

10.0 TView+ Management Suite - Radio Configuration

TView+ Management Suite provides a facility for local radio configuration and diagnostics.

Example: Configuration session

- 1) Attach the Serial/System Port adaptor to the Data Port of the M-Series.
- 2) Connect a TView+ configuration cable to the system port interface of the serial/system port adaptor.
- 3) Connect the TView+ configuration cable to the PC serial port.
- 4) Launch TView+ & Select "Programmer".
- 5) Select "Read" the radio.
- 6) Change the configuration as required.
- 7) Select "Write" the parameters back to the radio.

Refer to the User Manual for detailed operation of advanced features.



Important Notices for Class I, Division 2, Groups A,B,C&D Hazardous Locations

Applies to models TBURMR450-xxxxxH0 (CSA Marked)

This product is suitable for use in Class I, Division 2, Groups A, B, C & D hazardous locations or non-hazardous locations only. The transceiver has been recognised for use in these hazardous locations subject to the following conditions of approval:

1. This device is OPEN type equipment that must be used within a suitable end-use system enclosure, the interior of which is accessible only through the use of a tool. The suitability of the enclosure is subject to investigation by the local Authority Having Jurisdiction at the time of installation.
2. Wiring to or from this device, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 Hazardous Locations, as appropriate for the installation.
3. Installation, operation and maintenance of the radio modem should be in accordance with the radio modem's user manual.
4. A power connector with locking screws as supplied by Schneider Electric MUST be used.

⚠ WARNING

HAZARD OF EXPLOSION

- Do not connect or disconnect this equipment unless power has been removed or the area is known to be non-hazardous.
- Tampering or substitution of components may adversely affect the safe use of the radio modem in hazardous locations and may void the approval. Refer to Articles 500 through 502 of the National Electrical Code (NFPA 70) and Section 18 of CSA C22.1 for further information on hazardous locations and approved Division 2 wiring methods.
- A power connector with locking screws as supplied by Schneider Electric MUST be used.

Failure to follow these instructions can result in death or serious injury, and equipment damage.

Contact Details

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Quick Start Guide

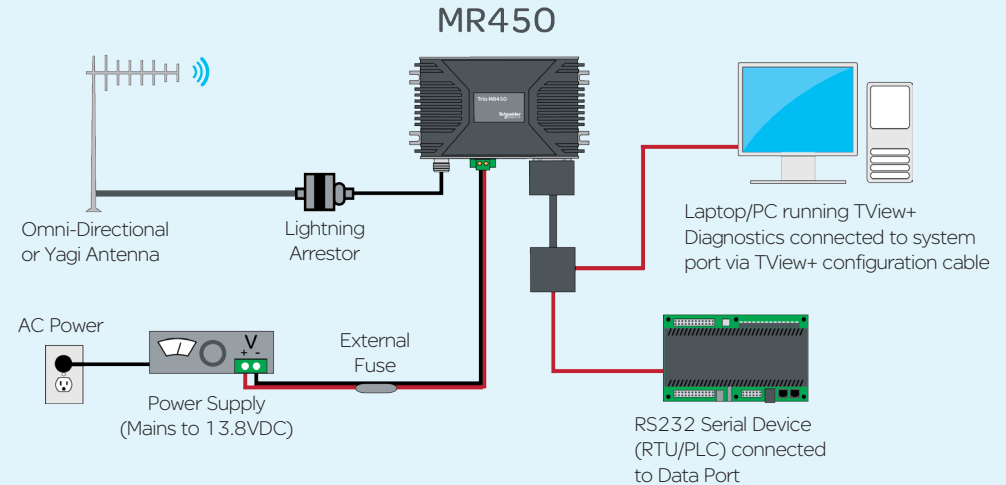
MR450 Gen II Data Radio



1.0 Introduction

Welcome to the Quick Start Guide for the M-Series Data Radio. This guide provides step-by-step instructions, with simple explanations to get you up-and-running. For further information, along with information on analog mode M-Series, refer to the M-Series user manual.

Typical Radio Setup



2.0 Mounting Guidelines

The radio should be mounted in a clean and dry location, protected from water, excessive dust, corrosive fumes, extremes of temperature and direct sunlight. In high power or high temperature applications, allow sufficient passive or active ventilation. To help minimize moisture ingress it is suggested to mount the radio with the connectors facing downwards.

Din rail mounting kits are available (part no: TBUMDIN-KIT-TYPEA). For more information, refer to the user manual.

3.0 Physical Dimensions

Choose an enclosure that is suitable for the size of the radio.

The M-Series dimensions are: 154 x 102 x 29mm (6.1 x 4.1 x 1.2in.)

The radio is rated for use in ambient (operating) environments from -30°C to +60°C (-22°F to +140°F).

4.0 Connecting Antennas and RF Feeder Cables

Install the RF antenna system in accordance with the manufacturer's instructions. Consider antenna gain when setting transmit power. Refer to compliance information at the end of this document and in the user manual for more information.

The RF connector on this product is an N-type female. Use good quality, low loss feeder cable, selected according to the length of the cable run. Waterproof all external connections.

5.0 Power Supply Requirements

Typical receive/standby input power is 2.5 Watts. The input power will vary in transmit mode according to RF output power level. The MR450 is supplied with a lock-in mating DC power connector (Phoenix Contact Part Number 1777989) which should be installed with the locking screws done up tightly (0.5 - 0.6 Nm / 4.42 - 5.31 ftin).

Rated Operating Voltage: **10 to 16V DC**
 Nominal Operating Voltage: **13.8V DC**
 Input Power (Rx typical): **2.5 Watts**
 Input Power (Tx typical): (See table)

Tx Power (dBm)	Typical Input Power (Watts)
30	8.5
37	21

The radio is designed to self protect from permanent damage if the voltage exceeds 16Vdc or if reverse polarity is applied. The radio may need to be returned for service if this occurs.

Before connecting any wiring, ensure all components are earthed to a common ground point. Connect and secure the Antenna and Serial connectors BEFORE applying power to the unit. Lastly, before inserting the power connector, re-check that the polarity and voltage are correct using a multimeter and check the power cable against the +/- label printed on the front panel of the radio. Failure to use an external fuse can result in damage to the radio which will void the warranty. A 3 Amp fast blow fuse is recommended as an external fuse.

NOTICE

HAZARD OF EQUIPMENT DAMAGE

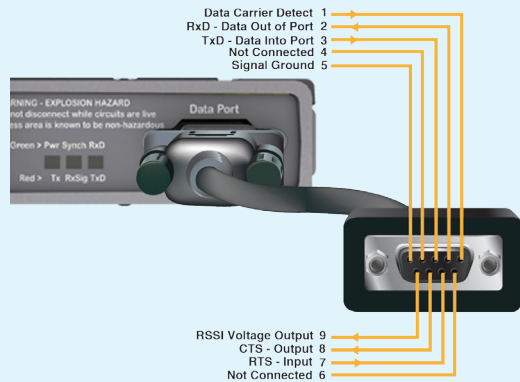
- The radio modem can be damaged if there is any potential difference between the chassis-ground, RS232 signal ground, power (-) input, or antenna coaxial shield. Before connecting any wiring, ensure all components are earthed to a common ground point.
- The radio modem can be damaged if an external fuse is not used

Failure to follow these instructions can result in equipment damage.

6.0 Communications Ports

The M-Series utilises a single DE9 interface to provide a system port (used for configuration and diagnostics) along with an user port (used to connect to end application devices - RTU/PLC).

The shared single DE9 interface can be split by using the Serial/System Port Adaptor. This adaptor is provided with each digital mode M-Series. The adaptor is a DB9 (Male) to DB9 (Female) and RJ45 socket. This provides a connection for user data (User Data port) and configuration/diagnostics (System Port).



Typical user port pins used:

- Pin 2 (Rx/D) - Data Output from Modem
- Pin 3 (Tx/D) - Data Input To Modem
- Pin 5 (SG) - Signal Ground

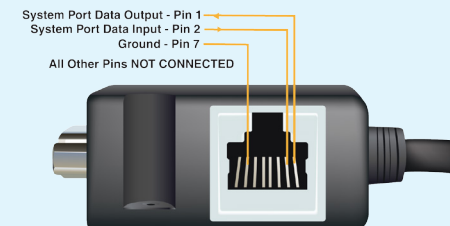
For details on pin-out of TView+ configuration cable, refer to the ER450 Quick Start Guide.

(Part number: TBUMPROG-TVIEW)



M-Series Adapter System Port Pin-Out

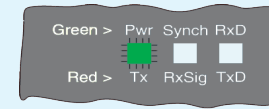
(Part number: TBUMCAB-SER-ADP-A)



7.0 LED Indicators

Radio is Powered

If all LEDs are off, check if power is reaching the radio modem. Successful power-up is indicated by the "PWR" LED indicating a continuous (healthy) GREEN state.

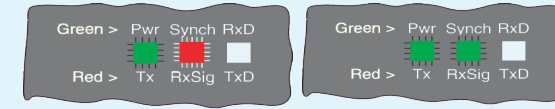


This LED will turn RED when the transmitter is active.

Received Signal Indicator

The "Rx/Synch" LED is used to indicate the state of the receiver. If the LED is off, no signal is being received. A RED indication shows that an RF carrier is being received, but no data stream can be decoded. This may indicate the presence of interference or another user on the channel.

A continuous GREEN indication shows that the modem is locked and synchronised to the incoming signal, and has good Bit Error Rate (BER).



Data Flow "breakout" LEDs

There is also an LED to indicate data flow into and out of the user port. Data received by the radio modem through the user port (for RF transmission) is shown as a RED flash, and data sent out of the modem through the user port (from RF reception) is shown as a GREEN flash. If data is alternately flowing in and out quickly, then the indicator appears orange.

8.0 Activating the Transmitter

In most systems, the transmitter, by default, is controlled automatically by the radio when it has data to transmit. To manually activate the radio transmitter, connect (i.e: link) the RTS signal (Pin 7) to Aux (Pin 8). To operate in this mode, the radio must be configured via the programming software for PTT from RTS.

WARNING

HAZARD OF RADIO FREQUENCY (RF) BURNS

Ensure that a matching load or antenna is attached to the RF port prior to applying power to the device.

Failure to follow these instructions can result in death or serious injury.

9.0 Antenna Azimuth Alignment for Rx Signal

When using a directional antenna, azimuth alignment may be required, to achieve optimum received signal. Receiver signal strength can be read from TView+ Diagnostics, which can provide the RSSI value after a poll/response, or, by measuring the DC voltage between pin 9 (RSSI) and pin 5 (GND) of the serial COM port which can output a live, RSSI to analog DC voltage, where, 2.8V DC represents approx. -90dBm. Indicated signal strength is equal to ~20dB/volt, or the conversion chart shown below can be used. As the RSSI to analog DC voltage output indicates 'live' receiver signal strength, the radio must be listening to a permanently active transmitter, otherwise, only low levels of background noise will be indicated. (see 8.0 for instructions on activating the transmitter).

Analog RSSI Output Characteristics - M Series Data Radio

