Ordering Guide

Products and Services
Standard Terms and Conditions of Sale Apply

August 2015

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Contents

1. Product and Services Overview

4RF Limited offers a complete menu of products and services for the Aprisa SR+ product range. A summary of our offerings is illustrated below.

Products		
Radios	Aprisa SR+	The Aprisa SR+ is available in the 135, 220, 320, 400, 450, 896 and 928 MHz frequency bands. The channel sizes of 12.5 kHz, 25 kHz and 50 kHz are software selectable.
	Aprisa SR+ Product Options	The Aprisa SR+ is available in standard or protected (1+1) configurations with Data Port and Duplex product options.
Accessories	A range of accessories including power supplies, duplexer kits, cables and product manuals are shown in Accessories on page 13.	
Network Management	All 4RF products support the Simple Network Management Protocol (SNMP). Network management options include standard off the shelf network managers or MIB integration support. Details are shown in Network Management on page 21.	

Services	
Service Options	4RF offers a wide range of services. These comprise training, technical support, radio link and network engineering, factory acceptance testing, network integration, installation and commissioning, repair and return, extended warranties and customized service level agreements.

2.   Aprisa SR+ Product Ordering

Aprisa SR+ Radios

Branding and Product Identification

Aprisa SR+ radios are ordered and configured according to the part numbering protocol specified below. The first two characters identify the product branding. The second two characters identify the product Aprisa SR+.

Please follow this part numbering protocol when ordering Aprisa SR+ radios.

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APSQ-ZBBB-CCC-DD-PP-AAOO

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Branding (AP)	Product options (OO)
	See details on page 11
Product Identifier (SQ)	Compliance Body (AA)
	See details on page 11
Radio Configuration (Z)	Data Port Options (PP)
See details on page 6	See details on page 10
Frequency Band (BBB)	Duplex Options (DD)
See details on page 7	See details on page 8
Channel Size (CCC)	
See details on page 8	

Radio Configuration (Z)

The Aprisa SR+ is available in two radio configurations.

Option (Z)	Description
N	Non-protected radio, software configurable to operate as a base station, repeater or remote station.
	Each radio contains an embedded web server application, SuperVisor, to enable element management using a web browser, such as Mozilla Firefox and Microsoft® Internet Explorer.

Option (Z)	Description
R	Protected (1+1) radio, software configurable to operate as a base station, repeater or remote station.
	The Aprisa SR+ Protected Station comprises two Aprisa SR+ radios and a protection switch.
	Each radio contains an embedded web server application, SuperVisor, to enable element management using a web browser, such as Mozilla Firefox and Microsoft® Internet Explorer.

Replace Z in the part number with the required radio configuration.

Frequency Band (BBB)

The Aprisa SR+ is available in the following frequency bands:

Option (BBB)	Frequency Band	Frequency Tuning Range
135 (note 1)	135 MHz	135-175 MHz
220	220 MHz	215-240 MHz
320	320 MHz	320-400 MHz
400	400 MHz	400-470 MHz
450	450 MHz	450-520 MHz
896	896 MHz	896-902 MHz
928	928 MHz	928-960 MHz

The Aprisa SR+ tunes over the full frequency range.

Replace BBB in the part number with the required frequency band.

Note 1 Contact 4RF for availability

Channel Size (CCC)

The channel size on the Aprisa SR+ is software selectable:

Option (CCC)	Description
SSC	Software Selectable Channel Size 12.5 kHz, 25 kHz and 50 kHz

Gross Radio Capacities

The Aprisa SR+ Gross Radio Capacities are dependent on compliance body, channel size and modulation. The capacities shown are the gross radio link capacity data rate available.

ETSI Compliant

ETSI: 320 / 450 MHz Bands

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	60.0 kbit/s	40.0 kbit/s	20.0 kbit/s	9.6 kbit/s
20 kHz	84.0 kbit/s	56.0 kbit/s	28.0 kbit/s	9.6 kbit/s
25 kHz	120.0 kbit/s	80.0 kbit/s	40.0 kbit/s	19.2 kbit/s

ETSI: 400 MHz Band

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	60.0 kbit/s	40.0 kbit/s	20.0 kbit/s	9.6 kbit/s
20 kHz	84.0 kbit/s	56.0 kbit/s	28.0 kbit/s	9.6 kbit/s
25 kHz	120.0 kbit/s	80.0 kbit/s	40.0 kbit/s	19.2 kbit/s
50 kHz [1]	216.0 kbit/s	144.0 kbit/s	72.0 kbit/s	38.4 kbit/s

Note 1: It is the responsibility of the user to check for country regulatory of 50 kHz availability in this frequency band.

ETSI: 320 MHz Band in Austria

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
20 kHz	84.0 kbit/s	56.0 kbit/s	28.0 kbit/s	9.6 kbit/s
50 kHz	216.0 kbit/s	144.0 kbit/s	72.0 kbit/s	38.4 kbit/s

FCC / IC Compliant

FCC / IC: 400 MHz Band

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	54.0 kbit/s	36.0 kbit/s	18.0 kbit/s	9.6 kbit/s
25 kHz	96.0 kbit/s	64.0 kbit/s	32.0 kbit/s	19.2 kbit/s
50 kHz [1]	216.0 kbit/s	144.0 kbit/s	72.0 kbit/s	38.4 kbit/s

Note 1: It is the responsibility of the user to check for country regulatory of 50 kHz availability in this frequency band.

FCC / IC: 450 MHz Band

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	54.0 kbit/s	36.0 kbit/s	18.0 kbit/s	9.6 kbit/s
25 kHz	96.0 kbit/s	64.0 kbit/s	32.0 kbit/s	19.2 kbit/s

FCC / IC: 220 MHz Band

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	54.0 kbit/s	36.0 kbit/s	18.0 kbit/s	9.6 kbit/s
15 kHz	60.0 kbit/s	40.0 kbit/s	20.0 kbit/s	9.6 kbit/s
25 kHz	96.0 kbit/s	64.0 kbit/s	32.0 kbit/s	19.2 kbit/s
50 kHz	216.0 kbit/s	144.0 kbit/s	72.0 kbit/s	38.4 kbit/s

FCC / IC: 896 / 928 MHz Bands

No Forward Error Correction

Channel Size	Gross Radio Capacity			
	64 QAM	16 QAM	QPSK	4-CPFSK
12.5 kHz	60.0 kbit/s	40.0 kbit/s	20.0 kbit/s	9.6 kbit/s
25 kHz	96.0 kbit/s	64.0 kbit/s	32.0 kbit/s	19.2 kbit/s
50 kHz	216.0 kbit/s	144.0 kbit/s	72.0 kbit/s	38.4 kbit/s

Duplex Options (DD)

The Aprisa SR+ supports one or two frequency half duplex RF operation or full duplex two frequency RF operation.

The half duplex RF operation eliminates the need for an external duplexer.

The full duplex RF operation requires the use of an external duplexer connected to the radio's dual antenna ports (TX and RX).

Option (DD)	Description
HD	Half Duplex RF operation
FD	Full Duplex RF operation Available for use in a: • Standard radio operating as a base station • Protected station / master station operating as a base station

Replace DD in the part number with the duplex option.

Data Port Options (PP)

The Aprisa SR+ is available with hardware options for the number of data ports.

Option (PP)	Description	Terminal
22	2 Ethernet Ports and 2 Serial Ports	
31	3 Ethernet Ports and 1 Serial Port	
40	4 Ethernet Ports and no Serial Ports	

Replace PP in the part number with the required data port option.

Compliance Body (AA)

The Aprisa SR+ is designed to be compliant with specifications and standards from the European Telecommunications Standards Institute (ETSI), the Federal Communications Commission (FCC) and Industry Canada (IC) for radio performance and safety.

Option (AA)	Description
EN	Tested and compliant to ETSI, FCC and Industry Canada standards.

Replace AA in the part number with the option for the required compliance body.

Product Options (OO)

The current Aprisa SR+ product options are:

Option (OO)	Description
AA	Standard Aprisa SR+ Radio Aprisa SR+ Protected Station with single antenna operation and 12 VDC input power
AB	Aprisa SR+ Protected Station with single antenna operation and 48 VDC input power
DA	Aprisa SR+ Protected Station with dual antenna operation and 12 VDC input power
DB	Aprisa SR+ Protected Station with dual antenna operation and 48 VDC input power

Replace OO in the part number with the required product option.

Spare Parts

Part Number	Description
APST-XPSW-X22	4RF SR+ Spare, Protection Switch Includes 2 sets of integral SR+ Protection Switch Cables 2 Ethernet Ports, 2 Serial Ports No radios
APST-XPSW-X31	4RF SR+ Spare, Protection Switch Includes 2 sets of integral SR+ Protection Switch Cables 3 Ethernet Ports, 1 Serial Port No radios
APST-XPSW-X40	4RF SR+ Spare, Protection Switch Includes 2 sets of integral SR+ Protection Switch Cables 4 Ethernet Ports, 0 Serial Ports No radios
APST-FNAN-453-07-02	4RF SR+ Spare, Fuse, Nano SMF, 453 Series, 7A, 2 items Spare motherboard fuses (pair)
APST-C5MM-FEM-01	4RF SR+ Spare, Connector, 5mm, Female, 1 item Spare Molex 2 pin female connector for power connection to the Aprisa SR+

Accessories

Power Supplies

Part Number	Description
APSB-P230-030-24-TS	4RF SR+ Acc, PSU, 230 VAC, 30W, 24 VDC, -10 to +60C
APSB-P230-048-24-TE	4RF SR+ Acc, PSU, 230 VAC, 48W, 24 VDC, -20 to +75C
APSB-P230-060-24-TS	4RF SR+ Acc, PSU, 230 VAC, 60W, 24 VDC, -10 to +60C
APSB-P48D-050-24-TA	4RF SR+ Acc, PSU, 48 VDC, 50W, 24 VDC, 0 to +50C

Mounting Hardware

Part Number	Description
APSB-MBRK-DIN	4RF SR+ Acc, Mounting, Bracket, DIN Rail DIN rail mounting bracket for the horizontal or vertical mounting of the Aprisa SR+. Steel construction.
APSB-MR19-X1U	4RF SR+ Acc, Mounting, 19" Rack Mount Shelf, 1U 19" 1U rack mount shelf with brackets to mount 1 or 2 Aprisa SR+ radios and 1 duplexer. Black powder coated.

Duplexers Kits

The Aprisa SR+ product range contains Duplexer Kit accessories for use with Aprisa SR+ radios configured for Single Antenna Dual Port operation.

Radio Duplexer Kits

Example of part number: APSB-KDUP-400-B1-BR

Part Number	Description
APSB-KDUP-135-N0-BR	Aprisa SR+ Duplexer Kit for a SR+ Radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x N0 Duplexer 135 MHz, s4.6 MHz, p0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-320-A1-BR	Aprisa SR+ Duplexer Kit for a Aprisa SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x A1 Duplexer 300 MHz, s 5 MHz, p 0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-400-B1-BR	Aprisa SR+ Duplexer Kit for a SR+ Radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x B1 Duplexer 400 MHz, s 5 MHz, p 0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-450-M0-BR	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x M0 Duplexer 450 MHz, s 5 MHz, p 0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-450-P0-BR	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1 or 2 Aprisa SR+ radios and 1 duplexer 1x P0 Duplexer 450 MHz, s 3 MHz, p 0.5 MHz 2x TNC to SMA right angle 640mm cab

Part Number	Description
APSB-KDUP-928-G0-BR	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x G0 Duplexer 900 MHz, s 40 MHz, p 7 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-928-G2-BR-MM	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack mid mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x G2 Duplexer 900 MHz, s 9 MHz, p 1 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-928-G2-BR	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x G2 Duplexer 900 MHz, s 9 MHz, p 1 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-928-G3-BR	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x G3 Duplexer 900 MHz, s5.5 MHz, p0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-928-G3-BR-MM	Aprisa SR+ Duplexer Kit for a SR+ radio containing: 1x 1U 19" rack mid mount shelf with duplexer mounting brackets and screws to mount 1x SR+ radio and 1x duplexer 1x G3 Duplexer 900 MHz, s5.5 MHz, p0.5 MHz 2x TNC to SMA right angle 640mm cables

Protected Station Duplexer Kits

Example of part number: APSB-KDUP-928-G2-PS

Part Number	Description
APSB-KDUP-135-N0-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x N0 Duplexer 135 MHz, s4.6 MHz, p0.5 MHz 2x right angle TNC to SMA right angle 640mm cables Rack front mounted
APSB-KDUP-135-N0-PS-DA	Aprisa SR+ Duplexer Kit for a dual antenna SR+ Protected Station containing: 2x N0 Duplexer 135 MHz, s4.6 MHz, p0.5 MHz 4x right angle TNC to SMA right angle 640mm cables Rack front mounted
APSB-KDUP-320-A1-PS	Aprisa SR+ Duplexer Kit for a Aprisa SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x A1 Duplexer 300 MHz, s 5 MHz, p 0.5 MHz 2x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-320-A1-PS-DA	Aprisa SR+ Duplexer Kit for a dual antenna Aprisa SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 2x A1 Duplexer 300 MHz, s 5 MHz, p 0.5 MHz 4x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-400-B1-PS-DA	Aprisa SR+ Duplexer Kit for a dual antenna SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 2x B1 Duplexers 400 MHz, s 5 MHz, p 0.5 MHz 4x right angle TNC to SMA right angle 640mm cables

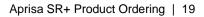| Part Number	Description
APSB-KDUP-400-B1-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x B1 Duplexer 400 MHz, s 5 MHz, p 0.5 MHz 2x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-450-M0-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x M0 Duplexer 450 MHz, s 5 MHz, p 0.5 MHz 2x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-450-M0-PS-DA	Aprisa SR+ Duplexer Kit for a dual antenna SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 2x M0 Duplexer 450 MHz, s 5 MHz, p 0.5 MHz 4x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-450-P0-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x P0 Duplexer 450 MHz, s 3 MHz, p 0.5 MHz 2x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-450-P0-PS-DA	Aprisa SR+ Duplexer Kit for a dual antenna SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 2x P0 Duplexer 450 MHz, s 3 MHz, p 0.5 MHz 4x right angle TNC to SMA right angle 640mm cables
APSB-KDUP-928-G0-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x G0 Duplexer 900 MHz, s 40 MHz, p 7 MHz 2x TNC to SMA right angle 590mm cables
APSB-KDUP-928-G2-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack front mount shelf with duplexer mounting brackets and screws 1x G2 Duplexer 900 MHz, s 9 MHz, p 1 MHz 2x TNC to SMA right angle 590mm cables
APSB-KDUP-928-G2-PS-MM	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 1U 19" rack mid mount shelf with duplexer mounting brackets and screws 1x G2 Duplexer 900 MHz, s 9 MHz, p 1 MHz 2x TNC to SMA right angle 590mm cables

Part Number	Description
APSB-KDUP-928-G3-PS-MM	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 2U 19" rack mid mount shelf with duplexer mounting brackets and screws 1x G3 Duplexer 900 MHz, s5.5 MHz, p0.5 MHz 2x TNC to SMA right angle 640mm cables
APSB-KDUP-928-G3-PS	Aprisa SR+ Duplexer Kit for a SR+ Protected Station containing: 1x 2U 19" rack front mount shelf with duplexer mounting brackets and screws 1x G3 Duplexer 900 MHz, s5.5 MHz, p0.5 MHz 2x TNC to SMA right angle 640mm cables

Note: Please contact 4RF to discuss alternative duplexer frequency spacing requirements.

Cables

Part Number	Description
APSB-IFCA-232-10	4RF SR+ Acc, Cable, Interface, RJ45 to DB9 RS232F, 10m
APSB-IFCA-USB-01	4RF SR+ Acc, Cable, Interface, USB A to USB micro B, 1m
APSB-RTNM-SMM-P5	4RF SR+ Acc, RF Cable, TNC male, SMA male, 0.5m
APSB-IFCA-USB-MS-18	4RF SR+ Acc, Cable, Interface, USB Converter, Multi-strand, 1.8m Includes USB Retention Clip
APSB-KFCA-USB-45-MF-18	4RF SR+ Acc, Kit, Interface, USB Converter, RJ45, Female, 1.8m Includes USB Retention Clip
APSB-KFCA-USB-D9-MF-18	4RF SR+ Acc, Kit, Interface, USB Converter, DB9, Female, 1.8m Includes USB Retention Clip

Demonstration Kit

The Aprisa SR+ demonstration kit is supplied pre-configured as a point-to-multipoint network and contains all the equipment needed to demonstrate and evaluate the performance and management capabilities of the Aprisa SR+.

The kit contains three Aprisa SR+ radios mounted on a removable, rigid chassis, housed in a rugged protective case for ease of transportation. Cables, attenuators and an RF splitter are included to establish the radio path. The kit includes an AC power supply to power the radios.

Aprisa SR+ Demonstration Kit

Part Number	Description
APSB-K135-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 135-175 MHz, SSC, Half Duplex, 2E2S, EN, Demo
APSB-K320-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 320-400 MHz, SSC, Half Duplex, 2E2S, EN, Demo
APSB-K400-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 400-470 MHz, SSC, Half Duplex, 2E2S, EN, Demo
APSB-K450-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 450-520 MHz, SSC, Half Duplex, 2E2S, EN, Demo
APSB-K896-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 896-902 MHz, SSC, Half Duplex, 2E2S, EN, Demo
APSB-K928-SSC-HD-22-ENPD	4RF SR+ Acc, Kit, 928-960 MHz, SSC, Half Duplex, 2E2S, EN, Demo

Documentation

Part Number	Description
APSB-DMAN-XHC	4RF SR+ Acc, Documentation, User Manual, Hard Copy

Network Management

4RF offers a range of network management solutions, including server and software options. Options include:

SNMPc

Part Number	Description
APNM-MBAS	A package of the product MIB and supporting documentation with detail to the monitoring (alarm) level only. Includes up to 4 hours of engineering support.
APNM-MADV	A package of on-site engineering support and documentation. Charged per day pro-rata based on number of days required.
APNM-PMPW-NPC	IBM PC (incl. monitor, keyboard, mouse) with SNMPc workgroup edition installed, pre-configured for basic operation, supporting a single user for small to medium sized networks. Limited to 1000 managed elements.
APNM-PMPE-NPC	IBM PC, (incl. monitor, keyboard, mouse) with SNMPc Enterprise edition installed, pre-configured for basic operation supporting a scalable multi-user environment. Includes SNMPc server license, 10 remote console licenses and 10 remote poller licenses.
APNM-PMPE-NSV	IBM 19inch rack mount server (incl. monitor, keyboard, mouse) with SNMPc Enterprise edition installed, pre-configured for basic operation supporting for a scalable multi-user environment.
APNM-PMPE-NSB	Two IBM 19inch rack mount servers (incl. monitor, keyboard, mouse) with SNMPc Enterprise edition installed, pre-configured for basic operation in a backed up configuration.
APNM-SMPW	Single user version for managing small to medium sized networks running on a single system and supports one user. Limited to 1000 managed elements.
APNM-SMPE	SNMPc Enterprise edition provides for a scalable multi-user environment. Includes SNMPc server license, 10 remote console licenses and 10 remote poller licenses.

AirSync5

Part Number	Description
APNM-IAS5-DWS-LN	2 x Tower Server (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for large sized network. License limited to 1000 Aprisa elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license (i.e. N x 1,000 license increments (N=1..15) of Aprisa managed elements). Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier) Does not include shipment cost
APNM-IAS5-DWS-SN	2 x Rack mount server (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for small sized network. Licensed limited to 500 Aprisa managed elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license. Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier) Does not include shipment cost
APNM-IAS5-RMT-SV-LN	2 x Rack mount server (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for large sized network. License limited to 1000 Aprisa elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license (i.e. N x 1,000 licence increments (N=1..15) of Aprisa managed elements). Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier) Does not include shipment cost
APNM-IAS5-RMT-SV-SN	2 x Rack mount server (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for small sized network. Licensed limited to 500 Aprisa managed elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license. Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier)
APNM-IAS5-RMT-SM-LN	Single Rack mount Server with Virtual Machine (VM) (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for large sized network. License limited to 1000 Aprisa elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license (i.e. N x 1,000 licence increments (N=1..15) of Aprisa managed elements). Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier) Does not include shipment cost
APNM-IAS5-RMT-SM-SN	Single Rack mount Server with Virtual Machine (VM) (incl single 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for large sized network. License limited to 500 Aprisa elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa elements license (i.e. N x 1,000 licence increments (N=1..15) of Aprisa managed elements). Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier) Does not include shipment cost

APNM-IAS5-RMT-SP-LN	Protected 1+1, dual Rack mount server with Virtual Machine (VM), manual switch-over protection (incl dual 22-24" monitor, keyboard, mouse) with installed AirSync5 NMS software for large sized network. License limited to 1000 Aprisa elements. Requires purchasing part number APNM-SAS5-XML for any new increase of 1000 Aprisa ements license (i.e. N x 1,000 licence increments (N=1..15) of Aprisa managed elements).
	Includes 1 year annual updates and support for AirSync5 software (warranty for hardware available from supplier)
	Does not include shipment cost
APNM-SAS5-XML	AirSync5 NMS software for medium-large sized networks (1,000 elements) running on a dual server. License limited to 1000 Aprisa elements. Requires purchasing this part number for any new increase of 1000 Aprisa elements up to 15,000 elements (i.e. N x 1,000 increments (N=1..15) of Aprisa managed elements). Includes 1 year annual updates and support
	Electronic delivery
APNM-SAS5-XML-US-Y1	AirSync5 software for medium-large network Annual Updates and Support for 1 year for every 1,000 elements (starting from second year and available for 3 years, new maintenance contract after 4 years). Requires purchasing this part number for any new increase of 1000 Aprisa elements up to 15,000 elements (i.e. N x 1,000 increments (N=1..15) of Aprisa managed elements)
	Electronic delivery
APNM-SAS5-XSN	AirSync5 NMS software for small sized networks (500 elements) running on a dual server. Licensed limited to 500 Aprisa managed elements.
	Includes 1 year annual updates and support
	Electronic delivery
APNM-SAS5-XSN-US-Y1	AirSync5 for small network (500 elements) Annual Updates and Support for 1 year (starting from second year and available for 3 years, new maintenance contract after 4 years)
	Electronic delivery

3. Services

General

4RF Limited has a world class services team and can offer a vast range of services to facilitate the best possible linking solution for your needs. Services include:

- RF design, Path profile analysis and engineering reports
- Customer site engineering surveys, audits and support
- Training courses from basic introduction to advanced
- Project management, installation and commissioning services
- Network Management System (NMS) solutions, including design, engineering and training

Please contact 4RF or your local 4RF sales director to discuss options and pricing on these services or any other service orientated work.

Full details of the terms and conditions for all engineering services are provided in 4RF's Terms and Conditions.

Training

Part Number	Description
APSV-XTRA-SRF-OF	4RF Service, Training, SR 2-day, at 4RF (max 8 trainees)
APSV-XTRA-SRF-CU	4RF Service, Training, SR 2-day, at Customer Site (max 8 trainees)
APSV-XTRA-NMS-OF	4RF Service, Training, NMS Standard 2-day, at 4RF (max 8 trainees)
APSV-XTRA-NMS-CU	4RF Service, Training, NMS Standard 2-day, at Customer Site (max 8 trainees)
APSV-XTRA-STU	4RF Service, Training, Additional Trainee

Notes:

1. For courses held at customer premises all 4RF trainer expenses are charged additionally including travel, freight and equipment, accommodation, meals, and local transport.

2. For courses held at 4RF, all trainee / student expenses are the responsibility of the customer.

3. The courses are for a maximum of 8 trainees. For course sizes in excess of 8 trainees, an additional fee applies per trainee.

Full conditions of all training courses are given in 4RF's Engineering Services Terms and Conditions.

Technical Support

The following discountable charges are to be read in conjunction with the Technical Support terms and conditions.

Part Number	Description
APSV-XTEC-OFF-HR	4RF Service, Tech Support, Office, per hour
APSV-XTEC-OFF-DY	4RF Service, Tech Support, Office, per day
APSV-XTEC-FLD-DY	4RF Service, Tech Support, Field, per day
APSV-XTEC-EMG-DY	4RF Service, Tech Support, Emergency Field, per day

Notes:

1. Field or Site visits are charged per day or part thereof.

2. If resolution of the issue identifies faulty 4RF equipment, charges may be refunded as described in the terms and conditions.

3. 4RF Engineer expenses are charged additionally including travel, accommodation, meals, local transport, equipment and freight.

Engineering Services
Services

Part Number	Description
APSV-XENG-RFE-HR	4RF Service, Engineering, RF, per hour
APSV-XENG-RFE-DY	4RF Service, Engineering, RF, per day
APSV-XENG-NET-HR	4RF Service, Engineering, Network, per hour
APSV-XENG-NET-DY	4RF Service, Engineering, Network, per day
APSV-XENG-FAT-DY	4RF Service, Engineering, Factory Acceptance Test, per day
APSV-XENG-ICO-DY	4RF Service, Engineering, Inst. & Commissioning, per day
APSV-XENG-NMO	4RF Service, Engineering, Network Monitoring
APSV-XENG-PMG-DY	4RF Service, Engineering, Project Management, per day
APSV-XENG-EXP-DY	4RF Service, Engineering, Expenses, per day
APSV-XENG-EXP-TR	4RF Service, Engineering, Expenses, Travel
APSV-XENG-TRA-DY	4RF Service, Engineering, Travel, per day
APSV-XENG-TRA-AF	4RF Service, Engineering, Travel, Airfares

Notes:

1. 4RF Engineer expenses are charged additionally including travel, accommodation, meals, local transport, equipment and freight.

Path Profiles

Part Number	Description
APSV-XENG-PTH-P1	4RF Service, Engineering, Path Profiles, <10 profiles
APSV-XENG-PTH-P2	4RF Service, Engineering, Path Profiles, 10-30 profiles
APSV-XENG-PTH-P3	4RF Service, Engineering, Path Profiles, >30 profiles

Notes:

1. The charge covers the individual path profiles and the associated report, detailing the following:

   - A plot of each individual path profile.
   - A full link budget indicating the theoretical availability according to the ITU standard recommendations.
   - A summary listing the main components and performance expectation for the link.
   - Additional information or observations specific to each path which can include:
   - Potential reflection and multi-path analysis.
   - Recommendations on alternate radio variants, antennas and feeder systems.

2. 4RF will produce the most accurate report possible based on the supplied information however we are not responsible for differences in actual performance compared with the expected performance as detailed in the report.

3. 4RF does not warrant or guarantee the performance defined in path reports produced without an associated 4RF site and path survey. A 4RF site and path survey can considerably improve the accuracy of the report and resultant performance predictions.

Repair and Return

General

The following charges and notes are to be read in conjunction with the Repair Terms and Conditions (supplied on request) and Standard Terms and Conditions of 4RF. Where there is a difference between the two documents, the Repair Terms and Conditions apply.

Notes:

1. Extended warranty is for 4RF manufactured products. Extended warranties for products not manufactured by 4RF will be considered on a case by case basis at 4RF's sole discretion.

2. The customer is responsible for freight to 4RF (DDU).

3. All items returned for repairs require a completed RMA form and if 'out-of-warranty' a customer purchase order.

4. Units returned to 4RF will be extensively tested. Any units found to be 'No Fault Found' will be charged for as listed.

5. Expedited repair and standard advanced replacement services are dependent on materials availability and are provided at 4RF's discretion.

6. Items may be assessed beyond economic repair (BER) by 4RF. Customers will be notified and work ceased pending a decision on replacement or extended repair price.

Extended Warranty

The standard warranty for the Aprisa SR+ is 15 months from date of shipment; additional, extended warranty periods are available to purchase at time of order.

Part Number	Description
APSV-XREP-EWQ-PS-Y1	4RF Service, Repair, Ext Warranty Aprisa SR+, Protected Station, 1 Year
APSV-XREP-EWQ-PS-Y3	4RF Service, Repair, Ext Warranty Aprisa SR+, Protected Station, 3 Years
APSV-XREP-EWQ-PS-Y6	4RF Service, Repair, Ext Warranty Aprisa SR+, Protected Station, 6 Years
APSV-XREP-EWQ-BR-Y1	4RF Service, Repair, Ext Warranty Aprisa SR+, Radio, 1 Year
APSV-XREP-EWQ-BR-Y3	4RF Service, Repair, Ext Warranty Aprisa SR+, Radio, 3 Years
APSV-XREP-EWQ-BR-Y6	4RF Service, Repair, Ext Warranty Aprisa SR+, Radio, 6 Years

Aprisa SR+ Repair

Part Number	Description
APSV-XREP-ASR-RD	4RF Service, Repair, Aprisa SR, Radio
APSV-XREP-ASR-PW	4RF Service, Repair, Aprisa SR, Protection Switch

General Repair Services

Part Number	Description
APSV-XREP-EXR	4RF Service, Repair, Expedited Repair (additional fee)
APSV-XREP-NFF-TR	4RF Service, Repair, No Fault Found, Terminal

Standard Advanced Replacement Service

Part Number	Description
APSV-XREP-ADV-TR	4RF Service, Repair, Advanced Replacement, Terminal

Guaranteed Advanced Replacement Service (GARS)

Part Number	Description
APSV-XREP-GAR	4RF Service, Repair, Guaranteed Replacement Service (per item listed on the schedule, per annum)

Service Level Agreements

Part Number	Description
APSV-XSLA-L00	4RF Service, Service Level Agreement, Bronze
APSV-XSLA-L01	4RF Service, Service Level Agreement, Silver
APSV-XSLA-L02	4RF Service, Service Level Agreement, Gold
APSV-XSLA-L03	4RF Service, Service Level Agreement, Platinum

As standard, all our customers are entitled to our 'Bronze' service level agreement. Upgrading to silver, gold and platinum service level agreements enable customers receive additional and preferential levels of service

Please refer to 4RF's Engineering Services Terms and Conditions for details of service level agreements.