Trio™ Q
Licensed UHF Ethernet and Serial data radio
QB450 – Full Duplex
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.

Complimenting the QR450 half duplex remote radio, the QB450 full duplex radio is ideal for deployment at base & repeater sites in systems using two frequency operation. In high duty cycle applications, the QB450 delivers maximum rated transmitter power in ambient temperatures up to +70°C (158°F). Where 1+1 hot standby redundancy is required, the half duplex QP450 and the full duplex QH450 are available.
## Product Data Sheet Trio QB450

### Specifications

#### 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**: Half duplex & Full duplex
- **Duplexer**: External duplexer filter may be required (not included) - Refer to note 5 for more information.

#### 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)

#### 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**: 3 x RJ45: 10/100 Mbps (auto-MDIX sensing) compliant with IEEE 802.3
- **Antenna**: 2 x N female bulkhead (seperate Tx and Rx ports - full duplex)
- **Power**: 10-pin locking, mating connector (11-30 V DC)
- **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, SNTP & TFPT)
- **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
## Trio QH450

### Modem

<table>
<thead>
<tr>
<th>RF Channel Data Rate¹</th>
<th>Regulatory Region</th>
<th>Bandwidth (KHz)</th>
<th>Speed (Kbps)</th>
<th>RF 1x10⁻⁶ BER Sensitivity (dBm)</th>
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<tbody>
<tr>
<td></td>
<td>FCC/IC</td>
<td>12.5</td>
<td>8</td>
<td>-113</td>
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<tr>
<td></td>
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<td></td>
<td>16</td>
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<td>-107</td>
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<td></td>
<td></td>
<td></td>
<td>32</td>
<td>-100</td>
</tr>
<tr>
<td></td>
<td>ACMA/ETSI</td>
<td>12.5</td>
<td>8</td>
<td>-113</td>
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<td>16</td>
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<td>56</td>
<td>-99</td>
</tr>
</tbody>
</table>

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

### Security

Encryption³: 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

### Diagnostics

Diagnostics Overview:
- Network management and diagnostic Windows GUI software
- Network-wide operation from any remote terminal
- Non intrusive protocol – runs simultaneously with the application
- Storage of data error and channel occupancy statistics
- Embedded Error Rate testing capabilities
- Diagnostics parameters available
  - Transmitter Power
  - Received Signal Strength
  - DC Supply Voltage
  - Received Frequency Offset
  - Radio Temperature
  - VSWR

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

### General

Operating Temperature Range: -40 to +70°C (-40 to 158°F) ambient

Cooling: Built in temperature controlled fan

Input Voltage: 11-30V DC

Input Power (Tx typical): 55 W @ 30dBm, 71 W @ 37dBm, 85 W @ 40dBm

Input Power (Rx typical): 14W

Housing & Dimensions: 19” (483mm) 1 RU rack mount. Without mounting brackets, D:424 x H:44.45 x W:436.5mm (D:16.7” x H:1.75” x W:17.18”)

Weight: 5kg (11lbs.)

Warranty: 3 years on parts and labor

### Approvals and Certifications

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)
## Product Data Sheet Trio QB450

### Model Code

<table>
<thead>
<tr>
<th>Model</th>
<th>Trio Radio QB450</th>
</tr>
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<tbody>
<tr>
<td>Code</td>
<td>Q Data Radios</td>
</tr>
<tr>
<td>Code</td>
<td><strong>Select: Unit Type</strong></td>
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<td>B</td>
<td>Full Duplex Radio - 19&quot; 1RU</td>
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<tr>
<td>Code</td>
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<td>4</td>
<td>UHF: 400 - 518 MHz Band</td>
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<td>Code</td>
<td><strong>Select: Sub Band - UHF</strong></td>
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<td>Low Band : 400 to 450 MHz</td>
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<td>H</td>
<td>High Band : 450 to 518 MHz</td>
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<td>Code</td>
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<td>FCC Region</td>
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<td>No encryption</td>
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<tr>
<td>Code</td>
<td><strong>Select: Licensed Feature</strong></td>
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<td>1L</td>
<td>Ethernet &amp; Serial (Three Ethernet &amp; two Serial Ports)</td>
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<td>Code</td>
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<td>11-30V DC</td>
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<td>Code</td>
<td><strong>Select: Reserved for future use</strong></td>
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<tr>
<td>0</td>
<td>Reserved for future use</td>
</tr>
</tbody>
</table>

Example: **TBURQB4HN-E00E1L00** represents a typical part number.

### Radio Regulatory Standards:

- FCC – Federal Communications Commission
- IC – Industry Canada
- ETSI – European Telecommunication Standards Institute
- ACMA – Australian Communications and Media Authority

**Note 1:** Availability of radio models is dependent on country of deployment. Local and regulatory conditions may determine the performance and suitability of the radio in different countries. It is the responsibility of the buyer to ensure the radio model meets the regulatory conditions required. Contact your local Schneider Electric sales office for more details.

**Note 2:** Backward compatibility is not available for all types & models of Trio E radio. Not all features are available when operating in backward compatible mode. Contact your local Schneider Electric sales office for more details.

**Note 3:** Export and import restrictions may apply.

**Note 4:** Other country and radio regulatory regional approvals are available upon request. Contact your local Schneider Electric sales office for more details.

**Note 5:** The QB450 is a full duplex radio and must be deployed with suitable isolation between transmitter and receiver. Isolation may be achieved by the use of band pass duplexer, external filters or suitably spaced separate antennas. Internal duplexers and filters are not available. Suitable duplexers include TBURDUPLXBP4XXCOA. For information regarding duplexers, contact your local sales office.

**Disclaimer:** Not all product features are available in every mode of operation. Schneider Electric reserves the right to change product specifications. For more information visit www.schneider-electric.com.
Product Data Sheet Trio QB450

Dimensions

QB450 - Full Duplex Radio