



- **Mission-critical communications**
- **Remote, inaccessible installations**
- **High-availability radio system**
- **Equipment redundancy and protection**
- **Configured using Windows® based Aprisa Setup™ software**
- **Compliant with internationally recognized standards**

The *Aprisa SE Protected Radio Link* provides network operators with a dependable radio-backup system that secures equipment availability and increases network reliability.

The Monitored Hot Standby (MHSB) 1+1 protected Aprisa link offers equipment redundancy and protection against any single point of failure within the radio equipment.

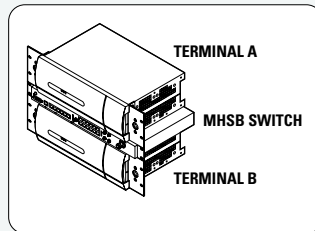
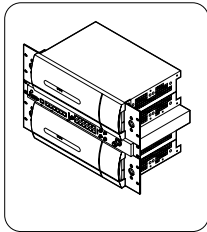
It has been engineered by 4RF for mission-critical telecommunications (where equipment availability is paramount), and for remote or inaccessible installations that need to sustain traffic for long periods before equipment servicing is possible. The MHSB protection switch monitors the condition of the radio terminals. It will switch the active Aprisa SE to the hot standby if a fault is detected, significantly increasing the availability of the radio system.

PRODUCT OVERVIEW

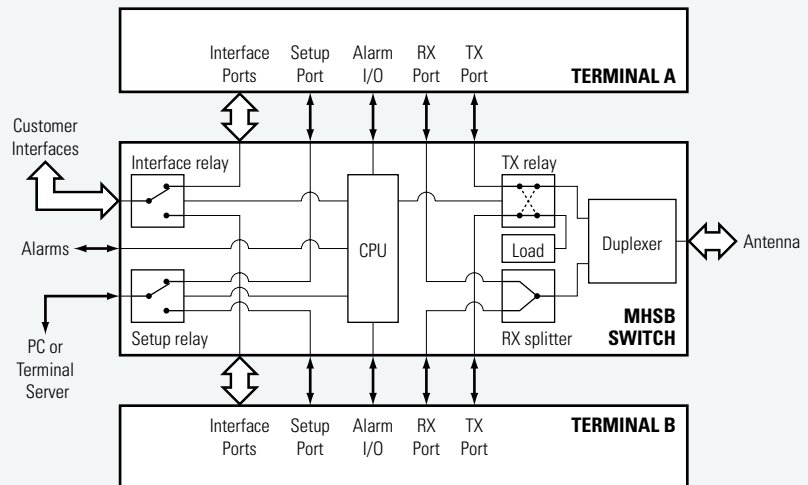
A protected radio terminal consists of two standard Aprisa SE terminals interconnected by a MHSB protection switch. The MHSB switch is housed in a 1U chassis, and is typically mounted between the Aprisa SE terminals. A Central Processor Unit (CPU) monitors the condition of the Aprisa radios and responds to major alarm conditions, triggering a switchover between the terminals.

CONFIGURATION & NMS

Aprisa Setup™ (the PC-based configuration, monitoring and maintenance tool) is used to configure the terminals to work in MHSB mode. The protection switch requires no configuration. The protected terminals may also be integrated to allow switch events to be reported within the Aprisa View™ network management system software. Discrete alarm outputs are provided from the protection switch for interfacing to external monitoring systems.



ARCHITECTURE



RF PROTECTION

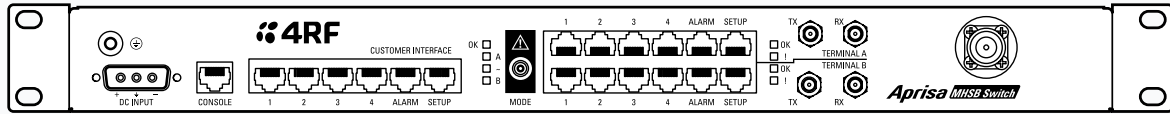
By connecting the receivers in both terminals to a common duplexer and antenna via a low-loss receive splitter, both the receive paths are active under normal conditions. Only one Aprisa SE radio will be transmitting into the duplexer and antenna, via a co-axial relay. This relay is used to switch the active transmitter into the transmission system and isolate the offline transmitter to a dummy load.

SWITCHOVER EVENTS

If the local protection switch detects a local failure in the active radio, it will switch control to the standby radio. In addition, if the local protection switch software does not detect a major failure and the remote protection switch detects a 'loss of modem synchronization' or loses the received signal, the remote switch will send a signal to the local switch telling it to switch control to the standby radio. The flow of customer traffic is then maintained with minimal disruption.

MANUAL OR AUTOMATIC

The protection switch can be operated in either a manual or automatic mode. The manual mode would be used typically for testing and setup. The automatic mode is used for normal operation, providing automated switchover for equipment redundancy. Aprisa Setup software also enables the user to force a manual switchover event.



MHSB SWITCH SPECIFICATIONS

Software control	Stand-alone firmware	Responds to major alarms from the Aprisa SE terminals
TX relay losses	All bands	0.5 dB reduction in Aprisa TX output power
RX splitter losses	All bands	4.0 dB reduction in Aprisa RX sensitivity
Switching time*	All bands	< 3.0 seconds (interruption to customer traffic)
MHSB LEDs	OK: green blinking A: yellow solid ~: green solid B: yellow solid	Protection switch is OK Set to test mode with Terminal A active Auto mode Set to test mode with Terminal B active
Terminal A/B LEDs	OK LED: green solid OK LED: green blinking ! LED: red solid ! LED: red blinking	Active terminal Standby terminal Active terminal faulty Standby terminal faulty
Alarm port	Yellow LED Green LED Output alarm contacts	Major fault with either Aprisa SE terminal Switch event (remains on for 10 seconds) Major fault - RJ-45 Pins 5 and 3 N/O Switch event - RJ-45 Pins 4 and 3 N/O
DC power supply	Input range Power consumption	±12 VDC (11-15 VDC) ±24 VDC (20.5-30 VDC) ±48 VDC (40-60 VDC) 11.5 W continuous
Mechanical	19" rack mounted Weight	1U High 430 mm wide x 45 mm high x 245 mm deep 4 kg (1400 MHz) 3 kg (300 & 400 MHz – duplexers are external)
Environmental	Operating Storage Humidity	-10° to +50° C -20° to +70° C Max. 95% non-cond.
*Switching time from detection of major alarm condition.		

APPLICATION OVERVIEWS

1. A maritime safety authority monitoring mission-critical distress signals has deployed *Aprisa SE Protected Radio Links* to connect a remote satellite-receiving station to a centralised monitoring and alarm centre.
2. *Aprisa SE Protected Radio Links* have been deployed in Indonesia by a railway utility to deliver continuous communications service along very long sections of rail track running through challenging sub-tropical vegetation.
3. In Thailand *Aprisa SE Protected Radio Links* carry voice and broadband data in a remote rural telecommunications network. Equipment redundancy is essential with the remoteness of the deployment and the difficulty and time required to access the terminals for maintenance. The protection switch ensures the communities have continued service in the event of radio outage, and enable the maintenance teams to visit the sites at scheduled intervals.
4. A mobile radio security network in North Africa uses *Aprisa SE Protected Radio Links* to connect their base stations and transport secure communications. The mission-critical nature of the network means downtime must be minimized, and equipment redundancy and protection is essential.



Aprisa™ **SE**

APRISA SE DIGITAL ACCESS RADIO

Aprisa SE is the simple, cost-effective solution to a wide range of low-capacity point-to-point digital radio applications.

Compact and simple to install at any site, Aprisa SE is also easy to use, reducing user expertise requirements, and minimizing the need for additional equipment.

Aprisa SE incorporates a single customer interface card (CIC) with a specific mix of interfaces optimized for the application needs, such as simple fractional E1 and Ethernet, or a complex combination of analog voice and digital data circuits.

CONTACT US

4RF COMMUNICATIONS LTD

26 GLOVER ST, NGAURANGA
PO BOX 13-506
WELLINGTON 6032
NEW ZEALAND

TELEPHONE: +64 4 499 6000
FACSIMILE: +64 4 473 4447
EMAIL: sales@4rf.com
URL: 4rf.com

VERSION 1-0