JETCON

JetCon 2201-w / 2201i-w

Industrial RS-232 to RS-422/485 Serial Converter

Quick Installation Guide

V1.2

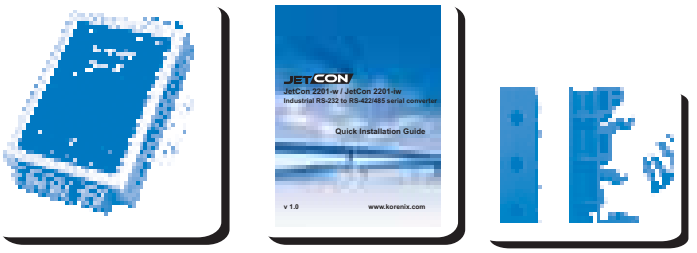
www.korenix.com

Introduction

The standard RS-232 protocol has been widely used in most of industrial computer systems for serial port communication. However, it has its limitations in transmission speed, range, and networking capabilities. On the other hand, the RS-422 and RS-485 standard has overcome the limitations mentioned above by utilizing different voltage lines for data and control signals. Therefore, the RS-232 to RS-422/485 converter is commonly deployed to the industrial serial communication network for more distance and reliability.

Product Features

- Automatic RS-232 to RS-422/485 converter
- Auto Baud rate and direction control
- High Speed 921.6Kbps
- 3000V RS-485/422 isolation protection
- RX biasing and line terminator selection
- Easy Configure without power resetting
- -40~70°C wide operating temperature



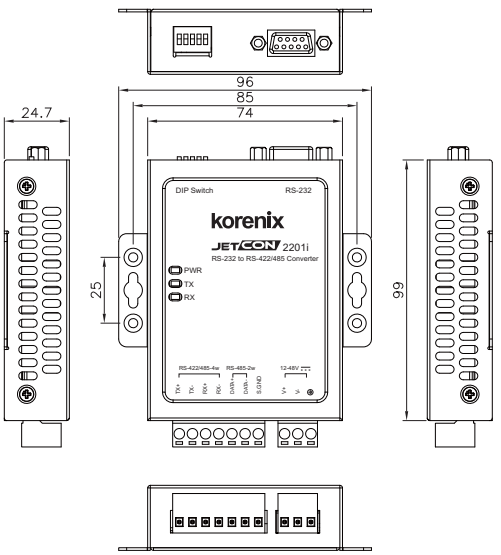
Package Checklist

The JetCon 2201 series are shipping with the following items:

- JetCon 2201 x1
- Quick Installation Guide x1
- DIN rail mount kits x1

System Dimension

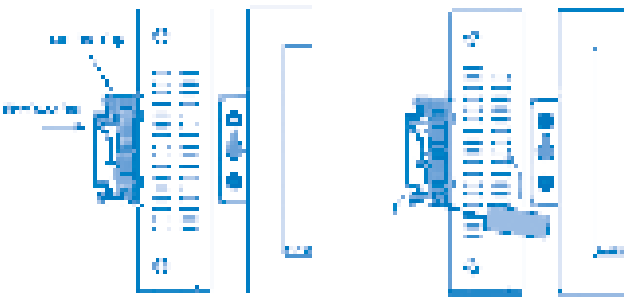
74mm (W) x 24.7mm(H) x 99mm (D)



System Installation

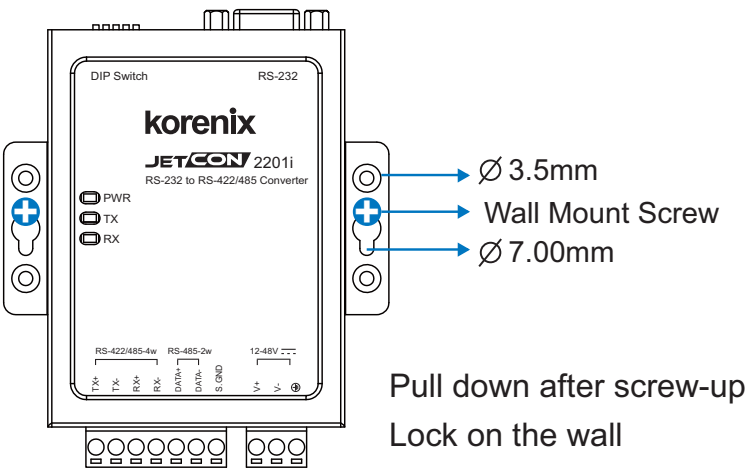
1. Mounting the Unit – DIN Rail

Din-Rail mount: screw up the DIN rail mount kit with 4 screws and mount JetCon 2201 on the DIN Rail.



Insert the flat screw driver into the bottom of clip to loosen the clip from the track

2. Mounting the Unit – Wall mount

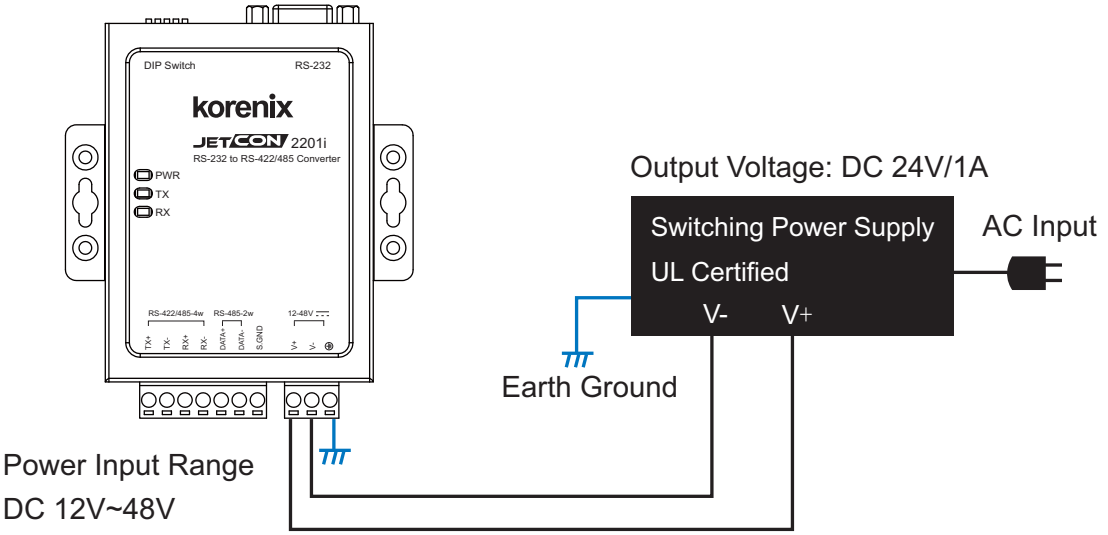


Pull down after screw-up the screws to Lock on the wall

3. Powering the Device

There is one earth grounding pole included in the power-input connector. Connect the earth grounding of JetCon 2201 to ensure the system safety and prevent noise to obtain better communication quality.

The standard DC power input is DC 24V with polarity reverse protection, the input voltage range from 12V to 48V. Before install the power, please ensure the Switch power supply is UL certified and the AC power source is turn-off.

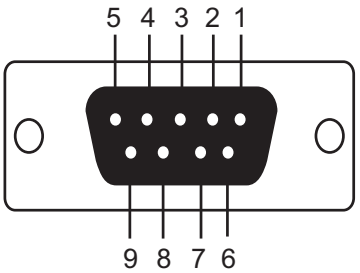


4. Connecting the serial interface

JetCon 2201 supports RS-232 converts to RS-422, RS-485 4-wire and 2-wire. The RS-232 supports Female DB-9 connector and RS-422/485 is removable terminal block.

Definition of RS-232 pin-out (DB-9)

Pin No.	Abbreviation	Full Name
1	CD	Carrier Detect
2	TD	Transmit Data
3	RD	Receive Data
4	DTR	Data Terminal Ready
5	S.G.	Signal Ground
6	DSR	Data Send Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator



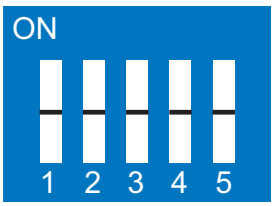
4.1 Connect to PC/PLC RS-232 interface

Some of RS-232 conductors of PC/PLC site need short to provide handshaking feedback mechanism as the connection figure.

4.2 RS-422/485 configuration

The JetCon 2201-w/2201-iw provides one 5-pin DIP-switch to select the RS-422/485 mode and also provides 120 ohm line terminator selection. The configuration of DIP-switch shows as following table. Be sure the DIP-switch is configured as right mode before make the RS-422 or RS-485 connection.

Description	SW1	SW2	SW3	SW4	SW5
RS-422	Off	Off	X	X	X
RS-485 4-wire	On	Off	X	X	X
RS-485 2-wire	On	On	X	X	X
RX +/- Terminator (120Ω)	X	X	On	X	X
RX+/- Biasing (150KΩ)	X	X	X	Off	Off
RX+/- Biasing (1KΩ)	X	X	X	On	On



In an idled multi-drop RS-485 network, all nodes are in listen (receive) mode. Under this condition there are no active drivers on the network. All drivers are tri-stated. Without anything driving the network, the state of the line is unknown. The JetCon 2201 provides biasing resistor select function to offer and keep 200 mV at the RX+ and RX-. If the network node up to 32, the first or last node need turn-on the Biasing resistor to keep the last bit state at RX+/- . The 120Ω terminator is used to match the line impendence, when the line impendence is mismatched, the transmitted signal is not absorbed and a portion is reflected back to the transmission line and interference the communication. Also, the terminator only applies at first and last node in a multi-drop RS-485 network.

4.3 Connecting RS-422 and RS-485

The JetCon 2201 supports one 7-pin removable terminal block for RS-422/RS-485 2-wire and 4-wire communication.

In the following diagram shows the wiring architecture of RS-422, RS-485 2/4-wire.

The RS-485 support 2/4-wire master-slave communication mode, the master-slave type architecture has one node that issues commends to each slave node and process the responses that from slave. Slave node won’t transmit data without request from master node. In the multi-drop serial network, each slave should have its own unique address.

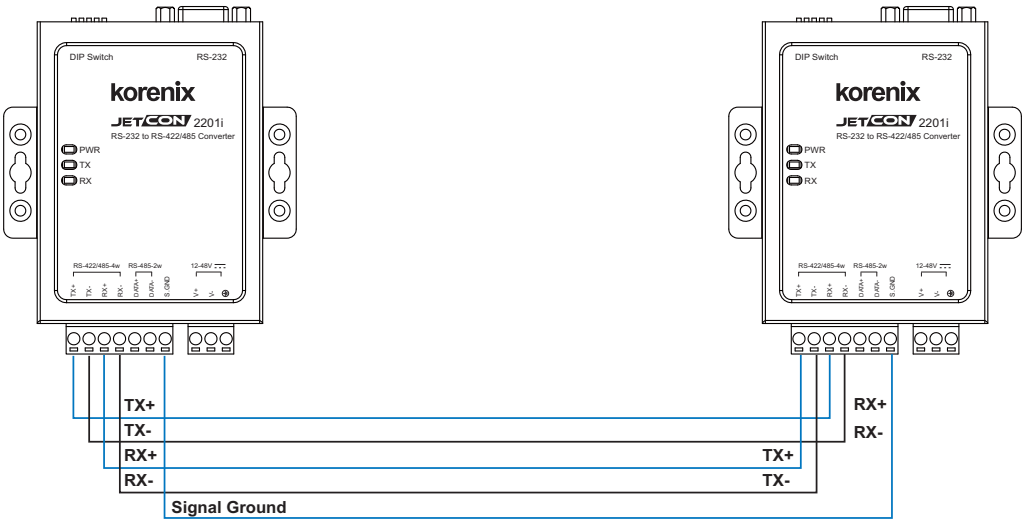
RS-422 4-wire Peer to Peer

Architecture: Point to Point

Baud Rate: 300~921.6 Kbps

Distance: 4000 feet

RS-232 to RS-422 4-wire Point to Point



RS-485 4-wire multi-drop

Architecture: Master-Slave Mode

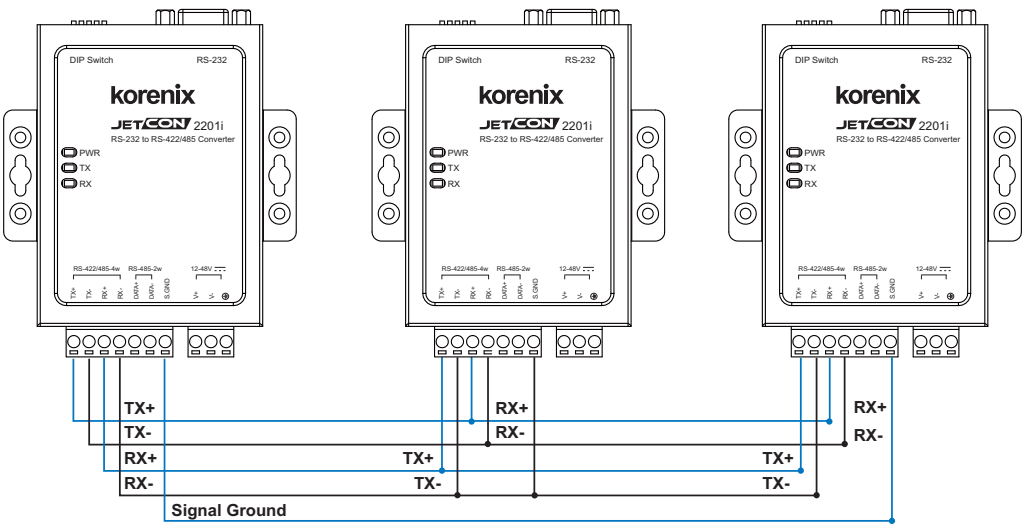
Max.Distance: 4000 feet

Baud Rate: 300~921.6 Kbps

Max. Node: 32 nodes

Note: The 120Ω Line Terminator and bias resistor need enable when the last converter is far away and the communication quality is no stable.

RS-232 to RS-485 4-wire Multi-Drop

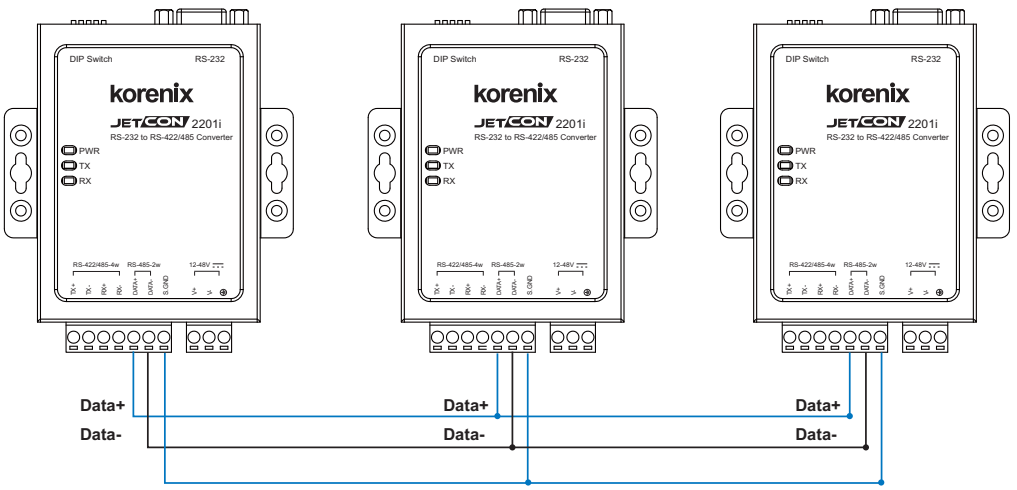


RS-485 2-wire multi-drop

Architecture: Master-Slave Mode. Max. Distance: 4000 feet

Baud Rate: 300~921.6 Kbps Max. Node: 32 nodes

RS-232 to RS-485 2-wire Multi-Drop



5. RS-422/485 isolation

The way to protect and against the electrical transient is providing a floating reference from the host circuitry. JetCon 2201-iw adopts a DC/DC converter to deliver an isolated power resource for 2 second site serial data circuits. This method separates the reference ground of serial data circuits from the host digital ground and it only presents in the JetCon 2201-iw. With this feature, JetCon 2201-iw can take risks of 8KV ESD, 1KV Electrical Field Transient and 2KV surge and meets the Emission testing level of IEC 61000-4-4 for the heavy industrial application to deliver a better serial communication quality.

EMC testing Level

Item / Std.	Commercial Grade	Heavy Ind. Grade (JetCon 2201)*
ESD	Contact 4KV/Air 8KV	Contact 8KV/Air 15KV - Over Level
RS	3V/m	10V/m
EFT	0.5Kv ,Power, I/O	2KV Power, 1KV I/O
Surge	1KV	2KV
CS	3V	10V

Note: * Heavy Industrial grade.

Patent No. (Taiwan):
Granted Invention: I 356616
Granted Invention: I 346480
Granted Invention: I 344766
Granted Invention: I 321415
Granted Invention: I 313547
Granted Invention: I 364684
Granted Invention: I 376118
Utility Model: M 339840
Utility Model: M 339841

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