

SUNIX Industrial Digital I/O Control Card

Quick Installation Guide (Universal)

Ver.1

Please visit <https://www.sunix.com> with product model for detail and latest manual/driver update

Introduction

SUNIX industrial digital I/O card is designed for PC-based IoT Gateway or Edge Computer that enables data acquisition and I/O controls in industrial automation. With built-in SUNIX QiuNiu Digital-I/O controller, and other SUNIX advanced features and technologies. In addition, SUNIX provides API software and SDK library, allowing users to program under Windows 10/11 and Linux operating system. The software package includes a dynamic library.dll, C and C# programming language sample code, making it easier to develop application software. SUNIX enriches digital I/O expandable capacity with cost-efficient design; it is the best digital I/O control solution for lite-industrial applications.

1. Hardware Installation

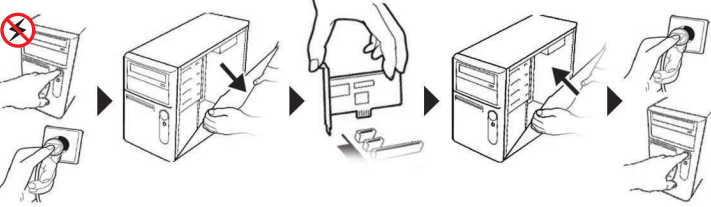


SAFETY FIRST

To avoid damages, please make sure to remove any power connection before card installation, and follow the detailed steps given below before inserting the card into your computer.

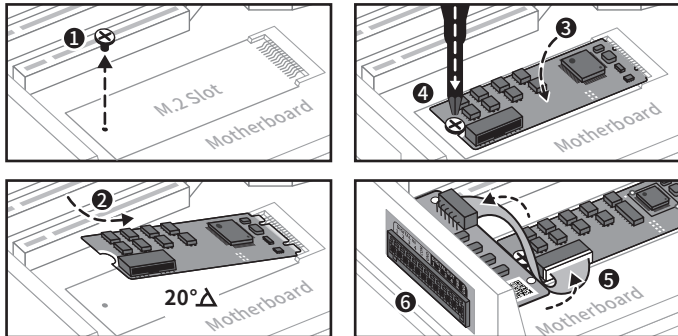
1-1 PCI Express I/O Card

- Step 1: Turn your PC's power off, and shut off the power to any peripheral.
- Step 2: Remove the power plug from the plug socket.
- Step 3: Remove the cover from the computer case.
- Step 4: If fitted, Remove the metal cover plate on the rear of a free PCIe slot.
- Step 5: Insert PCI Express Industrial I/O Control Board into the free PCIe slot and screw it firmly on the bracket side.
- Step 6: Place the cover back onto the computer.
- Step 7: Insert the plug into the plug socket.



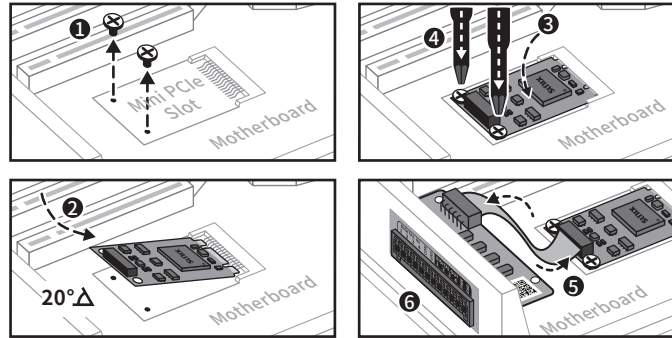
1-2 M.2 PCIe I/O Card

- Step 1: Remove the screw attached to the motherboard.
- Step 2: Insert M.2 Card tightly into the M.2 slot with 20° angle.
(SUNIX M.2 Card supports Key-M and Key-B slot)
- Step 3: Push the M.2 card down to the screw hole.
- Step 4: Lock screw on M.2 card that you remove from motherboard in step1.
- Step 5: Connect ribbon cable between M.2 card and extension board.
- Step 6: Secure the extension board to PC chassis.



1-3 Mini PCIe I/O Card

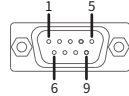
- Step 1: Remove the screw attached to the motherboard.
- Step 2: Insert Mini PCIe Card tightly into the Mini PCIe slot.
- Step 3: Push the Mini PCIe Card down to the screw hole.
- Step 4: Lock screw on Mini PCIe Card that you remove from motherboard in step1.
- Step 5: Connect ribbon cable between Mini PCIe Card and extension board.
- Step 6: Secure the extension board to PC chassis.



2. Pin Assignment

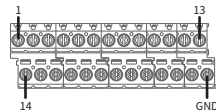
2-1 PCI Express Series

DB9 Male
RS-232/422/485
(SDC4880B)



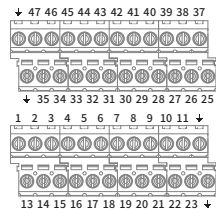
PIN	RS-232	RS-422	RS-485
1	DCD	TxD-	Data-
2	RxD	TxD+	Data+
3	TxD	RxD+	-
4	DTR	RxD-	-
5	GND	GND	GND
6	DSR	RTS-	-
7	RTS	RTS+	-
8	CTS	CTS+	-
9	RI	-	-

DB25 Male Wiring Board
Digital Input / Output
(SDC08801 / SDC4880B)



PIN	DI	PIN	DO
1	DI COM	14	DO PWR
2	DI COM	15	DO PWR
3	DI GND	16	DO GND
4	DI GND	17	DO GND
5	DI 1	18	DO 1
6	DI 2	19	DO 2
7	DI 3	20	DO 3
8	DI 4	21	DO 4
9	DI 5	22	DO 5
10	DI 6	23	DO 6
11	DI 7	24	DO 7
12	DI 8	25	DO 8
13	NC	GND	NC

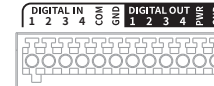
DB44 Male Wiring Board
Digital Input / Output
(SDC0FF0I)



PIN	DI	PIN	DO
25	DI COM1	1	DO COM1
26	DI COM2	2	DO COM2
27	DI COM3	3	DO COM3
28	DI 1	4	DO 1
29	DI 2	5	DO 2
30	DI 4	6	DO 3
31	DI 5	7	DO 4
32	DI 5	8	DO 5
33	DI 6	9	DO 6
34	DI 7	10	DO 7
35	DI 8	11	DO 8
36	GND	12	GND
37	DI GND1	13	DO GND1
38	DI GND2	14	DO GND2
39	DI GND3	15	DO GND3
40	DI 9	16	DO 9
41	DI 10	17	DO 10
42	DI 11	18	DO 11
43	DI 12	19	DO 12
44	DI 13	20	DO 13
45	DI 14	21	DO 14
46	DI 15	22	DO 15
47	DI 16	23	DO 16
48	GND	24	GND

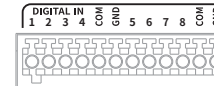
2-2 M.2 / Mini PCIe Series

4+4 Digital Input / Output



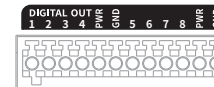
PIN	DI	PIN	DO
1	DI1	7	DO1
2	DI2	8	DO2
3	DI3	9	DO3
4	DI4	10	DO4
5	COM	11	PWR
6	GND	12	GND

8 Digital Input



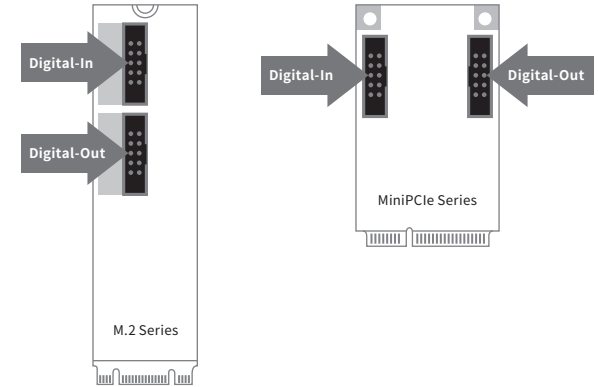
PIN	DI	PIN	DI
1	DI1	7	DI5
2	DI2	8	DI6
3	DI3	9	DI7
4	DI4	10	DI8
5	COM	11	PWR
6	GND	12	GND

8 Digital Output



PIN	DO	PIN	DO
1	DO1	7	DO5
2	DO2	8	DO6
3	DO3	9	DO7
4	DO4	10	DO8
5	PWR	11	PWR
6	GND	12	GND

2-3 DIO Pin Header Assignment



3. Driver Installation

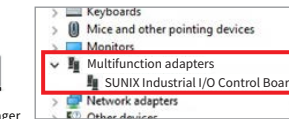
- 1) You can download the latest driver from SUNIX official website (<https://www.sunix.com>)
- 2) Please plug the card into the available I/O slot
- 3) Unzip the software file and run setup.exe under Windows operating system.



Name	Type
readme.txt	Text Document
Setup.exe	Application

4. Hardware Verification

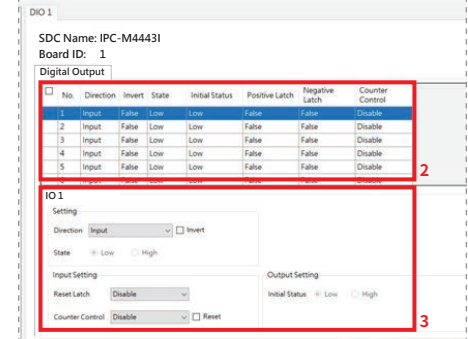
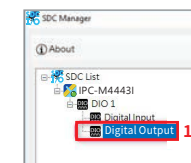
Please launch "Device Manager" to verify hardware installation correctly.
Controller Panel > All Control Panel Items > Device Manager



5. Configure Digital Input / Output Interface

Under Digital I/O interface catalog, select "Digital Input / Output" item and you can read control panel as shown as below. If there are any settings changes, be sure to execute the "Apply" button to save the settings, or execute "Default" button to restore manufacturing default settings.

- 1) **Digital Input / Output Interface** Select this item to read Digital Input channel state on the table.
- 2) **Digital Input / Output Channel State List** User can read the state table of the digital channel and individually set each channel in the control panel.
- 3) **Digital Input / Output Control Panel**



6. Digital Output Value Setting

A digital output is the closed or opened circuit to indicate whether the given state is high or low. The digital output hardware design is a NPN (Sink) type.

Initial Status ☒ Low ☐ High

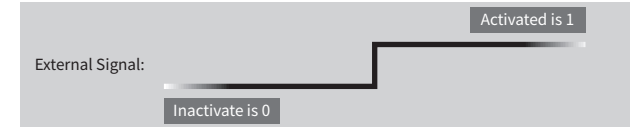
Direction

Output

☐ Invert

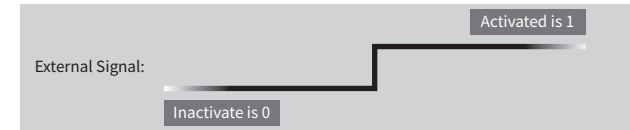
State ☒ Low ☐ High

- 1) **Digital Output Initial State: (Default: 0=Low)**
The digital output channel has the function "High" or "Low" state) during computer boot (before entering the operation system).
Digital Output initial state "High" or "Low" setting when system booting.



Note: Before turning computer power on, digital out state will be 0=Low.

- 2) **Digital Output Current State: (Default: 0=Low)**
Change the current digital output channel state to "High" or "Low" setting.



3) **Invert Value:**
"Enable" invert digital output state: (1:Low, 0:High)

Box State	Settings	Result
Uncheck (Default)	Default Mode	0:Low, 1:High
Check	Invert Mode	1:Low, 0:High

7. Configure Serial Interface (SDC4880B only)

Under Serial interface catalog, select "COM" port item and you can read control panel as shown as below. If there are any settings changes, be sure to execute the "Apply" button to save the settings, or execute "Default" button to restore manufactory default settings.

- (1) **Serial Interface**
Select this item to set Serial COM port settings.
- (2) **COM Port Control Panel**

COM Port Number

COM6

COM6

COM7 (in use)

COM8 (in use)

COM9 (in use)

COM10

COM11

- 7-1 COM Port Number Setting**
Under Port Number, select a COM number to assign to the serial port.
Click "Apply" to approve the settings for the selected port.
- Note: In order to prevent system resource conflict, do not select "in use" port.

COM Port Interface

RS232

RS232

RS422

RS485

- 7-2 Interface Setting (Default: RS-232)**
User can select RS-422 or RS-485 interface for each COM port of this board. User need to configure each COM port for different UART interfaces in this page. Please note if the select menu is unselectable, it means that this COM port does not support multi-interface feature.
- RS-422 (4-Wire RS-485)
This COM port forces to run RS-422 (4-Wire RS-485) full duplex mode.
 - RS-485
This COM port forces to run RS-485 half duplex mode.

RS-422/485 Termination

☐ Enable

- 7-3 RS-422/485 Termination Setting (Default: Disable)**
Under COM Port interface, user could disable or enable 120 ohms termination resistors across the two wires. Please refer to chapter 3 for technology detail.

RS-485 AHDC/CS

☐ Enable

- 7-4 RS-485 Carrier Sense (Default: Enable)**
RS-485 Carrier Sense technology is the data flow control under RS-485 half duplex (one-way traffic) communicating. Due to the reduction of TX/RX packet conflicting on RS-485 one-way traffic bus, it will enhance better system performance and RS-485 communication ability. Please refer to chapter 6.1 for technology detail.

8. Troubleshooting

- Q 1. System fails to find the Industrial I/O Control Board.
Ans: It may cause by following issue:
- a. The board is not properly plugged into the PCIe (M.2 / Mini PCIe) slot.
 - b. Please clean the golden finger.
 - c. The M.2 slot is defective. Please try other slots until you find one that works.
 - d. The mainboard does not have an available IRQ for the PCIe (M.2 / Mini PCIe) series board. Enter the PC's BIOS and make sure an IRQ setting is available in the PCI/PnP settings.
 - e. The board itself might be defective. You can try another mainboard testing this board working or not.
- Q 2. There is a blue screen when I entry operation system.
Ans: It may cause by following issue:
- a. The possible reason is an IRQ or I/O address conflict with other PCIe bus adapters, such as LAN or serial boards, or with the system BIOS. Refer to the corresponding problem in the previous FAQ for solutions.
 - b. Please check driver update from your vendor.

Copyright - Copyright© 2022 SUNIX Co., Ltd. All Rights Reserved. No part of this publication may be reproduced, transcribed, stored in a retrieval system, translated into any language, or transmitted in any form or by any means, photocopying, manual, or otherwise, without prior written permission from SUNIX. Disclaimer - SUNIX shall not be liable for any incidental or consequential damages resulting from the performance or use of this equipment. SUNIX makes no representations or warranties regarding the contents of this manual. Information in this manual has been carefully checked for reliability, however, no guarantee is given as to the correctness of this content. In the interest of continued product improvement, this company reserves the right to revise the manual or include change in the specifications of the product described within it at any time without notice and without obligation to notify any person of such revision or changes. The information contained in this manual is provided for general use by the customers. Trademarks - SUNIX is a registered trademark of SUNIX Group. All other trademarks or registered marks in this manual belong to their respective owners. BSMI 聲明 - 限用物質含有情況標示資訊網站請參考下列網址: <http://www.sunix.com.tw> 操作說明: 選擇頁面之產品/型號/文件下載區 (RoHS文件)