DA Series Expansion Modules

Expansion modules with Time Synchronization ports, RS-232/422/485 and RS-232/485 serial ports, 10/100 Mbps LAN and unmanaged switch ports, 100 Mbps fiber LAN ports, and PCI development kit

- IRIG-B Time Synchronization module
- Universal PCI expansion module
- 4-port 10/100 Mbps LAN module
- 4-port 100 Mbps Fiber LAN module
- 8-port 10/100 Mbps unmanaged switch module
- 8-port RS-422/485 serial module with terminal block connectors
- 8-port RS-232/422/485 software-selectable serial modules with isolation protection
- Fully compatible with Moxa embedded computers that have peripheral expansion slots

Overview

Moxa's peripheral expansion modules, which come with serial ports, LAN ports, switch ports, fiber ports, Time Synchronization IRIG-B ports, and PCI slots, give end-users the greatest flexibility for setting up industrial applications and are fully compatible with Moxa's embedded computers that have perpheral expansion slots.

The serial port modules include an 8-port RS-232/422/485 module with either DB9 or terminal block connectors, and an 8-port RS-422/485 module with terminal block connectors. Some modules are even designed with 2 kV digital isolation, making them fully suitable for the great demands of industrial applications that use serial communication.

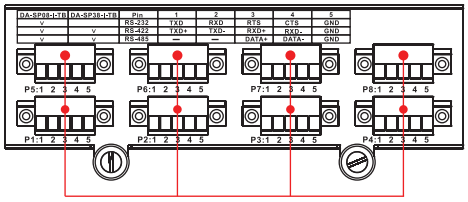
In addition, a 4-port LAN module, 8-port switch module, and 4-port fiber LAN module are available for setting up industrial communication applications with Ethernet-based devices. A universal PCI development kit is also available for PCI-based devices for expanding industrial applications at a reasonable cost.

The time synchronization module features 3 digital inputs and 4 digital outputs and provides precision timing information using IRIG-B input signals. The module is designed for embedded computers that support the PCI/104 interface.

All modules are designed to offer the greatest flexibility for setting up applications and performing industrial tasks. In particular, users can swap out modules quickly and easily.

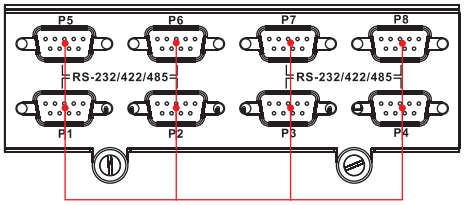
Appearance

DA-SP08-I-TB



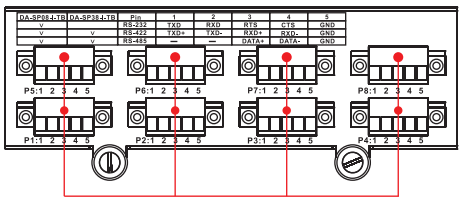
RS-232/422/485 Serial Port x 8

DA-SP08-DB/DA-SP08-I-DB



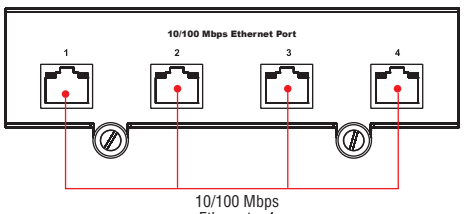
RS-232/422/485
Serial Port x 8

DA-SP38-I-TB



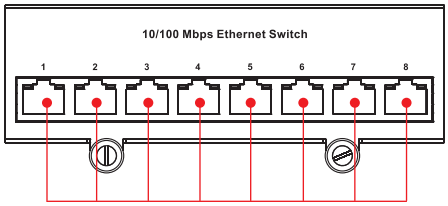
RS-422/485 Serial Port x 8

DA-LN04-RJ



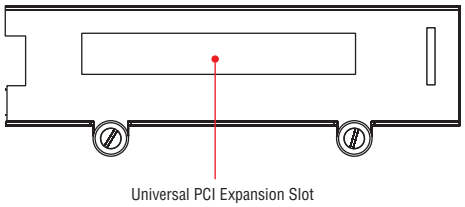
10/100 Mbps
Ethernet x 4

DA-SW08-RJ



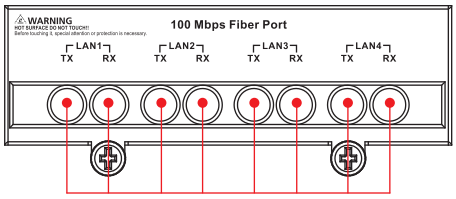
10/100 Mbps Switch Port x 8

DA-UPCI-DK



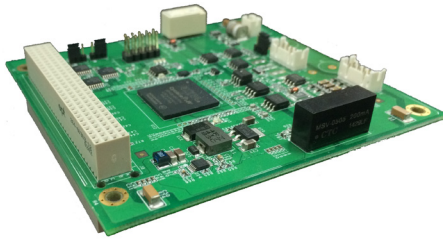
Universal PCI Expansion Slot

DA-FX04-MM-ST-T



Fiber LAN Port x 4

DA-IRIGB-4DIO-PCI104-EMC4



DA-IRIGB-4DIO-PCI104-EMC4 Hardware Specifications

Hardware
Communication Controller: FPGA Cyclone V
Form Factor: PC-104

Time Code Input
IRIG-B: Based on the IRIG STANDARD 200-04 and IEEE 1344

Precision and Accuracy
Accuracy (Time Synchronization): ±1 µs
Accuracy (Free Running): ±500 ms @ 24 hr

Input Signals
Single Level:
• Open: High
• Short to GND:> Low
• Level Input: 5 to 12 V
Differential Level:
• D+ - D- > 0.2 V, RXD is High
• D+ - D- < -0.2 V, RXD is Low
• Level Input: 5 V

Interface
IRIG-B: 2-pin wafer to DB9
DI/DO: 10-pin wafter to DB9

Protection
ESD Protection: 8 kV contact, 15 kV Air ESD protection
Surge Protection: 2 kV line-to-line and 4 kV line-to-ground surge protection, 8/20 µs waveform
Insulation: 500 V

Digital Input
Input Channels: 3, source type
Input Voltage: 0 to 30 VDC
Digital Input Levels for Dry Contacts: • Logic level 0: Close to GND
• Logic level 1: Open
Digital Input Levels for Wet Contacts: • Logic level 0: +3 V max.
• Logic level 1: +10 V to +30 V (source to DI)
Isolation: 3 kV optical isolation
Connector Type: DB9 male

Digital Output
Output Channels: 4, sink type
Output Current: Max. 200 mA per channel
On-state Voltage: 24 VDC nominal, open collector to 30 V
Isolation: 3 kV optical isolation
Connector Type: Male

Operating Systems
Windows: Windows 7E
Linux: Debian 7

Physical Characteristics
Dimensions: 90 x 96 mm (3.54 x 3.78 in)

Environmental Limits
Operating Temperature: -10 to 60°C (14 to 140°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Altitude: Up to 2000 m

Standards and Certifications
EMC: CE, FCC
EMI: EN 55022, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A
EMS: EN 55024, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11
Green Product: RoHS, CRoHS, WEEE

DA-SP08-DB, DA-SP08-I-DB, DA-SP08-I-TB Hardware Specifications

Serial Interface

Serial Standards: 8 RS-232/422/485 ports, software selectable (DB9 male or terminal block connector)
ESD Protection: 15 kV for all signals
Isolation: 2 kV digital isolation (DA-SP08-I-DB and DA-SP08-I-TB only)

Serial Communication Parameters

Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485
Baudrate: 50 bps to 921.6 kbps (supports non-standard baudrates; see user's manual for details)

Serial Signals

RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Weight: 290 g
Dimensions: 130 x 150 x 42 mm (5.12 x 5.91 x 1.65 in)
MTBF (mean time between failures): 1,753,143 hrs

DA-SP38-I-TB Hardware Specifications

Serial Interface

Serial Standards: 8 RS-422/485 ports, software selectable (DB9 male or terminal block connector)
ESD Protection: 15 kV for all signals
Isolation: 2 kV digital isolation

Serial Communication Parameters

Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485
Baudrate: 50 bps to 921.6 kbps (supports non-standard baudrates; see user's manual for details)

Serial Signals

RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Weight: 245 g
Dimensions: 130 x 150 x 42 mm (5.12 x 5.91 x 1.65 in)

DA-LN04-RJ Hardware Specifications

Ethernet Interface

LAN: 4 auto-sensing 10/100 Mbps ports (RJ45)
Magnetic Isolation Protection: 1.5 kV built-in

Physical Characteristics

Weight: 198 g
Dimensions: 132 x 150 x 42 mm (5.20 x 5.91 x 1.65 in)

DA-SW08-RJ Hardware Specifications

Ethernet Interface

LAN: 8 auto-sensing 10/100 Mbps unmanaged Ethernet switch ports (RJ45)
Magnetic Isolation Protection: 1.5 kV built-in

Physical Characteristics

Weight: 200 g
Dimensions: 132 x 150 x 42 mm (5.20 x 5.91 x 1.65 in)

DA-UPCI-DK Hardware Specifications

Universal PCI Expansion Adatpor

PCI Slots: 1
Interface Bus: 32-bit Universal PCI (3.3 V and 5 V)

Physical Characteristics

Weight: 195 g
Dimensions: 132 x 150 x 42 mm (5.20 x 5.91 x 1.65 in)
MTBF (mean time between failures): 11,053,266 hrs

DA-FX04-MM-ST-T Hardware Specifications

Fiber Interface

Number of Ports: 4 (100BaseFX)
Fiber Mode: Multi-mode
Connector Type: ST
Optical Wavelength: 0 to 2 km, 1310 nm (62.5/125 µm, 500 MHz*km)
Min-TX Output: -20 dBm
Max-TX Output: -14 dBm
RX Sensitivity: -34 dBm

Physical Characteristics

Weight: 495 g
Dimensions: 132 x 150 x 42 mm (5.20 x 5.91 x 1.65 in)

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F)

Standards and Certifications

EMC: EMC Level 4, ESD Level 4, criteria A

Software Functions

IEEE 1588 or IP Teaming Selectable (Default =IP Teaming): Supports 4 modes
AFT: Adaptor Failover Teaming
SFT: Switch Fault Tolerance
ALB: Adaptor Failover and Load Balancing
Link Aggregation: supported

Compatibility Chart for Peripheral Expansion Modules and Embedded Computers

All expansion modules can be used on any of Moxa's embedded computers that come with the peripheral expansion slots. Refer to the following chart.

Module Models	DA-682A	DA-710	DA-683
DA-SP08-DB 8-port Serial Module (RS-232/422/485)	✓	✓	✓
DA-SP08-I-DB 8-port Serial Module (RS-232/422/485)	✓	✓	✓
DA-SP08-I-TB 8-port Serial Module (RS-232/422/485)	✓	✓	✓
DA-SP38-I-TB 8-port Serial Module (RS-422/485)	✓	✓	✓
DA-LN04-RJ 4-port LAN Module (10/100 Mbps)	✓	✓	✓
DA-SW08-RJ 8-port Switch Module (10/100 Mbps)	✓	✓	✓
DA-UPCI-DK PCI Module	✓	✓	✓
DA-FX04-MM-ST-T 4-port Fiber LAN Module (100 Mbps)	✓	✓	✓
DA-IRIGB-4DIO-PCI104-EMC4 Time Synchronization Module	✓	✓	✓

Ordering Information

Available Models

DA-IRIGB-4DIO-PCI104-EMC4: 1 IRIG-B signal input port, 3 digital inputs, 4 digital outputs
DA-SP08-I-DB: 8-port RS-232/422/485 serial module with DB9 connector and digital isolation
DA-SP08-DB: 8-port RS-232/422/485 serial module with DB9 connector
DA-SP08-I-TB: 8-port RS-232/422/485 serial module with terminal block connector and digital isolation
DA-SP38-I-TB: 8-port RS-422/485 serial module with terminal block connector and digital isolation
DA-SW08-RJ: 8-port 10/100 Mbps unmanaged switch module
DA-LN04-RJ: 4-port 10/100 Mbps LAN module
DA-UPCI-DK: Universal PCI development kit
DA-FX04-MM-ST-T: 4-port (100BaseFX) fiber LAN module with multi-mode, ST connector, supports IP Teaming

Model Name	Serial Ports		Isolation	Switch	LAN		Connector Type				PCI
	RS-232/422/485	RS-232/485	2 kV Digital	10/100 Mbps	10/100 Mbps (RJ45)	Fiber 100 Mbps (ST)	DB9	RJ45	Terminal Block	ST	3.3/5 V
DA-SP08-I-DB	8	–	✓	–	–	–	✓	–	–	–	–
DA-SP08-DB	8	–	–	–	–	–	✓	–	–	–	–
DA-SP08-I-TB	8	–	✓	–	–	–	–	–	✓	–	–
DA-SP38-I-TB	–	8	✓	–	–	–	–	–	✓	–	–
DA-SW08-RJ	–	–	–	8	–	–	–	✓	–	–	–
DA-LN04-RJ	–	–	–	–	4	–	–	✓	–	–	–
DA-UPCI-DK	–	–	–	–	–	–	–	–	–	–	✓
DA-FX04-MM-ST-T	–	–	–	–	–	✓	–	–	–	✓	–
DA-IRIGB-4DIO-PCI104-EMC4	–	–	–	–	–	–	✓	–	–	–	–