



FEATURES

- Allows interface over ethernet links
- Accepts page input from any TNPP source
- Supports up to 1000 destinations with TNPP routing and zoning capabilities
- Encodes POCSAG (512, 1200 and 2400 baud) and basic FLEX (1600)
- GPS synchronized simulcast with microsecond accuracy
- Trimble Standard Interface Protocol compatible
- Traditional two-level digital transmitter interface
- Multiple user-definable input/output ports
- Enhanced four-level FLEX (3200 and 6400 baud) for I20 transmitter interface available as an option

INTRODUCTION

The Zetron High Speed Simulcast Paging System uses timing information from the Global Positioning System (GPS) to synchronize the transmission of digital paging signals to very tight tolerances. This provides the microsecond timing accuracy necessary for high-speed simulcast paging with protocols such as POCSAG and FLEX®.

The system consists of the Model 600 Wireless Data Manager (Source Unit) and multiple (up to 1000) Model 620 Wireless Data Encoders (Destination Units).

Model 600 Wireless Data Manager

The Model 600 accepts TNPP input from up to three TNPP links, efficiently batches the pages with timing information from an attached GPS, and delivers the pages across a link to multiple Model 620 Wireless Data Encoders.

Model 620 Wireless Data Encoder

The Model 620 receives batches of paging data from the Model 600, and encodes the data for POCSAG or FLEX. At the precise time indicated by an attached GPS, the encoded message batch is sent to the transmitter, resulting in synchronous broadcast with other Model 620 controlled transmitters.

The link between the Source and Destination units may be any type (or combination) of link that can reliably transport data. Designed for non-proprietary transmitters, the system is ideal for cost effective build-out of new transmitter sites for public or private paging system operators.

Standard features include encoding for POCSAG (512, 1200 and 2400 baud) and basic FLEX (1600), support for up to 1000 destinations with TNPP routing and zoning capabilities, multi-frequency transmitter control, traditional two-level digital transmitter interface, and multiple user-definable input/output ports.

GPS AND SIMULCAST

Critical to simulcast paging is the requirement to synchronize the transmission of paging to very tight tolerances. Every transmitter that can be received by a particular pager must have its transmission exactly in phase with each other. Timing accuracy of within a few microseconds is necessary to assure reliable transmission of the FLEX protocol. The controller at the transmitter must compensate for delays introduced by different equipment, path distances, modems and other sources of delay. The High Speed Simulcast System does this by using the Global Positioning System (GPS).

GPS is well-known system used to provide accurate location information to users worldwide. Less well-known is its capability to provide extremely accurate timing information as well. By using GPS timing signals, the Destination Unit is able to synchronize the paging data with microsecond accuracy.

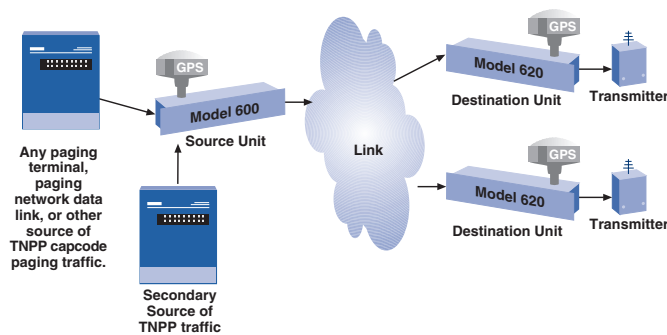
The Source Unit (SU) accepts page input from up to three TNPP links. TNPP is an established open protocol supported by major paging terminal manufacturers.

A TNPP interface means the Zetron Simulcast System can be used with virtually any existing paging system for maximum retention of investment.

The SU analyzes the pages in the TNPP stream and efficiently batches the pages with timing information so the Destination Units (DU) can encode and transmit the pages synchronized to their GPS inputs.

The DU knows exactly when to start and end each batch. Any TNPP capable data link can transmit the combined paging and timing information from the SU to the DU.

The timing information lets the DU know exactly when each batch of pages should be sent. The DU buffers the data as necessary until the time stamp exactly matches the GPS time. This synchronizes the paging data because the variance of GPS time from each site is on the order of one microsecond.



SPECIFICATIONS

PHYSICAL

Size:	1.75"H x 19"W x 6.76"D rack-mountable
Weight:	3 lbs.
Temperature Range:	0 to +60 degrees C, +32 to +140 degrees F
Humidity:	5 to 90% non-condensing
Power Input:	10.5 to 16 V _{DC} 5W maximum, optional 100-240VAC adapter

GENERAL

System Size:	1 M600 plus 1 to 1,000 M620s
Standard Formats:	POCSAG (512, 1200, 2400) FLEX (2 level 1600)
Optional Formats:	FLEX (4 level 1600 & 3200)
Page Input:	TNPP Capcode Pages
Data to M620s:	TNPP Command Packets
TNPP routing:	Configurable routing table
Simulcast Adjustment:	+10 seconds to - 10 seconds, in 1 microsecond increments
Frequencies:	16 selected with 4 output bits
Coverage Zones:	1 to 1,000
Morse Code ID:	Per M620 per frequency
Page Buffer on M600:	12 Megabytes RAM
Data Buffer on M620:	10 minutes maximum
Flash Storage	configuration data and unit software
User Interface	TTY & YMODEM UI (e.g.HyperTerminal)
Test Pages	Continuous periodic/short term via UI

SERVICE PORT

Usage:	User Interface and Logging Interface
Electrical:	RS-232 and Ethernet
Physical:	DE-9S (female) and RJ-45
Baud Rates:	9600 for RS-232, 115200 for Ethernet

TNPP INTERFACES

Usage transfer:	Page input to M600 and data to M620s, simplex or duplex operation, also TNPP routing
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Alternate Uses:	User Interface, Logging Interface
Electrical	RS-232 and RS-422
Physical RS-232:	DE-9P (male)
Physical RS-422:	DA-15P (male)
Physical Ethernet:	RJ-45
Ports on M600:	2 RS-232 and 2 RS-422, and 1 Ethernet
Ports on M620:	2 RS-232 and 1 RS-422, and 1 Ethernet
Baud Rates:	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

GPS INTERFACE (GPS Receiver/Antenna not included)

Usage:	GPS precision timing data input
Electrical:	RS-422 or RS-232 for time stamp data, RS-422 or TTL (with external adapter) or 1 PPS
Physical	DA-15S (female)
Daisy Chain	RS-422 of GPS between units
Compatibility	Trimble Standard Interface Protocol
TRANSMITTER INTERFACE (M620 only)	
Physical	DB-44S (female)
Standard PTT	Open drain FET output, external pull up to +24VDC ok, or TTL
Standard Digital Data:	Open drain FET output, or TTL, or RS-232
I2O Data:	RS-422: Dibit (2 bits); Baud Clock; and Tx On
PURC compatibility	If connect M33 to M620 output

ALARM I/O PORT (inputs not currently used)

Physical:	DB-25S (female)
Inputs:	TTL or contact closure (internal pull up to +5VDC through 47Kohm, or external pull up to 12VDC ok)
Outputs:	Active low (0V = alarm on), open drain sink up to 150mA (internal pull up to 12VDC through 47Kohm, or external pull up to +24VDC ok)

ETHERNET PORT

Physical:	RJ-45
Speed:	10BASE-T Half-Duplex

COMPLIANCE STANDARDS

US:	FCC Part 15 Class A.
European:	EMC Directive 89/336/EEC Emissions: EN 55022:1998 Immunity: EN 55024:1998

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