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Outdoor Warning

MDK-864 MICROPROCESSOR DIAGNOSTIC KEYBOARD

864 SERIES REMOTE STATION CONTROLLERS USER MANUAL

WHELEN MDK-864, MICROPROCESSOR DIAGNOSTIC KEYBOARD

FOR

WHELEN 864 SERIES REMOTE STATION CONTROLLERS

USER MANUAL

Printed 12/88.

MDK-864.003

WHELEN ENGINEERING COMPANY, INCORPORATED
Route 145 - Winthrop Road
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WHELEN MDK-864

USER MANUAL

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SECTION 1

1.1 MDK-864 DESCRIPTION

The MDK-864, Microprocessor Diagnostic Keyboard is a service tool for use when performing service and routing maintenance on Whelen's 864 Series of Microprocessor based remote station controllers.

The MDK-864 consists of a keyboard with two separate keypads:
programming/diagnostic
numeric

Located above the two keypads is a 20 character vacuum fluorescent display, which will display programming entries and 864 series system controller programming and diagnostic information. The display also indicates the MDK-864's power on/off condition and the MDK-864 programming active mode.

The MDK-864 serves two functions for the user:

First, the MDK-864 provides access to all 864 Series Remote Station Controllers memory, allowing the user to change the various system programming, such as a system's remote station address or to vary the pre-programed timing parameters for siren/voice activation durations and duty cycles.

Second, the keyboard serves as a diagnostic monitor, permitting access to the remote station's 864 Series controller's memory for examination of existing programming, and status registers.

The MDK-864 consists of two parts, the interface cable and display keyboard. A slide switch is located on the rear panel of the MDK-864 keyboard (next to the 25 pin D connector) to activate the keyboard's programming active mode.

SECTION 2

MDK-864 SYSTEM ILLUSTRATIONS

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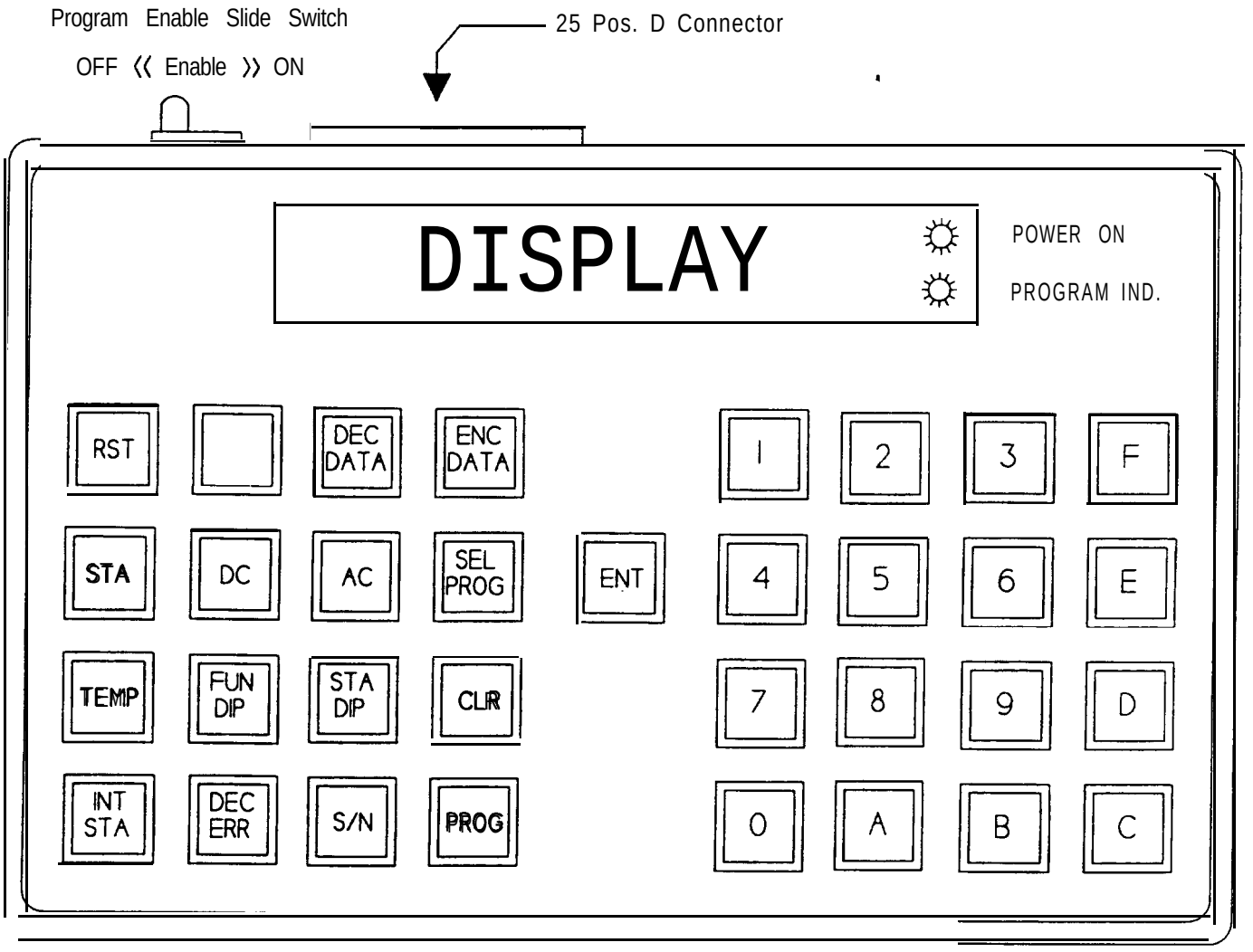


NOT TO SCALE

Figure 1, MDK-864 Keyboard

RST		OEC DATA	ENC DATA
STA	DC	AC	SELECT PROG
TEMP	FUNCTION DIP	STA DIP	CLEAR
INT STA	OEC ERR	S/N	PROG

STATUS WORD

7	6	5	4	3	2	1	0
OY NAMIC AC	PWR-UP 0-ON 1-OFF	SYSTEM ARM 0-DISARM 1-ARM	SIREN ON 0-OFF 1-ON	STORED AC	STORED ROTOR	STORED PARTIAL	STORED FULL

Figure 2, MDK-864 Register Readout: Status Word

2.1.2

RST		DEC DATA	ENC DATA
STA	DC	AC	SELECT PROG
TEMP	FUNCTION DIP	STA DIP	CLEAR
INT STA	DEC ERR	S/N	PROG

INSTANT STATUS

7	6	5	4	3	2	1	0
BIAS	PART	FULL				INTRUSION	AC

Figure 3, MDR-864 Register Readout: Instant Status

RST		DEC DATA	ENC DATA
STA	DC	AC	SELECT PROG
TEMP	FUNCTION DIP	S T A DIP	CLEAR
INT STA	-DEC ERR	S/N	PROG

FUNCTION DIPS

8	7	6	5	4	3	2	1
MASTER TMX ON - ON OFF - OFF	IMMEDIATE RESPONSE ON - ON OFF - OFF	INSTANT RESPONSE ON - ON OFF - OFF	AC/BAT CHECK ON - ON OFF - OFF	SIREN ENABLE ENABLE - ON DISABLE - OFF	30 SEC LEO CLR 30 SEC - ON INFINITE . OFF	DEC FORMAT 10 - ON 8 - OFF	PASSWORO ON - ON OFF - OFF

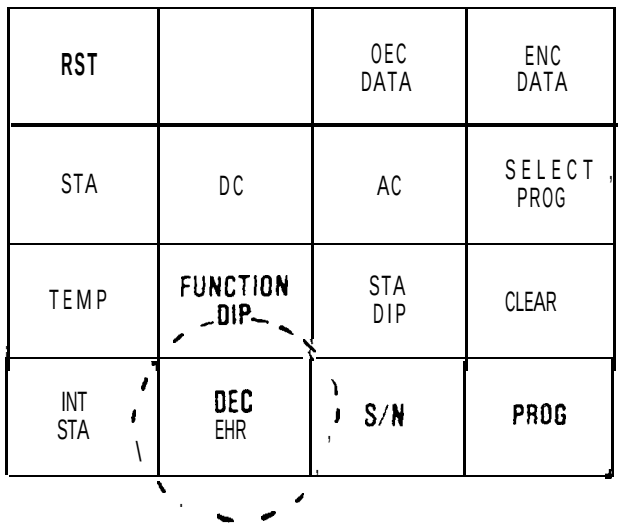
Figure 4, MDK-864 Register Readout: Function Dips

AST		OEC DATA	ENC DATA
STA	OC	AC	SELECT PROG
TEMP	FUNCTION DIP	STA DIP	CLEAR
INT STA	OEC ERR	s / n	PROG

INSTANT STATUS DIPS

6	7	6	5	4	3	2	1
TONE GEN BIAS	PART	FULL				INTRUSION	AC

Figure 5, MDK-864 Register Readout: Inatant Status Dips



DECODER ERROR FLAG

7	6	5	4	3	2	1	0
			PASSWORD ERR	DIGIT COUNT ERR	ADDRESS ERR	AREA CODE ERR	DIGIT LENGTH ERR

Figure 6, HDK-864 Register Readout: Decoder Error Flags

RST		DEC DATA	ENC DATA
STA	DC	AC	SELECT PROG
TEMP	FUNCTION DIP	STA DIP	CLEAR
INT STA	IJEC ERR	S/N	PROG

TO REMOTE

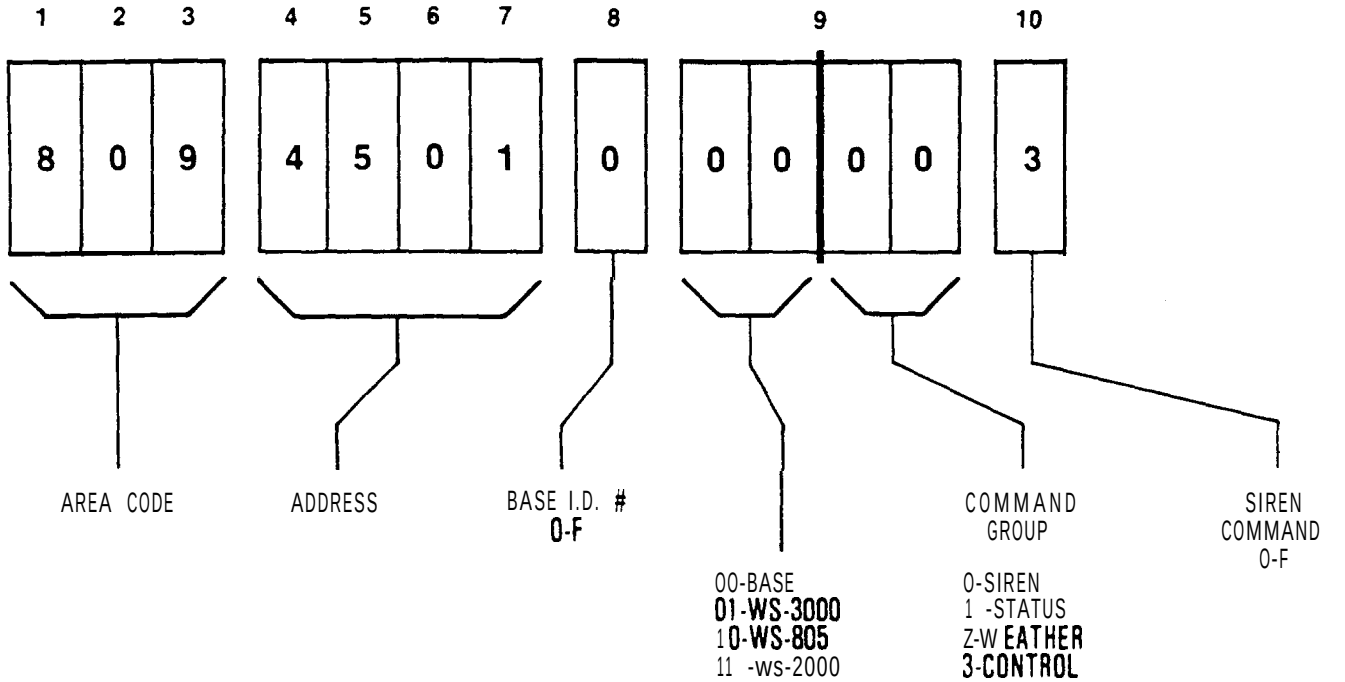


Figure 7 COMM/STATt™, 10 Digit Activation Word Format

RST		OEC DATA,	ENC DATA
STA	DC	AC	SELECT PROG
TEMP	FUNCTION DIP	STA DIP	CLEAR
INT STA	OEC ERR	S/N	PROG

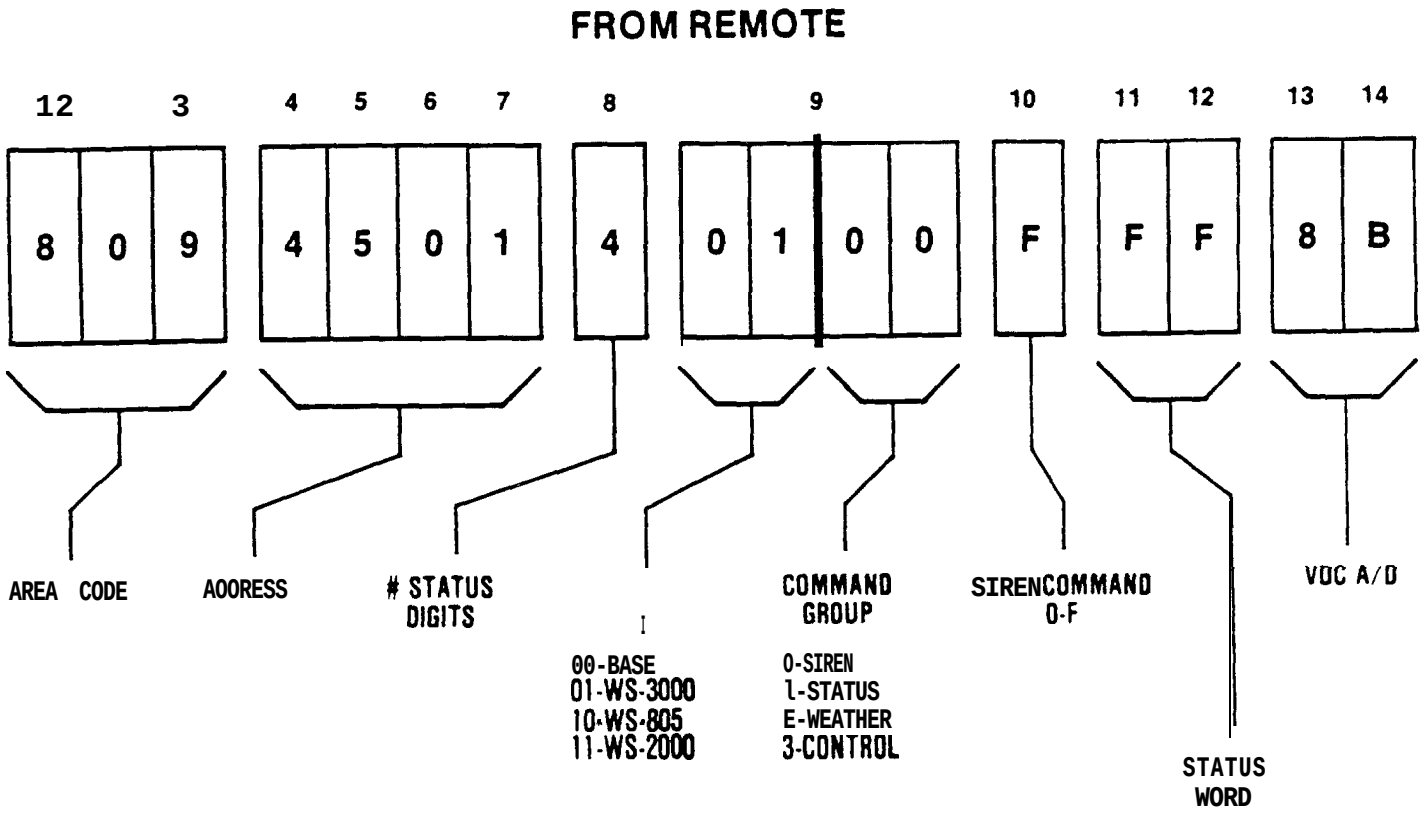


Figure 8, **COMM/STAT**tm, 14 Digit Status Word Format

SECTION 3

MDK-864 DIAGNOSTIC KEYS

3.1 KEY DESCRIPTIONS

Two 16 key keypads are located on the front panel of the MDK-864.

As indicated in Figure 1 in Section 2, the left keypad offers a selection of Diagnostic and Programming Keys; the right keypad is a hex keypad: O-9, A, B, C & D, which is used for selecting programming options and programming entry.

This Section details the purpose and function of the Diagnostic and Programming Keys on the MDK-864 Left Keypad as indicated in Figure 1 in Section 2.

Key	Use/Function
RST	The RST key resets the 864 Series remote station microprocessor controller. This key is to be depressed following connection of the MDK-864 to the Remote Station Controller as detailed in Section 4.1., or in the event the keyboard will not clear.
DEC. DATA	Pressing the DEC.DATA key causes the last data received by the Remote Station's 864 Series Controller to be displayed. This may be interpreted according to Figure 7 in Section 2.
ENC. Data	Pressing the ENC. DATA key cases the last data transmitted by the Remote Station's 864 Series Controller to be displayed. This may be interpreted according to Figure 8 in Section 2.
STA	Pressing the STA key causes the information stored in the Remote Stations 864 Series controller's status register to be displayed. This information is updated after each remote station operation. The Status Register Display is indentified in Figure 2 in Section 2.
DC VOLTS	Pressing the DC VOLTS key causes the remote station's battery voltage to be displayed.
AC VOLTS	Pressing the AC VOLTS key causes the remote station's- AC supply voltage to be displayed.
SEL PROG	Pressing the SEL PROG key permits the selection of a function for display or reprogramming.

Key	Use/Function
TEMP	Pressing the TEMP key causes the temperature in degree's Fahrenheit inside the Remote Station's 864 Controller's housing to be displayed. Note: Systems may optionally be equipped with external ambient temperature sensors; pressing the TEMP key for these systems will cause a display of the temperature as indicated by the external sensor.
FUN DIP	Pressing the FUN DIP key causes a display of the Remote Station's Controller Function Dip Register, which indicates the setting of the Function Dip switches on the remote station's 864 Series Controller. (See Figure 4 of Section 2.).
STA DIP	Pressing the STA DIP key causes a display of the Remote Station's Controller Instant Status Dip Register, which indicates the setting of the Instant Status Dip switches on the remote station's 864 Series Controller. (See Figure 5 of Section 2.).
CLEAR	Pressing this key will set the value of the function selected (MDK-864 Function/Programming Keys) to all zero's.
INT STA	Pressing the INT STA key causes the information stored in the Remote Station's 864 Series controller's Instant Status register to be displayed. This information is reflects the remote station's real time status. The Instant Status Register Display is indentfied in Figure 5 in Section 2.
DEC ERR	Pressing the DEC ERR causes decoder error flags for data decoded by the 864 Series Remote Station Controller be displayed. (See Figure 6 in Section 2 for the Decoder Error Flag Register.)
S/N	Pressing the S/N key causes the most recent signal to noise ratio received by the 864 Series Remote Station Controller to be displayed. The received S/N value is displayed in dB.

Key	Use/Function
PROG	The PROG key is used in conjunction with numeric keypad, keys 0-9, A, B, C & D, to select the function to be programmed. After pressing the PROG key, the MDK-864 display will read: Sel Prog. Programs available are:

1. Wail tone duration.

2. Attach tone duration.

3. Alert tone duration.

4. Public Address max duration.

5. Air Horn tone duration.

6. Hi/Low tone duration.

7. Whoop tone duration.

8. Five second wail tone duration.

9. Siren address.

0. Secur-a-key number.

A. Substitute number.

B. Transmitter turn on delay.

Note : In order to write new program data to the 864 Series Remote Station Controller, the program switch on the rear panel of the MDK-864 Keyboard must be turned to the Program Active Position. The program switch is a two position slide switch. The Program Active position is position nearest the 25 pin - D connector on the rear panel of the MDK-864 Keyboard. When the MDK-864 Keyboard is in the program Active mode, and LED in the lower right hand corner of the MDK-864 Keyboard will be lighted.

SECTION 4

MDK-864 USE WITH 864 SERIES REMOTE STATION CONTROLLERS

4.1 CONNECTION/DE-CONNECTION

The following steps should be utilized when connecting the MDK-864 to any Whelen 864 Series Remote Station Controller (ESC-864, MS-864 and RTU-864):

Installation

1. Turn off system* AC power.
2. Turn off system* DC power.
3. Plug into the ESC-864.
4. Turn on system* DC power.
5. Turn on system* AC power.
6. Observe power on LED in upper right hand corner of MDK-864 Controller Display is on.
7. Depress "RST" button.
8. For operation refer to programming and diagnostic sections.

Removal

1. Turn off system* AC power.
2. Turn off system* DC power.
3. Remove cable.
4. Restore system* power, DC & AC.

*System power refers to complete remote station device, ie: WPS-2000 Series, WPS-2700 Series, WPS-3000, WPS-4000, MS-864 or RTU-864.

4.2 MDK-864 PROGRAMMING OPERATION

The following steps detail the procedure necessary to access an 864 Series Remote Station Controller's programming routines, how the routine's entry is displayed, how to enter a new entry and verify the entry.

Programming Operation:

1. Install MDK-864 to Remote Station Controller using installation procedure. (See Section 4.1).
2. Enable EEPROM (E^2) jumper on Remote Station Controller PC board.
3. Depress the SEL PROG key.
4. Using keys l-9, & A-C, select program routine or function to be displayed or reprogrammed.
5. If a new function is to be inserted, depress CLEAR key. (Clears display to all zeros).
6. Enter the new function or program value with the numeric keyboard.
7. Turn on the Program Enable slide switch and verify that the MDK-864 programing indicator light is on. (NOTE: When in the programming mode, the Controller will not accept any input commands from the RF link).
8. Depress PROG key (new data will be stored in memory).
9. Re-select the function, and verify that the new entry is displayed on the MDK-864 display.
10. Turn off Program Enable slide switch.
11. Disable E^2 jumper.
12. Repeat steps 3-10 as necessary.

Note: For accessing the siren tone cyclic timing program for mechanical sirens, perform the following steps:

1. Depress the SEL PROG key.
2. Depress the ENTER key.
3. Using keys l-8, select the tone for the cyclic timing to be programmed.
4. Siren cyclic timing will be displayed in ON-OFF timing durations. Timing durations are shown in 100ms increments. To program, follow step 5-11 above.

Programming Selections, Display of Program

Program Selection	Function	Display
l-8	Siren Tone Duration	Minutes - Seconds
9	Siren Address	Activation Word, as displayed in Figure 7, Section 2.
A	Substitute Number	Enter A "C" in remote station address digits according to Figure 7, Section 2.
B.	Transmitter Turn on Delay	Turn on delay time is expressed in seconds - tenths of seconds.
PROG, ENTER, 1-5	Mechanical Siren Cyclic Timing	Cyclic Timing is displayed in on/off time durations. Durations are in 100ms increments.

4.3 DIAGNOSTIC DISPLAYS

1. DEC DATA (see Figure 7, Section 2)

   AREA CODE - three digit number unique to each customer.

   ADDRESS - four digit number that identifies each station.

   BASE ID - identifies the base station that sent the date.

   EQUIPMENT TAG - equipment type that data is being sent to (binary).

   COMMAND GROUP - 0-4 (binary).

   COMMAND - 1-16 (0-F hex).

2. ENC DATA (see Figure 8, Section 2).

   DIGITS l-10 - same as DEC DATA.

   DIGITS 11 & 12 - status word in hex code (see Figure 2).

   DIGITS 13 & 14 - analog voltage in hex code 0-255.

3. STATUS WORD (see Figure 2, Section 2)

   Two digit hex code, four bit binary per digit.

   1= "ON"/"YES" 0= "OFF"/"NO"

   Dynamic AC-AC power on/off form last activation.

   Pwr-Up - If AC input is on system will be powered up.

   System Arm - System armed for instant status response.

   Siren On - System enabled/disabled to make audible sound.

3. STATUS WORD (see Figure 2 Section 2), continued

Stored AC - AC power on/off from previous activation.

Rotor - rotor operation from last activation.

Partial - one or more speakers operated form last activation.

Full - All speakers operated form last activation.

4. INSTANT STATUS (see Figure 3, Section 2).

Real time data not stored.

1= "ON" 0= "OFF"

Tone Gen Bias - tone generator on/off.

Part - one or more speakers on/off.

Full - all speakers on.

Intrusion - cabinet door(s) open.

AC - on/off.

5. FUNCTION DIPS - (see Figure 4, Section 2).

Displays the setting of the function dip switches in the ESC-864.

Master TMX - transmitter enabled/disabled.

Immediate Response - enabled/disabled. Allows the ESC-864 to return status data without a request, if it was activated as a individual unit.

Instant Response - enabled/disabled. Allows the ESC-864 to return status data without a request, if it sees a change of state on designated bits in the status register.

5. FUNCTION DIPS - (see Figure 4, Section 2), continued.

AC/BATT Check - enabled/disabled. If enabled will transmit loss of AC power, when battery voltage drops below 19 vdc.

Siren Sound - enabled/disabled. If enabled allows base station to enable or disable audible sound.

30 SEC LED CLR - on/off. If on maintenance led's on ESC-864 will go out after 30 sec. of operation.

DEC FORMAT - on/off. On ESC-864 will accept 10 digit format. Off it will accept 8 digit format.

PASSWORD - enabled/disabled.

6. INSTANT STATUS DIPS (see Figure 5, Section 2).

See instant status word for bit descriptions.

Enabled/Disabled.

If bit is enabled, when ESC-864 sees that bit change state it will transmit the instant status word to base station.

6. DECODER ERROR FLAG (see Figure 6, Section 2).

Used to trouble-shoot activation failures.

1= "PASS" 2= "ERROR"

PASSWORD - correct/incorrect.

DIGIT COUNT - not 10 or 8.

ADDRESS - correct/incorrect.

AREA CODE - correct/incorrect.

DIGIT LENGTH - word transmitted to ESC-864 window time correct/incorrect.