ZETRON®

MODEL 280

Digital Tone Remote

INTRODUCTION

The Model 280 Digital Tone Remote represents the new standard in tone remotes. It contains all the unique features and audio performance required to handle critical communications in the public safety and utility market segments. The Model 280 is designed to provide the highest quality audio and most dependable operation to fully support the rigorous demands of emergency, multi-operator applications.

The Model 280 is programmable to customize the needs of any dispatch center. It is EIA-compatible and will interface seamlessly to the most popular brands of base stations and repeaters such as those from Motorola, Ericsson, and E.F. Johnson. It supports both two-wire simplex and four-wire duplex operation.

FEATURES

- **Controls up to 8 frequencies (F1-F8)**
- **Parallel-status feature shows the current status of the base station, even in multi-remote applications. Includes LOTL**
- **InstanTalk™ circuit allows operator to speak immediately, even while the function tones are being sent. Parallel function tones are muted**
- **Text aliases may be programmed into the liquid-crystal display to label frequencies and for page-by-name dispatching**
- **Programmable via PC to assign key functions, text strings, tone frequencies and durations**
- **VU meter and 12/24-hour clock**
- **Automatic audio leveling, 600/6000-ohm transformer-coupled 2- or 4-wire interface**
- **Four-wire interface for full-duplex operation**

OPTIONS

- **Paging encoder built-in for Motorola and GE two-tone sequential (100- and 1000-call), 5-tone, pulsed tone, DTMF, and alert tones**
- **120 VAC wall transformer power supply**
- **Programming cable, adapter, and PC software**

PARALLEL STATUS INDICATION

The Model 280 Digital Tone Remote always displays the current status of the base station. This can be crucial for public safety dispatchers who need to know the exact configuration of the base station without guesswork.

Most tone remotes only display the last command sent by that particular remote. This creates confusion in multi-operator applications where several remotes control the same base station. With the Model 280, however, each remote is updated when any remote in the system sends a command to the base station. A Model 280 will show the latest base station frequency as well as other parameters such as intercom and privacy.

DIGITAL AUDIO

Digital voice processing is a major innovation in the performance of tone remote controllers. It not only provides the cleanest and sharpest audio, but also makes the remote easier to use.

An operator can begin speaking immediately upon pressing the transmit button. With other

remotes, it's necessary to wait first for the function tones to be sent; otherwise, the initial syllables are clipped. The InstanTalk™ circuit is an innovative, momentary digital delay that supports critical communications by always allowing the dispatcher to speak instantly.

The capability to speak immediately makes the Model 280 ideal for dispatchers who are accustomed to using DC remotes but who need to make the transition to tone remotes.

Intelligent, Automatic Audio Leveling

Most remote-controlled radio systems require control from multiple points. The various audio levels are thus often quite different, depending upon their point of origin. Mobile radios, parallel remotes, and distant remotes may all sound different. The Model 280 addresses these issues through the use of high-quality, digital audio processing similar to that used in CD players. Even if a given audio level fluctuates on a daily basis, the Model 280 detects the change and compensates for it.

Reliable Audio Quality

Other tone remotes use analog filters and tone generators that require precise adjustment and ongoing maintenance. The designs degrade with time and temperature, eventually becoming unreliable and offering poor audio quality. The Model 280, on the other hand, is crystal-controlled for stable operation over the specified temperature range. The audio quality does not suffer with age. The Model 280 even performs a self-test during power-up to verify proper operation.

Paging Encoder Option

The Model 280 may optionally be equipped with a versatile, built-in, paging encoder. This provides an easy method of selecting specific field radios and pagers for receiving alerts and voice pages.

One of the most unique features of the encoder is a page-by-name database. As soon as a pager code is entered, the name of the person assigned to that pager appears on the display to verify the selection. If the operator doesn't know the pager code to begin with, he or she can quickly scroll through the whole list of names on the display until the right choice is found. The encoder is ergonomic and easy-to-use even during emergency situations.

To further support emergency applications, up to 10 fixed stacks may be pre-programmed. Like a telephone speed-dial number, a stack is a long paging sequence (up to 10 entire pager codes) that can be initiated with a minimum of keystrokes.

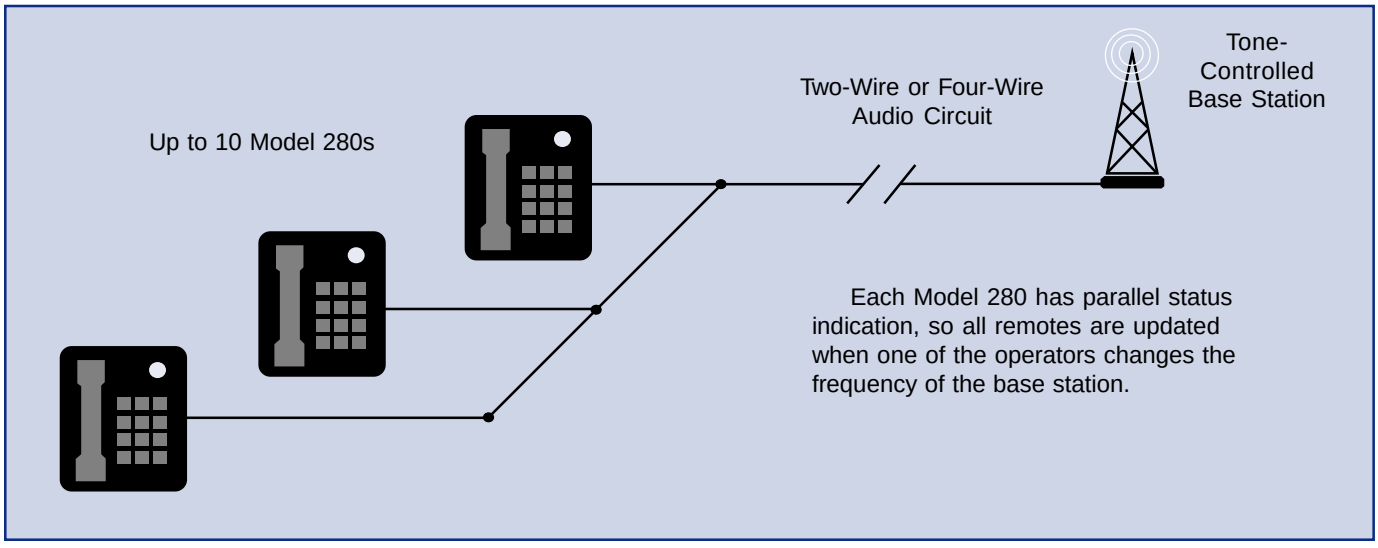
The encoder provides Motorola and GE two-tone sequential (100- and 1000-call), 5-tone, pulsed tone, and DTMF (all 16 tone pairs) signaling. Since it is built-in to the remote, it saves desk space and eliminates extra wiring in the dispatch area.

Operator Interface

An operator has two ways to transmit. If desired, the operator can simply press TRANSMIT and begin speaking. A built-in electret microphone picks up the speech and automatic level-control maintains proper gain. A built-in speaker allows the operator to listen to the receive audio.

For more private conversations, the operator can use the handset, which defeats the main speaker and built-in microphone. A press-bar on the handset initiates TRANSMIT with a minimum of effort.

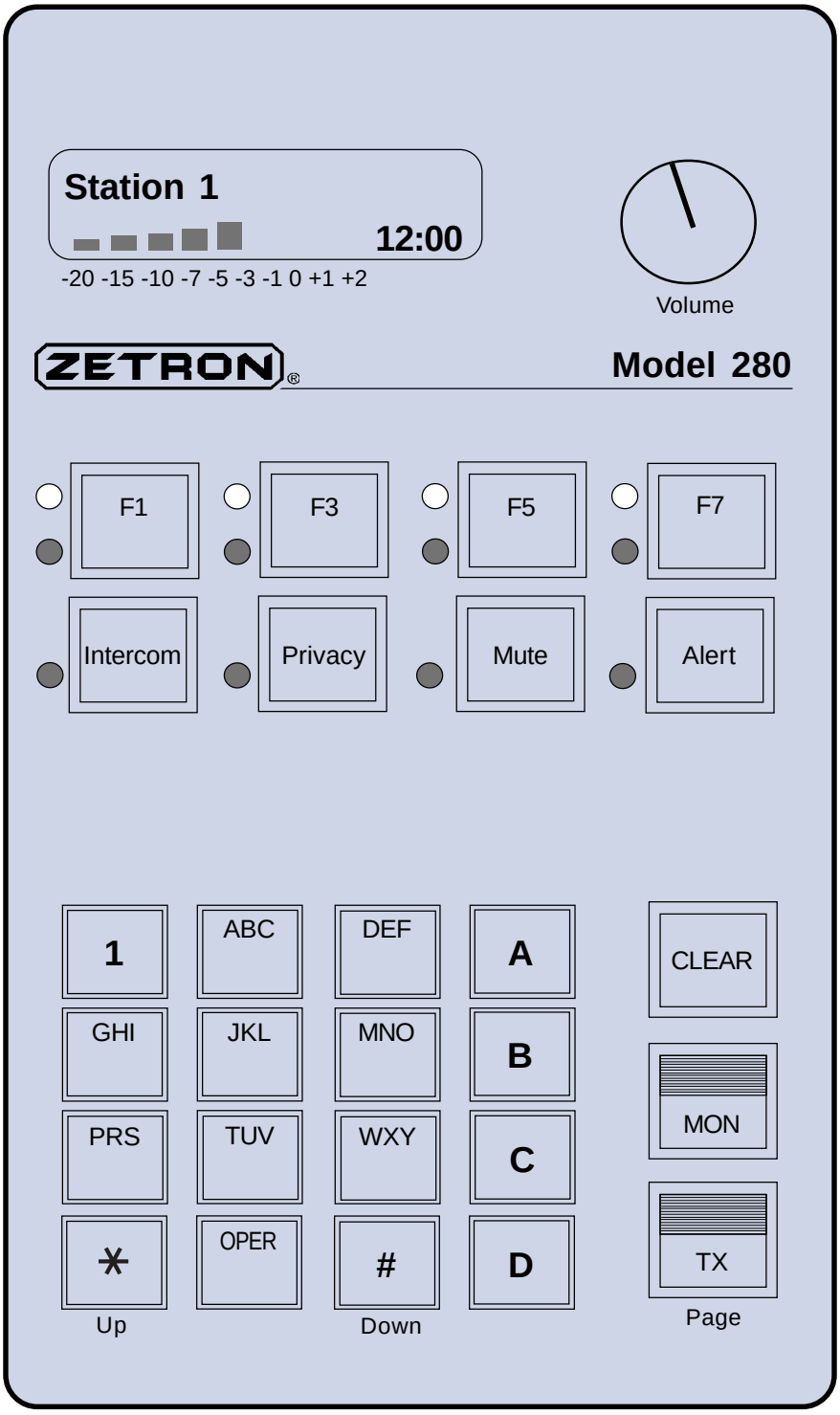
A connection is also provided for an external desk microphone or headset/footswitch.



LIQUID CRYSTAL DISPLAY

A high-quality LCD provides the utmost in ease-of-use. For quicker and more secure frequency selection, each frequency can be displayed with an accompanying text alias. For page-by-name purposes, text aliases can be assigned to individual pager codes.

To provide a visual indication that the system is operating at adequate volume levels, a **VU meter** is included on the display for both receive and transmit levels. For further convenience, a battery-backed **12- or 24-hour clock** is included.



PROGRAMMABLE FUNCTIONS

Each Model 280 can be customized to fit the exact needs of the end user. The installer simply plugs in a PC and selects which functions are to be assigned to the keys. Once the installer has programmed a remote, the configuration can be cloned and quickly uploaded into parallel remotes. The assignable functions include:

- Single frequency select (F1-F8)
- Double frequency select (F1/F2)
- Coded/Clear
- Intercom
- Privacy
- Repeat on/off
- Rx2 mute on/off
- PL1
- PL2
- PL3
- PL4
- Mute
- Monitor
- Wild I
- Wild II
- Supervisor takeover
- 1-kHz alert
- 5-beep alert
- High/low alert
- Siren alert
- Fast siren alert
- Transmit

Since the programming is done with software, there is no need to move jumpers or make tedious adjustments. Adding capability is a snap since the unit doesn't have to be opened to make operational changes. Adding frequencies or pagers is as simple as making a few keystrokes on a PC, so no messy hardware changes are required.

PRIVACY MODE & SUPERVISORY CONTROL

A privacy feature may be implemented during multi-remote applications. This allows an operator to silence and lock out other, parallel Model 280s. The other operators will not be able to initiate any functions until the privacy mode is released.

Outputs are provided for supervisory takeover control. In an emergency situation a supervisory operator can cut off other remotes to seize immediate control of the system.

SPECIFICATIONS

Power	10.5-16 VAC or DC, 650mA maximum, 300mA nominal. Optional wall transformer
DC Standby	Connection for standby power, 11-16 VDC, 50mA maximum
Connections	Power supply, standby power, line interface (2- or 4-wire), PTT open drain output, supervisor open drain output, external PTT input, external audio input, external audio output, ground. Screw terminal connectors
Temperature	0-60° Celsius. 95% relative humidity @ +50°C (non-condensing)
Size/Weight	8.3"W x 4.4"H x 9.5"D, 3 lb.
Adjustments	Line transmit level trim. 2-line by 16-character LCD
Display	indicates station status, time of day, transmit and receive VU, paging capcode entries, and operating prompts (paging, talk, etc). Text aliases (names) up to 16 digits may be assigned to each function
LEDs	Transmit, Monitor, and programmable LEDs per switch function
Controls	Volume, Transmit, Monitor, 16-digit keypad for paging, Clear, 9 assignable keys
Configuration	Via PC with adapter, cable, software (option)
Data retention	Nonvolatile EEPROM
Functions	Assignable function tone frequencies from 650-2050Hz; Single frequency select (F1-F8), Double frequency select (F1/F2), Coded/Clear, Intercom, Privacy, Repeat on/off, Rx2 Mute on/off, PL1, PL2, PL3, PL4, Wild I, Wild II, Supervisor takeover, Mute, 5-beep alert, High/lo alert, Siren alert, Fast siren alert, Monitor, and Transmit
Selective calling	Motorola and GE 2-tone sequential, 5-tone, pulsed tone, and DTMF. Includes leading digit multi-format selection, strapped digits, alert tones, tone-only or tone+voice per format
Filters	Tx notch filter removes guard tone components from microphone audio; Rx notch filter removes guard tone from speaker and handset audio. Filters and intelligent audio processing may be enabled so that parallel remote function tones are not heard
Tx audio delay	Selectable on/off to delay microphone audio during guard and function tone transmission
Rx audio delay	Selectable on/off to delay speaker and ear-piece audio so that parallel remote function tones may be detected and muted
Line type	2-wire or 4-wire leased line voice grade audio circuit, or copper connection
Line connector	Screw terminals
Audio input	600- or 6000-ohm impedance, accommodates line losses up to 20dB
Audio output	Adjustable up to +14 dBm into 600 ohms
Distortion	< 2% at full output. Signal-to-Noise > 50 dB. Hum, cross-talk all <-50dB at full output
Freq. response	-3 to +1 dB from 250-3000Hz (except guard tone notch
Compression	Input level increase of 30 dB above knee of compression causes < 3dB output increase

TONE LEVELS

Hi Level Guard	+3dB relative to maximum audio level (typically 10 dBm)
Lo Level Guard	-30dB relative to hi level guard tone (typically -20 dBm)
Guard Notch	-50dB, removes guard tone from tx audio
Function Tones	10dB below hi level guard tone (typ. 0dBm)
Tone accuracy	0.5Hz

PROGRAMMABLE ITEMS

Guard tone	2100, 2175, 2325, 2600, 2800, 2970Hz. Guard tone notch will follow
Hi level guard tone	120 mSec default, selectable 0-500 mSec. Tx audio delay will follow
Low level guard tone	Continuous during transmit
Function tone	40 mSec default, selectable 0-250 mSec. Tx audio delay will follow
Clock display	On/Off, 12/24 hour format, time set. Displays Hours:Minutes
VU meter display	On/Off
Function frequencies	650, 750, 850, 950, 1050, 1150, 1250, 1350, 1450, 1550, 1650, 1750, 1850, 1950, or 2050Hz
Monitor frequency	Any function frequency
PL strip frequency	Any function frequency
Function keys	9 keys may be assigned specific functions as follows: Single Frequency Select (F1) or Double Frequency Select (F1/F2); Coded/ Clear; Intercom; Privacy; Repeat On/ Off; Rx2 Mute On/Off; PL1; PL2; PL3; PL4; Wild I; Wild II; Supervisor Takeover; Mute; 1-kHz Alert; 5-beep Alert; High/Lo Alert; Siren Alert; Fast Siren Alert; Monitor
Hook function	Any function tone may be sent automatically whenever the handset is taken on or off-hook
Rx audio delay	On/off. Mutes function tones from parallel remotes
Tx audio delay	On/off. Allows user to begin speaking while function tones are sent
Alphanumeric labels	16 character names for each frequency select (F1-F8)

PAGING

Database	50 entries maximum, 10-digit capcodes, 16-character text aliases, automatic frequency select
Stack page	Up to 10 stacks of up to 10 capcodes each
Formats	Motorola and GE 2-tone sequential 100-call, 2-tone 1000-call, 1-8 digit DTMF, 5-tone, pulsed tone dialing. Audio level selectable per format
Tone/voice talk time	5-sec default, selectable 1-60 sec. May be extended by holding “transmit” during talk interval, or canceled by pressing “transmit” during talk interval
Keyup delay	750 mSec default, selectable 250-2000 mSec
Stack page gap	500 mSec default, selectable 250-2000 mSec

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See Zetron price list for option pricing.

Specifications subject to change without notice.

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