Trio™ Q
Licensed UHF
Ethernet and Serial data radio
QH450 Hot Standby Full Duplex

Distributed by:

relevant.

888.858.3647 | relevantsolutions.com

Schneider Electric

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 QH450 full duplex radio kit is ideal for deployment at base & repeater sites in systems using two frequency operation. In high duty cycle applications, the QH450 delivers maximum rated transmitter power in ambient temperatures up to +70°C (158°F). Where 1+1 hot standby redundancy is not required, the full duplex QB450 radio is available.

Product Data Sheet Trio QH450
Specifications

>	Trio QH450
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	Full duplex
Duplexer[5]	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 (for each QB within the Hot Standby configuration)	
Serial Interface 1/2	1 x RS232 DB9 female connector providing 2 x RS-232 3-wire serial ports (shared connector). 300-38,400 bps asynchronous
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[5]	2 x N female bulkhead (seperate Tx and Rx ports - full duplex) – refer to diagram at end of datasheet for more details
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
Ethernet Link Monitoring	Monitor the Ethernet link between a QB and up to two remote IP 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
Hot Standby	
Change-over control	Manual (front panel switched) / automatic upon alarm / automatic upon timer / remote (software driven)
Alarm Monitoring	General Alarms / Transmitter / Receiver / Received Signal Strength / Received Data Errors / Ethernet Connectivity / Power Supply
Specifications continue on the next page	

Product Data Sheet Trio QH450
Specifications

>	Trio QH450			
Modem				
RF Channel Data Rate[1]	Regulatory Region	Bandwidth (KHz)	Speed (Kbps)	RF 1×10^{-6} BER Sensitivity (dBm)
	FCC/IC	12.5	8 16 24 32	-113 -110 -107 -100
	ACMA/ETSI	12.5	8 16 24 32	-113 -110 -107 -100
		25	14 28 42 56	-111 -109 -106 -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			
Backward Compatibility[2]	Backward compatible with Trio E-Series radios			
Firmware	Local and over-the-air flash-based firmware upgradable patches with support for broadcast updates			
Security	**Security**			
Encryption[3]	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)	76 W @ 30dBm, 92 W @ 37dBm, 106 W @ 40dBm			
Input Power (Rx Typical)	35W			
Protection mode	Automatic or manual changeover between QB450 units			
Housing & Dimensions	Hot Standby is configured using 2 x QB450 + 1 x Hot Standby Controller (19" 1 RU each) for a total of 19"(483mm) 3 RU rack mount. Without mounting brackets, D:424 x H:133.3 x W:436.5mm (D:16.7" x H:5.25" x W:17.18")			
Weight	15kg (33lbs) excluding optional duplexer			
Warranty	3 years on parts and labor			
Approvals and Certifications				
Europe (ETSI)	ETSI EN 300 113, EN 301 489, EN 60950			
United States (FCC)	FCC PART 15, PART 90			
Canada (IC)	IC RS119, ICES-001			
Australia (ACMA)	ACMA AS4295-1995 (Data)			

Schneider Electric

Product Data Sheet Trio QH450
Model Code

TBURQH4HN-E00E1L0A represents a typical part number	
Model	**Trio Radio QH450**
TBURQ	Q Data Radios
Code	**Select: Unit Type**
H	Full Duplex Hot Standby Kit (with controller) - 19" 3RU Comprised of 2 x QB450 + 1 x QH Hot Standby Controller
Code	**Select: Generic Frequency Band**
4	UHF: 400 - 518 MHz Band
Code	**Select: Sub Band – UHF**
L	Low Band : 400 to 450MHz
H	High Band : 450 to 518MHz
Code	**Select: Reserved for future use**
N	Reserved for future use
Code	**Select: Regulatory Region[1]**
E00	ETSI/ACMA Region
F00	FCC Region
Code	**Select: Encryption[3]**
E	256-bit AES encryption (standard)
N	No encryption
Code	**Select: Licensed Feature**
1L	Ethernet & Serial (Two Ethernet & two Serial Ports)
Code	**Select: Power Supply**
0	11-30V DC
Code	**Select: Hot Standby Controller Options**
A	Common Tx/Rx Ports (External Duplexer required)
B	Duplicated Tx/Rx Antennas

Example: TBURQH4LN-E00E1L0A specifies: Trio QH450 Hot Standby full duplex radio kit, 400 to 450MHz, modulation for ETSI/ACMA regions, 256 bit Encryption enabled, three Ethernet & two Serial Ports, 10-30V DC power supply, Common Tx/Rx Ports.

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.
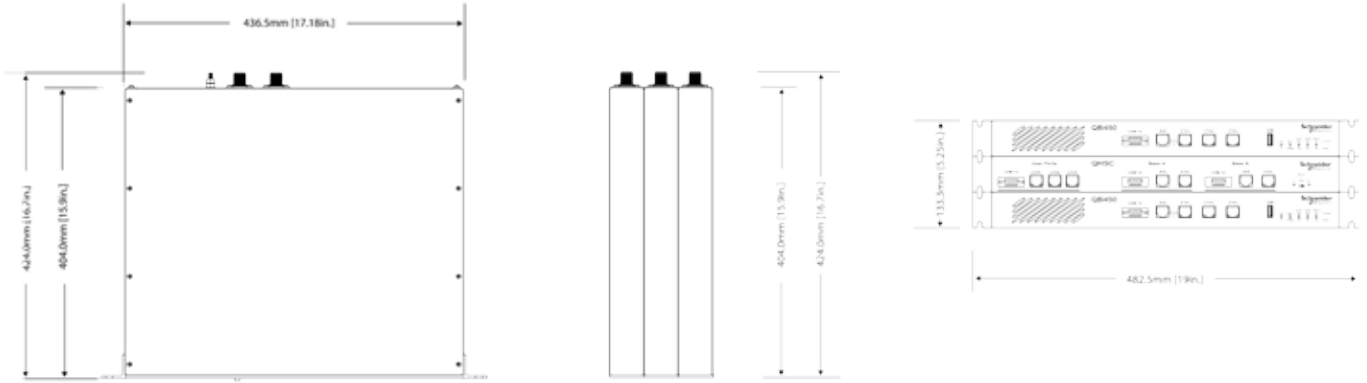
Note 3: Export and import restrictions may apply.

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 QH450 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.

Schneider Electric

Product Data Sheet Trio QH450
Dimensions and Options
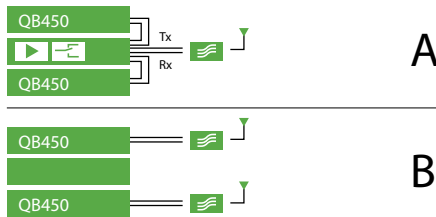
QH450 - Hot Standby Full Duplex Radio - Dimensions

QH450 - Hot Standby Controller Kit Configurations

QHHSC - Option Descriptions

	Description	Antenna Type
A	LNA (Rx) & RF Relay (Tx) Fitted	Common Tx/Rx Antenna
B	Duplicated Tx/Rx Ports	Duplicated Tx/ Rx Antennas

Note – The QH450 is a full duplex radio platform and must be deployed with suitable band pass duplexer or external filters. Internal Duplexers are not available. Suitable duplexers include TBURDUPLXBP4XXCOA. For information regarding external duplexers, contact your local sales office.

Kit Configuration

TBURQH4xx-xxxxxxxA
- 2 x TBURQB4xx-xxxxxxx
- 1 x TBURQHHSC-00A

QHHSC Hot Standby Controller Option

QB450
Tx
Rx
QB450

A

TBURQH4xx-xxxxxxxB
- 2 x TBURQB4xx-xxxxxxx
- 1 x TBURQHHSC-00B

QB450

QB450

B

LNA (Low Noise Receiver Amplifier / Splitter)

RELAY (Coaxial Transmitter Switch)

EXTERNAL DUPLEXER