Quick Start Guide

Aprisa SR+ Protected Station v2

Contents

1. Introduction

The Aprisa SR+ Protected Station is fully monitored hot-standby and fully hot-swappable product providing radio and user interface protection for Aprisa SR+ radios. The RF ports and interface ports from the active radio are switched to the standby radio if there is a failure in the active radio.

The Aprisa SR+ Protected Station is comprised of an Aprisa SR+ Protection Switch and two standard Aprisa SR+ radios mounted in a 2U rack mounting chassis.

All interfaces (RF, data, etc.) are continually monitored on both the active and standby radio to ensure correct operation. The standby radio can be replaced without impacting traffic flow on the active radio.

The Aprisa SR+ radios can be any of the currently available Aprisa SR+ radio frequency bands, channel sizes or interface port options. The Aprisa SR+ Protected Station can operate as a base station, repeater station or remote radio.

This guide provides a quick startup and basic installation instructions for the Aprisa SR+ Protected Station shown in the next figure below.

A more detailed User Manual is also available. Refer to the User Manual for important warning, cautions and notes and any detailed management relating to fault, configuration, maintenance, performance monitoring, and security.
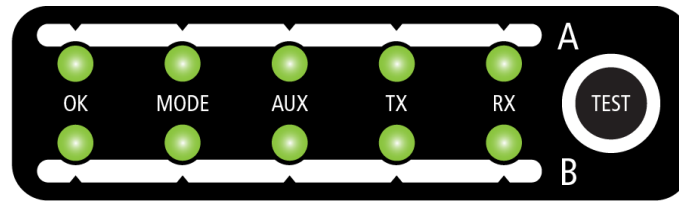
Front Panel Connections

Example: 2 Ethernet port and 2 serial ports.

All connections to the radio are made on the front panel. The functions of the connectors are (from left to right):

Designator	Description
10 - 60 VDC; 4A	10 to 60 VDC (floating) DC input using two Molex 2 pin male screw fitting connectors.
ALARM	Two Alarm ports using RJ45 connectors. Used for two alarm inputs and two alarm outputs.
ETHERNET 1 & 2	Two ports of Integrated 10Base-T/100Base-TX layer-3 Ethernet switch using RJ45 connectors. Used for Ethernet user traffic and product management.
SERIAL 1 & 2	Two ports of RS-232 serial using RJ45 connectors. Used for RS-232 asynchronous user traffic.
Remote Cont A and B	Two remote control ports using a Phoenix 1963447 connector. Used to switch-over the radios remotely without visiting the station site.
Auto / Locked	The Hardware Manual Lock switch provides a manual override of the active / standby radio.
MGMT	Two Management ports using USB micro type B connectors. Used to access the radio Command Line Interface (CLI).
LED Display Panel	See 'LED Display Panel' below.
TX / ANT	Four TNC, 50 ohm, female connectors for connection of the A and B antenna feeder cables. ANT for half duplex and Tx / RX for full duplex

LED Display Panel

The Aprisa SR+ Protected Station has an LED Display panel which provides on-site alarms / diagnostics without the need for PC.

The LEDs indicate the following conditions:

	OK	MODE	AUX	TX	RX
Flashing Red		*Radio has not registered*			
Solid Red	*Alarm present with severity Critical, Major and Minor*			*TX path fail*	*RX path fail*
Flashing Orange		*Diagnostics Function Active* *OTA software distribution*	*Management traffic on the USB MGMT port*		
Solid Orange	*Alarm present with Warning Severity*		*Device detect on the USB host port (momentary)*		
Flashing Green	*Software Upgrade Successful*		*Tx / Rx Data on the USB host port*	*RF path TX is active*	*RF path RX is active*
Solid Green	*Power on and functions OK and no alarms*	*Processor Block is OK*	*USB interface OK*	*Tx path OK*	*Rx path OK*

LED Colour	Severity
Green	No alarm – information only
Orange	Warning alarm
Red	Critical, major or minor alarm

Ethernet and RS-232 RJ-45 LED Indicators

LED	Status	Ethernet Explanation	RS-232 Explanation
Green	On	Ethernet signal received	RS-232 device connected
Orange	Flashing	Data traffic present on the interface	Data present on the interface

2. Installation

The Aprisa SR+ Protected Station is shipped to you in a box containing the following:

- One Aprisa SR+ Protected Station containing two Aprisa SR+ radios pre cabled to the protection switch with product options of:

  (1) Standard Protected Station - single antenna with or without duplexer (part number ends with AE)

  (2) Dual antenna Protected Station - dual antenna with or without duplexer (part number ends with DE)

- Two rack mounting brackets
- Two 2 pin female power connectors
- One 4 pin female remote control connector

2.1. Install the Aprisa SR+ Protected Station and Connect the Protection Earth

The Aprisa SR+ Protected Station is designed to mount in a standard 19" rack.

Rack mounted Aprisa SR+ Protected Station without duplexer

Rack mounted Aprisa SR+ Protected Station with duplexer

The Aprisa SR+ Protected Station has an earth connection point on the bottom right of the chassis. Use the supplied M4 screw to earth the enclosure to a protection earth.

The antenna feeder cable should use grounding kits for lightning protection as specified or supplied by the coaxial cable manufacturer to properly ground or bond the cable outer.

Note * When the spare Aprisa Protection Switch is supplied (APGS-XPSW-Xpp-FR-SA or APGS-XPSW-Xpp-FR-DA where pp is the port option e.g. 22, 31, 40), the item includes the Aprisa Protection Switch chassis, mounting brackets, 2x power connectors, 1x remote control connector but no radios.

Note: The Aprisa SR+ radio operates within frequency bands that require a site license be issued by the radio regulatory authority with jurisdiction over the territory in which the equipment is being operated. It is the responsibility of the user, before operating the equipment, to ensure that where required the appropriate license has been granted and all conditions attendant to that license have been met.

Hereby, 4RF Limited declares that the Aprisa SR+ digital radio is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the internet address www.4rf.com/library/en.

2.2. Connect the Antenna and Apply Power to the Aprisa SR+ Protected Station

Connect the antenna to the Protected Station antenna port (TNC female connector). If the antenna is not available, terminate the TX/ANT A/B antenna port with a TNC male 50 ohm terminator (10 Watts min). If the Protected Station is the dual antenna option, then both TX/ANT A/B antenna ports / terminators must be connected.

Warning: Do not directly connect the two radio antenna ports without attenuation of at least 40 dB. The receiver can be damaged if signals greater than +10 dBm are applied to the antenna port.

The Aprisa SR+ Protected Station version 2 operates on an input voltage of 10 to 60 VDC floating and consumes up to 42 Watts. Two power connectors (Molex 2 pin female) are supplied fitted to the Protected Station. Wire your power source to the two power connectors (- / +) and plug the connectors into the Protected Station. The connector screws can be fastened to secure the connectors.

Note: The radio fuses will blow if the connected power supply is over voltage, or the polarity is reversed. Spare fuses are located on the Protection Switch board (see the 'Replacing Protection Switch Fuses' section of the Aprisa SR+ User Manual).

Note: The factory default for the Terminal Operating Mode is set to 'Base' for all Protected Stations.

Turn your power source on. All the LEDs on both radios will flash orange for two seconds and then change to:

- Active radio - the OK, MODE, AUX, TX and RX LEDs will light green, and the TX and RX LEDs will also flash as traffic is transmitted / received.
- Standby radio - the OK, TX, RX and AUX LEDs will light green, and the MODE LED will flash green.

2.3. Connect to the Aprisa SR+ Protected Station (via SuperVisor or CLI)

Ensure that the Hardware Manual Lock switch is set to radio A (this is a factory default setting). This prevents random switching when changing the radio settings.

The Aprisa SR+ primary radio (radio A) in the Protected Station has a factory default IP address of 169.254.50.10 and the secondary Aprisa SR+ radio (radio B) in the Protected Station has a factory default IP address of 169.254.50.20, both with a subnet mask of 255.255.0.0.
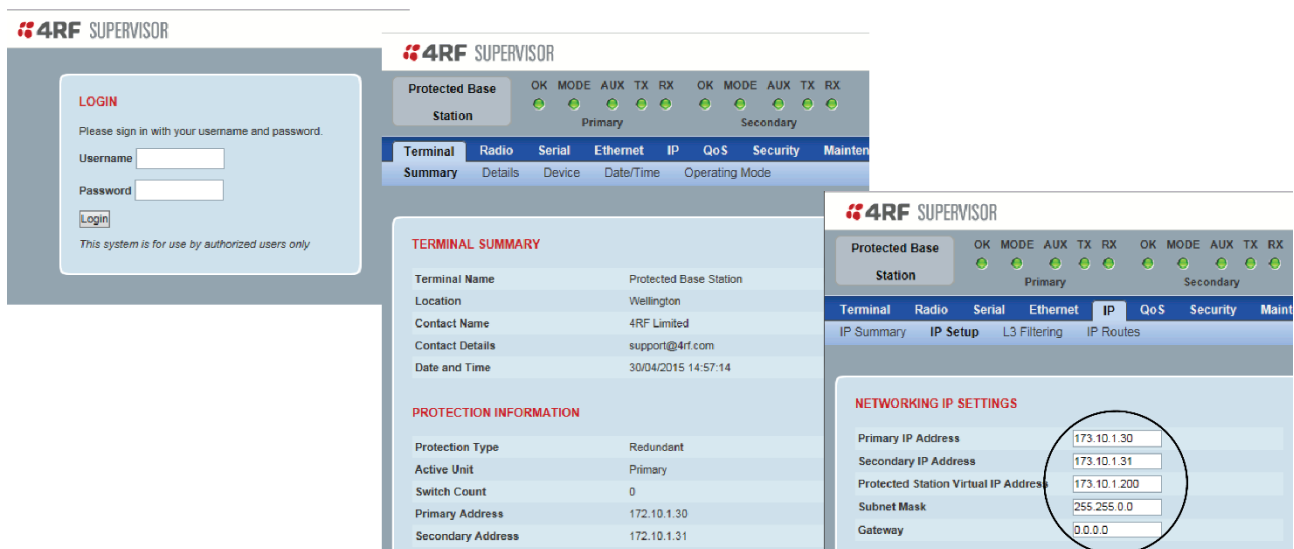
- Set up your PC for a compatible IP address e.g. 169.254.50.1 with a subnet mask of 255.255.0.0.
- Connect your PC network port to one of the Aprisa SR+ Protected Station Ethernet ports (1 to 4 depending on product option).

  Open a browser and enter http://169.254.50.10.

  Note: The Aprisa SR+ has a self-signed security certificate which may cause the browser to prompt a certificate warning. It is safe to ignore the warning and continue. The valid certificate is 'Issued By: 4RF-APRISA' which can be viewed in the browser.

- Login to the primary radio with the default login 'admin' and password 'admin'.
- Each radio in the network and both radios in the Protected Station must be set up with unique IP addresses on the same subnet.

  Set the Primary IP address and the Secondary IP address to network compatible IP addresses. Set the Protected Station Virtual IP Address. This is the IP Address of the active radio used in both bridge and router modes. Set the Subnet mask and Gateway.

If the IP addresses of radios in the protected station are unknown for some reason, they can be shown or changed via the Command Line Interface (CLI) on the radios MGMT USB ports. USB to UART Bridge VCP Drivers are required to connect the radio USB port to your PC. You can download and install the relevant driver from www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers.

Set the PC serial port to 38,400 baud, 8 data bits, no parity and 1 stop bit, with no hardware flow control.

- Open the protected station drawer by sliding it from the front.
- Connect your PC USB port to the primary Aprisa SR+ (A) MGMT USB port.
- Login to the radio with the default login 'admin' and password 'admin'.
- At the command prompt >> type 'cd APRISASR-MIB-4RF' and enter
- At the command prompt >> type 'ls Terminal' and enter to show the existing IP address
- At the command prompt >> type 'set termEthController1IpAddress xxx.xxx.xxx.xxx' and enter to change the IP address.

The Protected Station is configured in the 4RF factory as a protected station. If for some reason it is not setup as a Protected Station, please see 'Creating a Protected Station' in the Aprisa SR+ User Manual.

3. Setup the Aprisa SR+ Protected Station

Login using the IP address of either the primary or secondary radio (do not use the PVIP address for login). All parameters will be automatically synchronized on both radios.

The Aprisa SR+ has a factory default Terminal Operating Mode of Remote Station.

A single radio or a protected station in the Aprisa SR+ network must be set up as a base station. The other radios or protected stations in the Aprisa SR+ network are set up as remote stations or repeater stations.

Set the Ethernet Operating Mode and the Compliance Mode required.

Set the unique radio Network ID to be the same in your entire network including the Base Station ID.

Set the Aprisa SR+ TX Frequency, RX Frequency, TX Power and Channel Size to comply with your site license.

Set the Antenna Port Configuration required.

You can now configure the remaining protected station and network parameters and settings. For more information, please refer to the Aprisa SR+ User Manual available from the 4RF website www.4rf.com/secure (login required).

Reboot both Primary and Secondary radios and restore the Hardware Manual Lock switch is set to AUTO.

The Aprisa SR+ Protected Station is ready to operate.

4. Monitor the Aprisa SR+ Protected Station Signal Strength

When the network is installed, the radio signal strength can be monitored on remote stations by setting the radio to Test Mode.

To enter Test Mode, press and hold the TEST button on the front panel until all the LEDs flash green (about 3 - 5 seconds).

In Test Mode, the LED Display panel presents a real time visual display of the RSSI. This can be used to adjust the antenna for optimum signal strength.

Note: The response time is variable and can be up to 5 seconds.

To exit Test Mode, press and hold the TEST button until all the LEDs flash red (about 3 - 5seconds).

If the network is operating correctly, the LEDs will show:

- Active radio - the OK, MODE, AUX, TX and RX LEDs will light green, and the TX and RX LEDs will also flash as traffic is transmitted / received.
- Standby radio - the OK, TX, RX and AUX LEDs will light green, and the MODE LED will flash green.
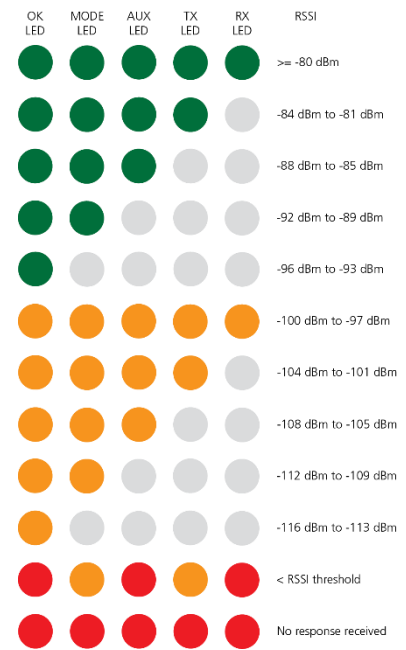
For more information, please refer to the Aprisa SR+ User Manual available from the 4RF website www.4rf.com/secure (login required).

To contact 4RF, go to www.4rf.com/contact/sales.

5. Fault Management and Troubleshooting

The Aprisa SR+ supports extensive alarms for every section and building block of the device including the interfaces. SuperVisor allows user to view the main summary alarm at the top of the SuperVisor page which mimic the device LEDs and in addition all the detailed alarms of the device (see SuperVisor > Events > Alarm Summary). In addition, SuperVisor allows user to troubleshoot any alarm issue by using the event history log page for more information about the alarm (see SuperVisor > Events > Event History). For more information see the Aprisa SR+ user manual.

6.   Performance Monitoring (RF and Data Traffic)

The Aprisa SR+ supports extensive performance monitoring statistics and diagnostic per the device and per data ports. The Aprisa SR+ Terminal, Serial, Ethernet, Radio, and User Selected Monitored Parameter results have history log views for both Quarter Hourly and Daily. SuperVisor allows user to view trends of the performance monitoring parameters in graph or tabular format (see SuperVisor > Monitoring).

For more information see the Aprisa SR+ user manual.