

Digital Input / Output

Presenter: Eric Mao

Date: Feb, 2018

DIO at a Glance

- What is DIO
- Application
- HW Setup for DIO
- Sample Code at a Glance
- iSetting Utility

What is DIO

- **Digital Input (DI):** to detect input logic states (H or L)
- **Digital Output (DO):** allow output logic states (H or L)
- Same concept as GPIO.
- DIO is isolated. Supply voltage can be 5-30V.
- GPIO is usually 5V or 3.3V depends on Super I/O solution.

Application



Hardware Setup for DIO

1. Understand pin definition from UM.

DIO1: Digital Input / Output Connector

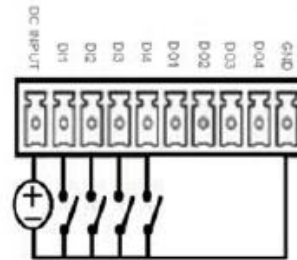
Connector Type: Terminal Block 1X10 10-pin, 3.5mm pitch

Pin	Definition	Pin	Definition
1	DC INPUT	6	DO1
2	DI1	7	DO2
3	DI2	8	DO3
4	DI3	9	DO4
5	DI4	10	GND

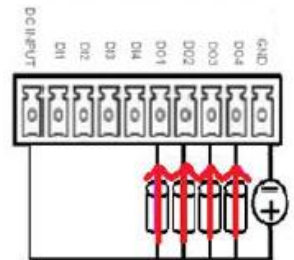


2. Follow UM instruction for wiring.

Digital Input Wiring



Digital Output Wiring



3. No driver installation is needed.

Sample Code

- Sample code is pseudo-code, which is not compilable language.
- For developer as reference to build their own application.

	GPI 0	GPI 1	GPI 2	GPI 3
IO Address	0xA03h	0xA03h	0xA03h	0xA03h
Bit	4	5	6	7
Sample code	#1			

	GPO 0	GPO 1	GPO 2	GPO 3
IO Address	0xA02h	0xA02h	0xA02h	0xA02h
Bit	0	1	2	3
Sample code	#2			

#1 : Get GPI 0 status
; Enable config mode

```
mov dx, SIO_INDEX_Port
mov al, SIO_UnLock_Value
out dx, al
jmp short $+2 ;lo_delay
jmp short $+2 ;lo_delay
out dx, al
```

; Switch GPIO Configuration for SIO LDN 0x06

```
mov dx, SIO_INDEX_Port
mov al, 07h
out dx, al
mov dx, SIO_DATA_Port
mov al, SIO_LDN_GPIO
out dx, al
```

; Get GPI 0 Pin Status Register

```
mov dx, SIO_INDEX_Port
mov al, GPI_REG
out dx, al
mov dx, SIO_DATA_Port
in al, dx
;al bit4 = GPI 0 status
```

; Exit SIO

```
mov dx, SIO_INDEX_Port
mov al, SIO_Lock_Value
out dx, al
```

#2 : Set GPO 0 status to high

; Enable config mode

```
mov dx, SIO_INDEX_Port
mov al, SIO_UnLock_Value
out dx, al
jmp short $+2 ;lo_delay
jmp short $+2 ;lo_delay
out dx, al
```

; Switch GPIO Configuration for SIO LDN 0x06

```
mov dx, SIO_INDEX_Port
mov al, 07h
out dx, al
mov dx, SIO_DATA_Port
mov al, SIO_LDN_GPIO
out dx, al
```

; Set GPO 0 Pin to High

```
mov dx, SIO_INDEX_Port
mov al, GPO_REG
out dx, al
mov dx, SIO_DATA_Port
in al, dx
or al, GPO_0
out dx, al
;al bit0 = GPO 0 status
```

; Exit SIO

```
mov dx, SIO_INDEX_Port
mov al, SIO_Lock_Value
out dx, al
```

iSetting Utility



- iSetting is a Windows-based testing utility developed by C&T.
- For different Super I/O solution, there is different iSetting versions to support.
- **DI Section:** to detect logic state from the correspondent DI pin. Color will change based on H or L.
- **DO Section:** allow controlling logic state output on each correspondent DO pin. Press set to send out output value H or L.

THANK YOU!