



# Remote Data Radio - MR450

M Series - Generation II



For dependable professional data radio communications in SCADA and Telemetry systems at the lowest possible cost, the solution is Trio DataCom's MR450.

Highly versatile, the compact MR450 has price/performance optimized versions to suit the widely varying needs of such typical applications as fresh or waste water management and industrial control automation. Rugged construction and full -30C to +60C operational capability make it suitable for the harshest environments.

Even though it comes at a low price, the simplex/half duplex MR450 has the most commonly sought-after features, yet is still easy to configure and use. Where additional system features may be required, Trio DataCom offers it's compatible E Series - the world's most advanced family of data radio products.

The MR450 is complemented by matching full duplex base and repeater stations, including a redundant hot standby version. Local and remote diagnostics are optionally available to assist in commissioning and troubleshooting.

## Features

### Radio

- 395-520 MHz operation
- 0.1 to 5 watt transmitter output power
- Software selectable Tx and Rx frequencies
- Simplex or half duplex operation with any Tx-Rx splits
- One model suitable for 12.5 and 25 kHz channel spacing
- Synthesized digital data radio design
- Professional N Type antenna connector

### Data Modem

- Fully integrated DSP based data modem
- High data integrity - CRC error checking
- Multistream™ simultaneous data streams allow for multiple vendor devices/protocols to be transported on the one radio network
- Internal repeater operation - single radio store and forward
- Channelshare™ unique integrated C/DSMA collision avoidance technology permits simultaneous polling and spontaneous alarm reporting operation in the same system
- User configurable 300-19,200 bps asynch RS-232 port
- Transparent 3 wire RS-232 user interface
- Compatible with most industry standard data protocols, e.g., MODBUS, DNP-3, IEC 870-5-101 etc.

### Network Management and Remote

- Diagnostic option** (In conjunction with **TVIEW+™ Software**)
  - Separate simultaneous local diagnostics/configuration interface
  - Remote fully transparent Network Management and Diagnostics
  - Network wide operation from any radio modem
  - Full SCADA style features such as database, trending and networking
  - Over-the-air modem reconfiguration
  - Full graphical presentation (HMI)

### General

- Operation from -30 to +60 °C
- Hazardous Environment Certification - Class I, Division II (Groups A,B,C and D)
- 13.8 Vdc supply voltage
- Low power consumption
- Compact footprint
- Rugged die-cast alloy chassis
- Multi function LED status display
- Field upgradeable firmware
- Windows based configuration software



Innovative and sophisticated  
digital communications  
designs products and solutions

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### Radio

**Frequency Range:** 395-465 MHz or 450-520 MHz

**Frequency Splits:** Various Tx/Rx frequency splits - programmable

**Channel Selection:** 6.25 kHz channel step

**Channel Spacing:** One model suitable for 12.5 and 25 kHz

**Frequency Accuracy:**  $\pm 1.5$ ppm (-30 to 60°C) (-22 to 140°F) ambient

**Ageing:**  $\leq 1$ ppm/annum

**Operational Modes:** Simplex and Half duplex

**Configuration:** All configuration via Windows based software

#### Compliances:

FCC	PART 15, PART 90
IC	RS119, ICES-001
ACA	AS4295-1995 (Data)
ETSI	EN300 113
CSA	Class I, Division II, Groups (A,B,C,D) for Hazardous Locations (ANSI/UL equivalent)

### Transmitter

**Tx Power:** 0.1 to 5W (+20 to +37 dBm)  $\pm 1$  dB software adjustable

**Modulation:** Narrow band GMSK

**Timeout Timer:** Programmable 0-255 seconds

**Tx Spurious:**  $\leq -30$  dBm

**PTT Control:** Auto (Data) / RTS line

### Receiver

**Sensitivity:** -116 dBm for 12 dB SINAD

**Intermodulation:** Better than 65 dB

**Spurious Response:** Better than 70 dB

**Mute:** Programmable digital mute

### Diagnostics (Optional)

Network wide operation from any remote terminal.

Non intrusive protocol - runs simultaneously with the application.

Over-the-air re-configuration of user parameters.

Storage of data error and channel occupancy statistics.

In-built Error Rate testing capabilities.

### Connections

**User Data Ports:** DB9 female port wired as DCE (modem). (Separate connections on DB9 for simultaneous User and Diagnostic Data)

**Antenna:** N female bulkhead

**Power:** 2 pin screw locking (mating connector supplied)

**LED Display:** Multimode LED Indicators for Pwr, Tx, Rx, Sync, Data Port Tx/D and Rx/D data

### Modem

**Data Serial Port:** RS232, DCE, 300-19,200 bps asynchronous

**Diagnostics Connection:** RS232, 19,200 bps asynchronous

**Data Interface:** 3 wire data interface. (Tx/D, Rx/D & GND). RF carrier driven DCD output for collision management.

**Analog Interface:** TX/RX Analog interface for external FSK/FFSK modems.

#### RF Channel Data Rate:

Four models:  
2400/4800 bps (MR450-x001-xxx) or  
4800/9600 bps (MR450-x002-xxx) or  
9600 bps (MR450-x003-xxx) FCC  
4800 bps (MR450-x004-xxx) ETSI

**Data Buffer:** 8 kbyte of on-board RAM

#### Bit Error Rate:

$< 1 \times 10^{-6}$  @ -115 dBm (2400 bps)  
 $< 1 \times 10^{-6}$  @ -114 dBm (4800 bps)  
 $< 1 \times 10^{-6}$  @ -106 dBm (9600 bps)

**Collision Avoidance:** Trio DataCom's unique supervisory Channelshare™ collision avoidance system

**Multistream™:** Trio DataCom unique simultaneous delivery of multiple data streams (protocols)

**Firmware:** Field upgradeable Flash memory

### General

**Power Supply:** 13.8 Vdc nominal (10-16 Vdc)

**Transmit Current:** 600 mA nom. @ 1 W  
1500 mA nom. @ 5 W

**Receive Current:**  $< 170$  mA nominal

**Dimensions:** Solid Diecast Alloy Housing  
154 x 102 x 29 mm  
(6.1 x 4.1 x 1.2 inches)

**Mounting:** Integral Solid Diecast feet

**Weight:** 0.32 kg (0.71 lbs)

### Options

TVIEW+™ Configuration, Network Management and Diagnostic Windows GUI Software

DIAGS/M Remote Diagnostics Facilities per Radio Modem

### Related Products

EB450 Base Station\*

EH450 Hot Standby Base Station\*

\* Configured for M Series compatibility



Local regulatory conditions may determine the performance and suitability of individual versions in different countries. It is the responsibility of the buyer to confirm these regulatory conditions. Performance data indicates typical values related to the described unit.

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