Trio E to Trio Q Product Migration Guide

Introduction

Reasons for End of Life

A product can reach the end of its marketing life for a number of reasons: evolving market demands, technology innovation and development that drives change in the product, or the product reaches a stage where it's been replaced by enhanced technology.
The Trio E has reached the end of the product life cycle due to the development of a compatible replacement product range - the Trio Q data radio.

Suitable Replacements

Common E data radio hardware variants are being replaced with equivalent Trio Q data radios.
Suitable replacements shown are indicative only.
Products are interoperable. Application requirements should be validated before substitution.

Trio E to Trio Q Product Migration Guide

Product References Included in End of Life

The following part number references are included within the End of Life cycle for the Trio E data radio.

E data radio Part number references within End of Life cycle
TBURER450-xxxxxxxx
TBURER45e-xxxxxxxx
TBUREB450-xxxxxxxx
TBUREB45e-xxxxxxxx
TBUREH450-xxxxxxxx
TBUREH45e-xxxxxxxx
TBUREHHSC-00x
TBURCAB-EH-HSC
TBURERFDTRAY

Trio Licensed Offer - Overview

Item	MR450	QR450	QB450	QP450	QH450
Radio Type	Simplex/ Half Duplex	Simplex/ Half Duplex	Full Duplex	Simplex/ Half Duplex	Full Duplex
Duty Cycle	Low	Medium	High	High	High
Max Tx Power	5 Watts	10 Watts	10 Watts	10 Watts	10 Watts
Ethernet Ports	N/A	2	3	3	3
Serial Ports	1	2	2	2	2
Power Supply	10-16V DC	10-30V DC	11-30V DC	11-30V DC	11-30V DC
Configuration	TView+	Web/Telnet	Web/Telnet	Web/Telnet	Web/Telnet
CSA Hazardous	Standard	Standard	No	No	No
Typical Use	Remote Sites	Remote Sites	Entry Point/ Repeater	Entry Point/Repeater/ Any site requiring redundancy	Entry Point/Repeater/ Any site requiring redundancy

Refer to data sheets for specific details on product specifications

Trio E to Trio Q Product Migration Guide

Trio Q Licensed: QR450 Overview

Diagnostics & Management
- Status LEDs
- RSSI Output
- Factory Reset

Mounting Holes
- Flat Panel Mounting
- DIN Rail Mounting

DC Power
- 10-30V DC
- 5W standby
- Reverse polarity tolerant (Radio limits damage)

RF Port
- Up to 10W RF Power
- High VSWR Foldback
- -40 to +70 Deg C
- Over Temperature Foldback

Ethernet Ports
- 2 x 10/100 MBps
- Auto MDIX Sensing

Serial Ports
- Dual RS-232 Serial Port
- Shared on single DB-9 Connector
- Break Out cable if two ports required
- RS-485 mode supported

Trio Q Licensed: QB450 Overview

RF Ports
- Up to 10W RF Power
- High VSWR Foldback
- Separate Tx/Rx Connections
- Over Temperature Foldback

Digital Inputs/Outputs
- 3 DI / 3 DO
- Alarm Output
- Read/Write via SNMP

Status LEDs
- Status LEDs
- RSSI Output
- Factory Reset

General
- 19" 1RU Rack Mounted
- -40 to +70 deg C
- 100% duty cycle
- Full Duplex Operation

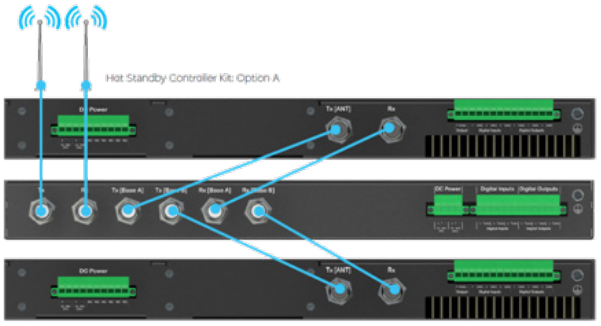
Ethernet Ports
- 3 x 10/100 MBps
- Auto MDIX Sensing

Serial Ports
- Dual RS-232 Serial Port
- Shared on single DB-9 Connector
- Break Out cable if two ports required
- RS-485 mode supported

Trio E to Trio Q Product Migration Guide

Trio Q Licensed: Hot Standby Kit QH450

- The Hot Standby Controller monitors each base for alarms and swaps over if an alarm is detected
- Support for Hot Standby Ethernet connections
  - Configurable shared (virtual) IP address
  - Ethernet Link Monitoring
- 100% Tx duty cycle rated
  - Over -30°C to +60°C (-22°F to +140°F)
- 3 x 19" 1RU hot swappable arrangement.
- Integrated Transmitter RF relay with Receiver LNA
  - Supports multiple external duplexer or redundant antenna configurations
- Manual online base over ride switch to facilitate swap out of alternate base
- General purpose digital I/O via SNMP



Trio E to Trio Q Product Migration Guide

E Emulation Mode

The Trio Q is designed as a compatible range replacement for the Trio E.
While operating in E Emulation mode, the Trio Q and the Trio E have the following similarities:

- RF and bit error rate performance
- General functionality and operation
- User configurable features and options
- Local and remote diagnostics and network management capability

However, there are some differences that may need to be considered, such as: standby power consumption, form factor, user interface and antenna connector arrangement and local and remote configuration.

Feature	Trio Ex450	Trio Ex45e	Trio Q in E Emulation Mode	Trio Q Mode
Modem / Radio				
Max Speed (bps)	9600 in 12.5kHz 19200 in 25kHz	9600 in 12.5kHz 19200 in 25kHz	9600 in 12.5kHz 19200 in 25kHz	32000 in 12.5kHz 56000 in 25kHz[1]
RF Sensitivity/BER	Refer to Trio E Data Sheet	Refer to Trio E Data Sheet	Same as E data radio	Refer to Trio Q Data Sheet
Dynamic Speed Selection	No	No	No	Standard
Collision Avoidance	ChannelShare	ChannelShare	ChannelShare	ChannelShare+
Link Layer Retries	No	No	No	Standard
Max Tx Power	5 Watts (37dBm)	5 Watts (37dBm)	5 Watts (37dBm)	10 Watts (40dBm)
Functionality / Operation[2]				
Embedded eDiags Server	No	Standard	Standard	Standard
Embedded Terminal Server	No	Standard	Standard	Standard
SNMP V1/V2 + Traps	No	Standard	Standard	Standard
Broadcast firmware upgrades	No	Standard	Standard	Standard
IP Compression	No	Standard	Standard	Standard
IP Routing / Store & Forward	No	No	No	Standard
Serial Transport	Packet Based	Packet Based	Packet Based	Encapsulated in IP/ Ethernet
Configuration / Diagnostics				
Configuration Method	Local and remote TView+	Local and remote TView+ and eProg	Web/Telnet + Local Console	Web/Telnet + Local Console
Diagnostics & NMS Method	TView+ & SNMP	TView+ & SNMP	TView+/Web/ Telnet/Console & SNMP	TView+/Web/ Telnet/Console & SNMP

Note 1: Not available for FCC regulatory regions
Note 2: Some options require Ethernet connectivity
Note 3: For detailed specifications, please review the product datasheets

Power Consumption

ER45x vs QR450 power consumption comparison, refer to the adjacent power consumption figures below:

Input Power	ER450	ER45e	QR450
Input Power (Tx Typical)	10.5 W @ 30dBm 22 W @ 37dBm	10.5 W @ 30dBm 22 W @ 37dBm	24 W @ 30dBm 37 W @ 37dBm 54 W @ 40dBm
Input Power (Rx/Standby Typical)	1.75W	2.5W	5W

Tx and Rx power requirements of the QR450 may need to be considered to determine correct rating of external power supply current limits, solar panel size or battery backup capacity.

Trio E to Trio Q Product Migration Guide

Remote Hardware Overview

ER450

Serial Ports
Two separate DB9 **serial ports**

DC Power Port
2 pin, screw terminal power connector

System Port
Separate on-line system port

RF Port
N-Type Female RF Connector

ER45e

Serial Port
Single DB9 **serial port**

Ethernet
Single RJ45 **Ethernet port**

DC Power Port
2 pin, screw terminal power connector

System Port
Separate on-line system port

RF Port
N-Type Female RF Connector

QR450

Serial Ports
Two serial ports on **shared** DB9 serial port

Ethernet
Two RJ45 **Ethernet ports**

RF Port
TNC Female RF Connector

DC Power Port
2 pin, screw terminal power connector with lock-in screws

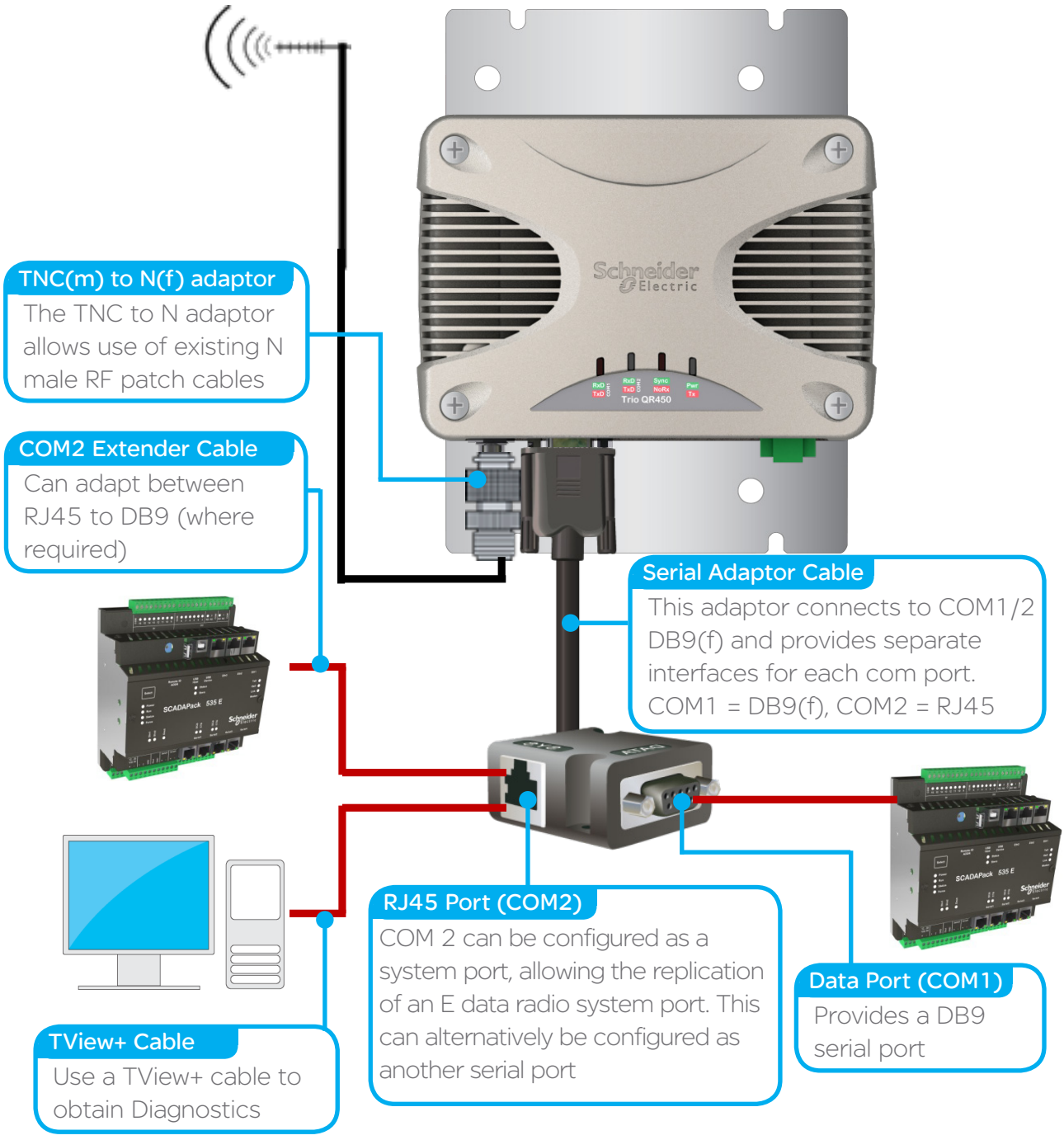
Trio E to Trio Q Product Migration Guide

Trio E to Trio Q Typical conversion kit use

To facilitate the conversion of Trio E to Trio Q, a conversion kit has been created.
The conversion kit contains:

- An Trio ER45x form factor mounting bracket
- TNC(m) to N(f) RF Adapter
- A Serial adaptor cable
- A COM2 extender cable

Part number references: **TBURMNTKIT-ERQR** (ordered separately)



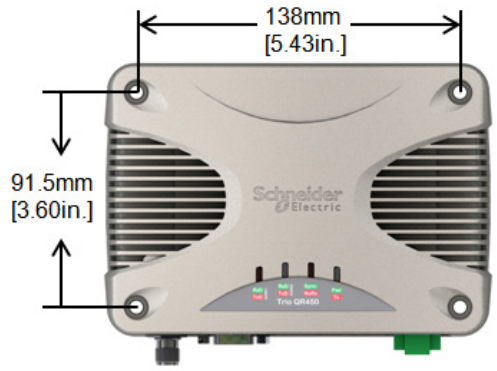
Trio E to Trio Q Product Migration Guide

Mounting Dimensions

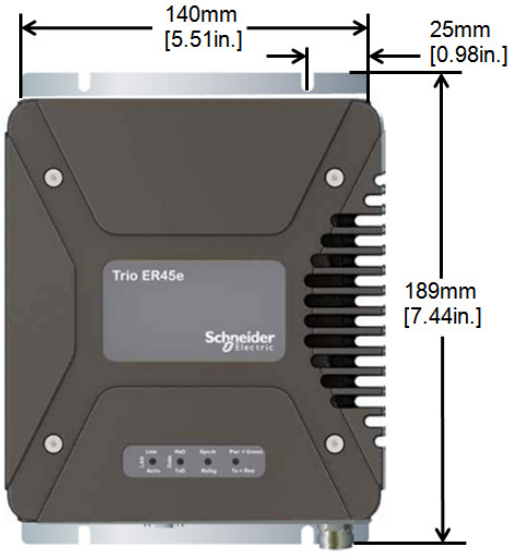
Trio E to Q Conversion Kit

The conversion kit mounting bracket, is integrated with mounted holes for a Trio QR450 that allows for mounting in the horizontal (flat) or vertical (flat) planes.
This means a Trio QR450 can be mounted in the footprint of a Trio ER45x without the need to drill new mounting holes.

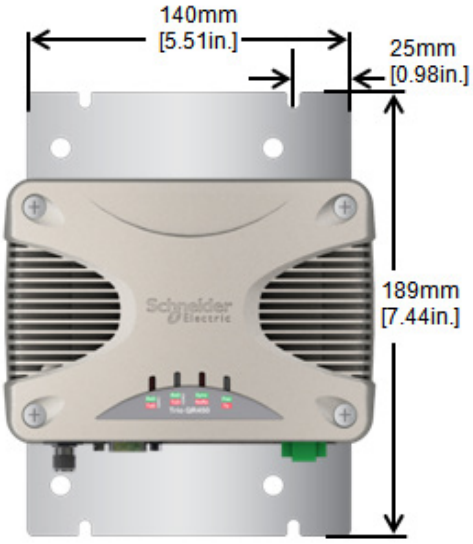
QR450



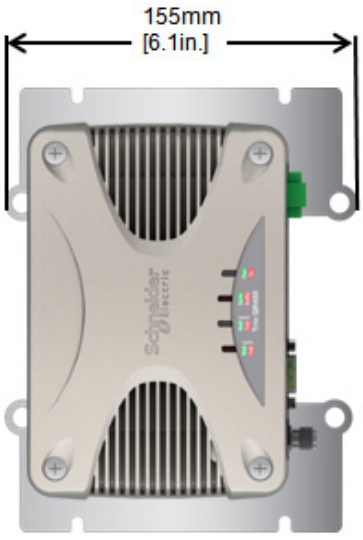
ER45x



E to Q Conversion Kit Bracket



Horizontal Orientation

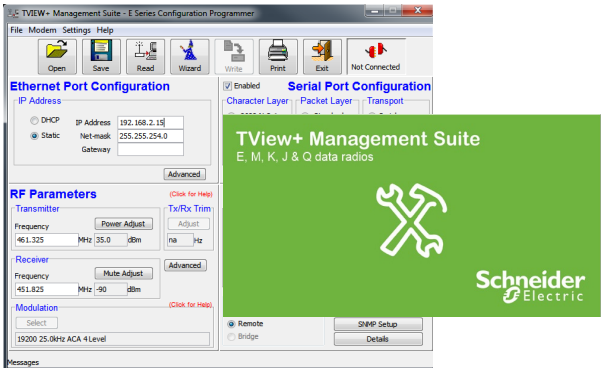


Vertical Orientation

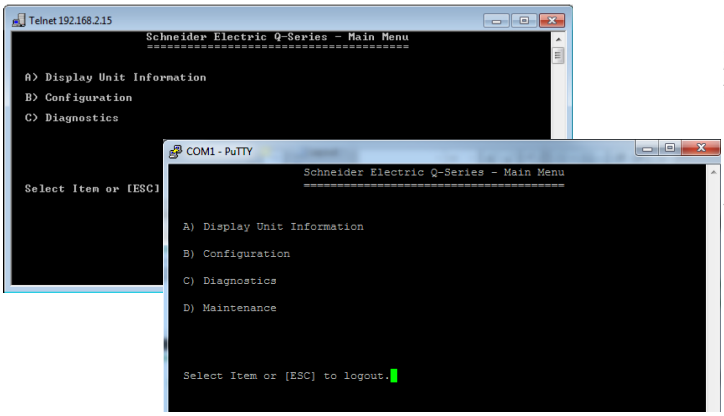
Trio E to Trio Q Product Migration Guide

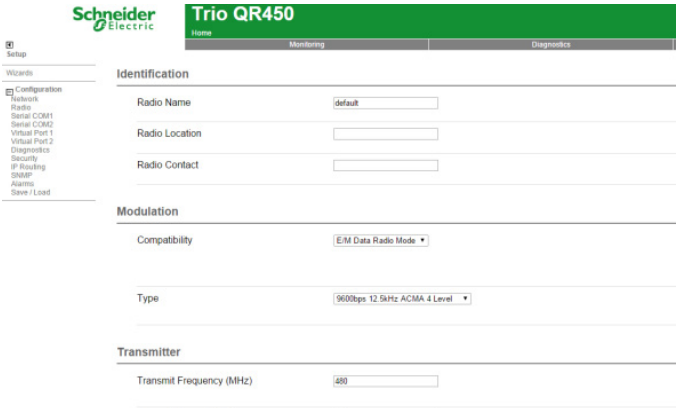
Configuration

The Trio E data radio is configured via a standalone software application called TView+ Management Suite. This requires a separate download/installation in order to configure the radio.
When a Trio Q is operating in E Emulation mode, a serial port can be configured as a system port. This can be used as an entry point to remotely configure E/M series radios via TView+.



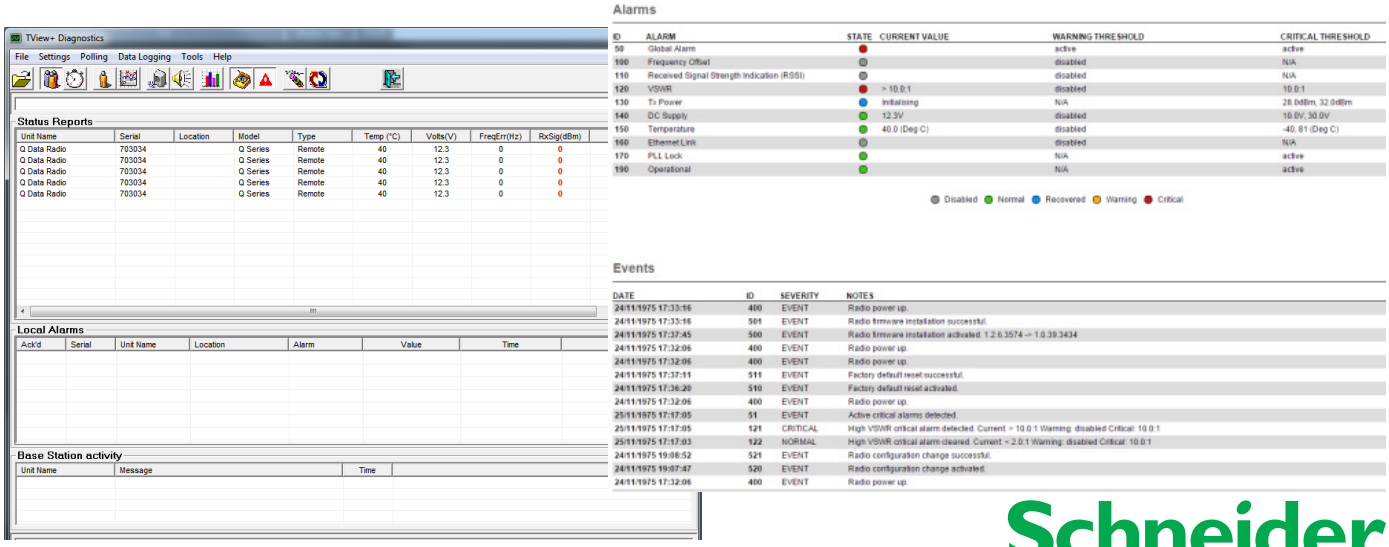
Q data radios provide a graphical Web User Interface (WUI) which can be accessed by a web browser to perform configuration changes. This helps to eliminate the requirement for stand-alone configuration software to be installed on a PC. Access to the WUI can be made via HTTP/HTTPS connection. Configuration changes can also be made via Telnet, SSH or via a serial console.





Diagnostics

The Trio E data radio is monitored via a standalone software application called TView+ Diagnostics (part of the TView+ Management Suite). The Q data radio, which can also be monitored via TView+ Diagnostics, comes with additional monitoring features such as: Improved SNMP alarms and embedded alarms/monitoring page within web user interface.



Trio E to Trio Q Product Migration Guide

Supported E/M Modulations

One aspect of configuring Trio E, includes the "modulation type" parameter, which specifies what type of over-the-air modulation to use in the transmitter/receiver.

A variety of common Trio E over-the-air modulation types are available when using a Trio Q in Trio E Emulation mode. (See table below for supported modulation types).

E data radio Modulations	M-Series Modulations
9600 12.5 kHz ACA 4 Level [1]	9600 25.0kHz ACA M-Series [2]
19200 25.0 kHz ACA 4 Level [1]	4800 12.5kHz ACA M-Series [2]
9600 12.5 kHz FCC 4 Level [2]	4800 25.0kHz ACA M-Series [2]
19200 12.5 kHz FCC 4 Level [2]	2400 12.5kHz ACA M-Series [2]
19200 25.0 kHz FCC 2 Level [2]	9600 12.5kHz FCC M-Series [2]
9600 12.5 kHz ETSI 4 Level [2]	4800 12.5kHz ETSI M-Series [2]

Note 1: Requires firmware version 1.2.x or later
Note 2: Requires firmware version 1.3.x or later

Information

Non-Packet, Bell-202 and Trio D-Series modulations are not offered in the Trio Q. If you are using these modulations types, please speak to your sales representative regarding the last time buy opportunity for the E data radio.

Trio E to Trio Q Product Migration Guide

Product Reference Conversion Cheat Sheet

To help match a Trio E product reference with a Trio Q product reference, the following items should be reviewed: Hardware Type, Frequency Band and Regional Regulatory Authority/Bandwidth.
Any option can be chosen in places where 'x' is shown as noted below.
Refer to the Trio Q data sheets for a full description of product reference codes.

TBURQa4bH-cccH1L00

Q data radio Hardware Type	E data radio Equivalent
R	TBURE**R**45x-xxxxxxxx
B	TBURE**B**45x-xxxxxxxx
H	TBURE**H**45x-xxxxxxxx

Q data radio Frequency Band	E data radio Equivalent
L	TBUREx45x-**bb**xxxxxx Where '**bb**' can be: **59, 63, 58, 54, 56, 57, 55, B3[1], B4, B5, C1[2]**
H	**51, 65, 52, 53, 60, 54, C1[2], C2, C3**

Q data radio Regional Regulatory Authority/Bandwidth	E data radio Equivalent
F00	TBUREx45x-xx**F01**xxx TBUREx45x-xx**F02**xxx
E00	TBUREx45x-xx**E01**xxx TBUREx45x-xx**A01**xxx TBUREx45x-xx**A02**xxx

Information

Note 1: B3 Super type lower frequency range is 395MHz, The Q data radio can only operate down to 400MHz.

Note 2: C1 Super type frequency range is 436 to 467MHz, This falls between the frequency ranges of the High and Low variants of the Q data radio.

Note: The E data radio frequency operating range is 380 – 518MHz, where the Q Data radio frequency operating range is 400-518MHz.

The table below shows some typical Trio E product references with recommended replacement Trio Q product references.

Common Trio Ex450 Product References	Common Trio Ex45e Product References	Compatible Trio Q Product References
TBURER450-51A01EH0 TBURER450-51A02EH0 TBURER450-51E01EH0	TBURER45e-51A01EH0 TBURER45e-51A02EH0 TBURER45e-51E01EH0	TBURQR4HH-E00E1L00
TBURER450-51F01EH0 TBURER450-51F02EH0	TBURER45e-51F01EH0 TBURER45e-51F02EH0	TBURQR4HH-F00E1L00 TBURQR4HH-E00E1L00#
TBUREB450-51A01E00 TBUREB450-51A02E00 TBUREB450-51E01E00	TBUREB45e-51A01E00 TBUREB45e-51A02E00 TBUREB45e-51E01E00	TBURQB4HN-E00E1L00
TBURER450-51F01EH0 TBURER450-51F02EH0	TBURER45e-51F01EH0 TBURER45e-51F02EH0	TBURQB4HN-F00E1L00 TBURQB4HN-E00E1L00#
TBUREH450-51A01E0A TBUREH450-51A02E0A TBUREH450-51E01E0A	TBUREH45e-51A01E0A TBUREH45e-51A02E0A TBUREH45e-51E01E0A	TBURQH4HN-E00E1L0A
TBUREH450-51A01E0B TBUREH450-51A02E0B TBUREH450-51E01E0B	TBUREH45e-51A01E0B TBUREH45e-51A02E0B TBUREH45e-51E01E0B	TBURQH4HN-E00E1L0B

#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.

Trio E to Trio Q Product Migration Guide

Special Note: EB Base Station Options

The QB450 full duplex data radio is **NOT** available for the following EB options:

- 20W Tx output power variants of the EB45x
- Internal duplexer variants of the EB45x

E data radio Option not supported by Q	Description
TBUREB45x-xxxxxx**1**x	Configured for internal duplexer
TBUREB45x-xxxxxx**A**x	20W RF power output

Note: 20W RF power output was available within Australia only

Information

20W Tx output power and Internal Duplexer variants of Trio EB Base Stations are not offered in the Trio Q. Any customers using these models and who require additional or spare radios will need to purchase additional Trio E units during the last time buy process.

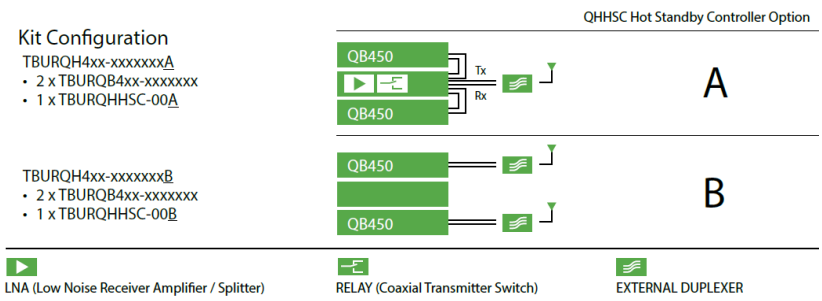
Special Note: EH Hot Standby Options

The Trio Q Hot Standby Kit is available in Type A and Type B antenna configurations.
There is no equivalent replacement for Type C (internal duplexer)

Example Part number Reference:

TBURQH4HH-E00H1L0d

Q data radio Hot Standby Option	E data radio Equivalent
A	TBUREH45x-xxxxxxx**A**
B	TBUREH45x-xxxxxxx**B**



Information

20W Tx output power and Internal Duplexer variants of Trio EB Base Stations are not offered in the Trio Q. Any customers using these models and who require additional or spare radios will need to purchase additional Trio E units during the last time buy process.

E data radio Option not supported by Q	Description
TBUREH45x-xxxxxxx**C**	Configured for internal duplexer

Internal Duplexer (Band Reject only)
TBUREH45x-xxxxxx0C
- 2 x TBUREB45x-xxxxxx00
- 1 x TBUREHHSC-00C
  – duplexer insider EHHSC*

Trio E to Trio Q Product Migration Guide

Special Note: Full Duplex Remotes

The Trio Q offers full duplex variants in 19" rack mount form factor only (QB/QH).
There is no **form factor equivalent** replacement for Type 'Y' or 'X' ER

Example Part number Reference:

TBURER450-51A01YH0
TBURER450-51A01XH0

Q data radio Full Duplex models
QB450
QB450

Information

Note: Type Y and X (full duplex) variants of Trio ER radios are not offered in the same form factor as Trio Q. For any Trio E option that is not covered by Trio Q, end users should consider their ongoing requirements during the Trio E data radio last time buy process.

More Information

For more information on the E data radio or Q data radio product ranges, please go to the Schneider Electric Telemetry and Remote Scada Solutions web page at:
http://www.schneider-electric.com

May 2015. Document number 0100SM1503