



## Dial Access Paging Terminals for Display and Voice Pagers

### FEATURES

#### Paging

- 1,500 subscriber capacity
- 280 seconds of pooled voice storage
- Supports all popular analog and digital paging formats including FLEX™
- Canned alphanumeric messages
- Repeat paging
- Flexible programming of multiple pager groups
- Priority paging with live breakthrough
- Talkback paging
- Subscriber call counts
- System logs record details of every page sent

#### Telco Interface

- Support for alpha modem plus voice and numeric message entry on every telephone interface
- Two telephone interfaces (expandable to four)
- Field configurable for a variety of telephone line types

#### Radio transmitter control

- Remote transmitter tone control
- 16 transmitter zone addresses
- Sequential paging for up to 4 Tx zones
- Transmits Morse code station ID

#### Miscellaneous

- System voice prompts
- Easy on-screen programming with PC
- Total operator control of system settings
- Programming via any dial up line
- Telephone line and radio channel traffic statistics
- Call counting/accumulation
- System alarm output

### OPTIONS

- Dual telephone interface card
- Dual dial click detector
- Dual MF (Multi Frequency) telco signaling decoder
- TNPP networking interfaces
- TAP Outdial interfaces
- Parallel printer port for page logging

### INTRODUCTION

The Model 640 DAPT XTRA is a dial-access paging terminal designed to provide advanced features for systems with moderate capacity requirements. The DAPT XTRA offers exceptional value by providing a powerful system in a compact package at an attractive price. What makes the DAPT XTRA so powerful is a wide range of standard features - features that are costly options with other paging terminals.

With the DAPT XTRA's power comes flexibility. The rich feature set means that the basic unit is suitable for almost any application. Specific configurations, such as telephone interface signaling and transmitter control parameters, are easily set in the field. Other functions automatically adapt to the requirements of the moment. For example, the telephone interface can handle voice, numeric, or alphanumeric message entry based upon which pager the user calls. Another example of this adaptability is access for system management: it can be connected either by modem through any dial-up line used for paging or by direct serial connection, depending on the method the system operator uses at the time.

## APPLICATIONS

### PCP and RCC Service Providers

The DAPT XTRA is well-suited for carriers who are providing services in small markets. System voice prompts give the system a professional sound to prospective customers. Call counts and traffic statistics allow the operator to monitor system usage. Remote transmitter control is provided for wide area coverage. For ventures with multiple service areas, the TNPP interface option allows the DAPT XTRA to network with paging terminals in other locations.

### Health Care and Public Safety

The standard feature set of the DAPT XTRA includes capabilities that are often required for health care and public safety applications. Priority and voice paging are essential for emergency response teams. System voice prompts eliminate caller confusion in high-pressure situations. Alphanumeric input is accomplished through both modem and direct serial connections to send detailed messages to key personnel. Risk management is facilitated by the system logs, which record the details of every page that is sent. Most nurse call systems can interface with one of the DAPT XTRA's serial ports for automatic paging.

### In-Plant: Industry, Government, Institutions

Meeting the many demands of various in-plant applications is easy with the DAPT XTRA. Each telephone interface can be configured for a different line type, so one system can be accessed from an internal PABX, a telco line, and a local operator at once. The talkback paging feature of the DAPT XTRA allows callers to converse with personnel who have mobile or portable radios. For additional security, the units are equipped with an alarm output contact closure in case a fault condition is detected within the terminal.

## PAGING CAPABILITIES

### Paging Formats

All the popular paging formats are supported by the DAPT XTRA. The terminal comes with 2-tone, 5/6-tone, FLEX, POCSAG, and Golay formats. A system operator can even program custom 2-tone formats by entering frequencies and timings. What this all adds up to is that the DAPT XTRA can support almost any pager that comes along, past, present, and future.

### Alphanumeric Paging

The DAPT XTRA has been designed to support a variety of alphanumeric input methods. Every telephone interface on the DAPT XTRA is equipped with a modem so that it can process calls from remote alphanumeric entry devices as well as voice and numeric traffic.

Alphanumeric messages can also be accepted from a number of different devices, including dedicated alphanumeric entry stations, personal computers

running alpha paging software, nurse call systems, and automated monitoring systems, connected both locally via serial cable and via modem.

The DAPT XTRA also supports operator entry of alphanumeric messages from a VDT or PC. Its user friendly interface displays the subscriber name, alerts the operator when a numeric-only pager is selected, and lets the operator edit the message if it exceeds the maximum length.

For cases when alphanumeric paging is desired but no entry device is available, the DAPT XTRA allows the caller to use the telephone's DTMF keypad to "speed dial" any of up to 100 canned alphanumeric messages programmed by the system operator. The caller can include more than one canned message in a page, and can even insert numbers among the alphanumeric messages selected. In addition, alphanumeric text can be spelled out using any DTMF telephone keypad.

### Voice Paging and Storage

Voice storage capability is essential for a number of applications. The DAPT XTRA has 280 seconds of pooled voice storage. The silence compression feature eliminates pauses in a caller's message to make optimum use of the storage space that is available. Pooled storage is the most efficient way to store voice messages because all telephone lines have access to the same memory resource, so that a call can always be processed if there is any space available in the system.

In addition to storing multiple voice pages, storage also allows the terminal to do repeat paging for extra insurance in noisy areas, and sequenced paging for multiple transmitter coverage zones.

### Priority Paging

Six levels of paging priority are supported, including "next out" and "breakthrough". These priorities can be assigned both on a per-pager and on a per-interface basis. This allows key pagers to be set so that they are always the next out regardless of current traffic, and local operators can break through with live voice pages in case of emergency. The interrupted page is stored and resent after the emergency page.

### Group Paging

Group paging is supported both for specific formats, such as two-tone group call, as well as for formats that do not inherently have group call capability. This feature supports 50 groups of 10 pagers each. Each group can mix dissimilar pager formats, and can even support both voice and display pagers in a single group. For maximum flexibility, a group can be a member of another group, and an individual pager can be in several groups at once.

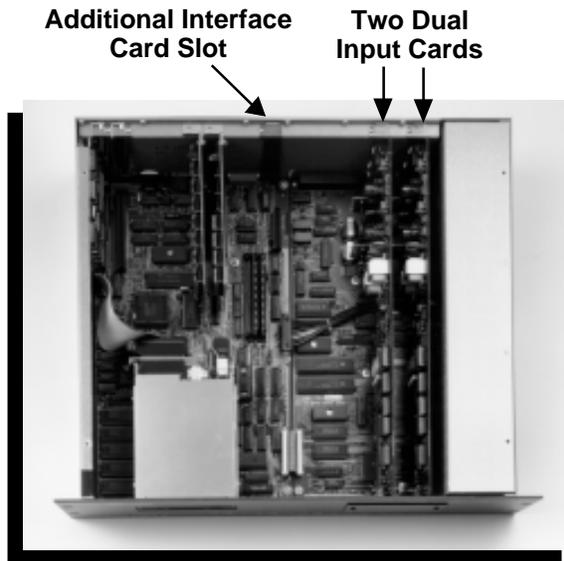
### Talkback Paging

Talkback paging allows two-way communication between telephone (land line) callers and mobile radio users. The DAPT XTRA supports half-duplex and full-duplex radio stations with carrier switching.

## INTERFACE CARDS

The DAPT XTRA comes with one Dual Input card that can be field-configured as either an RS-232 serial connection (typically to support TAP) or a telco line. A second Dual Input card can optionally be installed.

Another interface card slot can optionally contain any one of the following: (1) A TNPP card to support networked paging terminals. (2) A dedicated high-speed serial TAP Input. (3) A dial up TAP Output to another paging terminal's TAP input.



### Telephone interface

#### Telco line types

Direct Inward Dial (DID) and E&M input from a telco central office is most commonly used by wide area service providers. The caller dials a telephone number, and the last 2 to 7 digits of this number are sent to the terminal automatically by the telephone company, selecting the particular subscriber to be paged.

Other types of lines (end-to-end, loop start, or ground start) are answered with a beep tone and/or voice prompt. The caller then keys in the pager number using a touch-tone telephone. In-plant systems often use these line types from their PABX.

The Dual Input card handles telephone company DID lines (either immediate or wink start), end-to-end, and DTMF Overdial line. It also handles PBX lines (either loop start, E&M type I, ground start, or station). For applications that require E&M 4-wire audio lines, a different card can be supplied. Since these telephone interfaces (except 4-wire audio E&M) can be easily configured on-site, the DAPT XTRA prepares the system operator for future changes in the phone system.

With its internal voice and display page storage, the DAPT XTRA can process calls on all lines simultaneously. This reduces the number of busy signals confronting callers and increases the overall efficiency of the terminal.

#### Dial click decoder (option)

If the caller has a rotary (pulse-dial) telephone, the optional dial click decoder card is required. *Note: The viability of dial click decoding depends on the type of telco central offices serving each of the callers and the paging terminal. Consult Zetron for specific applications.*

#### Dual multifrequency decoder (option)

Most Telco trunks to a customer use Dual Tone Multi-Frequency (DTMF) signaling. However, in some instances, Multi-Frequency (MF) lines may be supplied by the phone company. This option supports MF for both trunks on a Dual card.

#### TAP paging (option)

Early in the development of paging terminals, a standard protocol for sending alphanumeric pages to a paging terminal was developed by Motorola and IXO called Telocator Alphanumeric Protocol (TAP).

TAP interfaces of 300 or 1200 baud are supported by the Dual Input card when it is configured for either serial or telco ports. The telco lines have alphanumeric messaging input modems which handle TAP when the DID number dialed by the caller is configured for TAP. In addition, a dedicated Dual Serial Card can be installed which supports 2 serial TAP interfaces up to 9600 baud.

The outdial TAP Interface module is intended for sending small to medium volumes of display pages from one terminal to another. It may be used to extend the coverage region for some users of an in-plant paging system, by calling up an external paging service with an "Alpha" port.

#### TNPP Networking (option)

The need to tie paging terminals together in a network is as old as the radio paging industry itself. The industry standard for networking paging terminals, TNPP, uses packets of data that are distributed among terminals in a network. A packet can contain the address of the destination paging terminal(s), the information about the page itself, error-checking information, and other elements necessary for communication. A paging terminal that receives a packet can tell which pages to transmit, which ones to pass along to other terminals in the network, and whether any information has become corrupted. A typical packet transfer takes place in less than a second. With duplex systems, communication between terminals ensures that any failure to deliver a packet is reported and corrected.

TNPP networking is made possible with either the Unidirectional TNPP Interface Card (for satellite downlink) or Bidirectional Dual TNPP Interface Card (for full-duplex, land-based networks). The Unidirectional TNPP Network Interface Card comes with 1 input port. The Bidirectional TNPP Network Interface Card comes standard with 2 ports. Please note that the outdial TAP and TNPP options are mutually exclusive.

## PAGING TRANSMITTER INTERFACE

### Direct transmitter control

For direct control of a paging transmitter, digital outputs from the DAPT XTRA can modulate the FSK (frequency shift keying) input of the paging transmitter and change its modulation between analog (AC) and digital (DC) modes.

### Remote transmitter control

The DAPT XTRA is capable of controlling remote transmitters by encoding the paging site address, analog/digital mode, and transmitter key-up information as audio tones (Motorola PURC® tone protocol) which can be sent over telephone lines or a radio link.

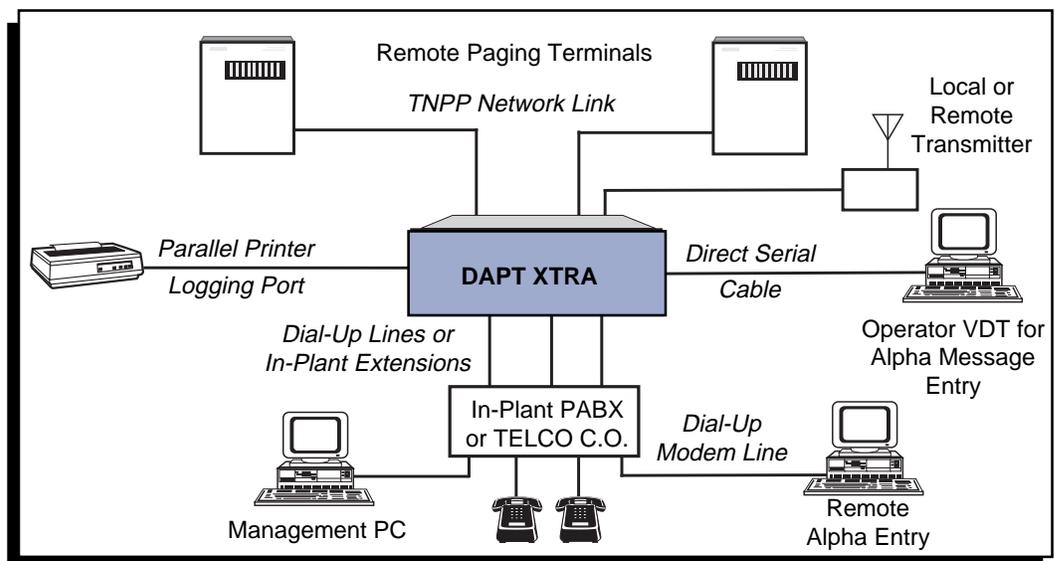
The Model 66 Transmitter Controller Panel can be used at the transmitter site for controlling transmitters that do not support the PURC protocol.

### Zone Addressing

The DAPT XTRA can individually select among 16 transmitter zones so that the system can send pages to specific zones. Each page sent can be repeated up to four times, each time with a different zone address. This allows wide area coverage with multiple transmitters without the expense of simulcasting equipment.

### Shared channel support

Some paging channels are shared with co-channel carriers or mobile subscribers. In these systems, it is necessary for the transmitter sites to notify the paging terminal when the channel is clear for transmission. The DAPT XTRA recognizes the COR/CAS signal (from a receiver monitoring the frequency) sent back to the terminal. The paging terminal stores and sends pages destined for that zone once the "busy signal" is cleared.



## OTHER FEATURES

### System Voice Prompts

The System Voice Prompts use a factory or operator recorded human voice to guide callers through the paging process on the DAPT XTRA. The prompts tell callers when to override a pager number, whether to speak a voice message or to enter a telephone number, and when an invalid number has been reached. The system operator can change any and all of the prompts simply by rerecording them over the telephone.

### System Management

In the areas of programming and data retrieval, the DAPT XTRA provides an effective combination of power and ease of use. The terminal can be programmed with a PC or video display terminal that accesses the terminal either through a direct serial connection, or via modem through any of the phone lines used for paging. Because the system can be accessed via phone line, factory support technicians can easily call the system to resolve any issues that may arise. The on-screen menus are kept simple, so

any clerical person can be quickly trained in basic operations such as adding or deleting pagers. For fine tuning system operation, software replaces confusing DIP-switch settings and cryptic file editing with option menus.

A wealth of information is available to help monitor system activity. Subscriber call counts can be sorted and displayed according to frequency of use so that the system operator can spot pagers that are over used or under used. Traffic statistics report the levels of trunk activity and radio channel loading, alerting the system operator to potential degradation of service levels before they become problems for the users. A PC can be used to retrieve system logs. The DAPT XTRA is also equipped with a system alarm output so that faults, such as a power failure or system reboot, can be signaled externally.

### Parallel Printer Port (option)

The printer port will allow the DAPT XTRA to print a log of all pages processed by the terminal.

## ZETRON SUPPORT

Because providing the best customer support possible is a top priority Zetron, extra efforts ensure that system operators have the resources available to properly manage and maintain their DAPT XTRA. This helps to prevent problems, and minimizes down time if a problem occurs. Emergency support is available around the clock, so response to critical problems is never more than a few minutes away. A Spare Boards Kit is offered to make replacing damaged boards a quick and easy process.

## RELATED ZETRON PRODUCTS (optional)

Many Zetron products work in concert with the paging terminals. Integration of Zetron products can benefit the system operator in three ways: by making system design simpler with applications expertise; by making implementation smoother; and by making support easier through use of a single manufacturer.

### Model 55B Page Buffer

The Model 55B stores pages received from a terminal for later transmission. It can monitor a COR input at the transmitter site to prevent transmission of pages when the frequency is busy.

### Model 55D Digital Repeater

The Model 55D extends paging range for POCSAG digital pages when it is connected to a receiver and transmitter tuned to the paging frequency. The Model 55D uses the paging channel itself as a link to the remote site, eliminating the need for costly link equipment at the site and a second link frequency.

### Model 61 Network Access Paging Encoder

The Model 61 receives TNPP data via an RS-232 port from a satellite downlink, wireline, or radio link, encodes pages into POCSAG or Golay format, and batches them for transmission. Its internal buffer and COR input makes it ideal for remote sites that need to monitor for co-channel activity before paging.

### Model 62 Simulcast Delay Unit

The Model 62 provides a low cost, precise, adjustable analog delay for simulcast configurations. It assures the audio modulation is identical for each transmitter by delaying the audio signal to compensate for different link propagation paths.

### Model 66 Transmitter Control Panel

The Model 66 interfaces with most transmitters on the market and accepts remote control tone signaling from the terminal. It can be equipped with a Transmitter Address Decoder option for multiple zone addressing, and a Simulcast Delay option.

The Model 66 is also recommended for in-plant applications where a single transmitter is located more than 30 feet from the terminal. The Model 66 provides electrical isolation and reduces installation costs because only a two-wire interface is needed between the terminal and the transmitter location.

### Model 68 Transmitter System Controller

The Model 68 interfaces directly with the radio channel output of a terminal to steer transmitter control signals to up to 16 separate interfaces. This allows a combination of RF, wireline, and microwave links to be controlled from one radio station card output.

### Alarm Monitoring Systems

Zetron's line of alarm monitoring systems (Model 1512, 1514, 1550 and 7030) can initiate display and voice pages to a terminal whenever an alarm condition is met.

### Model 1515 VeriPage

The Model 1515 continually monitors a paging system and verifies accurate operation of the terminal. If any VeriPage pages are initiated, but not received, voice messages and/or pages can be sent to another phone number to alert operators of the malfunction.

### Alphanumeric Page Software

The following programs send alphanumeric pages to a paging terminal. Each can be connected to the paging terminal via direct RS-232 connection or via modem.

**ZAPP!** software is designed for use by multiple numbers of PC operators entering messages.

**Epage** adds paging capabilities to a network server by converting standard Email into alphanumeric pages and sending them to a paging terminal.

## SPECIFICATIONS

### GENERAL

Call Capacity	1,500 subscribers
Signaling Formats	2-tone Motorola, GE, Reach (plus custom tones and timing); 5/6-tone; FLEX 1600 baud; POCSAG 512, 1200, and 2400 baud, plus voice; Golay

### VOICE CAPABILITIES

Pooled voice storage	280 seconds
No. of simultaneous voice channels	5
Silence compression	Programmable for 65,000 levels of sensitivity and 255 levels of time threshold

### ALPHANUMERIC PAGING

Maximum characters	500
Protocols	TAP, manual VDT operator support

### Modem Input

Number of interfaces	One modem per telephone interface (telephone interface can handle modem and tone/numeric traffic on a per-call basis)
Modem type	Bell 103/212, Bell 212, CCITT v.21/v.22
Baud rates	300, 1200

### Direct Serial Input

Dual Input card	Two interfaces (each Dual Input is field-configurable for either serial or phone line; configuring for a serial port disables phone line) - 300, 1200 baud
-----------------	--

Dual Serial port card	Two interfaces - 300, 1200, 2400, 4800, or 9600 baud
-----------------------	--

Signals supported	TX, RX, GND
Connector	Male DB 9-pin

### Canned Alpha

Messages	100 field-programmable messages of 30 characters each, caller-initiated by DTMF telephone input
----------	---

### Direct Serial Output (TAP Outdial Option)

Number of Interfaces	1
Baud Rates	300, 1200, 2400, 4800, or 9600 baud
Signals supported	TX, RX, GND
Connector	Male DB 9-pin

### TELEPHONE INTERFACES

Number of interfaces	2, expandable to 4
Line types (field-configurable)	End-to-End; DID (immediate or wink start); PABX (ground or loop start); PABX E&M tie trunk type I; direct-connect local DTMF telephone
Input signaling	Pulse or DTMF
Options	Rotary dial click detector MF Type 2A decoder
Line coupling	600-ohm transformer Adjustable balance duplex hybrid
Connector	Male RJ21

### TNPP INTERFACE (Option)

# direct connections	2 (bidirectional), 1 (unidirectional)
# addressable nodes	32 inbound, 32 outbound
Network media	Programmable for dedicated wireline, packet radio, wireline packet network, satellite downlink (simplex receive)
Baud rates	300, 1200, 2400, 4800, 9600

Interface type	Serial RS-232, (TX, RX, GND)
Connectors	Male DB 9-pin

### TRANSMITTER INTERFACE

Transmit audio	Balanced 600 ohm transformer, 250 Hz to 3500 Hz +/- 1 dB, selectable flat tone or -6dB per octave de-emphasis
Receive audio	Balanced 600 ohm transformer, adjustable level -20 dBm to +10 dBm
Format encoding	Analog frequency accuracy +/- 0.02%, analog tone distortion < 0.2%, digital data stability +/- 2 ppm
Digital data	RS-232 compatible Field-programmable polarity and timing
CAS/COR Input	Selectable polarity TTL or contact closure
Transmitter request	RS-232
Transmitter busy	Selectable polarity TTL or contact closure
Station ID	Field-programmable, Morse code at 1200 Hz and 20 wpm
Zone address select	4 binary outputs (for 16 zones), open collector, 40mA sink, up to 4 sequenced zones per page
Tone remote control	Motorola PURC® (analog-type), transmitter address knockdown tones
Talkback paging	2-tone and 5/6-tone encoding Half- and full-duplex base stations

### SYSTEM MANAGEMENT

Modem access	1200 baud, accessible through any dial-up telephone interface
Direct serial access	300, 1200, 2400, 4800, 9600 baud male DB 9-pin connector
Programmable pager groups	50 groups of 10 members each, groups can be members of other groups
System log paging records	Date, time, input port, pager ID, type of page length, contents of numeric page
Traffic statistics	Trunk busy time on hourly basis, page queuing wait time on hourly basis, maximum and average values, 7-day history

### PARALLEL PRINTER PORT (Option)

Connectors	Female DB 25-pin
------------	------------------

### PHYSICAL

Dimensions	5.25"H x 17"W x 15.5"D with 19" rackmount ears
Weight	16 lb.
Power Supply	110/240 v AC +/- 15%, 50-60 Hz, 80 w

### ENVIRONMENTAL

Operating temp.	0 - 50 °C
Humidity	max. 90% non-condensing

PURC® is a registered trademark of Motorola, Inc.  
FLEX™ is a trademark of Motorola, Inc.

Zetron, Inc. PO Box 97004, Redmond WA 98073-9704 USA



Ph: (425) 820-6363 Fax: (425) 820-7031 Email: [zetron@zetron.com](mailto:zetron@zetron.com) Web: <http://www.zetron.com>

European Office: Zetron, Inc. 27-29 Campbell Court, Bramley, TADLEY, Basingstoke, RG26 5EG, UK Phone: +44 1256 880663 Fax: +44 1256 880491  
See Zetron price list for option pricing. Specifications subject to change without notice. Literature number: 005-0421E June 2000