**Moxa TCC-100I**

# Moxa TCC-100I RS-232 to RS-422/485 Converter User Manual

Model: TCC-100I

## 1. Introduction

The Moxa TCC-100I is a high-quality, industrial-grade RS-232 to RS-422/485 converter designed for reliable serial communication in demanding environments. It features embedded surge protection (16KV ESD) and 2KV isolation protection, ensuring robust data transmission and system integrity. This manual provides essential information for the proper installation, operation, and maintenance of your TCC-100I converter.


Figure 1: Front view of the Moxa TCC-100I converter, showing the RS-232 port, power indicators, and model branding.

## 2. Key Features

- 2 kV isolation protection (TCC-100I) for enhanced safety and reliability.
- RS-232 to RS-422 conversion with RTS/CTS support for flow control.
- RS-232 to 2-wire or 4-wire RS-485 conversion, offering versatile connectivity options.
- Supports both wall mounting and DIN-rail mounting for flexible installation.
- Plug-in terminal block for easy and secure RS-422/485 wiring.
- Embedded 16KV ESD surge protection to safeguard against electrical surges.

# 3. Setup and Installation

Proper installation is crucial for optimal performance and longevity of the TCC-100I. Follow these steps carefully:

## 3.1 Package Contents

Verify that your package contains the following items:

- Moxa TCC-100I Converter
- Quick Installation Guide (if applicable)
- Warranty Card (if applicable)

## 3.2 Mounting the Converter

The TCC-100I supports both DIN-rail and wall mounting.

### 3.2.1 DIN-Rail Mounting

1. Attach the DIN-rail mounting kit (if not pre-installed) to the rear of the TCC-100I.
2. Hook the top of the converter onto the DIN-rail.
3. Push the bottom of the converter towards the DIN-rail until it clicks into place.

### 3.2.2 Wall Mounting

1. Secure the wall-mount plates (if not pre-installed) to the sides of the TCC-100I using the provided screws.
2. Mark the desired mounting points on the wall using the plates as a template.
3. Drill pilot holes and insert appropriate wall anchors if necessary.
4. Mount the converter to the wall using screws through the wall-mount plates.


Figure 2: Angled view of the Moxa TCC-100I, highlighting the integrated mounting brackets for DIN-rail or wall installation.

## 3.3 Wiring Connections

Ensure all power is disconnected before making any wiring connections.

### 3.3.1 RS-232 Connection

Connect your RS-232 device to the DB9 male connector on the TCC-100I. This port supports standard RS-232 signals.

### 3.3.2 RS-422/485 Connection

Use the plug-in terminal block for RS-422/485 wiring. Refer to the pin assignments below:

**RS-422/485 Terminal Block Pin Assignments**

| Pin | Description | Function |
|---|---|---|
| Tx+(B) | Transmit Data + | RS-422/485 (4-wire) |
| Tx-(A) | Transmit Data - | RS-422/485 (4-wire) |
| Rx+(B)/Data + | Receive Data + / Data + | RS-422/485 (4-wire) / RS-485 (2-wire) |
| Rx-(A)/Data - | Receive Data - / Data - | RS-422/485 (4-wire) / RS-485 (2-wire) |
| RTS+(B) | Request To Send + | RS-422 (Flow Control) |
| RTS-(A) | Request To Send - | RS-422 (Flow Control) |
| CTS+(B) | Clear To Send + | RS-422 (Flow Control) |
| CTS-(A) | Clear To Send - | RS-422 (Flow Control) |
| SGND | Signal Ground | Common Ground |


Figure 3: Top view of the Moxa TCC-100I, clearly showing the RS-232 DB9 connector and the plug-in terminal blocks for RS-422/485 and power connections.

### 3.4 Power Connection

Connect a 12-48VDC power source to the dedicated power input terminal block. Ensure correct polarity (V+ and V-). The PWR LED indicator on the front panel will illuminate when power is successfully applied.

## 4. Operating the Converter

Once properly installed and powered, the TCC-100I automatically converts serial data between RS-232 and RS-422/485 standards. No software configuration is typically required for basic conversion.

- **RS-232 to RS-422 Conversion:** Data transmitted via the RS-232 port will be converted to RS-422 differential signals and vice-versa. RTS/CTS signals are also converted for hardware flow control.
- **RS-232 to RS-485 Conversion:** The converter supports both 2-wire and 4-wire RS-485 modes. Data from RS-232 will be converted to RS-485 differential signals. The TCC-100I features automatic data direction control for RS-485, simplifying setup.

Monitor the PWR LED for power status and the Tx/Rx LEDs (if present) for data transmission activity.

## 5. Maintenance

The Moxa TCC-100I is designed for low maintenance. However, periodic checks can help ensure its continued reliable operation:

- **Cleaning:** Gently wipe the exterior of the converter with a soft, dry cloth. Do not use liquid cleaners or solvents.
- **Cable Connections:** Periodically check all cable connections to ensure they are secure and free from damage.
- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges to prevent damage.
- **Firmware Updates:** While typically not required for this type of device, check the Moxa website for any available firmware updates if experiencing unusual behavior.

## 6. Troubleshooting

If you encounter issues with your TCC-100I, refer to the following common problems and solutions:

**Troubleshooting Guide**

| Problem | Possible Cause | Solution |
|---|---|---|
| No power (PWR LED off) | No power supply, incorrect voltage, or incorrect polarity. | Verify power supply connection, ensure voltage is within 12-48VDC, and check polarity. |
| No data transmission | Incorrect wiring, mismatched baud rates, or faulty cables. | Check RS-232 and RS-422/485 wiring against pin assignments. Ensure baud rates and data formats match between connected devices. Test cables for continuity. |
| Intermittent communication | Noise interference, loose connections, or ground loop issues. | Ensure proper grounding. Check for strong electromagnetic interference sources. Verify all connections are secure. The TCC-100I's isolation protection helps mitigate ground loop issues. |
| RS-485 communication issues | Incorrect 2-wire/4-wire setup, missing termination resistors (if applicable to your network). | Confirm the correct RS-485 mode (2-wire or 4-wire) is used. Add termination resistors at the ends of the RS-485 bus if required by your network topology. |

## 7. Specifications

Detailed technical specifications for the Moxa TCC-100I:

**Moxa TCC-100I Technical Specifications**

| Attribute | Value |
|---|---|
| Brand | Moxa |

| Attribute | Value |
| --- | --- |
| Model | TCC-100I |
| Item Weight | 6.99 pounds (approx. 3.17 kg) |
| Manufacturer | MOXA |
| ASIN | B07BR9482N |
| Connector Type | DIN Rail, DB9 (RS-232), Terminal Block (RS-422/485, Power) |
| Number of Ports | 1 (RS-232), 1 (RS-422/485) |
| Isolation Protection | 2 kV |
| Surge Protection | 16KV ESD |
| Mounting Options | Wall mounting, DIN-rail mounting |
| Power Input | 12-48VDC |

## 8. Warranty and Support

For detailed warranty information, technical support, and additional resources, please refer to the official Moxa website or contact your authorized Moxa distributor. Keep your purchase receipt for warranty claims.
**Moxa Official Website:** www.moxa.com