Z E T R O N

MODEL 25
OPERATOR'S MANUAL

#025-9025A

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INTRODUCTION

The Zetron Model 25 Programmable Encoder is a console or rack mounted selective signaling encoder, specifically designed for use in public service and public utility dispatch centers where operators need the ability to send calls quickly and efficiently.

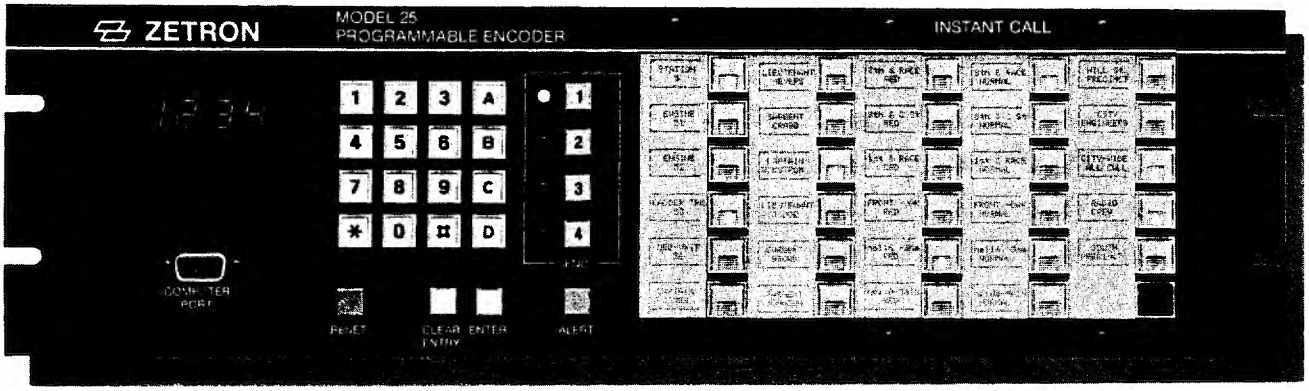
One very useful feature of the Model 25 is the ability to send multiple calls or pages over automatically selected channels by the press of a single Instant Call push button. Multiple Instant Call push buttons may be pressed in rapid succession so that groups of equipment or personnel may be dispatched efficiently. Each Instant call push button shows its call progress via integral LEDs.

The encoding function of the Model 25 is not programmed in our factory; the Model 25 can and must be programmed in the field. The Model 25 has very limited capabilities until it has been programmed. However, once the encoder has been properly programmed, it becomes a very useful and easy to use dispatching tool. The description of operation in this manual assumes that the unit has been completely and properly programmed. Programming, installation and repair of the Model 25 is described in a separate manual (document number 025-9018). This manual describes basic operation only.

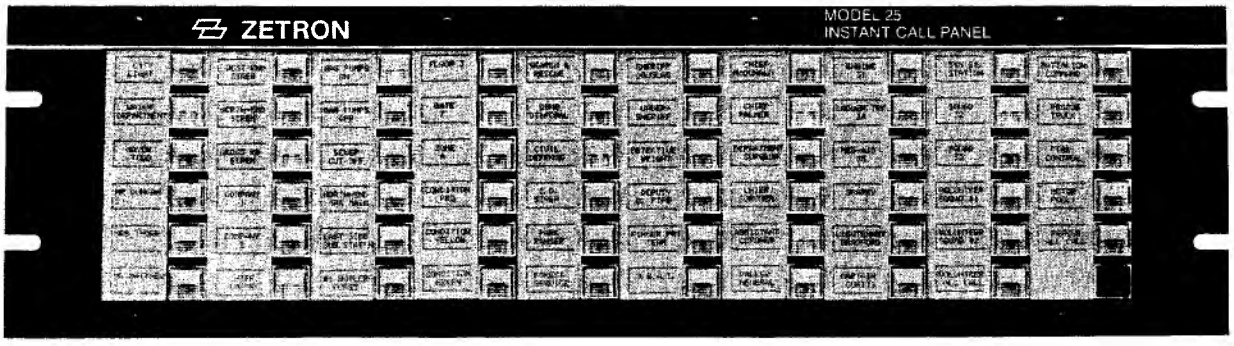
A typical Model 25 system will contain one encoder panel and perhaps one or more auxiliary panels. The encoder panel usually contains a display and keypad section for manual paging on the left half and a matrix of 30 push buttons for "Instant Call" paging on the right half. Auxiliary panels contain a matrix of 60 Instant Call push buttons only. In some systems the encoder panel may not contain a keypad or display, in which case the encoder panel will look the same as an auxiliary panel.

MODEL 25 - FRONT PANEL DESCRIPTIONS

MODEL 25 - ENCODER WITH KEYPAD



MODEL 25 - AUXILIARY INSTANT CALL PANEL / ENCODER WITHOUT KEYPAD



FRONT PANEL DESCRIPTION, ENCODER WITH KEYPAD

ITEM	DESCRIPTION
STATUS DISPLAY	The 4-character status display shows the current status of the encoder. If the time is being displayed, the middle decimal point is illuminated.
16-KEY DTMF PAD	These keys are used for manual entry of encoding information such as a call number. The '*' key is used to cause the time to be displayed (if equipped with clock).
CHANNEL SEND KEYS	These keys are used to manually steer transmission to different channels.
CHANNEL BUSY INDICATORS	The LEDs next to the SEND keys indicate the busy status of the channels controlled by the adjacent key.
ENTER KEY	This key is used to enter a key sequence such as a call number, into the keyboard stack.
CLEAR ENTRY KEY	This key is used to clear the previous key sequence or remove the last entry from the keyboard stack.
ALERT KEY	This key causes one of 4 alert tones to be generated while the key is depressed.
RESET KEY	This key is used to clear the encoder of pending or current transmissions, and to clear all Instant Call key indicators. After pressing this key the encoder is in the idle state.
COMPUTER PORT	This DB9 RS-232 connector socket is used to connect the encoder to a printer, CRT, or computer for call logging, remote control, or programming.
BEEPER	The annunciator hidden behind the panel is used to indicate operator error or completion of a call sequence.

FRONT PANEL DESCRIPTION, INSTANT CALLS

INSTANT CALL KEYS	These keys allow a single keystroke to send pre-programmed call sequences over pre-programmed channels.
INSTANT CALL STATUS INDICATORS	Each Instant Call key has an integral LED used to show the status of the call stacks which the key represents.
INSTANT CALL CLEAR KEY	The lower right-hand key allows for clearing of the panels Instant Call status LEDs.
INSTANT CALL SEND QUEUE KEY	The lower left-hand key (when enabled) allows for the Instant Call keys to be reviewed before sending.

STATUS DESCRIPTION, ENCODER WITH KEYPAD

DISPLAY	DESCRIPTION
"- "	This is the cleared display indicating that the encoder is in the idle state awaiting encoding commands.
"XX.XX"	The hours and minutes of the 24 hour time is displayed when idle (instead of "- ") if the encoder is equipped with the time clock. The decimal point means time is displayed.
"- " flashing	The keyboard stack contains one or more key sequences (call numbers). The keyboard stack will automatically clear after 30 seconds if no more keys are pressed.
"bUSY" flashing and beeping	This displays during a call sequence if the requested channel is busy. If the channel remains busy for over 30 seconds, then the encoder will give up the attempt to send. The call(s) may be forced to send by pressing any of the send keys.
"XXXX" flashing	The last four digits of the last call sent is flashed after a calling sequence to indicate that the last stack may be re-sent by pressing a SEND key. The encoder is in the idle state and any key other than a SEND key will be processed normally. The display will stop flashing and the ability to re-send the last call will be lost if more than 30 seconds elapses or if a key other than a SEND key is pressed.
"dAtE" flashing	This indicates that the encoder is in the clock set mode. This will occur automatically at power-on if the clock option is installed and the time/date needs setting.
"ErrX" flashing and beeping	This indicates that the encoder detected a fault during its limited idle state test or during the comprehensive operator-initiated self test. The error number, "X", indicates the area of fault.

STATUS DESCRIPTION, INSTANT CALLS

LED on	The call stack is in the panel's call queue, or is being processed by the encoder.
LED blinking	The call stack has been sent over the air by the encoder.
CLEAR key LED on	The panel is in the clear mode. Any key pressed while in clear mode will cause the LED of the pressed key to turn off. If the call is still in the call queue, it will be removed. Press the CLEAR key again to exit clear mode.
SEND QUEUE key LED on	The panel's queue is currently being sent to the encoder for call processing (SEND QUEUE is used only if enabled).
SEND QUEUE key LED off	Keys pressed enter the call queue, but the queue is not sent to the encoder until the SEND QUEUE key is pressed.

POWER-ON SELF-TESTS

When power is applied to the Model 25 encoder, the encoder and Instant Call panels will begin a self-test which will take several seconds to complete. The self-test will first illuminate each individual LED indicator on all of the panels so that an operator may verify their operation. The self-test will then test the internal circuitry of each panel which will detect most, but not all possible, component failures. In the event that a component is found faulty, either the encoder will display the word "ErrX" or an Instant Call panel will illuminate one or more of its LEDs on its far right push button column. Operation of a system that indicates a fault should not be attempted until the fault has been corrected.

After the self-test has been successfully completed, the encoder will verify that the time and date of the clock (if the option is present) is valid. If the time or date of the clock is not valid, then the encoder will display the word "dAtE" indicating that the clock should be set. Page 10 of this manual describes how to set the clock.

Finally, when the encoder becomes idle and is ready for operation, it will display either the 24-hour time (hours and minutes) or a single dash character (if the clock option is not present). Whenever the time is displayed, the middle decimal point of the display will also be illuminated. While the encoder is idle it is performing a limited self-test. If the encoder detects a fault during the limited self-test, then it will indicate this by displaying the "Err" notice.

IN CASE OF FAULT, CONTACT THE FOLLOWING PERSON: _____

INSTANT CALL OPERATION

The Instant Call push buttons provide the simplest operation available. To "tone out" or page equipment and/or personnel, simply push the button(s) labeled with the desired item(s). Each button represents the tone sequence (call stack) used to access its associated item(s). When a button is pressed, it will illuminate indicating that its tone sequence is awaiting transmission. A maximum of 16 buttons may be pending transmission at one time. In some systems, transmission will begin with the press of the first button, but if the lower left-hand Instant Call button is labeled "REVIEW/SEND" or "SEND QUEUE" (the "queue" is the pending buttons) then the SEND QUEUE button must be pressed before transmission will begin. When the SEND QUEUE button is pressed, it will illuminate and remain illuminated until the last button on the panel has begun transmission. The SEND QUEUE button is a programming option which is useful in preventing transmission of accidentally-pressed buttons.

Transmission of the queue (pending buttons) is performed in the order that the buttons were pressed. Operators should avoid changing the console settings while the encoder is transmitting, otherwise the transmitted tones may not be received. When the tone sequence of a button has completed transmission the encoder will beep and the button will begin to blink. A glance at the panel can show which items have been "toned out" and which are still pending.

The lower right-hand Instant Call button of the panel can be used to extinguish illuminated or blinking buttons and clear pending tone sequences that have not started transmission. The button may be labeled either "ALL CLEAR" or "SELECTIVE CLEAR". If the button is labeled ALL CLEAR then a single press of the button will clear all button indicators and pending tone sequences on the panel. If the button is labeled SELECTIVE CLEAR then the first press of the button will cause it to illuminate indicating that the panel is now in the clear mode. While the clear button is illuminated, a press of any other Instant Call button on the panel will clear both the button's indicator and tone sequence. Another press of the SELECTIVE CLEAR button will cause its indicator to extinguish and normal panel operation will resume. The SELECTIVE CLEARing feature is useful in removing unwanted buttons while allowing others to continue. The clear button operation is a jumper configurable option which can be changed only when the unit is removed from the console. The RESET key of the encoder's keypad is a universal 'all clear'. A press of the RESET key will cause any transmission in progress to halt, any pending tone sequence to clear, and all indicators to extinguish on all panels.

KEYPAD (MANUAL) OPERATION

NOTE: The keypad on your encoder may be disabled. If the keypad is disabled, then the only key that will remain functional is the RESET key.

The keypad section of the encoder would normally be used for paging of seldom called, non-emergency equipment or personnel which may not merit an individual Instant Call button. Typical operation from the keypad will probably be from a list which matches an individual to a keypad entry code and a send channel. A list form is provided at the very end of this manual for just this purpose.

The keypad entry code from the list should be entered into the encoder from the 16 key "DTMF" pad. Keypad entries can only be made while the encoder is idle. As digits are entered, they will appear in the display. If more that 30 seconds elapse between key strokes, then the encoder will automatically clear out the previous keystrokes. This prevents forgotten keypad entries from being accidentally transmitted.

The SEND Keys

Next the send channel from the list should be selected from one of the four SEND keys on the encoder keypad. If the encoder beeps in response to any keystroke, then the attempted operation or character is not allowed. Pressing RESET will clear any previous keystrokes so that another attempt can be made. Transmission of the paging tones is started when the SEND key is pressed. When the page is complete, the encoder will beep and the last four digits of the entry code will be flashed in the display. The display will flash for a maximum of 30 seconds or until a key is pressed. While the display is flashing, the previous page can be repeated simply by pressing the appropriate SEND key. When the display stops flashing, either the 24-hour time or the single dash will again be displayed. If the clock option is present, then the time display can be made to replace the flashing display by pressing the "*" key on the DTMF pad.

The ENTER Key

Several paging codes can be accumulated into the keyboard paging stack prior to sending. "Stacking" pages makes more efficient use of the transmission time since the stack sequence will take less time than if each individual page were transmitted separately. Stacking is performed by entering a keypad entry code via the DTMF pad and pressing the ENTER key. When this is done the display will show a flashing dash indicating that the keyboard paging stack contains an entry. The process can be repeated for several paging codes. The stack is quite large and it is unlikely that the limit will ever be reached, but if the stack does fill then a double beep will occur when the ENTER key is pressed.

When all of the desired paging codes have been stacked, they may be sent, just like an individual page, by pressing the desired SEND key. Transmission of the stack will begin with the first pager code entered into the stack and will proceed until the last pager code in the stack has been sent. As each pager code tone sequence is transmitting, the last four digits of the pager code will be visible in the display. When the stack completes transmission, the encoder will beep and the display will flash. The stack, too, may be repeated while the display is flashing by simply pressing the desired SEND key.

The CLEAR ENTRY Key

The CLEAR ENTRY key is for editing the last entry in the keyboard paging stack. Once a pager code has been ENTERed into the stack (and the flashing dash is displayed), it may be drawn back out, and again shown in the display be pressing CLEAR ENTRY. When a pager code is shown in the display, it may be erased (cleared) altogether by again pressing CLEAR ENTRY. Another pager code can be ENTERed into the stack in place of the previously cleared entry without disturbing the other pager codes in the stack.

The ALERT Key

The ALERT key can be used to generate sirens, a warble or a continuous tone over the channel(s) selected on the console. This would typically follow shortly after the paging tone sequence to alert all listening individuals of the urgency level of the page. While the encoder is idle, the alert is generated by either pressing just the ALERT key or the digit 1, 2 or 3 then the ALERT key. The alert tone will continue to be generated for as long as the ALERT key is held down. The following table shows the types of alerts possible via the ALERT key.

KEY(S)	ALERT TYPE
ALERT only	Steady Tone
1 then ALERT	Slow Siren
2 then ALERT	Fast Siren
3 then ALERT	Hi/Lo Warble

CHANNEL BUSY MONITORING

The Model 25 encoder has the ability to monitor a channel for busy activity prior to transmission. If this ability is used, and transmission is attempted over a busy channel, then the encoder will indicate this to the operator prior to transmission by beeping and displaying the word "bUSY". The encoder can be forced to transmit over a busy channel by pressing any SEND key on the keypad or any Instant Call button which is solidly illuminated. If the encoder is not forced to transmit, then it will wait up to 30 seconds for the channel to clear (all the while beeping), after which it will give up the attempt to transmit the individual pager code.

SETTING THE TIME CLOCK

The clock will need setting when first powered-on but thereafter it probably will need setting only to compensate for daylight savings time shifts. The clock will automatically compensate for months of different length and leap years.

When clock changing is required, the clock set mode may be entered via the keypad by holding down the RESET key then holding down the '*' key and releasing the RESET key. When the encoder display shows "PrOG" then the '*' key may be released. If the encoder powers-on with the display flashing the word 'dAtE' then the encoder is already in the clock set mode. If at this point you desire to begin normal operation instead of setting the clock, then the RESET key may be pressed, after which the time will be set to 00 hours, 00 minutes.

Once in the clock-set-mode the encoder will flash the word "dAtE" until the '*' key is pressed at which time the first prompt will be issued. In order to complete the clock setting cycle, the month, day, year, hours, and minutes must be entered in that sequence. Each item requires exactly two digits to be entered. The following table shows the required input for each prompt.

PROMPT	DESCRIPTION	REQUIRED REPLY
nn _ _	Enter month	01 - 12
d _ _	Enter day	01 - 31
Y _ _	Enter last two digits of the year.	00 - 99
H _ _	Enter hour (24 hr format)	00 - 23
nn _ _	Enter minutes	00 - 59

As soon as the last digit of the minutes is entered, the clock is set with the seconds at zero. The encoder will now display the hours and minutes of the time and will be ready for normal operation.

COMPUTER AIDED DISPATCH (CAD) OPERATION

The Model 25 has the capability of being controlled by a computer for CAD systems. In such systems, whenever the dispatch computer has control of the encoder, the Instant Call push buttons will be disabled. In typical CAD use, the Instant Call push buttons are available only for backup operation in case the dispatch computer goes down. For such systems, a manual over-ride switch may be available on or near the encoder to allow emergency control of the Instant Call buttons. Even while the dispatch computer has control of the encoder, it is possible to allow the manual paging keypad to remain active. This may be advantageous since the task of some non-emergency paging will likely not reside with the dispatch computer. The use of the Model 25 in a CAD system, however, is very dependent on the individual installation. For this reason, there is space provided here for special instructions to be noted.

ADVANCED KEYPAD OPERATION

This section is for those operators who need a deeper understanding of the operation of the Model 25. The programming, installation and repair manual can provide even more detailed operating information.

Keypad entry codes from a list are not arbitrary; they are chosen because of the programming done to the encoder. A keypad entry code (pager or call code) must consist of from two to fifteen digits (characters). The first digit is the block digit or leading digit which is used to steer the encoder to one of up to 13 format blocks numbered 1-9, A, B, C and D. One other block, block 0, is reserved for the 206 stacks corresponding to the Instant Call buttons. An Instant Call button stack, if programmed, consists of one or more pager codes each referring to one of the 13 blocks/formats.

The digits following the block digit are used by the leading-digit-chosen format to determine the tone sequence to send. In addition, the programming of the blocks also tells the encoder over which channel(s) the block will be transmitted if the page is send via an Instant Call button or a specially programmed SEND key. Normally the SEND keys are programmed to key-up or select a certain specific channel(s) without regard to the pages that it is sending. However, two other options exist for the operation of a SEND key. Option 1 is for a SEND key not to key or select any channel. When such a SEND key is used, it will rely on the console to direct the transmission over the channel(s) selected on the console. Option 2 is for a SEND key to use the channel(s) programmed for the blocks/formats of the pages that it will be transmitting.

The following form should show the allocation of each block digit and SEND key.

NOTE TO THE PROGRAMMER

It is helpful to keep the following form as a record of the block/format and SEND key programming, since this directly affects any keypad entry list that refers to pager codes and SEND keys. The form may copied so that each time the block/format assignment is changed, it can be recorded. It is also a good idea to date the record in order to keep track of the latest programming. On the back of this sheet is an example showing how the form may be used. You may wish to remove the example form in order to avoid possible confusion.

EXAMPLE

BLOCK OR LEADING DIGIT	FORMAT INFORMATION	CHANNEL INFORMATION
0	Reserved for Instant Call stacks	Not Applicable
1	Custom Call Format	Police channel
2	1000 Call Two Tone, Code Plan C	City Utilities
3	Quick Call Two, Tone Series Z	Fire channel
4	5/6 Tone Sequential, EIA tones	City Utilities
5	D T M F	Medic Aid channel
6	Rotary Dial Format (2805)	Medic Aid channel
7	Automatic Alert, 3 beeps	Fire channel
8	Automatic Alert, 4 beeps	Fire channel
9	Automatic Alert, 5 beeps	Fire channel
A	Automatic Alert, Fast Siren	Fire channel
B	Automatic Alert, Slow Siren	Police channel
C	Not Used	
D	Not Used	

SEND KEY #	LABEL	CHANNEL OR OPTION USED
1 (top SEND key)	"P"	Police channel
2	"F"	Fire channel
3	"CON"	Console Select Dependent (Option 1)
4 (bottom key)	"AUTO"	Pager Code Dependent (Option 2)

The "AUTO" SEND key can be used in most cases unless the leading digit of the pager code being sent indicates that the wrong channel will be used. The SEND keys dedicated to specific channels must be used in cases where the leading digit of the pager code indicate a channel other than the one desired.

DATE _ _ / _ _ / _ _ _ _

BLOCK OR LEADING DIGIT	FORMAT INFORMATION	CHANNEL INFORMATION
0	Reserved for Instant Call stacks	Not Applicable
1		
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		

SEND KEY #	LABEL	CHANNEL OR OPTION USED
1 (top SEND key)		
2		
3		
4 (bottom key)		

MODEL 25 - PERSONNEL KEYPAD ENTRY CODE LIST

	PERSON OR EQUIPMENT	KEYPAD ENTRY CODE (PAGER CODE)	SEND KEY
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

MODEL 25 - PERSONNEL KEYPAD ENTRY CODE LIST

	PERSON OR EQUIPMENT	KEYPAD ENTRY CODE (PAGER CODE)	SEND KEY
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			
36.			
37.			
38.			
39.			
40.			
41.			
42.			
43.			
44.			
45.			
46.			
47.			
48.			
49.			
50.			

MODEL 25 - PERSONNEL KEYPAD ENTRY CODE LIST

PERSON OR EQUIPMENT	KEYPAD ENTRY CODE (PAGER CODE)	SEND KEY

MODEL 25 - PERSONNEL KEYPAD ENTRY CODE LIST

PERSON OR EQUIPMENT	KEYPAD ENTRY CODE (PAGER CODE)	SEND KEY