

Trio QP

Quick Reference Guide

Hot Standby Half Duplex - Q Data Radio



1.0 Introduction

Welcome to the Trio™ Quick Start Guide for the QP Hot Standby Half duplex radio. This section provides additional installation considerations, wiring diagrams and operational descriptions. This document should be read in conjunction with the QR half duplex radio Quick Start Guide, which can be found within the Q data radio user manual.

The QP is a hot standby, half duplex radio which can provide automatic changeover facilities.

The QP is designed with a pair of internal, highly reliable half duplex radios, which the QP can toggle between as online or offline. An automatic changeover can be triggered by the QP, due to out-of-tolerance (alarm) conditions based on either RF and/or user data throughput parameters.

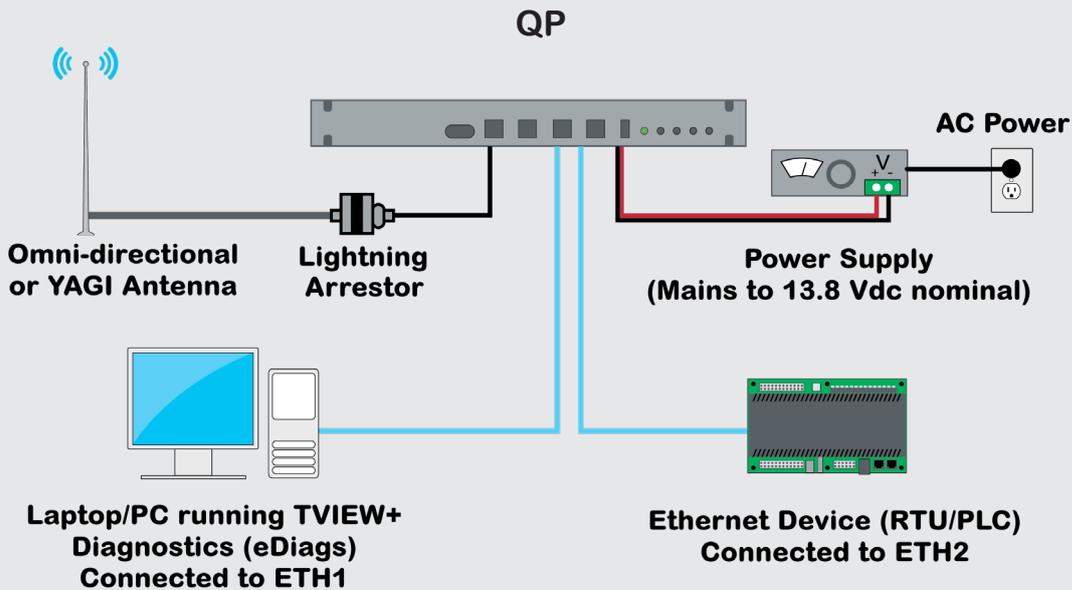
QP - Hot Standby Half Duplex radio

Features and Benefits

- Internal pair of highly reliable, half duplex radios with automatic changeover capability
- Flexible antenna options – Duplicate Ports or Common Ports
- Both online and off-line radios monitored regardless of online status
- Also refer to the common Features and Benefits list of the Q data radio.



2.0 Typical Radio Setup



3.0 Operational Description

The QP hot standby half duplex radio, is a 1RU rack mounted module which operates with two internal highly reliable half duplex radios, which can be switched between to provide redundancy.

The two half duplex radios (Radio A & Radio B) operate simultaneously and depending on the QP antenna option, there are different antenna arrangements available:

- Option B: Duplicate Ports - This option provides a separate antenna port for each of the internal radios.
- Option D: Separate Switched Ports - This option provides a separate antenna port for the receiver and the transmitter. Ownership of the ports will belong to the online remote, controlled by internal switching.
- Option E: Common Port - This option will connect the internal radio's antenna ports through an RF relay, providing a single antenna port on the QP.

Only data received by the "online" radio is directed to the user equipment. The online radio is also the only unit transmitting at any time. The QP can perform the following functions:

- Monitor the alarm output from both radio A and radio B and change over the online radio if required.
- Switch all user data through to the online radio.
- Switch the antenna via internal coaxial relay to the online radio transmitter (Requires QP Kit Option E).

Digital switching in the QP directs user data to and from the user ports on the front panel directly to the user ports of the online radio.

4.0 Mounting Guidelines

The QP hot standby half duplex radio is housed as a 1 RU 19 in. rack mounted unit. There are mounting brackets included for the front panel, which can be used to secure the unit to the rack.

Mount the radio in a clean and dry location, protected from water, excessive dust, corrosive fumes, extremes of temperature and direct sunlight. Allow sufficient passive or active ventilation to allow the radio fans to pass air through the internal heat sink efficiently.

All RF, power and digital I/O connections are made at the rear of the unit. All User interfaces are located at the front of the unit, this includes: Ethernet interface, Serial COM port interfaces and Auxiliary interface.

4.1 Mounting Brackets

The QP half duplex radio is housed in a 1 RU 19 in. rack enclosure. Each unit is supplied with two 1 RU mounting brackets, which can be fitted to either side of the unit to allow installation into a 19" in. rack. The mounting brackets can be fitted on the side of the base in 3 different locations: Front Mount, Proud Mount or Center Mount. For further details, refer to the Q user manual.

4.2 Physical Dimensions

Body: -19 in. (483 mm) 1 RU rack mount.

Without mounting brackets, D:424 x H:44.45 x W: 36.5 mm (D:16.7 x H:1.75 x W:1.43 in.)

5.0 Power Supply Requirements

Operating Voltage: 11...30 Vdc (Dual Input)

Input Power (Rx typical): 14 Watts

Input Power (Tx typical): (See table below)

Tx Power (dBm)	Typical Input Power (Watts)	
	QP150	QP450
30	26	34
37	38	46
40	46	59

Note: In high ambient temperature situations, the internal fans may operate, resulting in an increase of input power of up to 28 Watts.

Typical receive/standby input power is 14 Watts. The input power will vary in transmit mode according to RF output power level.

The QP is supplied with a lock-in mating DC power connector which should be installed with the locking screws done up tightly: (0.5 - 0.6 Nm / 4.42 - 5.31 ftin). Replacement parts available from Schneider Electric, part number TBUMPWR-PLUG-QB.

The radio is designed to limit damage if the voltage exceeds the operating voltage or if reverse polarity is applied. The field-replaceable internal fuse has a 12 Amp rating. Replacement fuses available from Schneider Electric, part number TBUMPWR-FUSE-QB.

Before connecting any wiring, ensure that all components are earthed to a common ground point.

Connect and secure the Antenna, Ethernet and Serial connectors BEFORE applying power to the unit. Lastly, before inserting the power connector, re-check that the polarity and voltage are correct using a multimeter and check the power cable against the +/- label printed on the rear panel of the radio.

6.0 LED Indicators

Indicated State	Pwr/Tx
No power, or ShutDown	
Power on	
Transmitter On	

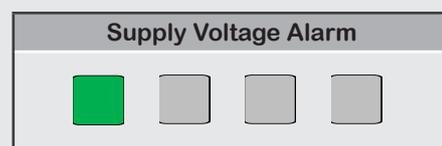
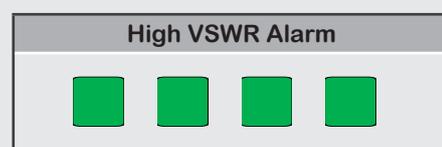
Indicated State	COM1/2
No Activity	
RxD Data Output	
TxD Data Input	
RxD & TxD Data Active	

Indicated State	Synch/RxSig
No received signal	
Receiver in SYNC state	
RSSI over mute level and no sync	

Indicated State	ETH port
Ethernet port inactive, no cable connected	
Ethernet port active @ 10Mbps	
Ethernet port active @ 100Mbps	

Alarm LED indications:

In some circumstances the radio will indicate an alarm state. This is shown by all LEDs illuminating RED for 1 sec, followed by a pattern of green LEDs for 1 sec. The pattern of green LEDs indicate the type of alarm. Consult the user manual for further information. See the examples to the right for, high VSWR and supply voltage alarms.



7.0 Connecting Antennas

The RF antenna system should be installed in accordance with the manufacturer's instructions and local regulatory requirements. The QP antenna connectors are N-type female connectors. Always use good quality low-loss feeder cable, selected according to the length of the cable run. Also, use a flexible patch cable between the radio and lightning arrestor or flange mount of the radio cabinet/enclosure. Ensure that all external connections are waterproofed.

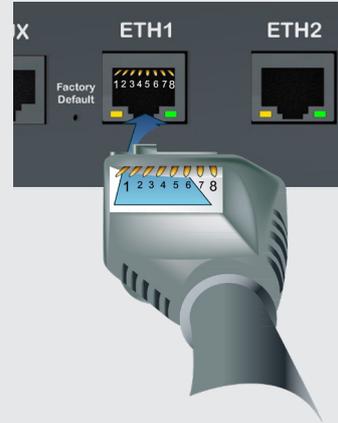
8.0 Communication Ports

8.1 Ethernet Ports - ETH1/2/3

The ETH ports are 10/100 Base-T compliant, using RJ45 sockets. These sockets support both TIA/EIA-568-A & B wiring as they have Auto MDI/MDIX Auto Sensing. This means you can use both straight-through and crossover type CAT-5 or better patch cables. All RJ45 connectors must utilize mating plugs that include an integral locking tab.

Note: If cable termination is required, refer to the Q Data radio user manual.

Note: Maximum differential voltage : 5 Vdc, 50 mA max through each differential pair.



8.2 Serial Ports - COM1/COM2

The QP features a 9-pin miniature D-Shell (DE-9) Female connector that supports two individual serial port connections. Each serial port is associated with an embedded serial terminal server that provides Serial to TCP/UDP IP connectivity. Refer to the user manual for more information on the serial terminal servers.

See the pin-out table for RS-232 pin allocations. For RS-485, refer to the Q data radio user manual.

An RSSI output is available on pin 9 which is useful for antenna alignment. See following page for details.

Notes:

- (1) Pin 1, 2, 6 & 8 are outputs rated at +/- 6 Vdc, 65 mA max.
- (2) Pin 3, 4 & 7 are inputs rated at +/- 15 Vdc, 5 mA max.
- (3) Pin 9 is a multipurpose IO pin with 120 mA max input / 5 mA max output.
- (4) Connecting wires should be #26 AWG (0.14 mm²) or larger.

RS-232 Mode		
Pin	Name	Input/Output
1	COM 1 DCD	Output
2	COM 1 RxD	Output
3	COM 1 TxD	Input
4	COM 2 TxD	Input
5	GND	-
6	COM 2 RxD	Output
7	COM 1 RTS	Input
8	COM 1 CTS	Output
9	RSSI	Output



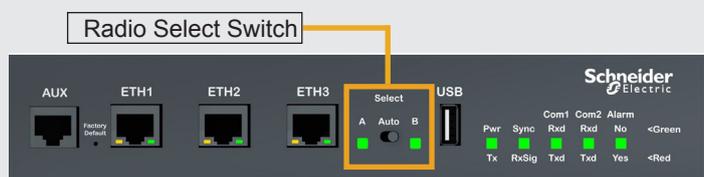
8.3 Radio Select Switch

The 3-position switch (A / Auto / B) on the front panel provides the following functionality:

- Position A: Radio A is forced online
- Position Auto: changeover hardware will select the online radio
- Position B: Radio B is forced online

Adjacent to the select switch are two LEDs: These LEDs indicate the current online radio.

Indicated State	Select LEDs
Auto Mode	
Local Force	
Remote Force	



9.0 Activating the Transmitter

Data sent to any of the radio's communication ports (Ethernet or Serial port) can cause the radio to activate its transmitter and send the data over the air. However, to test the transmitter with external test equipment (Tx power, VSWR or Frequency), or to test another radio's receiver, the Q data radio provides a tool to manually control the activation of the transmitter, which can be controlled via direct connection, or over the air.

Access to this tool is via the web user interface by browsing to: Maintenance -> Transmit Test. This will display the transmit test tool page.

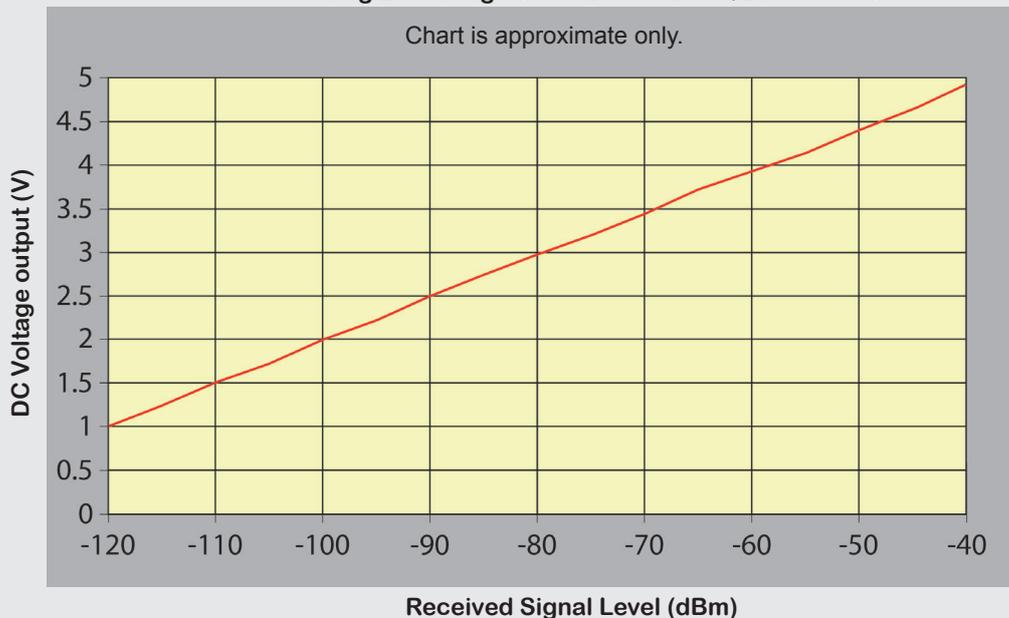
The transmitter can now be controlled via this page. To activate the transmitter, press the 'Turn ON' button. By default this will enable a Modulated Carrier for 60 seconds. During this time, the Tx LED should illuminate solid RED to indicate the transmitter is active. Check the transmitter's RF connector is properly terminated with an antenna or dummy load before performing this test

Transmitter State	<input type="button" value="Turn on"/>
Transmit Carrier	<input type="button" value="Modulated"/>
Transmit Idle Time (s)	<input type="text" value="60"/>
Power Level (dBm)	<input type="text" value="30"/> <input type="button" value="+"/> <input type="button" value="-"/>
Frequency Trim (Hz)	<input type="text" value="0"/> <input type="button" value="+"/> <input type="button" value="-"/>
<input type="button" value="Save and apply"/>	

10.0 Antenna Azimuth Alignment for Rx Signal

When using a directional antenna, azimuth alignment may be required, to achieve optimum received signal. Receiver signal strength can be read using the TVIEW+ Diagnostics software, or by measuring the DC voltage between pin 9 (RSSI) and pin 5 (GND) of the serial COM port. This provides a real-time (2 second peak hold) indication of RSSI by outputting 1...5 Vdc, where 2.5 Vdc represents approximately -90 dBm. Indicated signal strength is equal to ~20 dB/volt. As the RSSI-to-analog DC voltage output indicates 'live' receiver signal strength, the radio must be listening to a transmitter that remains active throughout the test, otherwise, only low levels of background noise will be indicated. (Refer to section 9.0 for instructions on activating the transmitter).

RSSI to Analog DC Voltage Characteristics - Q Data Radios



11.0 Factory Default

If you want to perform configuration changes on your Q data radio and do not know the IP address, you may need to activate a factory reset, or access the radio's Text User Interface via the serial COM port (refer to the user manual for further information).

In a factory default state, the unique IP allocations for Radio A and Radio B are:

- Radio A: 192.168.2.15
- Radio B: 192.168.2.16

Ensure that the correct internal radio is being factory defaulted by using the 'Select' switch on the front panel. Only a single internal radio can be factory defaulted at a time.

A factory reset can be initiated using the following method:

- 1) Apply power to the unit and wait (up to 3 minutes) for it to fully boot up. This is indicated by a solid GREEN Power LED.
- 2) Choose the desired radio using the Select switch on the front panel.
- 3) Press and hold the Factory Default switch, using a paper clip or similar object, for 6 seconds or until all four LED's begin flashing GREEN.
- 4) Wait for up to 4 minutes for the factory default reset process to complete.



12.0 Connecting to the Web User Interface

Each internal radio of the QP contains an embedded web server which provides access to the Web User Interface (WUI). The WUI can be used to perform configuration changes on the radio. To change a configuration parameter in one of the internal radios, connect your PC to one of the Ethernet ports (ETH 1, 2 or 3) on the front panel of the QP and direct your browser to the IP address of the internal radio (the select switch can be in any position while accessing a radio's WUI) It is strongly recommended that you follow these guidelines for successful connection to the radio:

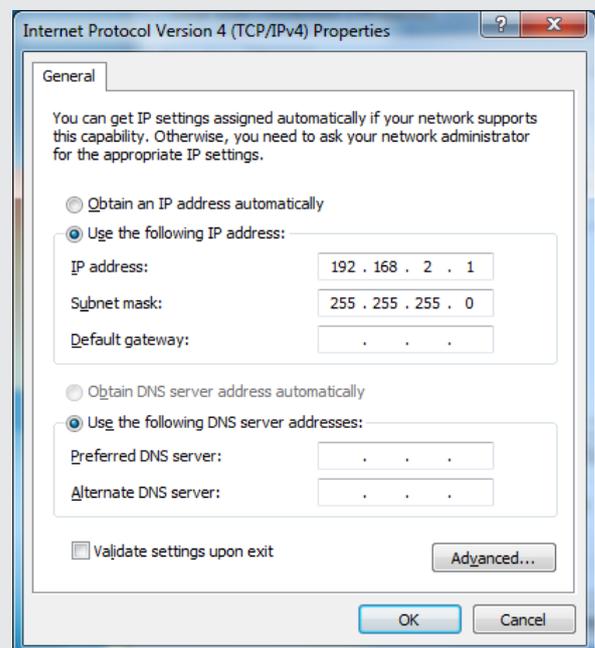
- (1) Ensure that the Q data radio is powered up and has fully booted. This is indicated by a solid GREEN power LED and takes approximately 2 minutes from applying DC power for the Q data radio to complete its boot process.. Note that the radio may be in a fully booted state, but indicating a user alarm. For example, if the radio's antenna port is incorrectly terminated, the radio will indicate a high VSWR alarm. Regardless of this user alarm, the radio can still be browsed to.
- (2) Disconnect your PC from any other Internet/LAN networks. Failure to do so may create a conflict in IP addresses or the Q data radio IP might not fall within the subnet mask specified by your network.
- (3) Connect your PC's Ethernet port to one of the Ethernet ports (ETH 1, 2 or 3) using an RJ-45 patch cable. Cross over cables will also work (Ethernet ports support MDI/MDIX). An active 100Mb connection is indicated on the radio by solid green and amber illumination on the LEDs which are fixed to the physical Ethernet port you are connected to. The green LED will blink to indicate data activity.
- (4) Ensure that your PC LAN port is configured for a suitable IP address. If you are using Windows 7, this can be done by configuring the LAN settings via the Control Panel. Navigate to your Windows "Start" button and open Control Panel -> Network and Sharing Center -> Change adapter setting -> Double click on the LAN port you are using -> Properties -> Double click 'TCP/IPv4'. You should see the window shown to the right.

Ensure that "Obtain IP Address Automatically" is NOT selected. It is recommended that you manually specify a compatible IP Address. In this example, a factory defaulted, 'Radio A' is being configured. The IP address of that internal radio is 192.168.2.15 (while the factory default IP address of 'Radio B' is 192.168.2.16) so a compatible IP address for the PC would be 192.168.2.1. Click OK to accept the changes.

Note: Check with your Network Administrator before allocating IP addresses as each LAN/WAN network is different.

(5) Now open your web browser and enter the IP address of 'Radio A' into the URL. In this case, we type "192.168.2.15", the browser should now display the home page of your radio. (Shown below).

Note: You may need to disable a web proxy (if in use) or disable or modify your local fire wall to help ensure that the security rules allow access to the Q data radio's IP address.

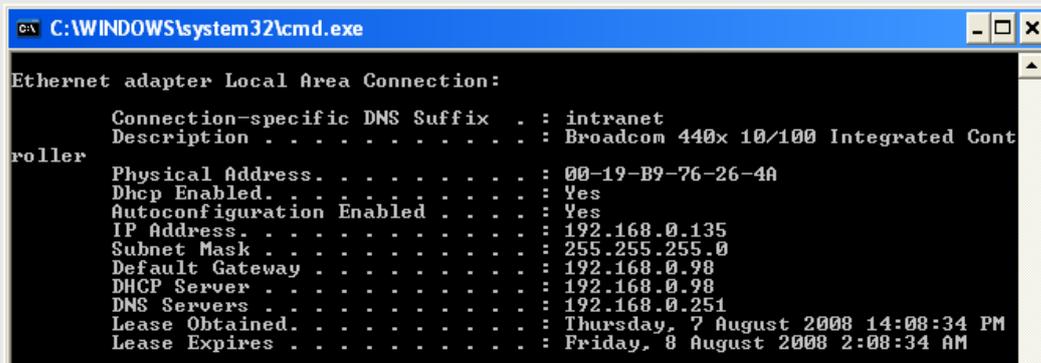


13.0 Resolving Ethernet Configuration Issues

Here are some basic tips to help you resolve any Ethernet configuration issues that you may encounter. The Windows operating system (and others) comes complete with many useful tools. First, you need to open a command window. This can be done by clicking on “Start” then “Run” and entering `cmd` and clicking OK.

Obtaining IP information about your PC

If you need to find out more information about your computer’s Ethernet IP configuration, network gateways and DNS servers, you can use a tool called “IPConfig”. Simply type “IPconfig /all” into your command window.



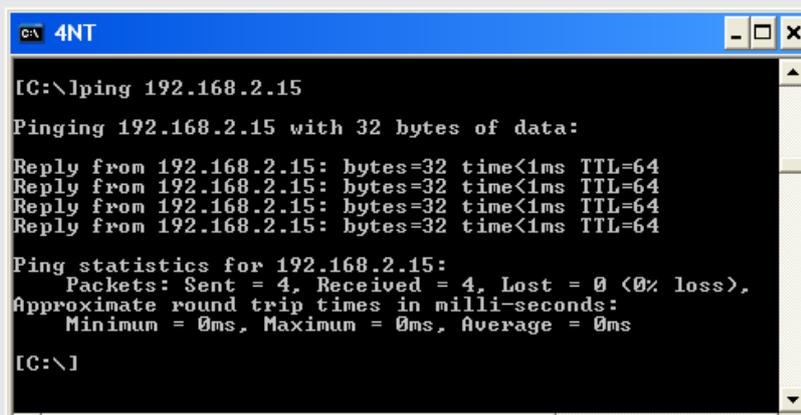
```
C:\WINDOWS\system32\cmd.exe

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : intranet
    Description . . . . .           : Broadcom 440x 10/100 Integrated Cont
roller
    Physical Address. . . . .       : 00-19-B9-76-26-4A
    Dhcp Enabled. . . . .           : Yes
    Autoconfiguration Enabled . . . : Yes
    IP Address. . . . .             : 192.168.0.135
    Subnet Mask . . . . .           : 255.255.255.0
    Default Gateway . . . . .       : 192.168.0.98
    DHCP Server . . . . .           : 192.168.0.98
    DNS Servers . . . . .           : 192.168.0.251
    Lease Obtained. . . . .         : Thursday, 7 August 2008 14:08:34 PM
    Lease Expires . . . . .         : Friday, 8 August 2008 2:08:34 AM
```

Checking IP connectivity

The simplest way to check IP connectivity to a device is using the “Ping” utility. Type `ping x.x.x.x` where x.x.x.x is the complete IP address of the destination device you want to check. Ping will either respond with latency results (as shown) or display “timed out” if no connection was possible.



```
C:\ 4NT

[C:\>]ping 192.168.2.15

Pinging 192.168.2.15 with 32 bytes of data:

Reply from 192.168.2.15: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.2.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

[C:\>]
```

Repeated connections to multiple devices with same IP address

This is a common issue experienced when attempting to configure multiple radios with the same IP address (such as factory default radios) and is due to invalid MAC table entries. If you change your Ethernet connection between two devices with the same IP address quickly, you may need to reset the MAC look up table in your PC. You can do this by typing `arp -d 192.168.2.15` in the command window.

QP

Quick Start Guide

Q Data Radios

Step-by-Step Bench Test Setup

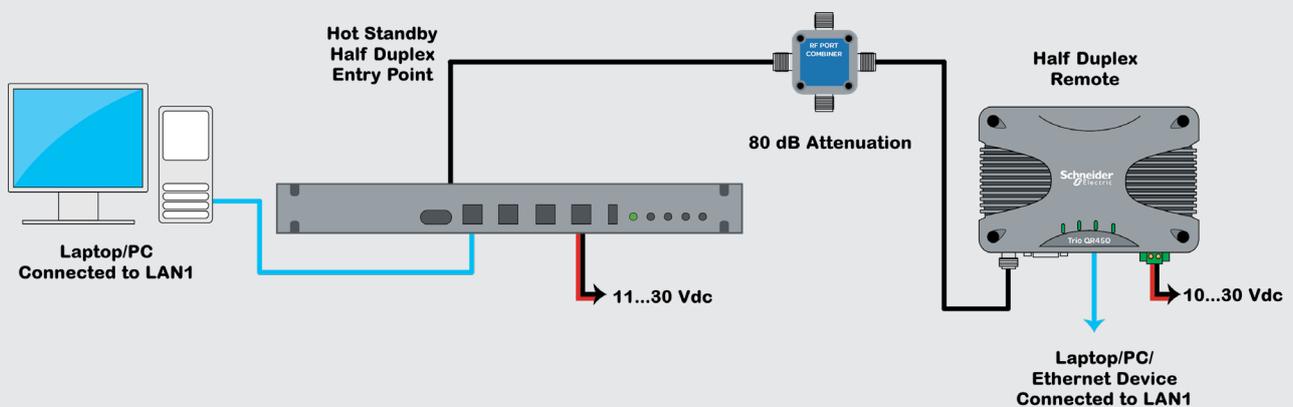
Introduction

This document describes the ten key steps required for:

- Connecting and configuring a hot standby half duplex Q Data Radio to communicate with a Half Duplex Q Data radio
- Performing basic diagnostics and health checks
- Connecting user equipment such as Host Software and/or RTUs

For more information consult the Q Data Radio User Manual.

Typical Bench Test Setup



Step 1 - RF and DC power connection

RF Connection

Bench testing is typically performed over short distances, so RF signals must be significantly attenuated. Using dummy loads or whip antennas is not recommended.

A suitable method for attenuation of RF signals is to use a 4-Port RF Attenuator (Part Number TBUM4PORTATTEN). An attenuator accurately reduces RF signal level, simulating a real world, long distance RF link. Other types of RF attenuators can be used providing the total attenuation is approximately 80dB. Power ratings must be checked (depending on configured Tx power).

If the TX power of each radio is set to 20 dBm (100 mW) then, low power, low cost attenuators can be used.

DC Power Connection

Ensure that each radio is wired using the correct polarity and that the power supply is regulated and has adequate current-delivering capacity.

Step 2 - Power Up Radios

For power supply requirements, refer to section 5.0 in quick reference guide

Apply DC power to the radios. The radio will begin a boot up process. This process can take up to 2 minutes. During this time frame, the 'Pwr' LED will periodically flash GREEN, indicating that the boot up process is still in progress.

Once the boot up process has completed, the 'Pwr' LED should be solid GREEN. If there is no LED indication, re-check the DC polarity and ensure that the DC voltage is within the operating voltage range.

Note: If these checks are not correct then you may need to inspect the internal fuse. Consult the user manual for further information.

Step 3 - Setup for Radio Configuration

IP Address and Factory Default

If you want to perform configuration changes on your Q data radio and do not know the IP address, you will need to activate a factory reset, or access the radio's Text User Interface via the serial COM port (refer to the user manual for further information).

In a factory default state, the unique IP allocations for Radio A and Radio B are:

- Radio A: 192.168.2.15
- Radio B: 192.168.2.16

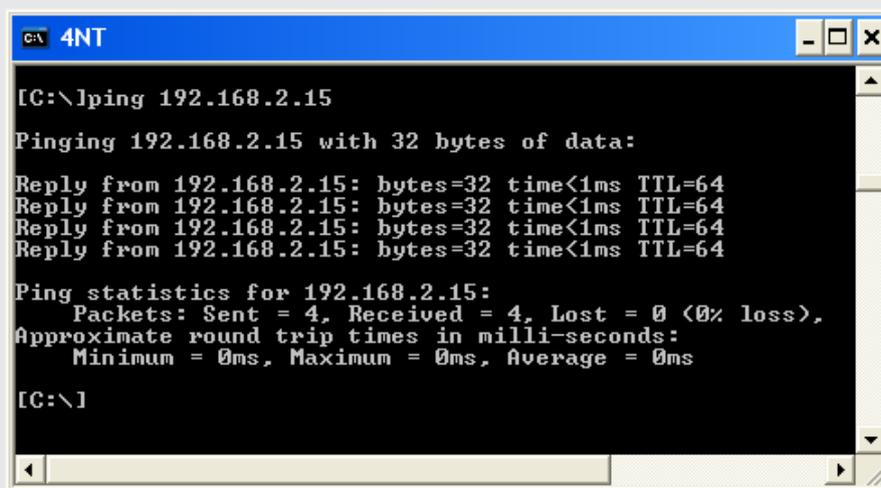
Ensure that the correct internal radio is being factory defaulted by using the 'Select' switch on the front panel. Only a single internal radio can be factory defaulted at a time.

A factory reset will cause all previous configuration settings of the selected radio to be erased and returned to their factory default values. A factory reset can be initiated using the following method: 1) Apply power to the unit and wait (up to 3 minutes) for it to fully boot up. This is indicated by a solid GREEN Power LED. 2) Choose the desired radio using the Select switch on the front panel. 3) Press and hold the Factory Default switch, using a paper clip or similar object, for 6 seconds or until all four LED's begin flashing GREEN. 4) Wait up to 4 minutes for the process to complete.

Connection to Embedded Web User Interface (WUI) - HTTP

Connect your PC Ethernet port to one of the Ethernet ports (ETH1, ETH2 or ETH3). to begin with, ensure that you can communicate with 'Radio A' by sending a ping.

Open up a command window on your PC by going to the "Start" -> Run and typing "CMD" then OK. Then type "ping 192.168.2.15" which is the default address of the radio. If the radio is in a factory default state, and the PC is configured correctly, 'Radio A' should respond to the ping as shown below. If this is not the case, check your network settings as described within the Quick Reference Guide. Once successful, 'Radio B' can be sent a ping, targeting the IP address 192.168.2.16.



```
C:\> 4NT

[ C:\> \ping 192.168.2.15

Pinging 192.168.2.15 with 32 bytes of data:

Reply from 192.168.2.15: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.2.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

[ C:\> ]
```

Q Data Radios can also be configured via a Text User Interface (TUI). Console protocols such as Telnet, SSH or a serial connection may be used. For further details on making configuration changes via the TUI, refer to the user manual.

Step 4 - Start Web Browser on your PC

Start your web browser and enter the IP address of the radio into the URL. For access to 'Radio A' type "192.168.2.15", press the <enter> key and the configuration page is now displayed in the browser. Use 192.168.2.16 to access 'Radio B'.



Step 5 - Activate Entry Point - PTP Wizard

Browse to the "Wizards" section of the WUI by clicking: -> Setup -> Wizards.

You will now see a variety of wizards available for selection.

Within the 'Different Tx/Rx Frequencies' section, find:

- Half Duplex - Point to Point.
- Then select the 'Half Duplex Entry Point' button

The wizard will now prompt for important configuration items. For each configuration item, help text is provided on the HTML programmer interface. If you are manually specifying IP addresses, record them for future reference. You will need to know the IP address of each radio in future steps.

At the bottom of the wizard page, the pre-configured options are shown.

After configuration is complete, activate the configuration by clicking on the "Activate Configuration" button in the top right corner of the page.

Once the configuration has completed, perform the same process on 'Radio B'.

Shared IP Address (Optional Configuration)

Radio A and Radio B (within the QP) can be configured to 'share' an IP address. This is a separate IP address from each radio's unique IP address. The shared IP address can be used to access the current 'online' radio.

The shared IP address should be configured in each individual internal radio as the same IP address.

To configure the shared IP address, go to: Setup -> Basestation -> General and enable Shared IP Mode.



Shared IP Mode	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Shared IP	<input type="text" value="192.168.2.20"/>

Step 6 - Activate Remote - PTP Wizard

Repeat steps (3) to (5) for the Remote radio. When at Step 5, select the 'Remote radio' button and click on the 'Start The Wizard' button.

Step 7 - Verify Modem Operation

The radio configuration & RF link can now be verified for correct operation. First, check that the remote radio can correctly decode a transmitted signal. This is done by energizing the transmitter (modulated carrier) of the entry point radio. Refer to the instruction about this in section 8.0 of the Quick Reference Guide.

With the transmitter energized, inspect the LED status on each radio. The entry point radio should have a solid RED 'Pwr/Tx' LED. The remote radio should display a solid GREEN 'Sync/RxSig' LED. If this LED is not SOLID green it may indicate incorrect configuration or inadequate signal strength and the setup should be checked. Repeat this test with the Remote radio transmitting.

Step 8 - Packet Transmission Testing

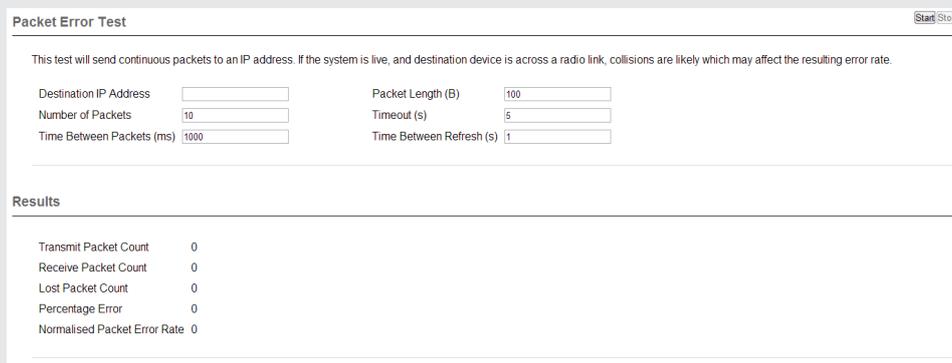
This tool provides a useful way to test radio link by transmitting data packets between two units in a loop-back mode. Access this tool within in the "Diagnostics" tab, then click on the "Packet Transmission Test" sub-menu.

Enter the IP address of the target radio that you want to ping in the "Destination IP Address" field. Ensure that the "Number of Packets" is set to a reasonable sample size (i.e. x100). Now click on the "Start Packet Test" button. The radio will indicate the packet test has started and is currently running. Both units will have flashing Tx LEDs indicating that data is being transmitted.

This test can be done from any radio to any radio in the same network.

When the test is complete, the test results will be populated and summarized in the "Test Results" section.

The test results show TX & RX Packets, Lost Packets and the Packet Error Rate.



Packet Error Test	
This test will send continuous packets to an IP address. If the system is live, and destination device is across a radio link, collisions are likely which may affect the resulting error rate.	
Destination IP Address	<input type="text"/>
Packet Length (B)	<input type="text" value="100"/>
Number of Packets	<input type="text" value="10"/>
Timeout (s)	<input type="text" value="5"/>
Time Between Packets (ms)	<input type="text" value="1000"/>
Time Between Refresh (s)	<input type="text" value="1"/>
Results	
Transmit Packet Count	0
Receive Packet Count	0
Lost Packet Count	0
Percentage Error	0
Normalised Packet Error Rate	0

Step 9 - Embedded Diagnostics Testing

Review Diagnostics

Connect your web browser to 'Radio A' of QP the Entry Point radio using the IP address recorded in Step 5 (alternatively, the shared IP address can be used, if it has been configured). Once loaded, click on the Diagnostics tab, then select the summary sub-menu. This will display the Diagnostics summary page. Review the diagnostics parameters checking for abnormal items such as high VSWR (high TX reverse power) and lower than expected radio RSSI (Received Signal Strength). Repeat this step for 'Radio B' and the remote radio (The radio diagnostic parameters for the offline radio will not be up to date values).

Summary	
Unit	
Date	Mon Nov 24 18:14:28 1975
Up Time (sec)	2565.37
CPU Load (%)	7
Supply Voltage (V)	13.7
Radio Temperature (C)	40.3
Radio Temperature (F)	104.54
LAN	
ETH 1 Rx Packets	317
ETH 1 Rx Bytes	38864
ETH 1 Tx Packets	101
ETH 1 Tx Bytes	27379
ETH 2 Rx Packets	0
ETH 2 Rx Bytes	0
ETH 2 Tx Packets	0
ETH 2 Tx Bytes	0
Radio	
Radio Rx Packets	1
Radio Rx Bytes	21
Radio Tx Packets	195
Radio Tx Bytes	18794
Radio Forward Power (dBm)	30.0
Radio Reverse Power (dBm)	28.6
Radio VSWR	> 10.0:1
Radio RSSI (dBm)	-120.1
Radio Rx Frequency Offset (Hz)	0.3

Step 10 - Commissioning Record

After a packet transmission test has been performed, a Commissioning Record can be prepared. This is created by clicking on the "Commissioning Record" button.

It is recommended that the radio is configured to obtain the current date / time from an NTP server, otherwise the date / time shown may not be correct.

The user can enter an appropriate Unit Name and Location for reference purposes. Additionally, a comment may be added noting the type of antenna in use. Once this information has been added, the web page can be printed (using the print facility in your web browser). It may be useful to print the commissioning record to PDF for future reference.

This now completes the requirements for setting up a half duplex, Point-to-Point Q Data Radio Link. The radios are now ready for application testing. The application can be connected to ETH1, ETH2 or ETH3 or all. For more information on testing, consult the Q Data Radio User Manual.

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Printed in USA Issue: 2020-11-05