SDC0FF0I

PCI Express Industrial I/O Control Board
16-ch Isolated Digital Input
16-ch Isolated Digital Output

Introduction

SUNIX SDC0FF0I, industrial isolated digital I/O PCI-Express add-on card, is designed for PC-based IoT Gateway or desktop that enables data acquisition and I/O controls in industrial automation. This board built-in SUNIX Digital-I/O controller, **QiuNiu**, and also built with many of 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 systems. The software package includes a dynamic library.dll, C, C# and Python programming language sample code, making it easier to develop application software. SUNIX SDC0FF0I board enriches digital I/O expandable capacity with cost-efficient design; it is the best digital I/O control solution for lite-industrial applications.

Features

- Designed to meet PCI Express Base Specification Revision 2.1.
- With high reliable SUNIX **QiuNiu** Digital-I/O controller.
- Plug-n-Play, I/O address and IRQ assigned by system.
- Ultra low power consumption (<1.5W) design for green environment and industrial application.
- High quality electronic components, low impedance and high stability ensure product quality and reliability.
- Support Microsoft Windows 10/11 and Linux with C, C# and Python programming language sample code.
- Capable of engaging with EdgeX device C SDK for EdgeX service development.
- Certified by CE, FCC, RoHS, and Microsoft approvals.
- Support both standard and Low profile bracket design to meet various of PC chassis.

Digital I/O Interfaces:

- Expands isolated sixteen (16) digital input channels with features for all channels.
  - Support both NPN & PNP devices
  - Support both dry and wet contact connections
  - With digital filter for noise reduction
  - Built-in 32-bit counter for all digital in channels
- Expands isolated sixteen (16) NPN type digital output channels with initial value (Booting & Restart) protection.
- Each channel built-in 2.5KV isolation protection for signal and power, allowing the input signals to be completely floated so as to prevent ground loops.

Specifications

Board Level

Interface	PCI Express
Controller	SUNIX **QiuNiu** Digital-I/O controller
BUS	PCI Express Gen1 x 1 (single Lane)
IRQ & IO	Assigned by System
ESD Protection	±15KV IEC61000-4-2 Air Gap Discharge ±8KV IEC61000-4-2 Contact Discharge

Digital Input

Type	NPN & PNP	Channel	16-channel
Dry Contact	Logic Level 0: Open; Logic Level 1: Close to GND	Wet Contact	Logic Level 0: 0 to 3VDC; Logic Level 1: 10 to 50VDC
Input Resistance	10KΩ	Isolation	2500 VDC
Counter	32-bit counter on all channel	Frequency	Input Range 2KHz max.
Digital Filter	Digital filter for noise reduction	Pin Define	DI1~DI16, COM, GND
Interrupt Mode	Event trigger (Rising Edge, Falling Edge, Both modes) & polling for all channels		
PCB Connector	DB44 Female connector		

Digital Output

Type	NPN	Channel	16-channel
Voltage Range	3.5 to 40VDC	Current	500mA per Channel
Isolation	2500 VDC	Pin Define	DO1~DO16, PWR, GND
Initial Protection	Load preset output value automatically during booting and restart		
PCB Connector	DB44 Female connector		

Software Support

OS	Windows 10 (X86/X64), Windows 11, Linux
SDK	Library: Supporting C, C++, C# and Python languages. C, C# and Python sample code available
Third Party Software support	Capable of engaging with EdgeX device C SDK for EdgeX service development.

Declaration

Green Product	RoHS, WEEE

Regulatory Approvals

Hardware	CE / FCC / VCCI / BSMI

Environment

Operation Temperature	-20 to 70°C (-4 to 158°F)
Operation Humidity	5 to 95% (non-condensing)
Storage Temperature	-20 to 70°C (-4 to 158°F)

Dimension

PCB Dimension	120 x 68.5 mm
Bracket	Standard 120 mm / Low Profile 79.2mm
Bracket Space	1

Unit : mm

Standard bracket

Low Profile bracket

120

79.20
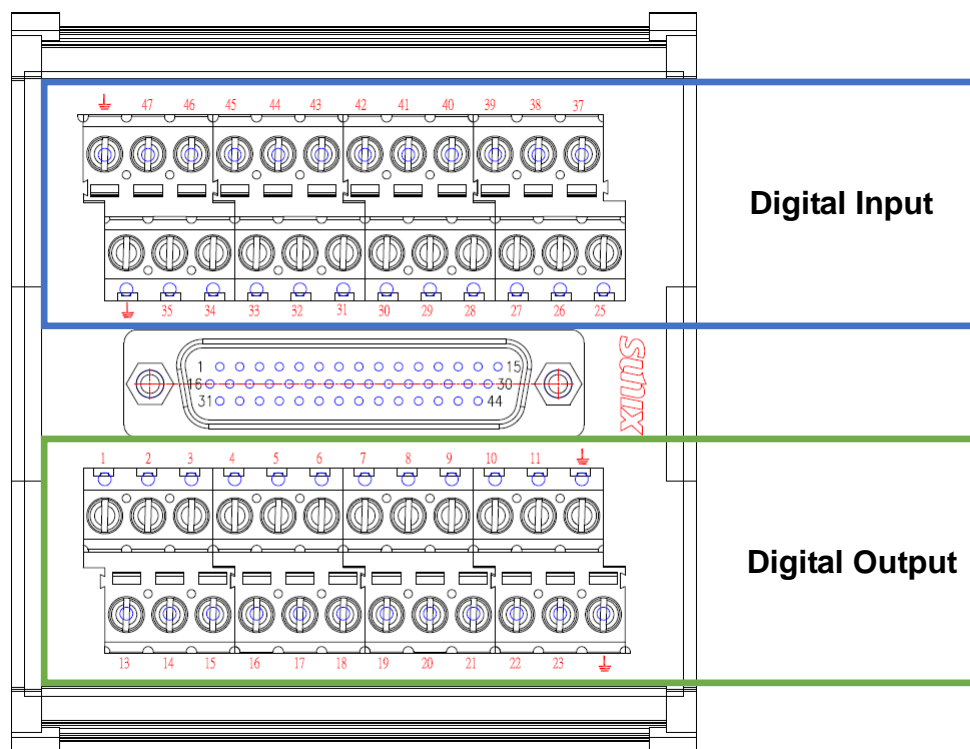
105.16

68.10

120.00

68.50

H=2.0
H=2.03
H=0
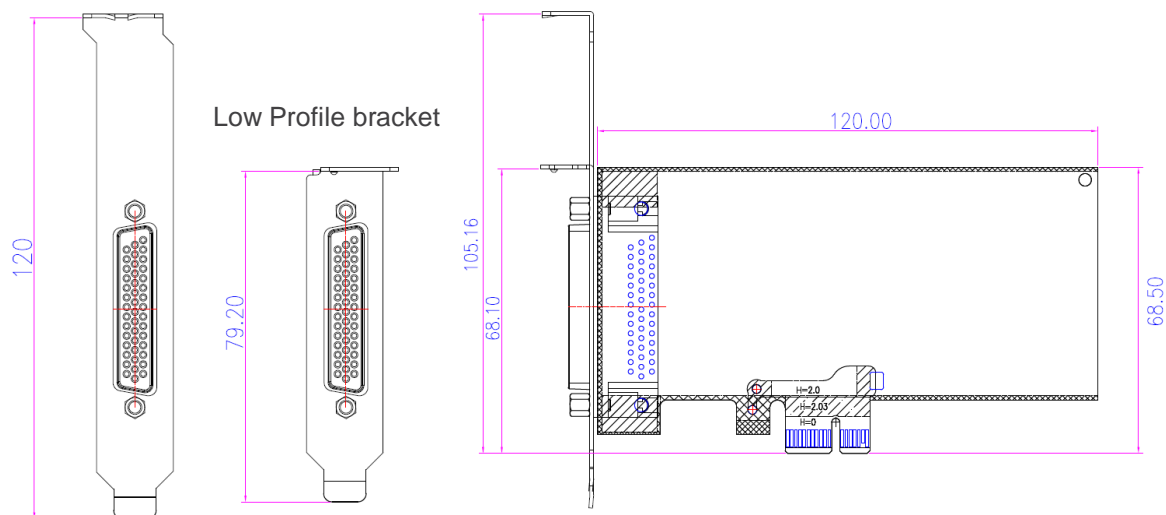
Package

- SDC0FF0I PCI Express Industrial I/O Control Board
- DB44 Male to Female connection cable, 100cm
- DB44 Male DIN-rail wiring board
- Low Profile Bracket
- Quick Installation Guide
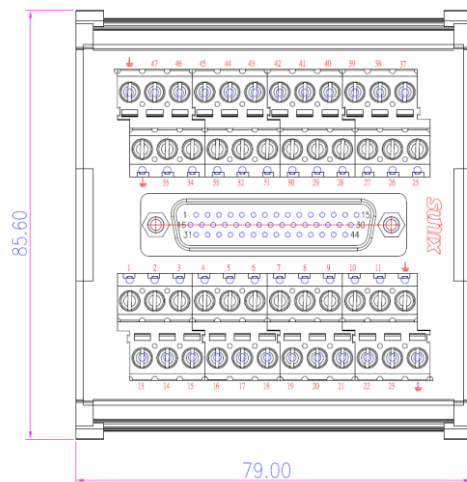
Pin Assignment

■ **Digital Input / Output**

PIN	Digital Output	PIN	Digital Output	PIN	Digital Input	PIN	Digital Input
1	DO_COM1	13	DO GND1	25	DI COM1	37	DI GND1
2	DO_COM2	14	DO GND2	26	DI COM2	38	DI GND2
3	DO_COM3	15	DO GND3	27	DI COM3	39	DI GND3
4	DO 1	16	DO 9	28	DI 1	40	DI 9
5	DO 2	17	DO 10	29	DI 2	41	DI 10
6	DO 3	18	DO 11	30	DI 4	42	DI 11
7	DO 4	19	DO 12	31	DI 5	43	DI 12
8	DO 5	20	DO 13	32	DI 5	44	DI 13
9	DO 6	21	DO 14	33	DI 6	45	DI 14
10	DO 7	22	DO 15	34	DI 7	46	DI 15
11	DO 8	23	DO 16	35	DI 8	47	DI 16
⏚	GND	⏚	GND	⏚	GND	⏚	GND

Accessories

■ **DB44 Male to Female connection cable**
■ **100 cm**
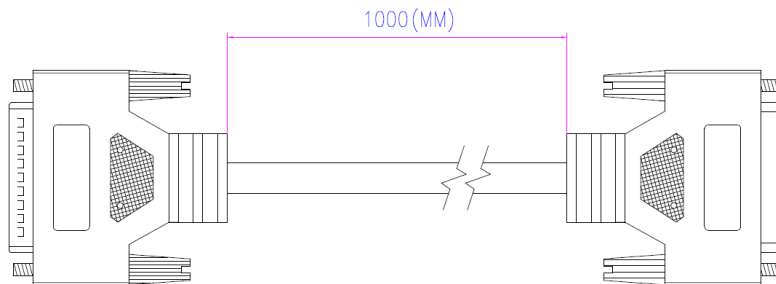
■ **DB44 Male DIN-rail wiring board**
■ **79.1 x 85.5 mm**

■ **Low Profile Bracket**