Model 427

Features

- Direct dispatcher line connection to MPT infrastructure
- Four audio and RS-232 data links support up to four line dispatcher connections per unit
- Standard MAP27 interface protocol driver with custom extensions
- Open protocol for third-party peripheral development
- Programmable monitoring points
- Real-time monitoring of dispatcher ID status
- Site status monitoring
- Site system control features
- Forty-eight programmable, individual dispatcher ID assignments for speech, status and data calls

Introduction

Providing a total system solution for MPT 1327 trunking entails much more than basic site controller equipment. In reality, trunking systems need to provide the capability of dedicated system access to special users who administer and maintain the system, as well as to dispatchers who need access to additional calling capability to manage radio subscriber fleets effectively. Zetron addresses this requirement with an innovative product and open approach to providing a system-level line interface.

The Model 427 Peripheral Equipment Interface is a portal for trunked radio command, control and communications via the connection of value-added peripherals. User's of Zetron MPT 1327 trunking systems often need to fulfill requirements for dispatch console capability – either single operator position, or in the case of larger utility or public safety applications – multiple operator positions.

The Model 427 offers an economical approach to providing direct system-level access to the trunking system for this purpose. In addition, technicians and administrators needing system maintenance and monitoring capabilities beyond that of typical dispatch operations are afforded this capability via the Model 427 using Zetron SiteWatch application software (provided with purchase).

Benefits

The Model 427 makes it possible to have a line-connected dispatcher. This, in addition to Zetron's IntegratorRD wireless (radio control station access) dispatch solution, allows flexibility for dispatch operations in Zetron MPT 1327 trunking systems. Providing system access via line, wireless or both, is dictated by operational requirements such as budget and topography (coverage area). Whether the need is for a dedicated or redundant (backup) solution, Zetron addresses both requirements.

In addition to making voice calls, dispatchers now have complete command and control over their Zetron MPT 1327 system and can perform many functions such as disabling users, reassigning channels, dynamic regrouping, monitoring conversations in-progress in the system and data calls. In providing capabilities beyond those accessible by radio subscribers, total system and fleet management is now possible from a single operator position based upon need and access.

Description

Each Model 427 is a slim 1U-high rack mounted unit that provides four interface ports - with each port consisting of an audio and data component. RJ-45 jacks provide 4-wire audio connection, along with DB-9 connectors for RS-232C serial data control. These support direct connection of peripheral equipment (typically line dispatch or network maintenance PC terminals) to Zetron's MPT 1327 trunking infrastructure.

At the site, the Model 427 interfaces directly to the trunking infrastructure 'stack' (Model 827, 844, and other Model 427s).

Embracing an open, non-proprietary approach to interconnection, Zetron designed this interface to be compliant with an open and published standard - MAP27 (Mobile Access Protocol for MPT 1327).

Protocol

MAP27 and ZETRON Extended Protocol — An Open Standard for Developers

MAP27 is a serial communications data protocol and an open standard. The Model 427 supports the Physical and Data Link Layer Interface as described under sections 3 and 4 of the MAP27 Version 1.5 for MPT 1327 equipment, including non-prescribed Data Calls. In addition, a special Zetron extended protocol set is incorporated in the Model 427 to allow operation as a multi-port device and to extend its status reporting and control capabilities. The Model 427 along with the extended protocol set provides a powerful command and control interface.

Zetron publishes both the basic and extended data protocol used by the Model 427 as part of its available Software Developers Kit (SDK), which is described in detail later. Thus, the Model 427 is a hardware platform by which third-party vendors can develop both hardware and software solutions to communicate with and enhance the Zetron trunking platform.

"Virtual" Radio Emulation

Most MPT 1327 transceivers have a MAP27 interface port on their rear panel. This allows a common data communications and control language to be used for such applications as remote radio control, text messaging, SCADA/telemetry, radio fleet calling and dispatch command & control.

Likewise, each port on a Model 427 connected to a line dispatch terminal becomes a "virtual radio" on the system. However, these "virtual radio" ports offer much more capability than any normal subscriber radio due to Zetron's extended protocol set.

The standard MAP27 mode allows peripherals of other manufacturers to directly connect to Zetron MPT 1327 trunking systems. An assigned audio/data port combination connecting to a Model 427 can emulate MAP27 radio functions. This means that group or single IDs can be assigned to each MAP27 interface. A Zetron extended command set is available through database programming in order to allow users of the Single ID mode access to enhanced system features.

System Architecture

The heart of Zetron MPT 1327 site infrastructure is a combined data and digitized PCM audio "highway" that all site components share for repeater bus control and audio routing. This effectively provides an internal voice and data switch, rather than requiring an external dedicated switching node. The Model 427 interfaces directly to the trunk stack (M827 controllers and M844 links, and other M427s) and physically connects to these units via this common bus.

Each Model 427 contains four 4-wire audio ports that can be programmed with or without E&M signaling. These ports are primarily used for incoming and outgoing speech calls, operate independently from one another, and appear to the system as enabled telco ports. Up to 12 total system ports are available, allowing multiple Model 427s to be used until port capacity is reached.

Extended Command & Control Capability

Monitoring Point and General ID Status Monitoring

For each Monitoring Point configured and enabled in a system, call status and call progress information flows to peripheral devices via the extended MAP27 data link. This allows consoles and other peripherals to have a global picture of all or specifically selected incoming and outgoing call information for any dispatcher.

System Control and Monitoring

System control messages allow a console or peripheral to directly control repeaters, query, enable or disable users, reassign Class of Service, change user priorities and manage call queues. System status messages allow a console or peripheral to directly query Model 827 sites for real-time Call Status, Radio Availability, System Alarm conditions and Call Queue Status information.

Model 427 Call Type Support

The Model 427 supports most call types specified in the MAP27 Equipment Version 1.5 specification as well as Status messages, Short and Extended data messages. In addition, All-Calls, inbound and outbound Voice Calls, Emergency Voice Calls, Diversion control and Dynamic Regrouping (MPT1343 Annex 6) are fully supported.

Specifications

PHYSICAL

Power:	10.5 to 16 volts DC, 12 watts
Temperature:	0 to 60° Celsius
Size:	483 mm W x 44.5 mm H x 263 mm D
Weight:	2.6 kg

AUDIO PORTS

Line Type:	4-wire or 4-wire E&M
From Telco:	24 dBm to 0 dBm
To Telco:	-20 dBm to 0 dBm
Signaling:	E&M leads
Connector:	RJ-45C

4-Wire E&M Private Circuit

Speech and Data:	Voice audio, DTMF
Signaling:	E&M
Incoming Call:	Detection of voltage on E-lead

MAP27 SERIAL DATA PORTS

Serial Data Protocol:	Supports the Physical and Data Link Layer Interface described under sections 3 and 4 of the MAP27 for MPT 1327 Equipment Version 1.5 Specification.
Data Port Speed:	Common data rates up to 19.2 kbps
Data Port Capacity:	System supports maximum of 12 ports per site

SYSTEM/SITE CAPACITY

Audio Port Interfaces:	12 per site
Radio Channels:	12 radio channels per site
Sites:	12 sites per system
Subscribers:	5,000 subscribers
Groups:	2,000 group identities
Fleets:	500 fleets per system maximum

ACCOUNTING SPECIFICATIONS

Record Types:	Registration, status, short data (SDM2), mobile to mobile, mobile to landline, landline to mobile, landline to diverted mobile, multisite mobile to mobile, multisite land to mobile, multisite mobile to group, and multisite land to group.
Capacity:	Minimum 3656 to a maximum of 7313 records stored internally. Actual record size depends on call type. Landline to mobile, mobile to landline and multisite calls require twice the storage of other call types.
Stored Information:	Called/Calling prefix and ident, start date/time, call duration, channel and line assigned, dialed number.
Filtering:	Programmable minimum call time to store for speech and interconnect. Storage of registration, status, SDM2s, call failures and informational multisite records can be set to on or off.

ADDITIONAL SPECIFICATIONS

Indicators:	Links 1-4, ALARM, BUS, Subscriber Bus Poll, Repeater Bus Sync, Link 1-4 Signaling
Backup Battery:	Retains data for over 8,000 hours when power is removed from unit.
Real Time Clock:	Synchronized by M827 bus master
Programming:	Remote programming via computer using M827BASE database program. Optionally, any Model 827 in the system can be used as a gateway to program the Model 427.

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The Power to Respond

See Zetron price list for option pricing.
Specifications subject to change without notice.

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