4RF

Aprisa XE

Ordering Guide

Products and Services

Standard Terms and Conditions of Sale Apply

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CONFIDENTIAL

Contents

1. Product and Services Overview

4RF Limited offers a complete menu of product and services.

A summary of our offerings is illustrated below. In some cases services are provided on a customized basis only. Refer to full service description in Section 3 for more details.

PRODUCTS		
Terminals and Accessories	Aprisa XE – Integrated Radio and Multiplexer	The Aprisa XE family of products extends from 300 MHz to 2.7 GHz. Channel size options vary from 25 kHz to 14 MHz, and capacity ranges from 72 kbit/s to more than 65 Mbit/s. Basic terminals include an integrated Ethernet switch.
	Aprisa XE Interface Cards	A series of network interface cards capable of connecting to the most common network types, supporting legacy and IP applications (see page 8).
	Aprisa XE Terminal Product options	See page 7 for product options.
	Accessories	Options for power cables, network interface cables, re-usable installation kits and product manuals (see page 15).
	Network Management	All 4RF products use SNMP (v2.0). Network management options include standard off the shelf SNMP Managers or MIB integration support (see pageon page 20).
Ancillary Equipment	Antennas, Lightning Arrestors, RF Cables, etc.	A complete range of recommended 3rd party ancillary items including antennas, lightning arrestors, etc.
Pre Shipment Options	Shipment	The customer has the option to request 4RF to provide a quotation for shipping.
	Terminal / Link Pre-Configuration	Terminals or complete links can be pre-configured according to customer requirements. Pre-configuration orders must be accompanied by the necessary instruction.
	Special Packaging Options	Customized packaging options for terminals or complete links, including accessories and ancillary items. Requirements are agreed with customers prior to shipment.

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. These options are detailed in Section 3.

2. Aprisa XE Product Ordering

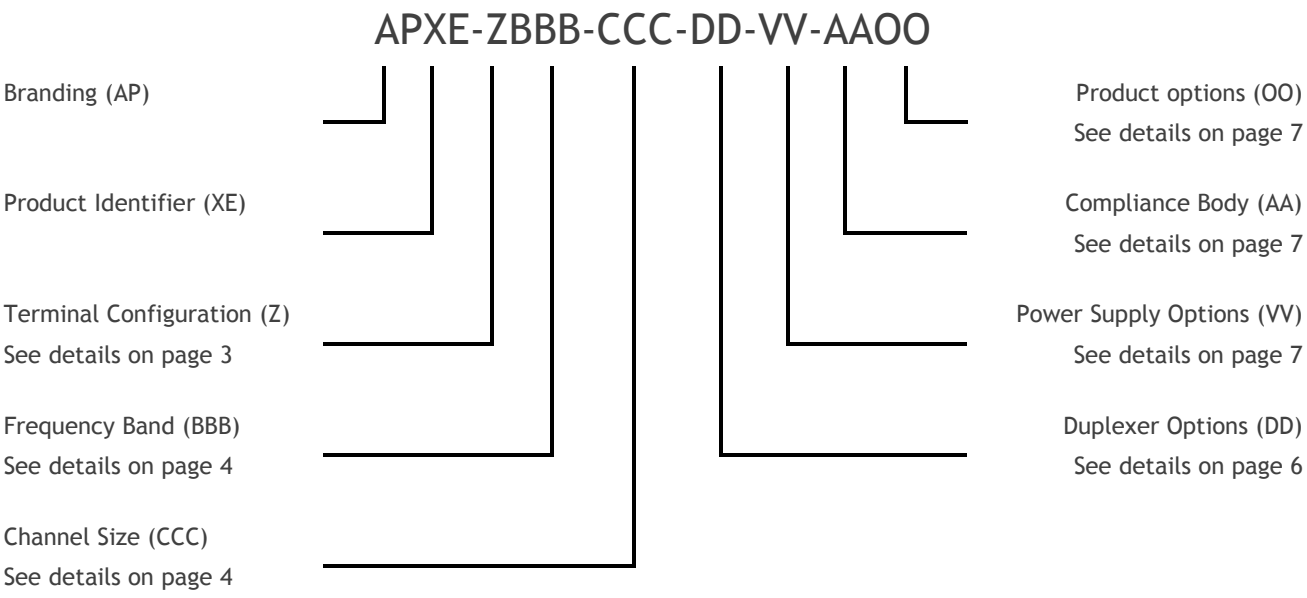
Each Aprisa XE comprises a basic radio terminal and typically a selection of network interface cards (see section 0 ‘Aprisa XE Interface Cards’ on page 8).

Where customers only require a 10/100BaseT interface, no interface cards are required. The Aprisa XE is equipped with an integrated 4 Port Ethernet bridge.

Aprisa XE Integrated Radio and Multiplexer

Aprisa XE terminals 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.

Please follow this part numbering protocol when ordering Aprisa XE terminals.



Terminal Configuration Options (Z)

The Aprisa XE is available in three terminal configurations. Replace the **Z** in the part number with one of the options shown below:

OPTION	DESCRIPTION
N	**1+0 Non-Protected Terminal** 1+0 Terminal includes: • 1 x radio with 4 x 100Base T interface Ethernet bridge • Supervisor Software (Element Manager) • Accessory Kit (patch cables, CD). • Standard power modules (12 VDC, 24 VDC, 48 VDC, or AC PSU) • CD with User Manual and Software
P	**1+1 Monitored Hot Stand By Terminal - MHSB** MHSB Terminal includes: • 2 x radios with 4 x 100Base T interface Ethernet bridge • Supervisor Software (Element Manager) • Accessory Kit (patch cables, CD). • Standard power modules (12 VDC, 24 VDC, 48 VDC, or AC PSU) • CD with User Manual and Software • 1 x Tributary Switch [1] • 1 x RF Switch
S	**Hitless Space Diversity Terminal - HSD** HSD Terminal includes: • 2 x radios with 4 x 100Base T interface Ethernet bridge, PIC and PSC card • Supervisor Software (Element Manager) • Accessory Kit (patch cables, CD). • Standard power modules (12 VDC, 24 VDC, 48 VDC, or AC PSU) • CD with User Manual and Software

The accessory kit is supplied free of charge with the terminal and contains the following items:

- Setup cable (RJ-45 to RJ-45) and adaptor
- Mounting brackets and screws
- Interface slot blanking plates (2)
- Hardware kit (includes Allen key for fascia screws)
- Alarm cable (RJ-45 to RJ-45)
- Ground cable
- DC power cable (for use with the -48 VDC and -24 VDC power supplies)
- AC power cable (for use with the 110 / 230 VAC power supply)
- CD with Aprisa XE Product Description, Aprisa XE User Manual and current system software

[1] A standard MHSB Terminal will protect up to eight Network Interface ports. Additional ports can be protected by adding additional Tributary Switches. The part number for a Tributary Switch is APXE-TXVV.

Frequency Band Options (BBB)

The Aprisa XE is available in the frequency band options highlighted in the table below. Please note the maximum transmit output power shown in the columns to the right. This is the output power as measured at the Antenna port.

For further details please consult the Aprisa XE Product Description, available to download from the 4RF website, for full RF performance specifications.

Replace the BBB with one of the following options:

Frequency Band		Maximum Transmit Power			
Option	**Description**	**QPSK**	**16 QAM**	**32 QAM**	**64 QAM**
300	300 MHz band covering 330-400 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
400	400 MHz band covering 400-470 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
600	600 MHz band covering 620-715 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
700	700 MHz band covering 698-806 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
800	800 MHz band covering 805-890 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
900	900 MHz band covering 850-960 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
1G4	1400 MHz band covering 1350-1550 MHz	+35 dBm	+31 dBm	+30 dBm	+29 dBm
1G8	1800 MHz band covering 1700-2100 MHz	+34 dBm	+31 dBm	+30 dBm	+29 dBm
2G0	2000 MHz band covering 1900-2300 MHz	+34 dBm	+31 dBm	+30 dBm	+29 dBm
2G5	2500 MHz band covering 2300-2700 MHz	+34 dBm	+31 dBm	+30 dBm	+29 dBm

Channel Size Options (CCC)

The Aprisa XE is available in the channel sizes shown below. Not all channel and modulation options are available in each band (see ‘Channel Size and Frequency Band Cross Reference’ on page 5).

The capacities shown are the gross radio link capacity data rate available.

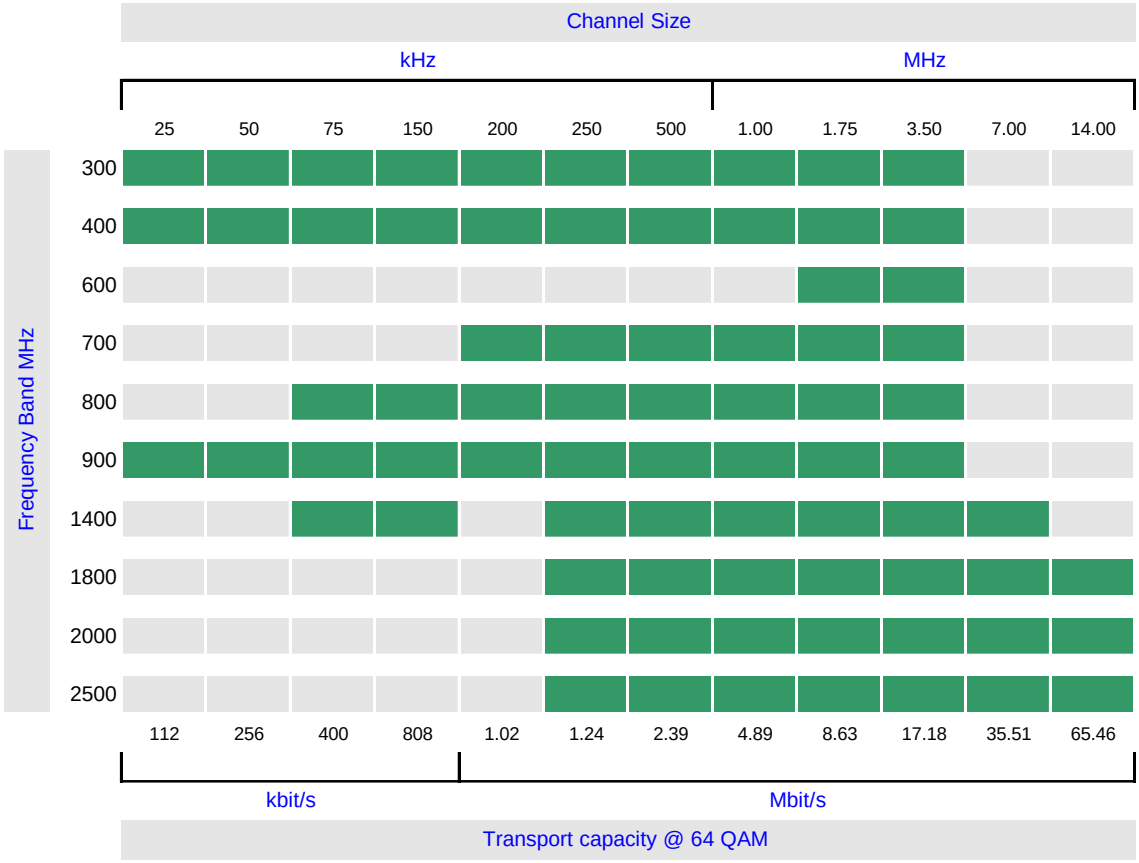
Replace the CCC in the part number with one of the options shown below:

Channel Size †		Gross Capacity			
Option	**Description**	**QPSK**	**16 QAM**	**32 QAM**	**64 QAM**
025	25 kHz Channel Size		72 kbit/s	96 kbit/s	112 kbit/s
050	50 kHz Channel Size	80 kbit/s	168 kbit/s	208 kbit/s	256 kbit/s
075	75 kHz Channel Size	128 kbit/s	264 kbit/s	312 kbit/s	400 kbit/s
150	150 kHz Channel Size	264 kbit/s	536 kbit/s	672 kbit/s	808 kbit/s
200	200 kHz Channel Size	336 kbit/s	680 kbit/s	840 kbit/s	1.02 Mbit/s
250	250 kHz Channel Size	408 kbit/s	824 kbit/s	1.03 Mbit/s	1.24 Mbit/s
500	500 kHz Channel Size	792 kbit/s	1.59 Mbit/s	1.99 Mbit/s	2.39 Mbit/s
1M0	1.0 MHz Channel Size	1.62 Mbit/s	3.26 Mbit/s	4.07 Mbit/s	4.89 Mbit/s
1M7	1.75 MHz Channel Size	2.87 Mbit/s	5.75 Mbit/s	7.19 Mbit/s	8.63 Mbit/s
3M5	3.5 MHz Channel Size	5.72 Mbit/s	11.45 Mbit/s	14.31 Mbit/s	17.18 Mbit/s
7M0	7.0 MHz Channel Size	11.83 Mbit/s	23.67 Mbit/s	29.59 Mbit/s	35.51 Mbit/s
14M	14 MHz Channel Size	23.99 Mbit/s	47.99 Mbit/s	59.99 Mbit/s	65.46 Mbit/s

Note † This may also be referred to as channel spacing, channel width or RF bandwidth. Consult your local regulator if in doubt.

Channel Size and Frequency Band Cross Reference

The following cross reference table shows the channels sizes available for each frequency band:



Duplexer Options (DD)

The Aprisa XE has several duplexer options. These are shown in the table below.

Contact 4RF for details on duplexer options not listed below.

Replace the DD in the part number with the correct code for the duplexer required.

To select the correct duplexer code, you must select the first character (A to J), representing the frequency band and the second character (0 to 4), representing the minimum T/R split and passband option.

For example, the 1400 MHz band is represented by the letter H and the Standard option is represented by the number 0. This H0 duplexer has a minimum T/R split of 48 MHz, a passband of 7 MHz and is mounted internally in the radio terminal.

Option	Frequency Band	Option	TX / RX Min Split	Passband	Lo Band	Hi Band	Mounting
A0	300 MHz	Standard	9.45 MHz	2 MHz	330 - 400 MHz	330 - 400 MHz	External
A1	300 MHz	Option 1	5 MHz	0.5 MHz	330 - 400 MHz	330 - 400 MHz	External
A2	300 MHz	Option 2	20 MHz	3.5 MHz	330 - 400 MHz	330 - 400 MHz	External
B0	400 MHz	Standard	9.45 MHz	2 MHz	400 - 470 MHz	400 - 470 MHz	External
B1	400 MHz	Option 1	5 MHz	0.5 MHz	400 - 470 MHz	400 - 470 MHz	External
B2	400 MHz	Option 2	20 MHz	3.5 MHz	400 - 470 MHz	400 - 470 MHz	External
C0	400 MHz	Standard	3 MHz	0.5 MHz	470 - 492 MHz	473 - 495 MHz	External
D0	600 MHz	Standard	45 MHz	7 MHz	620 - 715 MHz	620 - 715 MHz	Internal
E0	700 MHz	Standard	30 MHz	7 MHz	698 - 806 MHz	698 - 806 MHz	Internal
F0	800 MHz	Standard	40 MHz	7 MHz	805 - 890 MHz	805 - 890 MHz	Internal
G0	900 MHz	Standard	40 MHz	7 MHz	850 - 960 MHz	850 - 960 MHz	Internal
G2	900 MHz	Option 2	9 MHz	1 MHz	928 - 960 MHz	928 - 960 MHz	Internal
G3	900 MHz	Option 3	5.5 MHz	0.5 MHz	900 - 960 MHz	900 - 960 MHz	External
G4	900 MHz	Option 4	3.6 MHz	0.5 MHz	900 - 960 MHz	900 - 960 MHz	External
H0	1400 MHz	Standard	48 MHz	7 MHz	1350 - 1550 MHz	1350 - 1550 MHz	Internal
H1	1400 MHz	Option 1	23.5 MHz	7 MHz	1350 - 1550 MHz	1350 - 1550 MHz	Internal
K0	1800 MHz	Standard	47.5 MHz	14 MHz	1700 - 2100 MHz	1700 - 2100 MHz	Internal
I0	2000 MHz	Standard	91 MHz	14 MHz	1900 - 2300 MHz	1900 - 2300 MHz	Internal
J0	2500 MHz	Standard	74 MHz	14 MHz	2300 - 2700 MHz	2300 - 2700 MHz	Internal
J1	2500 MHz	Option 1	32 MHz	4 MHz	2314 - 2318 MHz	2346 - 2350 MHz	Internal

Power Supply Options (VV)

An Aprisa XE Terminal can be equipped with power supply options as shown in the table below.

The following power supply options should be specified at time of order.

Replace the VV in the part number according to the required power supply.

OPTION	DESCRIPTION
12	± 12 (10.5 – 17) VDC 170 Watt Power supply
1L	+ 12 (10.5 – 18) VDC 48 Watt Low Consumption Supply An optimized performance option for low power applications.
24	± 24 (20.5 – 30) VDC 200 Watt Power supply
48	± 48 (40 – 60) VDC 200 Watt Power supply
AC	110 – 240 VAC, 200 Watt 50 – 60 Hz auto-sensing
	Please specify if you require country specific AC power cable. Please see 'AC Power Cable Types' on page 11 for details on standard AC cables offered.

Compliance Body (AA)

The Aprisa XE is available compliant to various international standards.

The following approval options should be specified at time of order.

Replace the AA in the part number to indicate the required approvals.

OPTION	DESCRIPTION
ET	Tested and compliant to ETSI standards
FC	Tested and compliant to FCC standards (part 27 WCS, 90, 101)
IC	Tested and compliant to Industry Canada standards (IC RSS 119, IC SRSP-302-0)
FI	Tested and compliant to FCC and Industry Canada standards
NT	Tested and compliant to NTIA standards

Product options (OO)

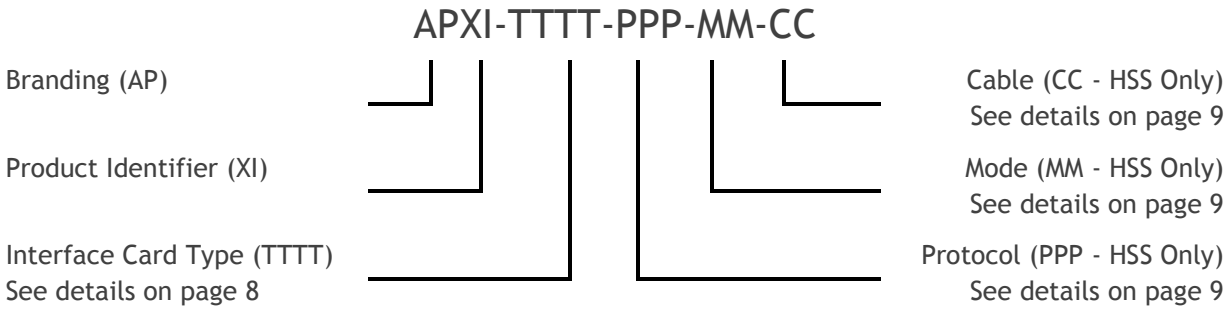
The following product options should be specified at time of order.

Replace the OO in the part number according to the required product option.

OPTION	DESCRIPTION
OO	Standard Build

Aprisa XE Interface Cards

Please follow the part numbering protocol shown below when specifying Network Interface Card requirements. Only specify the fields –PPP–MM–CC when ordering a High Speed Serial Card, otherwise leave blank.



Interface Type (TTTT)

According to requirements, replace the **TTTT** in the part number with one of the options shown below.

OPTION	DESCRIPTION
QJET	APXI-QJET 4RF XI, Quad, E1/T1 interface card Four channel E1 / T1 G.703 / 4 interface supporting both unframed E1 and T1 and framed N x 64 kbit/s fractional E1 / T1 configurations.
DFXO	APXI-DFXO 4RF XI, Dual, 2 wire FXO interface card Used for 2 wire FXO to FXS circuits.
DFXS	APXI-DFXS 4RF XI, Dual, 2 wire FXS interface card Used for 2 wire FXO to FXS circuits or E1 QJET to 2 wire FXS circuits or for hotline service (DFXS at each end of the link).
Q4EM	APXI-Q4EM 4RF XI, Quad, 4 wire E&M interface card Used for 4 wire E&M to 4 wire E&M circuits or E1 QJET to 4 wire E&M circuits.
QV24	APXI-QV24 4RF XI, Quad, V.24 Serial Interface Card Async baud rates of 300, 600, 1200, 2400, 4800, 7200, 9600, 12800, 14400, 19200, 23040, 28800, 38400, 57600 and 115200 bit/s Sync baud rates of 300, 600, 1200, 2400, 4800, 9600 and 19200 bit/s (Sync operation requires XE software 8.4.20 or greater)
SHSS	APXI-SHSS-PPP-MM-CC 4RF XI, Single, HSS + Cable, PPP, Dxx, 1+x Single Port Hi-speed Synchronous Serial with interface cable Sync baud rates of 8 to 2048 kbit/s in 8 kbit/s steps Requires additional specification (See section 0 HSS Card Configuration on page 9).
	APXI-SHSS-NOC or APXI-SHSS 4RF XI, Single, High Speed Synchronous Single Port Hi-speed Synchronous Serial without interface cable

HSS Card Configuration

Only specify the additional fields PPP-MM-CC when ordering a High Speed Serial Card.

Interface Protocol (PPP)

According to HSS Interface Protocol required, replace the **PPP** in the part number with one of the options shown below.

OPTION	DESCRIPTION
NOC	No interface cable required
V35	V.35
X21	X.21
449	RS-449
530	RS-530

Operation Mode (MM)

According to HSS Operation Mode required, replace the **MM** in the part number with one of the options shown below.

OPTION	DESCRIPTION
FC	DCE Female connector
MT	DTE Male connector

Cable Type (CC)

According to HSS Cable Type required, replace the **CC** in the part number with one of the options shown below. Cables are included ONLY with HSS card options.

OPTION	DESCRIPTION
00	Standard cable for standard 1+0 and HSD terminals
PP	Protected cable for 1+1 MHSB protected terminals

Aprisa XS Expansion Shelf

The Aprisa XS Expansion Shelf is used to aggregate analogue and digital interfaces onto E1 bearers that can be distributed across PDH or SDH networks to one end of an Aprisa XE radio link.

The Expansion Shelf includes an QJET uplink card fitted in interface slot H and accommodates the Aprisa XE range of Interface Cards, Aprisa XE power supplies and accessories.

The Expansion Shelf is available in a Non-Protected configuration only.

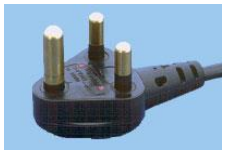
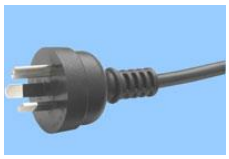
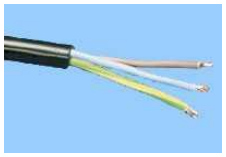
PART NUMBER	DESCRIPTION
APXS-XXVV	4RF XS, Aprisa Expansion Shelf incl QJET Uplink: Specify voltage VV = 12 VDC option 1L (12 VDC Low Power Consumption) 24 (24 VDC) 48 (48 VDC) AC (110/240 VAC 50/60 Hz)
	The Aprisa XS terminal includes: • Aprisa XS Terminal fitted with a QJET uplink card • RJ45 to RJ45 E1 crossover cable, 1.2m

Accessories

Power Cables

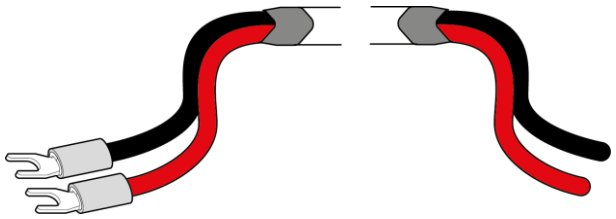
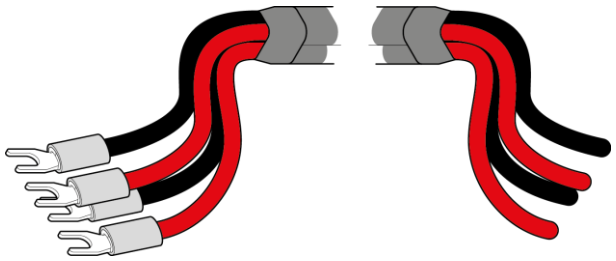
AC Power Cable Types

The following are the standard AC power cable types supplied by 4RF with the radio terminal. Please specify cable type at time of order. They are also available as spare parts.

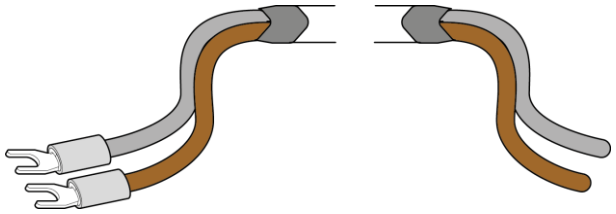
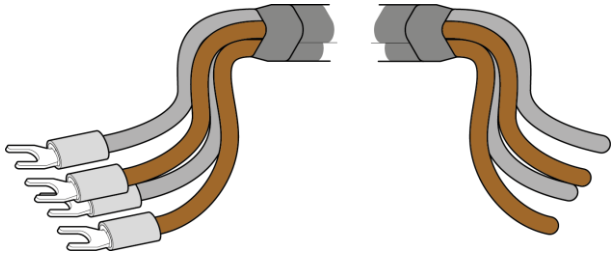
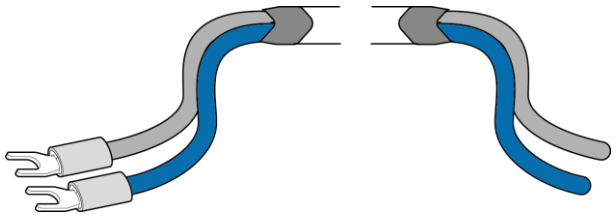
PART NUMBER	DESCRIPTION	
APAC-PWCA-ACP-03-TB	4RF Acc, Power Cable, AC, 3 m, Type B USA to IEC	
		
APAC-PWCA-ACP-03-TD	4RF Acc, Cable, Power, AC, 3m, Type D BS 546 to IEC	
		
APAC-PWCA-ACP-03-TF	4RF Acc, Power Cable, AC, 3 m, Type F SCHUKO to IEC	
		
APAC-PWCA-ACP-03-TG	4RF Acc, Power Cable, AC, 3 m, Type G UK to IEC	
		
APAC-PWCA-ACP-03-TI	4RF Acc, Power Cable, AC, 3 m, Type I Aus / NZ to IEC	
		
APAC-PWCA-ACP-03-TU	4RF Acc, Power Cable, AC, 3 m, Type U Unterm to IEC	
		

DC Power Cable Types

The following standard DC power cable types are supplied in the Accessory Kit. These are also available as spare parts.

PART NUMBER	DESCIPTION
APAC-PWCA-DCP-03-ST-T102	4RF Acc, Power Cable, DC, 3 m, Std, Red / Black, 2 sq mm
Standard DC cable ± 48 VDC and ± 24 VDC 3 metre red / black cable 2.0 mm^2 per conductor	
APAC-PWCA-DCP-03-ST-T104	4RF Acc, Power Cable, DC, 3 m, Std, Red / Black, 4 sq mm
Standard DC cable ± 12 VDC 3 metre red / black cable 4.6 mm^2 per conductor	

The following 'harmonized' DC power cable types must be ordered separately.

PART NUMBER	DESCIPTION
APAC-PWCA-DCP-03-HA-T202	4RF Acc, Power Cable, DC, 3 m, Harm, Brown / Grey, 2 sq mm
Harmonized DC cable ± 48 VDC and ± 24 VDC 3 metre brown / grey cable 2.0 mm^2 per conductor	
APAC-PWCA-DCP-03-HA-T204	4RF Acc, Power Cable, DC, 3 m, Harm, Brown / Grey, 4 sq mm
Harmonized DC cable ± 12 VDC 3 metre brown / grey cable 4.6 mm^2 per conductor	
APAC-PWCA-DCP-03-HA-T302	4RF Acc, Power Cable, DC, 3 m, Harm, Blue / Grey, 2 sq mm
Harmonized DC cable + 12 VDC Low Power 3 metre blue / grey cable 2.0 mm^2 per conductor	

Interface Cables

RJ-45 ~ Solid-core 2W / 4W and E1 (Punch- down / *wire wrap*) 	**RJ-45 ~ RJ-45** E1 Crossover (*stranded core*) 
RJ-45 ~ RJ-45 Standard Ethernet or E1 (stranded core) 	**RJ-45 ~ DB-9 female** V.24/RS-232 (*RJ-45 to DB-9 Adapter*) 

PART NUMBER	DESCRIPTION
APAC-IFCA-E1X-F1	4RF Acc, Cable, Interface, RJ45 to RJ45 E1 Crossover, 1.2m
APAC-IFCA-E1X-05	4RF Acc, Cable, Interface, RJ45 to RJ45 E1 Crossover, 5m
APAC-IFCA-E1X-10	4RF Acc, Cable, Interface, RJ45 to RJ45 E1 Crossover, 10m
APAC-IFCA-E1X-20	4RF Acc, Cable, Interface, RJ45 to RJ45 E1 Crossover, 20m
APAC-IFCA-ETH-P6	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet / E1, 0.6m
APAC-IFCA-ETH-05	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet / E1, 5m
APAC-IFCA-ETH-10	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet / E1, 10m
APAC-IFCA-ETH-20	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet / E1, 20m
APAC-IFCA-ETX-05	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet Cross, 5m
APAC-IFCA-ETX-10	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet Cross, 10m
APAC-IFCA-ETX-20	4RF Acc, Cable, Interface, RJ45 to RJ45 Ethernet Cross, 20m
APAC-IFCA-SOC-05	4RF Acc, Cable, Interface, RJ45 to Solid Core, 5m
APAC-IFCA-SOC-10	4RF Acc, Cable, Interface, RJ45 to Solid Core, 10m
APAC-IFCA-SOC-20	4RF Acc, Cable, Interface, RJ45 to Solid Core, 20m
APAC-IFCA-232-05	4RF Acc, Cable, Interface, RJ45 to DB9 RS232F, 5m
APAC-IFCA-232-10	4RF Acc, Cable, Interface, RJ45 to DB9 RS232F, 10m
APAC-IFCA-232-20	4RF Acc, Cable, Interface, RJ45 to DB9 RS232F, 20m
APAC-IFCA-449-15	4RF Acc, Cable, Interface, DB37 M to DB37 F RS-449, 15m

HSS Cables

PART NUMBER	DESCRIPTION
APAC-DCAB-449-03-FC-C3	4RF Acc, HSS Cable, RS449, 3 m, DCE, LFH-60 to DB37
APAC-DCAB-449-03-MT-C3	4RF Acc, HSS Cable, RS449, 3 m, DTE, LFH-60 to DB37
APAC-DCAB-530-03-FC-C1	4RF Acc, HSS Cable, RS530, 3 m, DCE, LFH-60 to DB25
APAC-DCAB-530-03-MT-C1	4RF Acc, HSS Cable, RS530, 3 m, DTE, LFH-60 to DB25
APAC-DCAB-V35-03-FC-C4	4RF Acc, HSS Cable, V.35, 3 m, DCE, LFH-60 to M34
APAC-DCAB-V35-03-MT-C4	4RF Acc, HSS Cable, V.35, 3 m, DTE, LFH-60 to M34
APAC-DCAB-X21-03-FC-C2	4RF Acc, HSS Cable, X.21, 3 m, DCE, LFH-60 to DB15
APAC-DCAB-X21-03-MT-C2	4RF Acc, HSS Cable, X.21, 3 m, DTE, LFH-60 to DB15

Patch Cables

PART NUMBER	DESCRIPTION
APAC-PBAL-BNF-RM-DU-01	4RF Acc, Cable, Balun, BNC F, RJ45 M, Dual, 1m
APAC-PBAL-BNM-RM-DU-p5	4RF Acc, Cable, Balun, BNC M, RJ45 M, Dual, 0.5m
APAC-PBAL-BNM-RM-DU-01	4RF Acc, Cable, Balun, BNC M, RJ45 M, Dual, 1m
APAC-PBAL-SIF-RM-DU-01	4RF Acc, Cable, Balun, Siemens 1.6/5.6 F, RJ45 M, Dual, 1m
APAC-PBAL-SIF-RM-DU-05	4RF Acc, Cable, Balun, Siemens 1.6/5.6 F, RJ45 M, Dual, 5m

Mounting Hardware

PART NUMBER	DESCRIPTION
APAC-MBRK-RMB	4RF Acc, Mounting, Bracket, Rack Mounting 88 x 75 x 25 mm
APAC-MBRK-XEB	4RF Acc, Mounting, Bracket, XE Wall mount 375 x 441 x 137 mm
APAC-MPAN-BAL-1U-BN-08	4RF Acc, Mounting, Panel, Balun, 1U, BNC, 8 port

Attenuators

PART NUMBER	DESCRIPTION
APAC-TFIX-D18-10-10-NMNF	4RF Acc, Attenuator, Fixed, DC-18G, 10dB, 10W, N M, N F
APAC-TFIX-D18-30-10-NMNF	4RF Acc, Attenuator, Fixed, DC-18G, 30dB, 10W, N M, N F
APAC-TFIX-D18-40-10-NMNF	4RF Acc, Attenuator, Fixed, DC-18G, 40dB, 10W, N M, N F
APAC-TVAR-D02-V1-05-NFNF	4RF Acc, Attenuator, Var, DC-2G, 6-120 dB, 5W, N F, N F
APAC-TVAR-D04-V2-05-NFNF	4RF Acc, Attenuator, Var, DC-4G, 6-66 dB, 5W, N F, N F

Documentation

PART NUMBER	DESCRIPTION
APAC-DMAN-AXE-HC	4RF Acc, Documentation, User Manual, Aprisa XE, Hard Copy

Pre-Shipment Options

The following pre-shipment options are available and must be specified with order prior to shipment.

PART NUMBER	DESCRIPTION
APPS-PCON	4RF Pre Shipment Options, Pre Configuration of terminal (per terminal) A pre-configuration service. Each Terminal and Network Interface Card is individually pre-configured to specific customer defined settings. This reduces the amount of on-site commissioning required at the time of installation. Each Terminal is tagged with a detailed configuration report.
APPS-CPAC-ZZZ	4RF Pre Shipment Options, Customised Packaging A customized packaging option. Terminals or complete links, accessories and ancillary items can be packaged together to ease logistics and project management during deployment. ZZZ – 4RF set code based on requirement.
APPS-ESHP	4RF Pre Shipment Options, Expedited Shipping Customers may request expedited delivery. Expedited delivery is subject to review of individual requests and approval by 4RF.

Spares

The Aprisa XE has a modular construction and can be repaired in the field by swapping modules. These functional modules are available as spare parts and can be ordered individually as detailed below.

Spares Recommendation

On a case by case basis, actual spares holding will vary on factors such as geographic coverage area and distribution of operational centers. When ordering multiple Aprisa XE terminals, it is advised complete terminals are ordered as spares as per the following recommendation:

INSTALLED BASE	SPARES HOLDING
Up to 50 terminals	2 spare terminals
50 to 100 terminals	4 spare terminals

Common Spare Modules : All Configurations

Misc Spares

PART NUMBER	DESCRIPTION
APSP-MODE	Aprisa XE Modem card
APSP-PXVV	Aprisa XE Power Supply: Specify voltage VV = 12 (12 VDC) 1L (12 VDC Low Power Consumption) 24 (24 VDC) 48 (48 VDC) AC (110/240 VAC 50/60 Hz)
APSP-CHAS	Aprisa XE spare chassis complete with CPU motherboard
APSP-CHAS-WOM	Aprisa XE spare chassis without motherboard
APSP-DUPL-**BBB**-DD	Aprisa XE spare standard duplexer: Specify duplexer options DD – see 'Duplexer Options (DD)' BBB = 300, 400, 600, 700, 800, 900, 1G4,1G8, 2G0, 2G5
APSP-FXST	4RF Spare, Fan, Aprisa standard 60x60x25mm
APSP-MBRM-XAC	4RF Spare, Module, XE Brownout Recovery Module for, AC PSU

Spare Transceiver Modules

The Aprisa XE spare Transceiver module includes the transmitter, receiver and synthesizers.

The Transceiver module part number is APSP-TBBB-CCC-AA where BBB is the Frequency Band, CCC is the Channel Size and AA is the Approval Option.

1+0 Spares

Spare Radio Terminals

The Aprisa XE spare radio terminal with a duplexer:

PART NUMBER	DESCRIPTION
APSP-NBBB-CCC-**ZZ**-VV-A**A**O**O**	Aprisa XE Spare Radio Terminals: Specify Frequency Band BBB = 300, 400, 600, 700, 800, 900, 1G4, 1G8, 2G0, 2G5 Specify Channel Size CCC see 'Channel Size Options (CCC)' Specify voltage VV = 12 (12 VDC) 1L (12 VDC Low Power Consumption) 24 (24 VDC) 48 (48 VDC) AC (110/240 VAC 50/60 Hz)
	Specify Approval option AA see 'Compliance Body (AA)' Specify Product option OO see 'Product options (OO)'

MHSB / HSD Spares

MHSB Spare Terminals

The MHSB spare terminal is a single radio without a duplexer.

PART NUMBER	DESCRIPTION
APSP-PBBB-CCC-**ZZ**-VV-A**A**O**O**	Aprisa XE MHSB Spare Terminals: Specify Frequency Band BBB = 300, 400, 600, 700, 800, 900, 1G4, 1G8, 2G0, 2G5 Specify Channel Size CCC see 'Channel Size Options (CCC)' Specify voltage VV = 12 (12 VDC) 1L (12 VDC Low Power Consumption) 24 (24 VDC) 48 (48 VDC) AC (110/240 VAC 50/60 Hz)
	Specify Approval option AA see 'Compliance Body (AA)' Specify Product option OO see 'Product options (OO)'

Please refer to:

'Frequency Band Options (BBB)' on page 4 for frequency band details
'Channel Size Options (CCC)' on page 4 for channel size details
'Power Supply Options (VV)' on page 7 for power supply options
'Compliance Body (AA)' on page 7
'Product options (OO)' on page 7.

MHSB Spare Modules

PART NUMBER	DESCRIPTION
APXE-TXVV	Aprisa XE MHSB 8 port Interface Tributary Switch Module (1RU) including 17 patch cables (300mm RJ45 to RJ45): Specify voltage VV = 12 (12 VDC) 1L (12 VDC Low Power Consumption) 24 (24 VDC) 48 (48 VDC) AC (110/240 VAC 50/60 Hz)
APXE-RBBB-***XXX***-DD	Aprisa XE MHSB RF Protection Switch Module (1RU): Specify Frequency Band BBB = 300, 400, 600, 700, 800, 900, 1G4, 1G8, 2G0, 2G5 Specify duplexer options DD see 'Duplexer Options (DD)'

HSD Spare Cards

PART NUMBER	DESCRIPTION
APSP-XPIC	4RF Spare, HSD Protection Interface Card
APSP-XPSC	4RF Spare, HSD Protection Switch Card

Network Management

4RF offers NMS solutions, including server and software options. Options include:

- NMS PC or Server with SNMPc Workgroup pre-configured for basic operation, supporting a single user for small to medium sized networks
- NMS PC or Server with SNMPc Enterprise pre-configured for basic operation, supporting a scalable multi-user environment

PART NUMBER	DESCRIPTION
Not Applicable	Supervisor – Integrated EMS Supervisor is an integrated element manager. The application is run using a standard web browser and can be used to manage every 4RF terminal in the network.
APNM-MBAS	4RF NMS, MIB Integration, Basic 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	4RF NMS, MIB Integration, Advanced A package of on-site engineering support and documentation. Charged per day pro-rata based on number of days required.
APNM-PMPW-NPC	4RF NMS, Pre-configured, SNMPc Workgroup, NMS PC 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	4RF NMS, Pre-configured, SNMPc Enterprise, NMS PC 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	4RF NMS, Pre-configured, SNMPc Enterprise, NMS server 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. Includes SNMPc server license, 10 remote console licenses.
APNM-PMPE-NSB	4RF NMS, Pre-configured, SNMPc Enterprise, NMS server + bu 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. Servers can be installed in same location or remotely.
APNM-SMPW	4RF NMS, Software, SNMPc Workgroup SNMPc 7.1 Workgroup edition 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	4RF NMS, Software, SNMPc Enterprise SNMPc 7.1 Enterprise edition provides for a scalable multi-user environment. Includes SNMPc server license, 10 remote console licenses and 10 remote poller licenses.
Contact 4RF Product Marketing	NMS with Pre-Integrated MIB A number of off the shelf NMS applications can be provided with a pre-integrated MIB.

3. Services

4RF Communication's world class services team 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.

Training

PART NUMBER	DESCRIPTION
APSV-XTRA-XES-OF	4RF Service, Training, XE Standard, at 4RF (max 8 trainees)
APSV-XTRA-XES-CU	4RF Service, Training, XE Standard, at Customer site (max 8 trainees)
APSV-XTRA-XEF-OF	4RF Service, Training, XE Concise 2-day, at 4RF (max 8 trainees)
APSV-XTRA-XEF-CU	4RF Service, Training, XE Concise 2-day, at Customer site (max 8 trainees)
APSV-XTRA-XEA-OF	4RF Service, Training, XE Advanced, at 4RF (max 8 trainees)
APSV-XTRA-XEA-CU	4RF Service, Training, XE Advanced, 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 (per person)

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. Flights in excess of 8 hours will be at business class rates.
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.

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 case 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. Flights in excess of 8 hours will be at business class rates.

Engineering Services

The following charges are to be read in conjunction with the Engineering Services terms and conditions.

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. Flights in excess of 8 hours will be at business class rates.

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

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 (attached). Where there is a difference between the two documents, the Repair Terms and Conditions apply.

Notes:

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

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

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

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

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

5. 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

PART NUMBER	DESCRIPTION
APSV-XREP-EWN-Y1	4RF Service, Repair, Ext Warranty 1+0, 1 Year
APSV-XREP-EWP-Y1	4RF Service, Repair, Ext Warranty 1+1, 1 Year
APSV-XREP-EWI-Y1	4RF Service, Repair, Ext Warranty Interface card, 1 Year
APSV-XREP-EWN-Y2	4RF Service, Repair, Ext Warranty 1+0, 2 Years
APSV-XREP-EWP-Y2	4RF Service, Repair, Ext Warranty 1+1, 2 Years
APSV-XREP-EWI-Y2	4RF Service, Repair, Ext Warranty Interface card, 2 Years
APSV-XREP-EWN-Y3	4RF Service, Repair, Ext Warranty 1+0, 3 Years
APSV-XREP-EWP-Y3	4RF Service, Repair, Ext Warranty 1+1, 3 Years
APSV-XREP-EWI-Y3	4RF Service, Repair, Ext Warranty Interface card, 3 Years
APSV-XREP-EWN-Y4	4RF Service, Repair, Ext Warranty 1+0, 4 Years
APSV-XREP-EWP-Y4	4RF Service, Repair, Ext Warranty 1+1, 4 Years
APSV-XREP-EWI-Y4	4RF Service, Repair, Ext Warranty Interface card, 4 Years

Aprisa XE Repair

PART NUMBER	DESCRIPTION
APSV-XREP-AXE-TR	4RF Service, Repair, Aprisa XE, Terminal (complete Aprisa XE radio terminal)
APSV-XREP-AXE-TC	4RF Service, Repair, Aprisa XE, Transceiver
APSV-XREP-AXE-MB	4RF Service, Repair, Aprisa XE, Motherboard (fitted to chassis)
APSV-XREP-AXE-MD	4RF Service, Repair, Aprisa XE, Modem
APSV-XREP-AXE-IF	4RF Service, Repair, Aprisa XE, Interface Card
APSV-XREP-AXE-RS	4RF Service, Repair, Aprisa XE, MHSB RF Switch
APSV-XREP-AXE-TS	4RF Service, Repair, Aprisa XE, MHSB Trib Switch
N/A - refer Spares	4RF Service, Repair, Aprisa XE, PSU (See section 0 Spares on page 17 for details)
N/A - refer Spares	4RF Service, Repair, Aprisa XE, Duplexer (See section 0 Spares on page 17 for details)

Aprisa SE Repair

PART NUMBER	DESCRIPTION
APSV-XREP-ASE-TR	4RF Service, Repair, Aprisa SE, Terminal (complete Aprisa SE radio terminal)
APSV-XREP-ASE-TX	4RF Service, Repair, Aprisa SE, Transmitter Module
APSV-XREP-ASE-RX	4RF Service, Repair, Aprisa SE, Receiver Module
APSV-XREP-ASE-MD	4RF Service, Repair, Aprisa SE, Modem
APSV-XREP-ASE-CR	4RF Service, Repair, Aprisa SE, Controller (incl. customer interface card -CIC)
APSV-XREP-ASE-IF	4RF Service, Repair, Aprisa SE, Interface Card (customer interface card -CIC)
APSV-XREP-ASE-SW	4RF Service, Repair, Aprisa SE, MHSB Switch
N/A - refer Spares	4RF Service, Repair, Aprisa SE, Duplexer (See section 0 Spares on page 17 for details)

General

PART NUMBER	DESCRIPTION
APSV-XREP-EXR	4RF Service, Repair, Expedited Repair (additional fee)
APSV-XREP-NFF-TR	4RF Service, Repair, No Fault Found, Terminal
APSV-XREP-NFF-MO	4RF Service, Repair, No Fault Found, Module
APSV-XREP-DPX	4RF Service, Repair, Duplexer Tuning

Standard Advanced Replacement Service

PART NUMBER	DESCRIPTION
APSV-XREP-ADV-TR	4RF Service, Repair, Advanced Replacement, Terminal
APSV-XREP-ADV-MO	4RF Service, Repair, Advanced Replacement, Module

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

Service Level Agreement Partnership Levels

The following table describes the key benefits for each partnership level.

	BRONZE	SILVER	GOLD	PLATINUM
Response time for technical requests	48 hours	24 hours	12 hours	12 hours
Escalation procedures	Nil	Predefined	Predefined	Predefined
Availability of a Service Engineer for on-site assistance	20 days for standard requests 5 days for urgent requests	For urgent requests, an engineer will be dispatched within 72 hours	For urgent requests, an engineer will be dispatched within 48 hours	For urgent requests, an engineer will be dispatched within 48 hours
Repair and return turnaround time	30 days	20 days	10 days	5 days
In-office technical support	Charges apply (listed in SPL)	Reduced charges (approximately 50%)	Free	Free
Standard advance replacement service	Charges apply (listed in SPL)	Free	Free	Free
Access to 24/7 phone number for technical support	Nil	Charges apply	Free	Free

Notes:

1. Equipment covered by the agreement is defined in the equipment schedule which forms part of the agreement.
2. A separate Service Price List (SPL) incorporating customer specific discounts for the following will be issued with each Service Level Agreement:
    - Training
    - Technical Support
    - Engineering Services
    - Repair and replacement

Additional fees and penalty charges are described in the customer specific agreements.