

## Dial Access Paging Terminal



### FEATURES

- Available in two configurations:
  - 100-call with two-tone paging
  - 1000-call with two-tone, 5/6-tone, POCSAG, 512-baud numeric, Golay, and talk-back paging
- Field-programmed paging code blocks
- Remote programming by Touch-Tone phone
- 100% number validation and substitution
- Selection of pager voice limit
- Nonvolatile memory for user settings
- Field-selectable telco interface:
  - End-to-end
  - DID (immediate dial or wink start)
  - PBX (loop trunk, E&M type I, ground start, or station)
- Programmable Morse code station ID
- Input to inhibit paging if radio channel in use
- Talk-back paging for two-way radios (requires interfacing to full-duplex radio)
- Mobile-to-landline, mobile-to-mobile calling
- Detachable radio and telephone connectors
- Front panel display of pager code

### INTRODUCTION

The Model 32 DAPT-Jr is a dial access paging terminal suitable for automated paging systems in factories and hospitals or for small RCC/PCP service. With the capability to encode the signaling formats required by most pagers and mobiles, this terminal allows for easy automation of existing manual paging systems. The DAPT-Jr is ideal for small systems of 50 to 250 pagers that can be serviced by one telephone input. (Other models are available for larger systems or systems with special requirements.) Two sizes are available: 100-call and 1000-call.

### TELEPHONE INTERFACE

The Model 32 is compatible with nearly any telephone system - central office or PBX. Selector level (DID) input is most commonly used in RCC/PCP service from a telco central office. The caller dials a normal telephone number. The last 2, 3, or 4 digits of this number sent to the Model 32 automatically by the telephone company select the particular user to be paged. A single DID line can handle an entire block of 100 or 1000 users. Callers using DID service hear ringing tones generated by the Model 32 while the pager is alerted.

For in-plant PBX applications, the Model 32 can connect either to a trunk line or a station extension. In a trunk connection (loop start, ground start, or E&M tie-line), callers dial a short one or two-digit trunk access code followed by the user's pager number. Trunk connections are preferred on PBX's for easy access to the paging system.

End-to-end signaling uses a central office subscriber line or a PBX station extension. The Model 32 answers a caller with a beep tone. The caller keys in the user number using a Touch-Tone telephone. A user number is two digits (00-99) in the 100-call unit and three digits (000-999) in the 1000-call unit.

## RADIO INTERFACE

Analog capable transmitters are able to handle conventional tone and voice signaling such as 2-Tone, 5/6-Tone, 2805 Hz, MTS, and DTMF. Digital display pagers such as NEC D2/D3, POCSAG 512-baud numeric (CCIR RPC #1), and Golay Sequential Code (GSC) type pagers require true direct-FM FSK digital transmitters. Even though some transmitters are designed for DCS (digitally coded squelch), they may not be able to handle the unbalanced modulation of digital pager data. Be sure to ask the transmitter manufacturer if the radio is direct FM frequency modulated (not phase modulated).

Functions of the Model 32 interface signals include: selecting the radio modulation mode, carrying audio tones and voice, handling digital paging data, providing push-to-talk keying, inhibiting paging when the radio is in use, and activating audio switching from two-way mobiles.

The Model 32 DAPT-Jr terminal can withstand the rigorous environment of radio sites. Most installers co-locate the paging terminal with the radio equipment and run the telephone line to the radio site. In situations where this is not practical, the Model 32 can operate a remote transmitter through a control link such as RF, microwave, or telephone. Control equipment at each end of the link combines the audio, keying, modulation mode, and digital data into a composite audio signal for transmission through the link.

## PROGRAMMING

Nonvolatile memory containing the system and subscriber programming settings has a built-in battery that preserves memory during more than 4 years of power loss. If needed, the memory chip can be moved to another Model 32 for quick change-over to a backup unit.

Paging format tone plans, voice limits, pager substitutions, pager invalidation, digital function codes, and pager capcode ranges are programmed in blocks of 100 user numbers. All user settings may be changed by accessing the terminal from any Touch-Tone telephone and keying a special access code.

Programmable voice limits give individual users a voice message time that best suits their needs. Four different times can be field-programmed; each user is assigned one of the four times.

A Model 32 can support a mixture of digital display pagers and tone-and-voice pagers. Message limits are set automatically by the type of pager programmed into the user blocks.

Pager substitution lets every user keep his or her same pager number even when pagers are exchanged for service. Pager invalidation prevents access to a pager if the person is unavailable or has not paid for service. When an invalidated number is accessed, the caller hears a distinct error tone.

The Model 32 can be field-programmed to monitor activity on its radio channel from mobile users. Following such activity, the Model 32 will produce a Morse code station ID if it has not made an ID in the past 15 or 30 minutes. This feature eliminates the need for extra ID equipment on mobile channels.

## PROGRAMMING COMMANDS

### General

- Initialize program memory
- Initialize user settings
- (In)validate user
- Display invalidated users
- Substitute user
- Clear substitutions
- Display substitutions
- Set voice limit (4 values)
- Assign voice limit to user
- Set end-end answer delay
- Activate calibration modes
- Set security access code
- Set programming access code
- Set Morse code ID
- On/off mobile channel auto ID
- On/off unattended auto-page
- Set telephone interface

### User Blocks

- Select block to program
- Initialize block of users
- (In)validate block of users
- Assign voice limit to block
- Assign paging format to block
- Set capcode range
- Set function code
- Set tone groups and timing
- Set group call
- Turn off block

### Talk-Back Paging

- Set user for 1-way/2-way
- Set block for 1-way/2-way
- Call time limit (0-990 sec)
- Mobile activity (0-99 sec)
- Warning time (0-990 sec)
- Mobile COR hold (0-9.9 sec)
- Mobile originate on/off
- Mobile security code on/off
- Toll restrict 1-/0-/none
- Autodial telephone number

BEEP PROMPTS	
Prompt Tones	Meaning to Callers
Single beep	Ready for pager number or voice message
Double beep	Talk-back time limit warning
Triple beep	Programming settings failure
Constant beep	DAPT-Jr hardware failure
Chirp	Ready for programming command/ Ready for display message
Ringling	Page in process
Uneven ringling	Radio channel busy
Busy tones	Invalid user number, error, or paging complete

## TALK-BACK PAGING

Talk-back paging allows two-way communication between telephone (landline) callers and mobile radio users. Features include landline-to-mobile, mobile-to-landline, mobile-to-mobile, and mobile-to-pager calling. Talk-back paging is a standard feature of the 1000-call terminal. To use the talk-back paging, a duplex radio station which provides COR/CAS signals is required.

For landline-to-mobile calling, the normal one-way paging message is sent to the mobile followed by ringing tones over the radio channel. The mobile answers the call by pressing push-to-talk (can also be programmed to require a "\*" and a 3-digit security code). The two-way conversation proceeds until the phone caller hangs up, someone keys "#", the mobile is inactive for the mobile activity time, or the two-way time limit expires. The mobile can interrupt the caller at any time by keying his/her radio.

Mobiles equipped with DTMF keypads can make mobile-to-landline calls and signal pagers or other mobiles when the mobile origination mode is enabled (field-programmable). Toll restriction can prevent mobiles from calling telephone numbers prefixed by 1- or 0-. Even mobiles without DTMF keypads can place a telephone call; keying the PTT twice quickly causes the Model 32 to dial a preprogrammed telephone number automatically.

## INSTALLATION

The Model 32 DAPT-Jr is quite small and therefore is usually placed on a shelf near the radio paging transmitter. Connections to the telephone system are via RJ-11 modular connectors. Detachable radio connectors with screw terminal strips adapt to any type of cabling system. You can also depend upon excellent technical support from Zetron applications personnel.

The Model 32 has been certified to meet the requirements for FCC part 15 and part 68.

## OTHER DOCUMENTS OF INTEREST

### Application Notes:

- Understanding the M32 Telephone Interface
- Understanding the Two-Tone Coding System
- Simplex/Duplex Operation

### Related Product Sheets:

- DeadBolt Lightning Arrestor
- Model 64 DAPT-Plus
- Model 640 DAPT-XTRA
- Model 640A DAPT-Alpha
- 2000 Series Paging Terminals

## SPECIFICATIONS

### GENERAL SPECIFICATIONS

Call Capacity	100 or 1000 users
Signaling Formats	2-Tone Motorola, G.E., Reach 5/6-Tone EIA, ZVEI, CCIR, CCITT HSC display and voice POCSAG (NEC D4) 512-baud numeric digital display Golay digital display and voice
Morse Code ID	1024Hz at 20 words/minute Field programmable 15- or 30-minute intervals 0 to 8 characters long
Power Supply	120/240V AC +/- 15% or 12V DC
Operating Temperature	0 to 65 degrees Celsius
Size	2.25"H x 8"W x 10.5"D
Weight	5 lb.

### SIGNALING SPECIFICATIONS

Frequency Range	200 Hz to 3500 Hz
Amplitude Stability	+/- 1.0dB maximum
Tone Frequency Accuracy	+/- 0.1%
Tone Frequency Stability	+/- 0.005%

### TELEPHONE INTERFACE

Type (field-selectable)	End-to-end DID immediate dial DID wink start PBX ground start PBX loop start trunk PBX E&M tie-trunk Type I Local Touch-Tone telephone
Connector	RJ11-C modular
Answer Delay	Programmable (0 to 7 rings)
Forced Disconnect	8-second time-out on end-to-end PBX may require trunk access
Protection	High voltage varistors
FCC Registration	Part 15, Part 68 Registration #EYB5Q5-71748-OT-R

### TRANSMITTER INTERFACE

Audio Output	Balanced 600-ohm, 0.2 to 3V pk-pk
Control Relays	1 Amp rating at 26V AC PTT DPDT contacts
Digital Data	Unipolar 0 to 7V, adjustable Programmable polarity
Digital Mode	5V TTL logic Polarity jumper selectable
CAS/COR input	Voltage level or contact closure 0.5V threshold Polarity jumper selectable
Connector	Detachable screw terminal strip(s)

### RECEIVER INTERFACE

Base Station	Half-Duplex
Audio Switching	Mobile carrier control
Receive Audio Input	Unbalanced Level 0.2V to 20V pk-pk, adjustable
Two-Way	Landline-to-pager or -mobile Mobile-to-landline, pager, or mobile Programmable enable per user Origination enable/disable Connect on key-up Connect on "*" + 3-digit code Disconnect code "#" Programmable limit (0-990 sec) Programmable activity (0-90 sec) Programmable warning time
Call Placement	DTMF to 10 pps conversion DTMF direct dial through Toll restrict 1- or 0- enable/disable Emergency dial with 2 PTT clicks

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