Aprisa SR+ Migration Made Simple

The Aprisa SR+ Migration Station provides a smooth migration from legacy SCADA telemetry radio services to next generation Aprisa SR+ high capacity digital SCADA telemetry networks utilizing existing frequencies and antenna infrastructure. From the very first remote radio replacement enjoy market leading Aprisa radio features in terms of speed, coverage, security, IP, and advanced management options.


THE MMS BENEFITS

Benefit now by migrating your legacy 'analog' point-to-multipoint SCADA telemetry radio system smoothly with the minimum of cost and downtime, using existing frequencies and antennas. When capital is tight, leverage your maintenance budget to get real performance and feature set upgrades at selected sites. Avoid backward compatibility solutions that limit network speeds and only deliver an investment return at the end of the project when you can deploy today's next generation Aprisa SR+ now to address 21st century advances such as DNP XML and WITS. Think forwards not backwards!

MMS SYSTEM COMPONENTS AND CONFIGURATION

The MMS system comprises of two main components, the standard Aprisa SR+ protected or non-protected base station and the new migration switch, a fully redundant RF switch. The MMS is installed side-by-side with the legacy base station. The new Aprisa SR+ network uses the same frequencies and antenna as the existing radio network. The migration switch connects to the RF antenna and shares this with the legacy base or the Aprisa SR+ base station as required by the remotes. The migration switch is managed by the advanced logic in the Aprisa SR+ protected base station. All SCADA traffic is directed through the Aprisa SR+ base station, which passes traffic destined for the legacy network to the legacy base station in addition to setting the migration switch for the antenna.
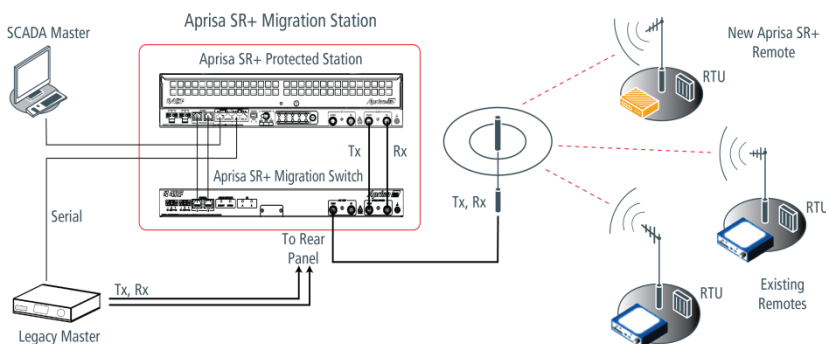
The Aprisa SR+ provides smart, secure point-to-multipoint communications for oil, gas and utility monitoring and control

- VHF, 220 MHz, UHF, and 900 MHz licensed bands (where available)
- RS-232 and IEEE 802.3 protocols with multiple port options
- Terminal server including SLIP options
- Software selectable:12.5 kHz, 25 kHz, and 50 kHz channel sizes
- Software selectable single / two frequency working
- Software selectable dual / single antenna port operation
- Gross data rates up to 216 kbit/s
- 256, 192, or 128 bit AES encryption
- AES-CCM to NIST SP 800-38C
- Adaptive Coding and Modulation: QPSK, 16, and 64 QAM
- Advanced forward error correction
- Dedicated alarm port per radio
- Layer 2 bridge (VLAN aware) and layer 3 router modes
- VLAN add/remove, single or double VLAN (QinQ)
- QoS priority enforcement
- L3/L4 filtering and ICMP/ping, Telnet, HTTPS, SNMP, SNMP proxy protocol filtering
- Power supply option for unprotected stand alone radio:
  10 to 30 VDC negative earth only
- Power supply options for protected base station:
  10 to 30 VDC negative earth
  18 to 60 VDC positive or negative earth
- –40 to +70°C operating temperature without fans
- Class I, Division 2 for hazardous locations
- ETSI, FCC, and IC standards compliant

Aprisa SR+ fully redundant Migration Switch characteristics

- VHF, 220 MHz, UHF, and 900 MHz licensed bands (where available)
- Dedicated TNC antenna port operation
- Dual / single N-Type antenna port connection to legacy base station
- Dual / single TNC antenna port connection to Aprisa SR+ base station
- Dedicated USB port
- Wide range power supply 10 to 60 VDC positive or negative earth
- Monitoring and operational LEDs
- –40 to +70°C operating temperature without fans
- <1.5 dB MMS RF switch insertion loss
- Class I, Division 2 for hazardous locations
- 432.6 mm (W) x 372 mm (D) x 83 mm (H)
- ETSI, FCC, and IC standards compliant

MMS OPERATING CONFIGURATIONS

The Aprisa SR+ MMS supports standard legacy radio networks, with repeater based network support. The MMS supports integration with typical SCADA telemetry radio systems where the base station operates in non-continuously keyed switched carrier mode. The legacy radio network traffic must be serial utilizing a recognized standard poll/response protocol. Multiple protocols including DNP3, Modbus, Bristol / BSAP, TotalFlow and a range of others are supported with the initial release with additional protocols released on customer request. The MMS supports Aprisa SR+ protected or non-protected base stations. Future support for other products and operating modes is in development.

OPERATIONAL OVERVIEW

The Aprisa SR+ inspects the serial SCADA traffic packets to determine the destination address. Each packet is mapped to either the legacy or the Aprisa SR+ network based on SCADA address learning, utilizing the address / destination ID field of the SCADA protocol. Initially all SCADA protocol addresses will be assumed to exist on the legacy network. If a transaction to a remote address times out or there is no response the packet can be resent on the Aprisa SR+ network. If an address is detected as working on the Aprisa SR+ network, it is added to the address map for the Aprisa SR+ network. This allows you to progressively switch out legacy remote radios without any configuration of the MMS address map or host controller. The address map can also be manual defined as an option. When migration of all remotes is complete the legacy base station and the migration switch component of the MMS can be removed resulting in a standard Aprisa SR+ base station installation.

REDUNDANCY

The migration switch contains a fully redundant RF switch, operating as a part of the MMS. Any hardware failure in the migration switch (or base station) results in a switchover and the MMS will continue to operate switching traffic between the legacy and Aprisa SR+ networks. The MMS provides full protection to the base station site.

CONNECTION TO SCADA MASTER / HOST CONTROLLER

For best performance the existing serial connection to the host controller should be set to the maximum bit rate (115 kbit/s) or replaced by an Ethernet connection, if available, to maximize the performance of the network as remote upgrades progress. These higher speeds also work to reduce serialization delays in the legacy base station connection.

OPERATING TEMPERATURE

With the superior thermal design common across all Aprisa products the MMS operates across the full temperature range without de-rating or the need for fans.

POWER SUPPLY

The Aprisa SR+ MMS supports redundant power supply inputs. Power supply options to support both +12 / 24 VDC and -48 VDC supplies are available.

MANAGEMENT

Configuration and management of the Aprisa SR+ protected station (and MMS) is done via the 4RF SuperVisor web-based browser application. With its comprehensive, easy to use graphical user interface, SuperVisor enhances network configuration and set up, improves fault identification and isolation, and increases asset visibility.

4RF

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Version 2.1.0