

# P25CC Remote Link Application

## A compact, reliable, low maintenance P25 solution for remote sites

### At the Vanguard of P25 Technology

Auria is at the forefront in delivering robust APCO P25 solutions to emergency services and commercial users who require reliable coverage over large and remote geographical areas.

Typically, remotely located or regional analog repeater systems operate in a harsh, low density environment, where extremes of temperature are normal, spare equipment space is at a premium, and solar power is often used. Transmission links out of the site are limited to simple voice circuits.

Auria's P25CC Remote Link Application is a compact solution that can be "interfaced" to existing network infrastructure without the need to reconfigure the physical installation.

The P25CC Remote Link Application can provide reliable coverage across linked sites over a wide geographical area.

Secondary management facilities are provided, such as remote site monitoring and control, and remote monitoring of alarms can include, for example- short messages such as "door opening", that can be forwarded to local support staff and agency officers.

The P25CC Remote Link Application can also be connected to other P25 networks, including metropolitan trunked networks.

The P25CC Remote Link Application is a software based capability that resides on Auria's P25 Channel Controller. It can be used with existing base station and linking equipment. Alternatively, Auria can bundle this capability in combination with new base station transceivers and linking infrastructure.

Auria's solutions conform to the latest APCO P25 standards with proven systems deployed in the USA, Europe and the Asia-Pacific region.

### P25 Channel Controller

The P25 Channel Controller provides the following functionality:

- Layer 1 coding and decoding of P25 Common Air Interface
- Configurable forward error detection and correction modes
- Radio management functions (PTT, channel change, alarm reporting)
- Generation and detection of CTCSS and DCS signaling
- Auto detect and configuration functions for analog and P25 call management on the same radio channel
- Support for up to 4 radio channels from a single 1RU rack mount enclosure
- AC and DC power options

A single P25 Channel Controller can control up to four radio transceivers (repeater or links) at a remote or hub site. Local repeaters that are connected to the P25 Channel Controller can be configured for the following operation:

- Conventional P25 repeater support
- Analog repeater support with CTCSS or DCS signaling
- Auto detect P25 and analog operation (dual mode)

### "Remote Link" and "Remote Link - Analog Integration"

The P25CC Remote Link Application is provided in two configurations- "Remote Link" and "Remote Link - analog Integration". Existing or new network infrastructure can be used with either configuration.

#### Remote Link-

In this configuration, the basic standalone functionality of the P25CC is extended to provide the following additional facilities:

- Radio channels connected to the P25CC appear as an omni-bus link, i.e. all channels become linked, where-
- A P25 call received on one receiver (channel) is transmitted on all other

configured channels. A channel matrix within the P25 Channel Controller defines the routing paths for received signals

- Flexible contention management is provided and can be configured, where-
  - The first call in holds the link and repeater transmitters for the duration of the transmission
  - Link traffic overrides local repeater traffic
  - Local repeater traffic overrides link traffic
  - Error detection and correction can be selectively enabled over link paths

#### Remote Link - Analog Integration-

In this configuration all of the Remote Link capabilities are made available and the following capabilities are added:

- Analog calls received on a repeater receiver are repeated locally in analog form
- IMBE coded and framed in P25 format for transmission on other configured channels
- Configurable with CTCSS/DCS mapping to P25 NAC
- P25 (omni-bus) calls received at an analog designated transmitter are transcoded to PCM format to enable transmission in analog mode at that transmitter
- A receiver channel configured in dual mode can receive and process an analog or P25 transmission
- An additional transmitter can be added at a site to enable concurrent transmission of an analog or P25 signal subject to frequency (channel) allocation and antenna coupling considerations
- Cross band operation is enabled. This facility can be useful if a service is being migrated to another frequency band or when linking to another agency is required

## Network Example

The figure below depicts two Remote sites connected to a hub. Each site has a talk through repeater. Site 1 has an additional transmitter enabling the concurrent retransmission of the received analog call in both P25 and analog modes.

The following scenario is shown:

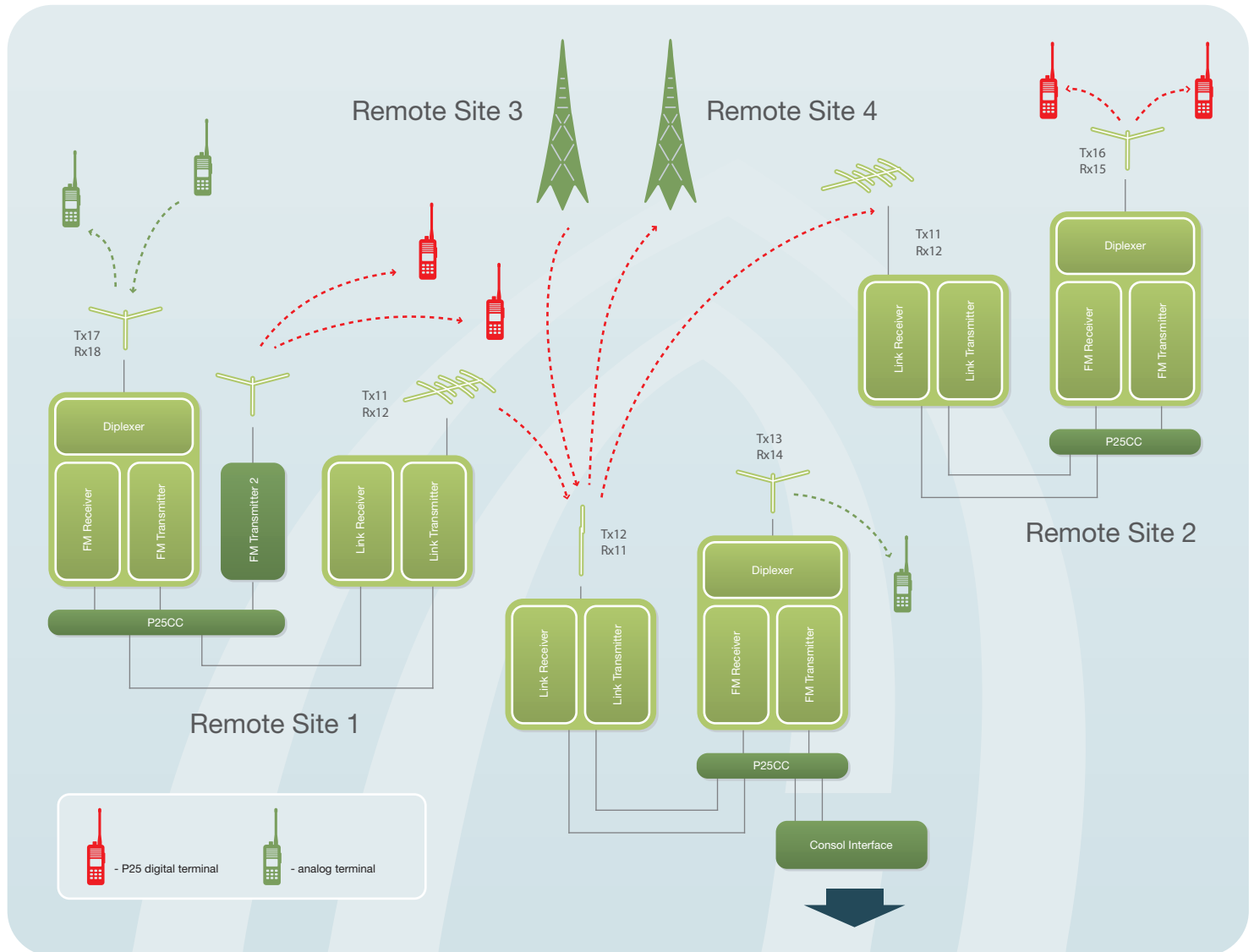
The analog terminal on the left in green is transmitting. The local repeater is retransmitting the analog signal to another analog terminal. The P25 Channel Controller is encoding the received analog signal in P25 format and

Error detection and correction is applied to P25 signals received off the Link and the local repeater receivers at each of the repeater transmitters before transmission to P25 terminals.

A description of the reverse path would show a P25 terminal establishing a call on site 2 and being retransmitted in analog and P25 format at site 1. The P25 originated call is retransmitted at the hub site in analog and presented to a console interface in analog form.

There is no practical restriction to the number of remote sites configured in this form. The four available channels within a single P25 Channel

- The upgrade path is supported by a selection of new base station transceiver options
- Analog and P25 terminal units are supported in a mixed user environment
- Flexible digital cross linking of repeaters is made available at a remote site
- Existing console based operations are supported
- Options are made available to connect to other P25 networks, including metropolitan trunked networks



transmitting this to another local transmitter for reception by P25 mobiles and also transmitting this P25 coded signal over the Link transmitter.

Under the control of the P25 Channel Controller at the hub, the P25 signal at the link receiver is transcoded to an analog signal for transmission on the local repeater. The same P25 Channel Controller also provides an analog signal to a console interface.

Remote Site 2 receives the P25 signal on the Link and retransmits this to local P25 terminal units.

Controller can be configured in any combination of analog, P25 digital, repeater mode, link mode or console interface mode.

### Key Attributes:

The combination of Auria's P25CC Remote Link Application and P25 Channel Controller provides a highly flexible solution whereby:

- P25 capability can be seamlessly integrated into existing or new network infrastructure

### More Information

We would welcome the opportunity to discuss your P25 requirements with you in detail, so contact us directly:

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