EDR-810 Series
Quick Installation Guide

Moxa Industrial Secure Router

Version 4.4, February 2024

Technical Support Contact Information
www.moxa.com/support

P/N: 1802008100017

Package Checklist

The Moxa Industrial Secure Router is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

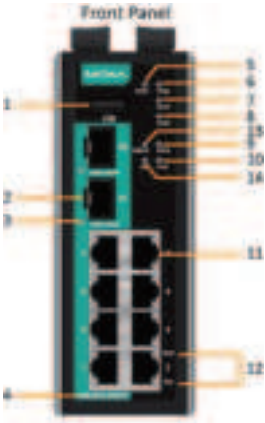
- 1 Industrial Secure Router
- RJ45 to DB9 console port cable
- Protective caps for unused ports
- Quick installation guide (printed)
- Warranty card

Features

Advanced Industrial Networking Capability

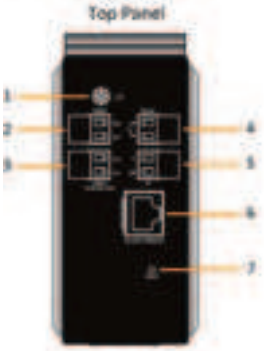
- Router/NAT/Firewall all in one
- Router with VRRP redundancy
- Firewall with Quick Automation Profile for rules of industrial protocols
- NAT with N-to-1, 1-to-1, and port-forwarding modes
- VPN for remote secure connection (VPN model only)
- Intelligent Policy Check for quick troubleshooting
- Supports 1 WAN and up to 15 interfaces for LANs
- -40 to 75°C operating temperature (T model)

Panel Views of Industrial Secure Router



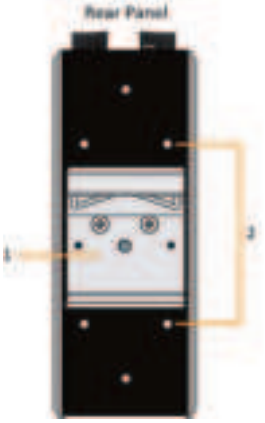
Front Panel:

1. USB port for ABC-02
2. 100Mbps/1000Mbps SFP port
3. 100Mbps/1000Mbps SFP port speed LED indicator
4. Model name
5. Power input PWR1 LED indicator
6. Power input PWR2 LED indicator
7. STATE LED indicator
8. FAULT LED indicator
9. MSTR LED indicator
10. CPLR LED indicator
11. 10/100Mbps copper port
12. 10/100Mbps copper port speed LED indicator
13. VRRP master LED indicator
14. VPN LED indicator



Top Panel:

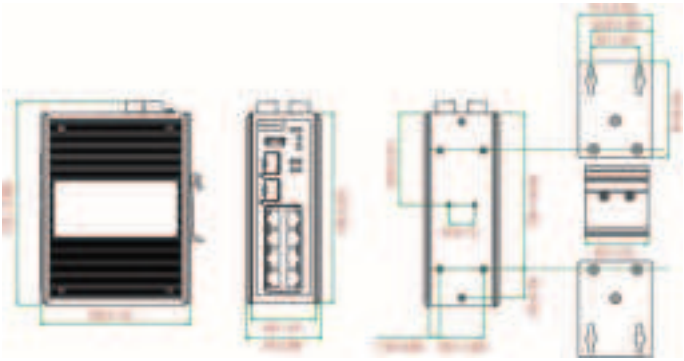
1. Grounding screw
2. Terminal block for power input 2
3. Terminal block for power input 1
4. Terminal block for relay output
5. Terminal block for digital input
6. RS-232 serial console port
7. RESET button



Rear Panel:

1. DIN-Rail mounting kit
2. Screw holes for wall mounting kit

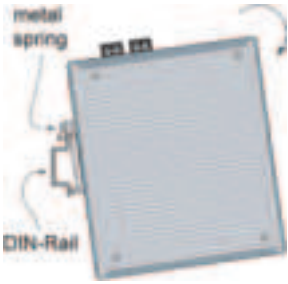
Mounting Dimensions (unit = mm)



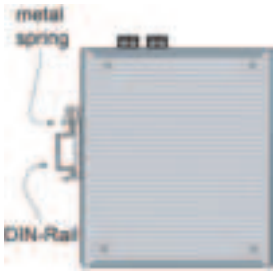
DIN-Rail Mounting (DNV GL type approved)

The aluminum DIN-rail attachment plate should already be fixed to the back panel of the Industrial Secure Router when you take it out of the box. If you need to reattach the DIN-rail attachment plate to the Industrial Secure Router, make sure the stiff metal spring is situated towards the top, as shown in the following figures.

STEP 1—Insert the top of the DIN rail into the slot just below the stiff metal spring.



STEP 2—The DIN-rail attachment unit will snap into place as shown in the following illustration.

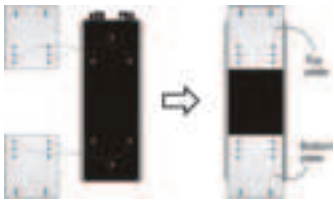


To remove the Industrial Secure Router from the DIN rail, simply reverse Steps 1 and 2 above.

Wall Mounting (Optional)

For some applications, you will find it convenient to mount Moxa EDR-810 on the wall, as shown in the following illustrations.

STEP 1—Remove the aluminum DIN-rail attachment plate from the rear panel of the EDR-810, and then attach the wall mount plates with M3 screws, as shown in the figure at the right.

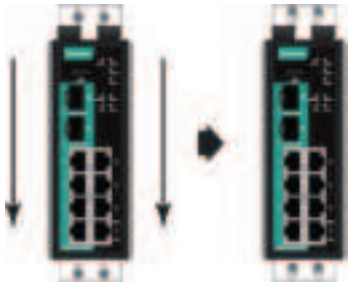


STEP 2—Mounting the EDR-810 on the wall requires four screws. Use the EDR-810, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure on the right.

NOTE Before tightening the screws into the wall, make sure the screw head and shank size are suitable by inserting the screw through one of the keyhole-shaped apertures of the Wall Mounting Plates.

Do not screw the screws in all the way—leave about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

STEP 3—Once the screws are fixed to the wall, insert the four screw heads through the wide parts of the keyhole-shaped apertures, and then slide the EDR-810 downwards, as indicated in the figure at the right. Tighten the four screws for more stability.



Wiring Requirements

WARNING

Do not disconnect modules or wires unless power has been switched off or the area is known to be non-hazardous. The devices may only be connected to the supply voltage shown on the type plate.

ATTENTION

This unit is a built-in type. When the unit is installed in another piece of equipment, the equipment enclosing the unit must comply with fire enclosure regulation IEC 60950-1/EN60950-1 (or similar regulation).

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa Industrial Secure Router.

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Please read and follow these guidelines:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
  NOTE: Do not run signal or communications wiring and power wiring through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring sharing similar electrical characteristics can be bundled together
- You should separate input wiring from output wiring
- We advise that you label the wiring to all devices in the system.

Grounding the Moxa Industrial Secure Router

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

ATTENTION

AWG 12 (3.3 mm^2) grounding wire must be used to ground the device.

Wiring the Relay Contact

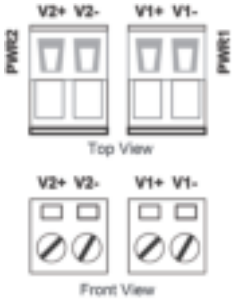
The Industrial Secure Router has one set of relay outputs. This relay contact uses one contacts of the terminal block on the Industrial Secure Router's top panel. Refer to the next section for detailed instructions on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.

In this section, we illustrate the meaning of the contact used to connect the relay contact.

FAULT:
The two contacts of the 2-pin terminal block connector are used to detect user-configured events. The two wires attached to the fault contacts form an open circuit when a user-configured event is triggered. If a user-configured event does not occur, the fault circuit remains closed.

Wiring the Redundant Power Inputs

The Industrial Secure Router has two sets of power inputs—power input 1 and power input 2. The top and front views of one of the terminal block connectors are shown here.



STEP 1: Insert the negative/positive DC wires into the V+/V- terminals, respectively.

STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the Industrial Secure Router's top panel.

Wiring the Digital Inputs

The Industrial Secure Router has one set of digital input, DI. The DI consists of two contacts of the 2-pin terminal block connector on the Industrial Secure Router's top panel, which are used for the DC inputs. The top and front views of one of the terminal block connectors are shown here.

STEP 1: Insert the negative (ground)/positive DI wires into the ⊥/I terminals, respectively.

STEP 2: To keep the DI wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the Industrial Secure Router's top panel.

Communication Connections

Each Industrial Secure Router has three types of communication port:

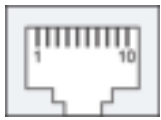
- 1 RJ45 console port (RS-232 interface)
- 8 10/100BaseT(X) ports
- 2 1000BaseSFP ports

RS-232 Connection

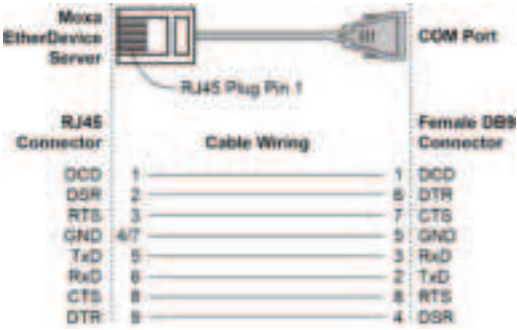
The Industrial Secure Router has one RS-232 (10-pin RJ45) console port, located on the top panel. Use an RJ45-to-DB9 (see the cable following wiring diagrams) to connect the Industrial Secure Router's console port to your PC's COM port. You may then use a console terminal program, such as Moxa PComm Terminal Emulator, to access the Industrial Secure Router's console configuration utility.

RJ45 (10-pin) Console Port Pinouts

Pin	Description
1	–
2	DSR
3	RTS
4	–
5	TxD
6	RxD
7	GND
8	CTS
9	DTR
10	–



RJ45 (10-pin) to DB9 (F) Cable Wiring



10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on Moxa Industrial Secure Router's front panel are used to connect to Ethernet-enabled devices. Most users will choose to configure these ports for Auto MDI/MDI-X mode, in which case the port's pinouts are adjusted automatically depending on the type of Ethernet cable used (straight-through or cross-over), and the type of device (NIC-type or HUB/Switch-type) connected to the port.

In what follows, we give pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports. We also give cable wiring diagrams for straight-through and cross-over Ethernet cables.

10/100Base T(x) RJ45 Pinouts

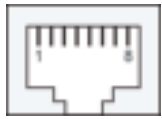
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

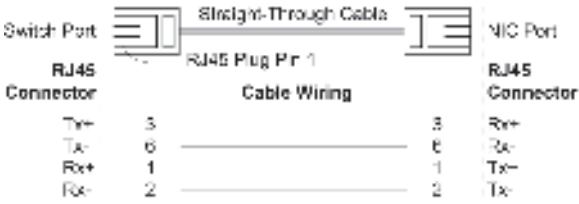
MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

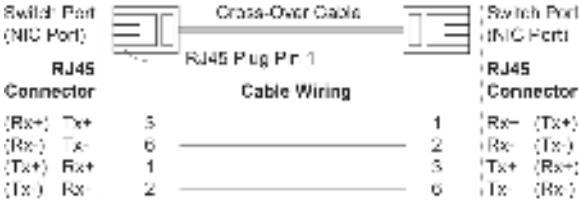
8-pin RJ45



RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring



RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



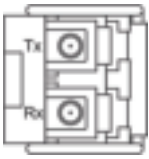
1000BaseSFP Fiber Port

The Gigabit Ethernet ports on the Industrial Secure Router are SFP slots, which require Gigabit mini-GBIC fiber transceivers to work properly. Moxa provides complete transceiver models for various distance requirements.

The concept behind the LC port and cable is quite straightforward. Suppose you are connecting devices I and II. Unlike electrical signals, optical signals do not require a circuit in order to transmit data. Consequently, one of the optical lines is used to transmit data from device I to device II, and the other optical line is used to transmit data from device II to device I, for full-duplex transmission.

Remember to connect the Tx (transmit) port of device I to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II. If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, as shown below, or A1-to-A2 and B1-to-B2).

LC-Port Pinouts



LC-Port to LC-Port Cable Wiring

ATTENTION

This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

The Reset Button

Depress the Reset button for five continuous seconds to load the factory default settings. Use a pointed object, such as a straightened paper clip or toothpick, to depress the Reset button. When you do so, the STATE LED will start to blink about once per second. Continue to depress the STATE LED until it begins blinking more rapidly; this indicates that the button has been depressed for five seconds and you can release the Reset button to load factory default settings.

NOTE DO NOT power off the secure router when loading default settings.

LED Indicators

The front panel of the Moxa Industrial Secure Router contains several LED indicators. The function of each LED is described in the following table:

LED	Color	State	Description
PWR1	AMBER	On	Power is being supplied to power input P1 on the main module.
		Off	Power is **not** being supplied to power input P1 on the main module.
PWR2	AMBER	On	Power is being supplied to power input P2 on the main module.
		Off	Power is **not** being supplied to power input P2 on the main module.
STATE*	GREEN	On	The system passed the self-diagnosis test on boot-up and is ready to run.
		Blinking	• The switch is under reset progress (1 time/s) • ABC-02-USB-T detected (1 time/s) • Locate specific switch from MXview (2 times/s)
	RED	On	The system failed the self-diagnosis test on boot-up. • RAM Test Fail/System Info Read Fail/Switch Init./PTP PHY error Fail (+Green MSTR/HEAD lit on: HW Fail) • FW Checksum Fail/Uncompress Fail (+Green CPLR/TAIL lit on: SW Fail)
FAULT*	RED	On	When a user-configured event is triggered.
		Off	When a user-configured event has not been triggered.
MSTR*	GREEN	On	When the EDR-810 is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain.
		Blinking	The EDR-810 has become the Ring Master of the Turbo Ring, or the Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain is down.
		Off	When the EDR-810 is not the Master of this Turbo Ring or is set as the Member of the Turbo Chain.
CPLR*	GREEN	On	When the EDR-810 coupling function is enabled to form a backup path, or when it's set as the Tail of the Turbo Chain.
		Blinking	When the Turbo Chain is down.
		Off	When the EDR-810 disables the coupling function or is set as the Member of the Turbo Chain.
10M (TP)	GREEN	On	TP port's 10 Mbps link is active.
		Blinking	Data is being transmitted at 10 Mbps.
		Off	TP port's 10 Mbps link is inactive.
100M (TP)	GREEN	On	TP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.

LED	Color	State	Description
		Off	TP port's 100 Mbps link is inactive.
1000M (SFP)	GREEN	On	SFP port's 1000 Mbps link is active.
		Blinking	Data is being transmitted at 1000 Mbps.
		Off	SFP port's 1000 Mbps link is inactive.
100M (SFP)	Amber	On	SFP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	SFP port's 100 Mbps link is inactive
VPN	Green	On	The EDR-810 is working with IPsec/OpenVPN tunnels.
		Off	The EDR-810 is not working with any IPsec/OpenVPN tunnel.
VRRP.M	Green	On	The EDR-810 is Master of VRRP.
		Off	The EDR-810 is not Master of VRRP.

*STATE, FAULT, MSTR, CPLR LEDs blink in sequence when the system is importing/exporting files from ABC-02-USB.

Specifications

Input Current	0.78 A @ 12 V 0.36 A @ 24 V 0.21 A @ 48 V
Input Voltage	12/24/48 VDC redundant dual inputs*
Power Consumption	9.874 W
Relay Output	30 VDC, 2 A resistance or 24 VDC, 1 A resistance
DI Output	13 to 30 VDC, max. 8 mA
USB Output	5 VDC, 64 mA
Operating Temperature	Standard models: -10 to 60°C (-14 to 140°F) Wide temp. models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)

*24 VDC has been certified for use in the Marine industry

ATEX Information

ATEX information	 Ex ec nC IIC T4 Gc DEMKO 19 ATEX 2188X Ambient Range : -40°C ≤ Tamb ≤ +75°C for model suffix with "-T" Ambient Range : -10°C ≤ Tamb ≤ +60°C for model suffix without "-T" **WARNING – DO NOT SEPARATE WHEN ENERGIZED**
Address of manufacturer	No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan

Specific Usage Conditions

- The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with EN IEC 60079-0 and accessible only by the use of a tool.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in EN IEC 60664-1.
- 24 to 12 AWG (0.2 to 3.3 mm^2) input conductor wire must be used with the device. The conductor cable must be screwed in with a torque of 4.5 to 5.0 lb per inch.

SFP Module Guidelines

The ambient temperature range of standard models (without "-T" suffix) must be kept within 0 to 60 °C when the device is equipped with a standard temperature SFP module (without "-T" suffix).

Refer to the list of Moxa Class I SFP models rated 3.3 VDC, 300 mA (max.) below:

- SFP-1G10ALC(-T)
- SFP-1G10BLC(-T)
- SFP-1G20ALC(-T)
- SFP-1G20BLC(-T)
- SFP-1G40ALC(-T)
- SFP-1G40BLC(-T)
- SFP-1GLHLC(-T)
- SFP-1GLSXLC(-T)
- SFP-1GLXLC(-T)
- SFP-1GSXLC(-T)
- SFP-1GLHXLC(-T)
- SFP-1GZXLC(-T)
- SFP-1GEZXLC
- SFP-1GEZXLC-120