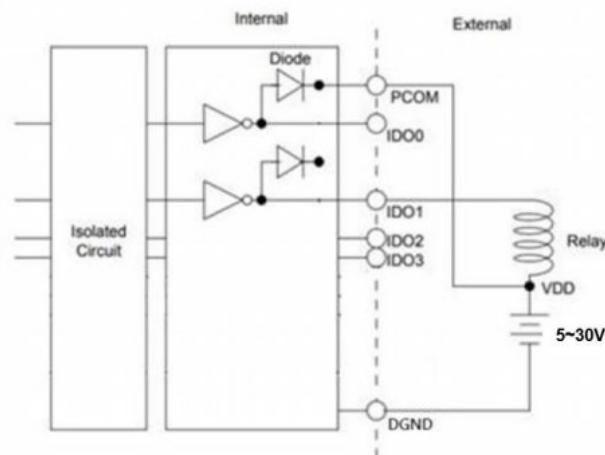
**Figure 4:** Isolated DI Wet Connection diagram



**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\

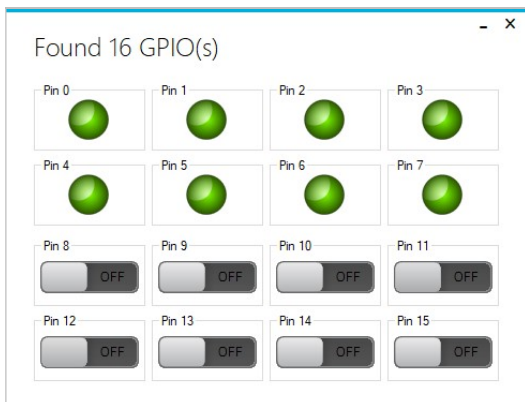
● The EAPI header files are located at

C:\Program Files\Advantech\PlatformSDK\include\

● The GPIO EAPI sample code is located at

C:\Program Files\Advantech\PlatformSDK\Sample\GPIO\_Sample\

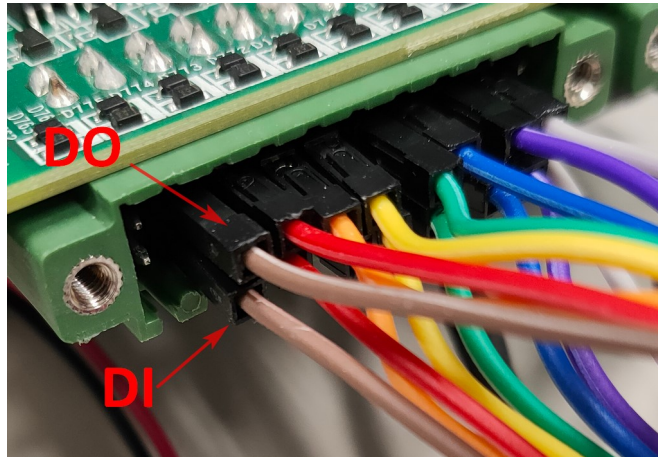
5. There is also a GUI test utility can help you to test GPIO function quickly, you can launch it from **Start > Advantech > GPIO Utility.**



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.

Description	Instruction	SW8
SW8 Default		
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>

**■ Contact Window and File Link:**

If you have any questions, please contact to [kyle.cheng@advantech.com.tw](mailto:kyle.cheng@advantech.com.tw)