

# Trio™ Q

Licensed UHF

Ethernet and Serial data radio

QR450 – Half Duplex



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Trio Q Data Radios are advanced, high-speed licensed digital data radios, providing both Ethernet and serial communications for complex and demanding applications in Point-to-Point and Point-to-Multipoint (Multiple Address Radio) Telemetry and remote SCADA systems.

Features such as ChannelShare+™ and web-based user configuration, together with powerful remote diagnostics and Network Management, make Trio Q Data Radios the complete licensed radio solution that works with leading host systems and remote equipment.

Combining both Ethernet and serial connectivity, Trio Q Data Radios are suitable for use with the latest SCADA technology as well as providing a smooth transition from serial-based infrastructure to IP/Ethernet.

# Product Data Sheet Trio QR450

## Specifications

### > Trio QR450

#### Radio

Frequency Range	400-450MHz (L-Band) or 450-518MHz (H-Band)
Frequency Splits	Various Tx/Rx frequency splits - configurable
Channel Selection	3.125kHz channel steps
Channel Spacing	12.5 and 25kHz (software selectable)
Frequency Accuracy	±0.5ppm, -40 to +70°C (-40 to 158°F) ambient
Aging	<= 1ppm/annum
Radio Modes	Simplex and Half duplex

#### Transmitter

Tx Power	0.05 to 10W (+17 to +40dBm) +/- 0.1dB configurable with over-temperature and high VSWR protection
Modulation	Narrow band 2, 4, 8 and 16-level continuous phase modulation
Tx Keyup Time	<1ms
Timeout Timer	Configurable 0 to 255 seconds
Tx Spurious	<= -37dBm
PTT Control	Auto (Data) / RTS line on Data Port

#### Receiver

AFC Tracking	Digital receiver frequency tracking
Mute	Configurable digital mute

#### Connections

Serial Interface 1/2	1 x DB9 female connector providing 2 x RS-232 3-wire serial ports or 1x RS485 serial port (shared connector).
Serial Interface Speeds	From 600bps up to 115,200bps
Serial Interface Flow Control	Configurable hardware / 3-wire interface
Serial Interface DCD Control	Configurable DCD operation : activated on RF carrier or from user data output
Ethernet Port	2 x RJ45: 10/100 Mbps (auto-MDIX sensing) compliant with IEEE 802.3
Antenna	1 x TNC female bulkhead
Power	2-pin locking, mating connector supplied
LED Display	Multimode Indicators for DC Power, Transmit, Receive, Synchronised Data, Serial Interface 1 & 2 Transmit & Receive Data, Ethernet 1 & 2 Transmit & Receive Data

#### Ethernet

Supported Protocols	Ethernet (including UDP, TCP, DHCP, ARP, ICMP, STP, IGMP, SNMP & TFTP)
Ethernet Repeating	Automatic Peer to Peer repeating
Operating Modes	Layer-2 Ethernet Bridge mode / Layer-3 IP Router mode
Ethernet Traffic Filtering	Configurable: No Filtering / Unicast Traffic & ARP Only / Unicast Traffic Only / List of approved MAC addresses
Compression	Automatic data compression
Terminal Server	Legacy RS-232/RS-485 serial support via embedded terminal server (UDP/TCP)
IP Configuration	Auto (DHCP) and Manual
SNMP	SNMP V1,V2c, RFC 1213-compliant & radio diagnostics parameters (with notifications)
Modbus Gateway	Configurable MODBUS/TCP to MODBUS/RTU Gateway
Time Server	NTP Client / Server / Client-Server / Manual modes

Specifications continue on the next page

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> Trio QR450				
<b>Modem</b>				
RF Channel Data Rate <sup>1,4</sup>	Regulatory Region	Bandwidth (KHz)	Speed (Kbps)	RF 1x10 <sup>-6</sup> BER Sensitivity (dBm)
	FCC/IC	12.5	8	-113
			16	-110
			24	-107
			32	-100
	ACMA/ETSI	12.5	8	-113
16			-110	
24			-107	
32			-100	
25		14	-111	
		28	-109	
		42	-106	
		56	-99	
Dynamic Speed Selection	QoS/RSSI based Automatic Speed Selection or Fixed speed mode			
Operating Modes	Base, remote, repeater or store 'n' forward			
Channelshare+™	Advanced dynamic supervisory collision avoidance system			
Firmware	Local and over-the-air flash-based firmware upgradable patches with support for broadcast updates			
<b>Security</b>				
Encryption <sup>3</sup>	256-bit AES			
HTML Interface	Password Protected HTTP and HTTPS configuration and management interface			
Console Interface	Password protected Telnet, SSH and Serial console interface			
Password Protection	Password protected configuration sessions			
<b>Diagnostics</b>				
Diagnostics Overview	<ul style="list-style-type: none"> <li>• Network management and diagnostic Windows GUI software</li> <li>• Network-wide operation from any remote terminal</li> <li>• Non intrusive protocol – runs simultaneously with the application</li> <li>• Storage of data error and channel occupancy statistics</li> <li>• Embedded Error Rate testing capabilities</li> <li>• Diagnostics parameters available               <ul style="list-style-type: none"> <li>• Transmitter Power</li> <li>• Received Signal Strength</li> <li>• DC Supply Voltage</li> <li>• Received Frequency Offset</li> <li>• Radio Temperature</li> <li>• VSWR</li> </ul> </li> </ul>			
Logging	Embedded event and performance logs including time stamped data statistics and channel occupancy			
Diagnostics & Configuration	Configuration via embedded HTTP, HTTPS web interface & or Telnet/SSH/Serial console			
Ping Tester	Embedded ping test facility			
<b>General</b>				
Operating Temperature Range	-40 to +70°C (-40 to 158°F) ambient			
Input Voltage	10-30V DC			
Input Power (Tx typical)	24 W @ 30dBm, 37 W @ 37dBm, 54 W @ 40dBm			
Input Power (Rx typical)	5W			
Housing & Dimensions	Rugged die-cast, 115 x 34 x 164mm (4.52" x 1.33" x 6.45")			
Mounting	Integrated Mounting Holes or DIN Rail mounting (optional)			
Weight	0.5kg (1.1lbs.)			
Warranty	3 years on parts and labor			
<b>Approvals and Certifications<sup>1,4</sup></b>				
Europe (ETSI)	ETSI EN 300 113, EN 301 489, EN 60950, EN 50385 and EN 50383			
United States (FCC)	FCC PART 15, PART 90			
Canada (IC)	IC RS119, ICES-001			
Australia (ACMA)	ACMA AS4295-2004 (Data)			
Hazardous Locations	CSA Class I, Division II, Groups (A,B,C,D) for Hazardous Locations ANSI/UL equivalent)			

## Product Data Sheet Trio QR450 Model Code

TBURQR4HN-E00E1L00 represents a typical part number	
<b>Model</b>	<b>Trio Radio QR450</b>
TBURQ	Q Data Radios
<b>Code</b>	<b>Select: Unit Type</b>
R	Simplex/Half Duplex Radio
<b>Code</b>	<b>Select: Generic Frequency Band</b>
4	UHF: 400 - 518 MHz Band
<b>Code</b>	<b>Select: Sub Band - UHF</b>
L	Low Band : 400 to 450MHz
H	High Band : 450 to 518MHz
<b>Code</b>	<b>Select: Hazardous Area Approvals</b>
H	Hazardous Environment Class 1 Div 2 Groups A, B, C & D
<b>Code</b>	<b>Select: Regulatory Region<sup>1,4</sup></b>
E00	ETSI/ACMA Region
F00	FCC Region
<b>Code</b>	<b>Select: Encryption<sup>3</sup></b>
E	256-bit AES encryption (standard)
N	No encryption
<b>Code</b>	<b>Select: Licensed Feature</b>
1L	Ethernet & Serial (Two Ethernet & two Serial Ports)
<b>Code</b>	<b>Select: Power Supply</b>
0	10-30V DC
<b>Code</b>	<b>Select: Reserved for future use</b>
0	Reserved for future use
<p><b>Example: TBURQR4LH-E00E1L00</b> specifies: Trio QR450 remote station, 400 to 450MHz, Class 1 Div 2, ETSI/ACMA Regulatory Region, 256 bit Encryption enabled, two Ethernet &amp; two Serial Ports, 10-30V DC power supply.</p> <p><b>Radio Regulatory Standards:</b>            FCC – Federal Communications Commission            IC – Industry Canada            ETSI – European Telecommunication Standards Institute            ACMA – Australian Communications and Media Authority</p> <p><b>Note 1:</b> Local country specific regulatory requirements may determine the performance and suitability of the radio. Additional certification, homologation or importation licenses may be required. It is the responsibility of the buyer to ensure that all regulatory requirements have been satisfied. Contact your local Schneider Electric sales office for more details.</p> <p><b>Note 3:</b> Export and import restrictions may apply.</p> <p><b>Note 4:</b> Other country and radio regulatory regional approvals are available upon request. Contact your local Schneider Electric sales office for more details.</p> <p><b>Disclaimer:</b> Not all product features are available in every mode of operation. Schneider Electric reserves the right to change product specifications. For more information visit <a href="http://www.schneider-electric.com">www.schneider-electric.com</a>.</p>	