

# RS-232 to Fiber Converter (IRF-631)

## User's Guide



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## FCC WARNING

This equipment has been tested and found to comply with the limits for class A device, pursuant to part 15 of FCC rules.

These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at the user's own expense.



## CE

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.



Take special note to read and understand all content giving in the warning boxes



Warning

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## ***ABOUT THIS GUIDE***

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Thank you for choosing IRF-631 (RS-232 to Fiber Converter). This device integrates serial and multi-mode/single mode fiber networks in one flexible package.

The IRF-631 Industrial Series (RS-232 to Fiber) Converter provides a reliable and economical solution for your industrial Ethernet environment. The converter offers seamless integration while working as transparent device between your serial devices and industrial Ethernet. The IRF-631 has operating temperature range from 0 to 50°C. Fiber enables you to extend the distances up to 120km.

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### **Purpose**

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This guide discusses how to install the IRF-631 Industrial Series Converter.

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### **Terms/Usage**

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In this guide, the term "**Converter**" (first letter upper case) refers to the IRF-631 Industrial Fast Ethernet Converter, and "**converter**" (first letter lower case) generically refers to all other Ethernet converters.

## ***INTRODUCTION***

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This chapter describes the features and specification of the Converter.

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### **Features**

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- Complies with EIA/TIA-232 & 574 standards
- Supports data transfer rate up to 115.20kbps
- Supports full duplex or half-duplex asynchronous data transmission
- Available with ST/SC connector for Multi-mode or SC connector for Single Mode
- Extends distance of up to 2km (6600 feet) multi-mode fiber and 120km (396000 feet) long-haul single mode fiber
- Push-button switch to select DTE & DCE
- LEDs for at-a-glance device status
- Suitable for industrial harsh environment
- Wide voltage range (9 ~ 32V DC)
- FCC Class A & CE approved

## ***IRF-631 INDUSTRIAL CONVERTER UNPACKING AND SETUP***

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This section and the following sections explain the setup and installation of the VOLKTEK IRF-631 Industrial Converter.

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### ***Unpacking***

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Open the box of the Converter and carefully unpack it. The box should contain the following items:

- ✓ *One IRF-631 (RS-232 to Fiber) Converter*
- ✓ *DIN rail bracket screws (optional)*
- ✓ *One AC power adaptor (please check connector type and input power specifications)*
- ✓ *DIN Rail Kit (Optional)*
- ✓ *Protective caps for unused ports*
- ✓ *This User's Guide*

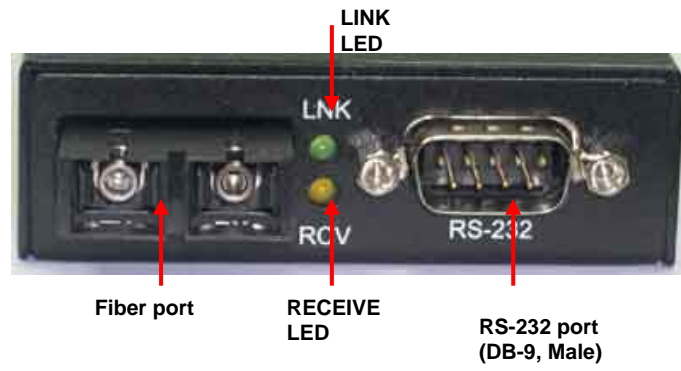
If any item is found missing or damaged, please contact your local reseller for replacement.

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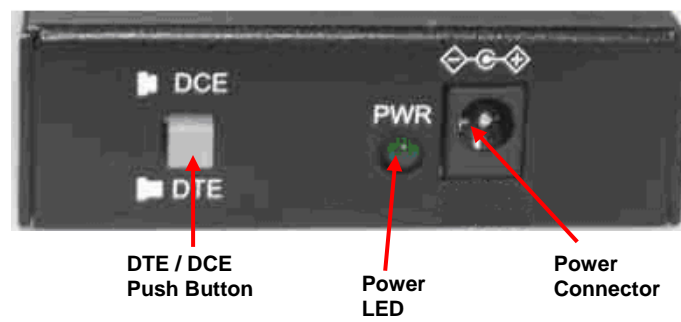
## Layout of the IRF-631

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### Front View of Converter



### Rear View of Converter

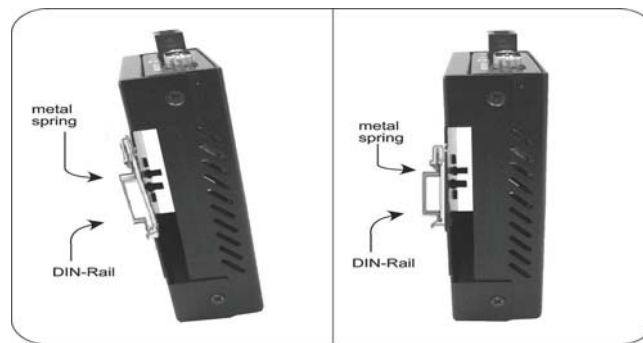


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## DIN Rail Mounting of the IRF-631

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The aluminum DIN Rail attachment plate should already be affixed to the back panel of the Converter. If you need to attach the DIN Rail plate, assure that the stiff metal spring is situated towards the top. Attaching the Converter to the DIN rail is easy, just align, and attach the top rail, then press down and snap forward the Converter to snap in the bottom rail, as shown in the figures below.



The setup of the Converter can be performed using the following steps:

- The surface must support at least 600 gm for the Converter.
- The power outlet should be within 1.82 meters (6 feet) of the Converter.



- Visually inspect the power adapter and make sure that it is properly connected.
- Make sure that there is proper heat dissipation from and adequate ventilation around the Converter. Do not place heavy objects on the Converter.

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## Wall Mounting IRF-631

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IRF-631 can also be installed by wall mounting. The backside casing provides space for two screws each side. Identify the exact location at wall by placing the Converter and marking the screw positions. Use the screw (include in the package) and snug them well to fix the Converter.

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## Power Inputs

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Use the provided power adapter for power supply. Plug the power adapter's DC plug into the Converter's DC-IN jack and then power adapter into an electrical outlet.



**Power Adapter:** Only use the recommended specific Power adapter provided with Converter. Check the technical specification section for information about the power input voltage. Since the Converter does not include a power switch, plugging its power adapter into a power outlet will immediately power it on.

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## Fiber Connection

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When connecting fiber cable to the Converter, be sure the correct type – ST or SC - connector is used. Follow the steps below to properly connect fiber cable:

1. Remove and keep the ST/SC port rubber covers. When not connected to a fiber cable, the rubber cover should be replaced to protect the optics.
2. Check that the fiber terminators are clean. You can clean the cable plugs by wiping them gently with a clean tissue or cotton ball moistened with a little ethanol. Dirty fiber terminators on fiber optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.
3. Connect one end of the cable to the ST/SC port on the Converter and the other end to the ST/SC port on the other device.
4. Check the corresponding port LED on the Converter to be sure that the connection is valid. (Refer to the LED chart)



**Warning** Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures.

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## Serial Connection

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Use the 9-pin female connector to connect the Converter to your DCE or DTE equipment. Use DTE/DCE push button accordingly.

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## DTE and DCE Switch Setting

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The IRF-631 Converter features a push-button switch to set DTE or DCE mode. It alleviates the worry of cable type configuration when connecting the converter with a RS-232 device.

DTE mode  
DCE mode

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## Connection to Data Terminal Equipment (DTE)

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1. Set the push-button switch to DTE mode.
2. Prepare TIA/EIA-574 compliant straight through shielded cables with DB-9 connectors.
3. Connect one end of cable with female DB-9 connector to the Converter's male DB-9 connector.
4. Connect the other end of the cable with male or female DB-9 connector to another DTE's male or female DB-9 connector.

**Note:** The connectors will only fit male to female or

female to male connections.

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## Connection to Data Communication Equipment (DCE)

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1. Set the push-button switch to DCE mode.
2. Prepare TIA/EIA-574 compliant straight-through cables with DB-9 connectors.
3. Connect one end of cable with female DB-9 connector to the Converter's male DB-9 connector.
4. Connect the other end of the cable with male or female DB-9 connector to another DCE's male or female DB-9 connector.

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## LED Indicators

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The Converter has following LEDs.

**Power Indicator (PWR):** This LED lights green when the Converter is receiving power from input. It is located beside the power adapter pin.

### **RCV LED**

Illuminates (green) to indicate when receiving data from a compliant device at serial port.

### **LNK LED**

Illuminates to indicate receiving link pulses from a compliant device at fiber port.

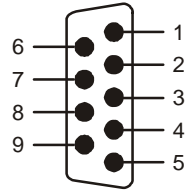
## **TECHNICAL SPECIFICATIONS**

| <b>General</b>                    |  |
|-----------------------------------|--|
| Standards                         | EIA/TIA-232, EIA/TIA-574   |
| Connectors                        | 1 x serial port (RS-232)<br>1 x ST/SC for multi-mode, SC for single mode |
| Wavelength                        | 1310nm (multi-mode)<br>1310nm ~ 1550 (single mode)                       |
| Max Distances                     | RS-232 – 15 meters<br>Fiber Optic – Up to 120,000 meters                 |
| <b>Physical and Environmental</b> |  |
| Power Input                       | 9-32V DC @ 800mA   |
| Temperature                       | Operating: 0° ~ 50° C, Storage: -20° ~ 80° C                             |
| Humidity                          | Operating: 10% ~ 80%   |
| Dimensions                        | 109.20 x 90 x 31.50 mm (D x W x H)                                       |
| Compliance                        | FCC Class A, CE approved   |

## APPENDIX

### RS-232 Pin Specification

#### Connector Outlook

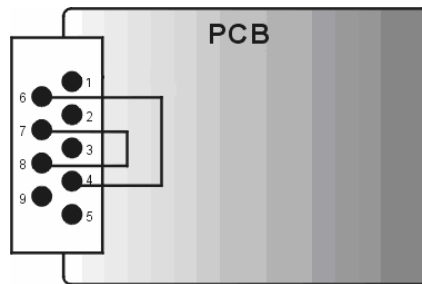


For your reference, the following diagram and tables show the RS-232 pin assignments.

| RS-232 Connector pin assignment |      |               |                  |     |      |
|---------------------------------|------|---------------|------------------|-----|------|
| No                              | Code | Description   | Signal Direction |     | Note |
|                                 |      |               | DTE              | DCE |      |
| 1                               | DCD  | Data Detect   | Out              | Out | —    |
| 2                               | RX   | Receive Data  | Out              | In  | —    |
| 3                               | TX   | Transmit Data | In               | Out | —    |
| 4                               | DTR  | Not Used      | —                | —   | —    |
| 5                               | GND  | Ground        | —                | —   | —    |
| 6                               | DSR  | Not Used      | —                | —   | —    |
| 7                               | RTS  | Not Used      | —                | —   | —    |
| 8                               | CTS  | Not Used      | —                | —   | —    |
| 9                               | RI   | Not Used      | —                | —   | —    |

Note: 1. DTR and DSR Signals are connected together in PCB circuit

2. RTS and CTS signals are connected together in PCB circuit
3. RTS, CTS, DSR, DTR handshaking signals transmission are not available



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