ERICSSON

LBI-39004

Mobile Communications

EDACS™
Guardog™

Installation & Operation Manual

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INTRODUCTION

This installation and operation manual is intended to be used with the Zetron 1512 SentriDial Technical Manual #025-9121. The Zetron manual contains maintenance and troubleshooting information, and describes the standard operation of the Zetron 1512 SentriDial alarm monitoring system using the standard Zetron software.

This manual focuses on the installation requirements and operation of the Zetron 1512 SentriDial (referred to in this manual as the Reset Unit), using the custom Zetron software developed for this EDACS (Enhanced Digital Access Communications System) application.

This manual is written for the standard 20-second voice message memory package. If additional memory has been added, disregard the 20-second limitations.

DESCRIPTION

The EDACS Guardog option provides an EDACS site with the means to reset its Station GETCs, Site Controller computer, and Data Modem. It can provide these resets automatically by following the Automatic Reset routine in its software when it senses that the site has switched to Failsoft, or manually by following remote commands. Additionally, if the Automatic Reset routine fails to bring the site out of Failsoft, it can be programmed to call as many as 10 different telephone numbers to play a voice message to alert maintenance or administrative personnel.

The Reset Unit can apply a momentary ground to reset all the Station GETCs, or apply a momentary ground to operate the AC Relay Panel (which resets the EDACS Site Controller computer and Data Modem). The Reset Unit applies these momentary grounds according to the Automatic Reset and Automatic Reset Disable routines in its custom software, or manual commands from a remote telephone or terminal.

The EDACS Guardog option adds the following parts to an EDACS Site Controller cabinet containing the Data Modem option (the Data Modem option provides the chassis and the hardware to mount the Reset Unit):

- Reset Unit
- Reset Unit Cables
- AC Relay Panel
- Interconnect Cables

The Reset Unit is a Zetron Model 1512 SentriDial alarm monitoring system with custom software and 20 seconds of voice message memory. The Reset Unit is mounted in the chassis with the Data Modem (see the Assembly Diagram at the end of this manual).

The Reset Unit Cables extend connections from inside the Reset Unit to the back panel of the chassis it shares with the Data Modem (see the Assembly Diagram at the end of this manual):

The AC Relay Panel is used by the Reset Unit to momentarily interrupt ac power to the EDACS Site Controller computer and Data Modem, causing them to automatically reset on power-up. The panel is mounted on the back rails of the cabinet, between the 13.8 Vdc power supply and the Uninterruptible Power Supply.

The Interconnect Cables are used to connect the option together and to the EDACS Site Controller cabinet (see assembly diagram at end of manual):

INSTALLATION

JUMPER CONFIGURATION

Although the jumpers used to configure the four output circuits of the reset unit should have been set correctly, it is always advisable to check the jumpers to be sure. Figure 1 shows the locations and positions of these eight jumpers for this application. The solid black rectangles represent the jumper itself.

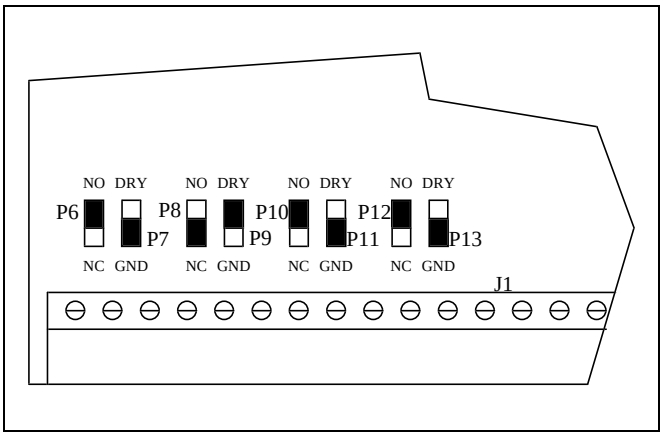

Figure 1 - Jumper Locations and Positions

CONNECTIONS

The EDACS Guardog feature is installed in the EDACS Site Controller cabinet at the factory. However, the following optional connections cannot be made to the cabinet until it is installed at the EDACS repeater site:

- Telephone Line
- External Alarm Output
- Remote Disable Input

The telephone line will be necessary if you want calls to be made at the end of an unsuccessful Automatic Reset Cycle or if you want to be able to make operational commands by telephone. The two-wire subscriber line is connected to the back of the Modem / Reset Unit Shelf at J5 pin 4 (tip) and pin 3 (ring) using a male RJ-11-6 modular plug.

CAUTION

This telephone line must come through a protected punch block, or equivalent protection, before being connected to the EDACS equipment.

The External Alarm Output is provided to give a signal to a customer supplied alarm circuit. The output provides a 120-second momentary closure to ground at the start of each Automatic Reset Cycle. The output relay's contacts have a maximum rating of 120 VAC and 1 A. The alarm output is available at J4 pin 2 (ground is available at pin 4) on the back of the Modem / Reset Unit Shelf.

The Remote Disable Input is provided for installations where a telephone line is not available at the site. This input accepts a momentary logic low from a customer supplied circuit to initiate the Automatic Reset Disable Cycle. This input is available at the terminal strip J2 terminal 8 (ground reference is terminal 6) inside the Reset Unit.

CAUTION

The momentary logic low, applied to the Remote Disable Input, must not exceed 120 seconds. An accidental short between ground and the Remote Disable Input, or a logic low in excess of 120 seconds, will continue to initiate the Automatic Reset Disable Cycle for as long as the ground or logic low is applied.

It is also very important to be careful with the GETC Reset line between the Reset Unit and each Station GETC. An accidental short between ground and the GETC Reset line will hold all GETCs in reset until the ground is removed.

CAUTION

An accidental short between ground and the GETC Reset line will hold all GETCs in reset until the ground is removed.

PROGRAMMING

Programming of the Reset Unit refers to the editing of configurable parameters, including the recording of voice messages. The Reset Unit's software contains default values for these configurable parameters and voice messages, which can be returned to at any time. These default values contain no telephone numbers or messages. The Reset Unit is initially configured with these default values, except for one telephone number and one voice message pre-programmed for test purposes.

The Reset Unit can be programmed before or after installation with a DTMF telephone, or with a video display terminal or PC. Some parameters can only be reconfigured with the terminal or PC, and the voice messages can only be programmed with the DTMF telephone.

The default values have been selected to minimize the need for reconfiguration, and most may never need to be

changed. Table 1 lists those parameters most likely to be reconfigured. Beside each parameter, it lists the default value and whether it can be reconfigured with a terminal/PC and/or a telephone.

PARAMETER	DEFAULT	TERM/PC	PHONE
Security Code	11	Yes	Yes
Acknowledge Code	2	Yes	No
Telephone Numbers	None	Yes	Yes
Telephone Message	None	No	Yes
Message Repeats	5	Yes	Yes
Input #3 Mode	N/O	Yes	Yes
Input #3 Stack	1	Yes	Yes

Table 1 - Parameters Most Likely to be Reconfigured

PROGRAMMING BY TELEPHONE

Setup

If the reset unit has been connected to a subscriber telephone line, programming of the Security Code, telephone message, and telephone numbers can be made from a DTMF telephone connected to a second subscriber telephone line, at the site or elsewhere.

If the reset unit is not yet connected to a subscriber telephone line or a second subscriber telephone line is not available, programming of these configurable parameters can still be made from a DTMF telephone connected directly to the reset unit. For a direct connection, connect the DTMF telephone as follows:

- With the power disconnected, remove the top cover of the reset unit.
- Plug the DTMF telephone (with a male RJ-11-6 modular connector) into J3 on the large printed circuit board (not J1 on the small printed circuit board).
- Reconnect power to the reset unit.

Programming Feedback

While programming by telephone, all information sent to you from the Reset Unit is in the form of sound signals. The following signals are used:

Answer Tone - A loud tone lasting about one second is only used to answer an incoming call.

Buzz - A low-frequency tone lasting about one second is used to indicate that things are not OK; usually a bad programming entry.

3 Beeps - A string of 3 short, high-frequency tones is used to indicate that things are OK; usually confirmation for a valid programming entry.

Other uses of the buzz and 3 beeps, as well as your recorded voice messages, are described in the procedures where you will most likely hear them.

Programming Errors

If you make an invalid entry, you will hear a buzz in place of the 3 confirmation beeps. This means it did not accept your entry and you can try again, starting at the beginning of the sequence.

If you realize part way through a sequence that you have made a mistake, you can abort the sequence by pressing the # key. You will hear a buzz, telling you that it has aborted the sequence and made no change. You can then try again, starting at the beginning of the sequence.

If you have heard the 3 confirmation beeps since making the mistake, it accepted your mistake as a valid entry and you will need to undo the mistake. If the mistake was made to the intended parameter, just reconfigure the parameter to the intended value. If, however, the mistake was made to an unintended parameter, you must first identify the parameter. Then you can reconfigure it to the default or intended value.

Programming Mode

To access the programming mode, use the following procedure (skip steps 2 and 3 if the telephone is connected directly to the Reset Unit):

1. Lift the DTMF telephone handset off-hook.
2. Dial the number of the subscriber line connected to the reset unit.
3. Wait for ringback tone to stop (default is 10 rings).
4. Wait for answer tone to stop.
5. Dial the Security Code (default is 11).
6. Wait for 3 confirmation beeps.

You are now in the programming mode and can proceed with reconfiguring the Security Code, Telephone Numbers, and Messages. However, if at any time you do not press a key for 30 seconds, the Reset Unit will drop you from the programming mode and you will have to hang-up the handset and start over at step 1. To keep from being dropped while you think, press the ∗ key periodically.

Exit Programming

To deliberately exit the programming mode, use the following procedure:

1. Dial #.
2. Hang-up the DTMF telephone handset.

Security Code

To reconfigure the Security Code, use the following procedure after you have accessed the programming mode:

1. Dial 0∗.
2. Dial new security code (any number from 0 to 9999).
3. Dial ∗.
4. Wait for 3 confirmation beeps.

Be sure to record the new Security Code for later use. If you should forget the Security Code, you will need to enter the programming mode with a terminal or PC to see what the Security Code is.

Telephone Numbers

To reconfigure the Telephone Numbers, use the following procedure after you have accessed the programming mode:

1. Dial 7.
2. Dial 01 (stack number 1)
3. Dial a number from 0 to 9 (position in stack). Position 0 is called first, position 1 second, etc. (you can skip positions to facilitate future additions).
4. Dial a number from 01 to 16 (length of telephone number). Use 00 to remove a telephone number.
5. Dial the telephone number.
6. Wait for 3 confirmation beeps.
7. Repeat steps, starting at step 1, for each telephone number to be called.

If the telephone number requires a pause before the number or any of its parts, the number(s) along with the pause(s) will have to be programmed with a terminal or PC.

Telephone Messages

Plan Messages

Only message numbers which have meaning for the EDACS Guardog feature are covered here. Since only 20 seconds of total message time are available, you should carefully plan which message numbers will be of benefit to your system, how to allot this time, and how to word each selected message so that those using this feature will get the maximum useful information.

Message #01 is the most important message if you plan to use the Reset Unit mostly with the automatic reset cycle enabled. It is the message that the Reset Unit plays to the called telephone numbers after unsuccessfully completing the automatic reset cycle. Use this message to indicate the specific site, if more than one site in the system has an EDACS Guardog. For example: "Site ____ reset cycle failure".

Messages #25, #26, #27, #29 and #30 are the most important messages if you intend to use the Reset Unit mostly with the automatic reset cycle disabled. When you manually operate an output relay from a remote telephone, you do it in two steps. First you select the relay you want to operate and whether you want to energize or de-energize it; then you give the execute command. Between these two steps, two sequential messages are played (if recorded) to verify the operation you selected, before the operation is executed. Message #25, #26, or #27 is played first, and is used to identify the function of the output relay you selected. Message #29 or #30 is played second, and is used to identify the operation you selected for this relay.

If message #25 is used, it should indicate that this output is used to reset the Station GETCs. For example: "GETC reset".

If message #26 is used, it should indicate that this output is used to reset the Data Modem and Site Controller computer. For example: "Controller reset".

If message #27 is used, it should indicate that this output is used to disable the automatic reset cycle. For example: "Automatic reset disable".

If message #29 is used, it should indicate that the selected operation will energize the relay. For example: "On".

If message #30 is used, it should indicate that the selected operation will de-energize the relay. For example: "Off".

Messages #3 and #15 can be used to vocalize the status of the site when the Reset Unit is called and the status of input #3 is requested. Each message is redundant to a sound signal, that is present with or without the message.

Therefore, only use these messages if you have extra message time available.

If message #3 is used, it should indicate that the site is in Failsoft. For example: "Site in Failsoft". If the status of input #3 is requested while the site is in Failsoft, message #3 will be played (if recorded), followed by a buzz. If no message #3 is recorded, there will just be a buzz.

If message #15 is used, it should indicate that the site is not in Failsoft. For example: "Site okay". If the status of input #15 is requested while the site is not in Failsoft, message #15 will be played (if recorded), followed by 3 beeps. If no message #15 is recorded, there will just be 3 beeps.

Record Messages

Before you program any messages, make a plan by writing out the words and the allowed time for each message. For the sample messages shown in Table 2, you could allow 2 seconds for messages #1 and #27, and 1 second each for messages #3, #15, #25, #26, #29, and #30 for a total of 10 seconds. Remember that there are only 20 seconds of message time available in the standard package.

MESSAGE NUMBER	SAMPLE MESSAGE
01	Site ____ reset cycle failure
03	Site in Failsoft
15	Site okay
25	GETC reset
26	Controller reset
27	Automatic reset disable
29	On
30	Off

Table 2 - Sample Messages

The following four rules **absolutely must be followed** when programming voice messages:

1. If the allowed time of a message is increased or a message is added, all the higher message numbers that are being used must be re-programmed.
2. If the allowed time of a message is reduced or a message is removed, all the higher message numbers (used or not) must be re-programmed. (This includes every message number up to #30, not just those shown in Table 2.) Program an allowed time of 00 for message numbers not needed.
3. If the allowed time of a message is not changed, the message may be re-programmed without re-programming the other messages.
4. Always play back all used message numbers after a change in any message number.

It may be helpful to think of the voice memory as a cassette tape with 20 seconds of recording time, where messages must be physically stored in message number order. Using this analogy:

- Selecting the default parameter values is like erasing the cassette.
- Increasing a message length or adding a message will record over part or all of any next higher message number, making it necessary to re-record all higher message numbers used (see rule 1).
- Decreasing a message length or deleting a message will add the left over amount of the earlier message to the beginning of the next higher message number (used or not), making it necessary to re-program all higher message numbers (used or not), in order to use this residual memory time (see rule 2).
- Re-recording a message without changing the length has no effect on other messages (see rule 3).

Since the consequences of increasing a message length are easier to correct than to decrease it, start with a small message length. If the allowed time is too small, all you have to do is increase it one second and re-program the message.

To record messages, use the following procedure after you have accessed the programming mode:

1. Dial 41.
2. Dial a number from 01 to 30 (message number). Of the message numbers chosen to record a message, they must be recorded in message number order. See Table 2.
3. Dial a number from 00 to 10 (allowed time for message in seconds).
4. Immediately speak the message into telephone.
5. Listen for the end-of-allowed-time beep. If the beep comes before you finish, your whole message isn't recorded. Record the message over by starting again at step 1.
6. Repeat steps, starting at step 1, for each message number you need to record.

After recording each message, you may wish to hear how it sounds and check that it fits the allowed time. To play back a recorded message, see the next section.

Play Back Messages

To play back messages, use the following procedure after you have accessed the programming mode:

1. Dial 40 to play a recorded message.
2. Dial a number from 01 to 30 (message number). See Table 2.
3. Listen to message.
4. Repeat steps, starting at step 1, for each message number you want to play.

Message Repeats

The number of times message #1 is played for each call should be set to the maximum number of 25, for the short message length probably used in this application. Since the message starts to be played back as soon as the telephone call is placed, the large number of repeats is needed to assure that the message is still being played back after several rings. To make this change from the default value of 5, use the following procedure after you have accessed the programming mode:

1. Dial 24 (reconfigure repeats).
2. Dial 25 (number of repeats).
3. Wait for three confirmation beeps.

Input #3 Parameters

Input #3 can be used to monitor the Failsoft status of the site. To reconfigure the input #3 parameters for this, use the following procedure after you have accessed the programming mode:

1. Dial 532 (sets input #3 to the Status mode).
2. Wait for 3 confirmation beeps.
3. Dial 60303 (sets input #03 to Dial Stack #03).
4. Wait for 3 confirmation beeps.

PROGRAMMING BY TERMINAL OR PC

Setup

The reset unit can be programmed with a video display terminal, or PC containing terminal emulation software. Connect the RS-232 serial communications port of the terminal or PC to J1 on the back of the shelf, using a male DB-9 plug.

Turn on the terminal or PC, start the communications terminal software if using a PC, and set-up the message format as shown in Table 3.

PARAMETER	VALUE
Baud Rate	4800 BPS
Data Bits	8
Parity	No
Stop Bits	1

Table 3 - PC Message Format

Main Menu

To access the Reset Unit's programming mode, press the space bar three times and the Return key. The following text should then be displayed on the screen (if not, repeat the 3 space bars and a return):

```
MAIN MENU

All's {W}ell
{S}ecurity code
Ac{K}nowledge code
{N}umber of rings
{O}utputs
{I}nputs
{B} Site to GETC time delay
{R}epeats
A{C}knowledge wait
{V}oice
Dialing {M}ethod
{D}ial stack
{L}ist stack
{P}ause between calls
{A}nalog
de{F}aults
{E}xit

Command?
```

To exit the Reset Unit's programming mode, press the E key and the Return key. The following new text should then be displayed on the screen:

```
E

BYE!
```

If at any time while you are in the programming mode you don't press a key for 30 seconds, you will automatically be dropped from the programming mode. The following new text should then be displayed on the screen:

```


BYE!
```

To return to the Reset Unit's programming mode, press the space bar three times and the Return key. You can periodically press the * key to keep from being dropped.

If you realize part way through a Main Menu selection that you have made a mistake, do one of the following:

- If you have pressed the Return key since making the mistake, press the Return key twice in succession to abort the Main Menu selection.
- If you have not pressed the Return key since making the mistake, you can press the # key to return to where you were after last pressing the Return key.

Security Code

The Security Code is needed to do anything (make operational commands or program) by telephone, except acknowledge an alarm. The default value for the Security Code is 11. To reconfigure the Security Code, press the S key (for {S}ecurity code in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
Current security code is: 11
ENTER NUMBER OF DIGITS IN ACCESS CODE (1-4)
```

Press the 1, 2, 3, or 4 key to indicate how many DTMF digits will be in the new Security Code, and then the Return key. (Of all the DTMF keys, only the # key cannot be used in the Security Code.) For an example, let's say the new Security Code is to be 5∗2. In this example there are 3 DTMF digits, so you would press the 3 key and then the Return key. The following new text should then be displayed on the screen:

```
3
ENTER ACCESS CODE
```

Press the keys for the new Security Code and then the Return key. For our example, press the 5 key, ∗ key, 2 key, and then the Return key. The following new text should then be displayed on the screen:

```
5∗2
Command?
```

The "Command?" response means that your last Main Menu selection has been completed and it is ready for you to select another Main Menu item.

Acknowledge Code

The Acknowledge Code is needed to acknowledge an alarm by telephone. The default value for the Acknowledge Code is 2. To reconfigure the Acknowledge Code, press the K key (for Ac{K}nowledge code in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
User code for acknowledging is: 2
ENTER NUMBER OF DIGITS IN ACCESS CODE (1-4)
```

Press the 1, 2, 3, or 4 key to indicate how many DTMF digits will be in the new Acknowledge Code, and then the Return key. (Of all the DTMF keys, only the # key cannot be used in the Acknowledge Code.) For an example, let's say that the new Acknowledge Code is to be 41∗∗. In this example there are 4 DTMF digits so you would press the 4 key and then the Return key. The following new text should then be displayed on the screen:

```
4
ENTER ACCESS CODE
```

Press the keys for the new Acknowledge Code and then the Return key. For our example, press the 4 key, 1 key, ∗ key twice, and then the Return key. The following new text should then be displayed on the screen:

```
41∗∗
Command?
```

The "Command?" response means that your last Main Menu selection has been completed and it is ready for you to select another Main Menu item.

Telephone Numbers

These are the telephone numbers to be called and given an alarm message when the Automatic Reset Cycle fails to bring the site out of Trunked Failsoft. The telephone numbers for this alarm are programmed in stack 1.

The stack 1, first-called telephone number has been pre-programmed to 6484 for test purposes in the factory. To reconfigure this telephone number, press the D key (for {D}ial stack in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
Enter the stack you wish to edit (1-12)
```

Press the 1 key, to indicate that you wish to edit stack 1, and then the Return key. The following new text should then be displayed on the screen:

```
Which phone number --- (1-10)
```

Telephone numbers do not have to be programmed into consecutive positions within the stack. In fact, leaving spaces between initial telephone numbers makes it easier to add telephone numbers in the calling order you want later on. Press the 1 key, to indicate that you wish to edit the first-called phone number and then the Return key. The following new text should then be displayed on the screen:

```
Enter number of digits in phone number (1-15)
```

If, for example, the telephone number you want to have called first is 999-6666, the number of digits in the phone number would be 7. For this example you would press the 7 key and then the Return key. The following new text should then be displayed on the screen:

```
Enter Pause in seconds (0-15)
```

This is the pause between coming off hook and dialing the first digit. For our example, press the 0 key (to indicate no pause) and then the Return key. The following new text should then be displayed on the screen:

```
Enter phone number
```

For our example, press the 9 key three times, the 6 key four times, and then the Return key. The following new text should then be displayed on the screen:

```
Enter number of digits in phone number (1-15)
```

This response (also used earlier) is now asking for DTMF overdial digits (not the subscriber line number). If DTMF overdialing is required, see the Zetron manual. Otherwise, press the Return key. The following new text should then be displayed on the screen:

```
Command?
```

The "Command?" response means that your last Main Menu selection has been completed and it is ready for you to select another Main Menu item.

If another telephone number needs to be added, repeat the process starting with pressing the D key (for {D}ial stack in the Main Menu) and then the Return key.

Whenever you finish editing any telephone numbers, you should check them to make sure that they're correct. To show all the numbers programmed in the stack, press the L key (for {L}ist stack in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
Enter the stack you wish to edit (1-12)
```

To list all telephone numbers in stack 1, press the 1 key and then the Return key. For our example the following new text should then be displayed on the screen:

```
Voice call    : {0} 9996666
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Voice call    :
Command?
```

The "Command?" response means that your last Main Menu selection has been completed and it is ready for you to select another Main Menu item.

If all the telephone numbers are the way you want them, you may exit the Programming Mode by pressing the E key (for {E}xit in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
E

BYE!
```

If, however, you spot an error, you must repeat the process to correct the mistake, starting with pressing the D key (for {D}ial stack in the Main Menu) and then the Return key. You can write over a wrong telephone number, and you can erase a telephone number by entering 00 for its number of digits.

Message Repeats

The number of times message #1 is played for each call should be set to the maximum number of 25, for the short message length probably used in this application. Since the message starts to be played back as soon as the telephone call is placed, the large number of repeats is needed to assure that the message is still being played back after several rings. The default value for the number of alarm message repeats is 5. To reconfigure the number of repeats, press the R key (for {R}epeats in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
R
Repeat voice message (0-25): 005
```

Press 25 to indicate 25 repeats. The following new text should then be displayed on the screen:

```
25
Command?
```

The "Command?" response means that your last Main Menu selection has been completed and it is ready for you to select another Main Menu item.

Input #3 Parameters

Input #3 can be used to monitor the Failsoft status of the site. To reconfigure the input #3 parameters for this, press the I key (for {I}nputs in the Main Menu) and then the Return key. The following new text should then be displayed on the screen:

```
Input #1
Mode: N/O
Debounce:010
Stack:1


N/{O}pen
N/{C}losed
{M}omentary
{S}tatus
D{i}sable
{D}ebounce
{R}etries of call stack
Time {B}etween retries
{A}ck type
S{T}ACK
{N}ext
{E}xit

Command?
```

This is the current status of the parameters for input #1 followed by the Input Menu. Press the N key (for {N}ext in the Input Menu) and then the Return key. The status of the parameters for input #2 followed by the Input Menu should then be shown. Again press the N key (for {N}ext in the Input Menu) and then the Return key. The status of the parameters for input #3 followed by the Input Menu should then be shown.

Press the S key (for {S}tatus in the Input Menu) to change the input mode to Status. Press the T key (for S{T}ACK in the Input Menu) to change the call stack assignment. The following new text should then be displayed on the screen:

```
Choose stack of phone numbers for this alarm (1-12)
```

Press the 3 key to assign stack #3. Even though no telephone numbers are assigned to this stack, changing the assignment from stack #1 (the default value) allows stack #1 to be disabled whenever the automatic reset cycle is disabled.

OPERATION

OVERVIEW

The Reset Unit operates in either the Operational Mode or the RS-232 Programming Mode. The Operational Mode includes monitoring the inputs, following the Automatic Reset Cycle, following the External Automatic Reset Disable Cycle, and various controls by telephone including alarm acknowledgment, checking status of inputs, operation of control relays, and some limited parameter changes. These limited parameter changes are referred to as programming, but are not to be confused with the RS-232 Programming Mode.

The RS-232 Programming Mode refers only to programming through the RS-232 port, using a video display terminal or PC equipped with terminal emulation software. During this programming, the Reset Unit does not perform any of the Operational Mode activities. After 30 seconds of no programming activity, it automatically returns to the Operational Mode.

OPERATIONAL MODE

Monitor Inputs

The Reset Unit spends most of its time monitoring Sense Inputs #1 through #8, the telephone line, and the RS-232 port.

- A logic low at Sense Input #1 for 10 consecutive seconds (default value) initiates the automatic reset routine.
- A logic low at Sense Input #2 for 10 consecutive seconds (default value) initiates the external automatic reset disable routine.
- A logic low at Sense Input #3 indicates that the site is in Failsoft.
- Sense Inputs #4 through #8 are not used.
- A ringing voltage on the telephone line initiates manual control by telephone.
- Three space bars followed by an enter at the RS-232 port initiates the RS-232 Programming Mode.

Automatic Reset Cycle

When a Station GETC switches to the Failsoft mode of operation, its Failsoft Enable circuit is pulled down to a logic low by U23-D (see Figure 2). Diode D1 isolates each

GETC from each other GETC, and diode D2 keeps a powered off GETC from pulling down the Failsoft Status line.

The Failsoft Enable circuits from all Station GETCs in each repeater cabinet are connected in parallel to a Failsoft Status line. This Failsoft Status line is daisy-chained to the Site Controller cabinet, where it is connected to the Reset Unit (see interconnect diagrams at the end of this manual).

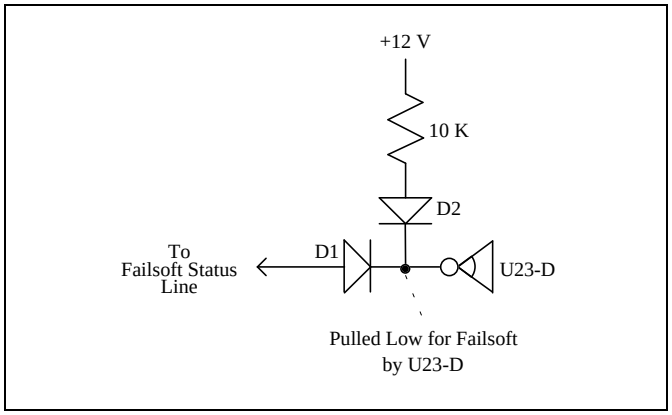

Figure 2 - GETC Failsoft Enable Circuit

The Failsoft Status line is always monitored by the Reset Unit at Sense Input #3, so that its status can be checked at any time. A logic low on the Failsoft Status line indicates that the site is in Failsoft.

The Failsoft Status line is also monitored by the Reset Unit at Sense Input #1, after going through the normally-closed K2 relay contacts of Output #3. Sense Input #1 is used to initiate the Automatic Reset Cycle. The K2 relay of Output #3 is used to disable the Automatic Reset Cycle.

The Reset Unit monitors the logic state of Sense Input #1 at all times, except when it is being programmed by a terminal or PC in the RS-232 Programming Mode. When the Automatic Reset Cycle is enabled, Sense Input #1 is connected to the Failsoft Status line. Table 4 lists conditions at inputs and resulting actions at outputs as a function of time for the complete, worst case situation involving all resets and ending in the disabling of the Automatic Reset Cycle.

The Automatic Reset Cycle is initiated by the presence of a logic low at Sense Input #1, continuously for 10 seconds. The Automatic Reset Cycle energizes the K4 relay of Output #1 for 2 seconds which applies ground, through the now closed normally-open contacts, to the GETC Reset line. The GETC Reset line is daisy-chained to the repeater cabinets where it is connected to each Station GETC's reset circuit.

At the same time, the Automatic Reset Cycle energizes the K1 relay of Output #4 for 120 seconds which applies ground, through the now closed normally-open contacts, to an external alarm circuit.

The Reset Unit allows 13 seconds for the GETCs to reset. The disappearance of a logic low at Sense Input #1 for any part of the 2-second window between t=13 and t=15 indicates that the GETC reset brought the site out of Failsoft, ending the Automatic Reset Cycle. Even though the K1 relay of Output #4 (for the external alarm output) will stay energized for 90 more seconds until t=120, the Automatic Reset Cycle is ready to start again if a new logic low is detected at Sense Input #1 continuously for 10 seconds.

The continuous presence of a logic low at Sense Input #1 for the 2-second window between t=13 and t=15 indicates that the GETC reset did not bring the site out of Failsoft, and the Automatic Reset Cycle continues on. The Automatic Reset Cycle energizes the K3 relay of Output #2 for 2 seconds which applies ground, through the now closed normally-open contacts, to the AC Relay Panel to energize its relay. The AC Relay Panel relay interrupts the ac power to the Site Controller computer and Data Modem for this 2-second interval. When the Site Controller computer and Data Modem are powered-on, they reset themselves.

The Reset Unit allows the Site Controller computer 90 seconds to reset. Then the Automatic Reset Cycle energizes the K4 relay of Output #1 for 2 seconds which applies ground, through the now closed normally-open contacts, to the GETC Reset line. The GETC Reset line is daisy-chained to the repeater cabinets where it is connected to each Station GETC's reset circuit.

The Reset Unit allows 13 seconds for the GETCs to reset. The disappearance of a logic low at Sense Input #1 for any part of the 2-second window between t=118 and t=120 indicates that the Site Controller computer reset and subsequent GETC reset brought the site out of Failsoft, ending the Automatic Reset Cycle.

The presence of a logic low at Sense Input #1 for the 2-second window between t=118 and t=120 indicates that the Site Controller computer reset and subsequent GETC reset failed to bring the site out of Failsoft. The last steps of a failed Automatic Reset Cycle are to initiate telephone calls and disable further Automatic Reset Cycles.

Further Automatic Reset Cycles are prevented by energizing (and latching) the K2 relay of Output #3, which removes the Failsoft Status line from Sense Input #1 (making it think the site is OK). Each telephone number programmed in stack 1 will be called once until all the numbers are called, or someone answers and correctly acknowledges the alarm message (message #1).

Automatic Reset Disable

Each time a reset occurs, any calls in progress are dropped. If this occurs too frequently, it may be better to disable the Automatic Reset Cycle and leave the site undisturbed in the Failsoft mode of operation until the condition can be corrected. The Automatic Reset Cycle can be disabled by any of the following methods:

- Failed Automatic Cycle (see Automatic Reset Cycle)
- Telephone Command (see Control by Telephone)
- Programming Command (see Programming Mode section)
- External Automatic Reset Disable Cycle (described here)

Input - Condition	Time	Output - Action
Sense Input #1 --- Reset Unit detects a logic low continuously for the last 10 seconds (default value) indicating that the site is in Failsoft.	t=0	Relay Output #1b --- Reset Unit energizes relay K4 for the next 2 seconds (default value) which connects ground, through the now closed normally-open contacts, to the GETC Reset line to reset all Station GETCs. Relay Output #4b --- Reset Unit energizes relay K1 for the next 120 seconds (default value) which connects ground, through the now closed normally-open contacts, to signal a Failsoft condition to an external alarm circuit.
Sense Input #1 --- Reset Unit detects a logic low continuously for the last 2 seconds (default value) indicating that the site is still in Failsoft after the first GETC reset.	t=15	Relay Output #2b --- Reset Unit energizes relay K3 for the next 2 seconds (default value) which connects ground, through the now closed normally-open contacts, to the Controller Reset line to operate the relay in the ac outlet box to reset the Controller.
	t=105	Relay Output #1b --- Reset Unit energizes relay K4 for the next 2 seconds (default value) which connects ground, through the now closed normally-open contacts, to the GETC Reset line to reset all Station GETCs.
Sense Input #1 --- Reset Unit detects a logic low continuously for the last 2 seconds (default value) indicating that the site is still in Failsoft after the second GETC reset.	t=120	Relay Output #3a to #3b --- Reset Unit energizes and latches relay K2 which disconnects the Failsoft Status line from Sense Input #1, through the now open normally-closed contacts, to disable further Automatic Resets as long as relay K2 is latched. Telephone Line --- Reset Unit calls programmed telephone numbers (if any are programmed) and gives an alarm message (if any is programmed).

Table 4 - Automatic Reset Sequence

The External Automatic Reset Disable Cycle is intended to be used only for those applications where a telephone line is not available at the site. It is started when a logic low from an external, remotely-controlled circuit applies a logic low at Sense Input #2 continuously for 10 seconds (default value). This sequence is identical to that of the Automatic Reset Cycle except for the following:

- The sequence progresses as if there was a logic low at Sense Input #1 throughout the sequence.
- No telephone calls are made at the end of the sequence.

Operational Commands by Telephone

Operational Commands allow the user of a standard touch-tone (DTMF) telephone to acknowledge alarms, check status of inputs, operate output relays, change voice messages, and change some working parameters. See the Programming by Telephone heading in the Installation section for additional information not covered here.

Acknowledge Alarms

The alarm message (message #1) must be stopped and acknowledged before the end of the last repeat, in order to prevent the alarm unit from calling the next number on call stack 1. Remember that the message is being repeated while the telephone is ringing, so don't be slow. Even with 25 repeats, a two-second message will time out 50 seconds after the call is placed.

To respond to an alarm message, you can simply acknowledge the alarm message, or you can acknowledge the alarm message and make some checks and/or changes. Use the following procedure:

1. Answer the telephone.
2. Listen to the alarm message.
3. Press 8, the stop message command. (Don't wait till the messages stop.)
4. Press 2 (default value), the acknowledge code for acknowledging the alarm message (if you only want to acknowledge the alarm message). Alternatively, you may press 11 (default value), the security code for programming (if you not only want to acknowledge the alarm message but also want to make some check and/or change). (If after you press 2 (default value), you decide you also want to make some check and/or change, you will have to follow through with the acknowledgment procedure already started, hang up, and call back.)
5. Wait for 3 confirmation beeps.
6. Press 8, the acknowledge alarm command.
7. Wait for 3 confirmation beeps.
8. If you pressed 2 (default) in step 4, go to step 9.

   If you pressed 11 (default) in step 4, you may now press a command from Table 5 and return to step 7; or you may press the command from Table 6, listen to message (if any is programmed), press ∗ (the execute command), and return to step 7; or you may stop by going to step 9.
9. Press #, the exit command.
10. Hang up the telephone.

While programming (if you pressed 11 in step 4), the Reset Unit continues to monitor its inputs and perform any Automatic Reset or External Automatic Reset Disable routine just as before. However, any alarm message telephone calls will be delayed until you press #, the exit command, and hang up the telephone. If you fail to press # before hanging up the telephone, you will have to wait for the 30-second no-programming-activity timer to time out before it can make any alarm message calls or you can call back.

Check Status of Inputs

To check the status of an input, use the following procedure:

1. Call the telephone number of the telephone line connected to the Reset Unit.
2. Wait for the ringback tone to stop.
3. Wait for the answer tone to stop.
4. Press 11 (default), the security code for programming.
5. Wait for 3 confirmation beeps.
6. Press a command from Table 5.
7. Press #, the exit command, or return to step 6.
8. Hang up the telephone.

While programming (if you pressed 11 in step 4), the Reset Unit continues to monitor its inputs and perform any Automatic Reset or External Automatic Reset Disable routine just as before. However, any alarm message telephone calls will be delayed until you press #, the exit command, and hang up the telephone. If you fail to press # before hanging up the telephone, you will have to wait for the 30-second no-programming-activity timer to time out before it can make any alarm message calls or you can call back.

Command	Function	Condition
301	Automatic Reset	Logic Low
302	Auto Reset Disable	Logic Low
303	Failsoft Status	Logic Low
315	Failsoft Status	Logic High

Table 5 - Input Status Commands

Operate Output Relays

To energize (turn on) or de-energize (turn off) an output relay, use the following procedure:

1. Call the telephone number of the telephone line connected to the Reset Unit.
2. Wait for the ringback tone to stop.
3. Wait for the answer tone to stop.
4. Press 11 (default), the security code for programming.
5. Wait for 3 confirmation beeps.
6. Press a command from Table 6.
7. Listen to the message (if any is programmed).
8. Press ∗, the execute command.
9. Wait for 3 confirmation beeps.
10. Press #, the exit command, or return to step 6.
11. Hang up the telephone.

While programming (if you pressed 11 in step 4), the Reset Unit continues to monitor its inputs and perform any Automatic Reset or External Automatic Reset Disable routine just as before. However, any alarm message telephone calls will be delayed until you press #, the exit command, and hang up the telephone. If you fail to press # before hanging up the telephone, you will have to wait for the 30-second no-programming-activity timer to time out before it can make any alarm message calls or you can call back.

Command	Function	Result
103	Auto Reset Enable	K2 off
104	Reset External Alarm	K1 off
111	GETC Reset	K4 on 2 sec*
112	Controller Reset	K3 on 2 sec*
113	Auto Reset Disable	K2 latched on
114	Test External Alarm	K1 on 120 sec*

* default values

Table 6 - Output Relay Commands

RS-232 PROGRAMMING MODE

The RS-232 Programming Mode is normally only used to initially reconfigure the default parameters associated with installation. See the Programming by Terminal or PC heading in the Installation section for additional information not covered here. Also see the Zetron 1512 SentriDial Technical Manual #025-9121.

Default values of configurable parameters are used in the operational descriptions. Selecting "de{F}aults" from the Main Menu will return these parameters to the default values.

When programming the inputs from the "Input Menu", it will appear as though it is possible to change the input "Mode" for Digital Inputs #1 and #2. However, no matter what Mode is displayed, Digital Inputs #1 and #2 are permanently fixed as normally open inputs, with a 10-second debounce (default value), for this application.

The Site to GETC time delay parameter has been added for this custom software application. It is the time the Reset Unit allows for the Site Controller computer to completely reset before resetting the GETCs the second time. Its default value is 90 seconds and should stay that value, as this is the approximate time needed for the Site Controller computer to reboot and begin polling the GETCs.

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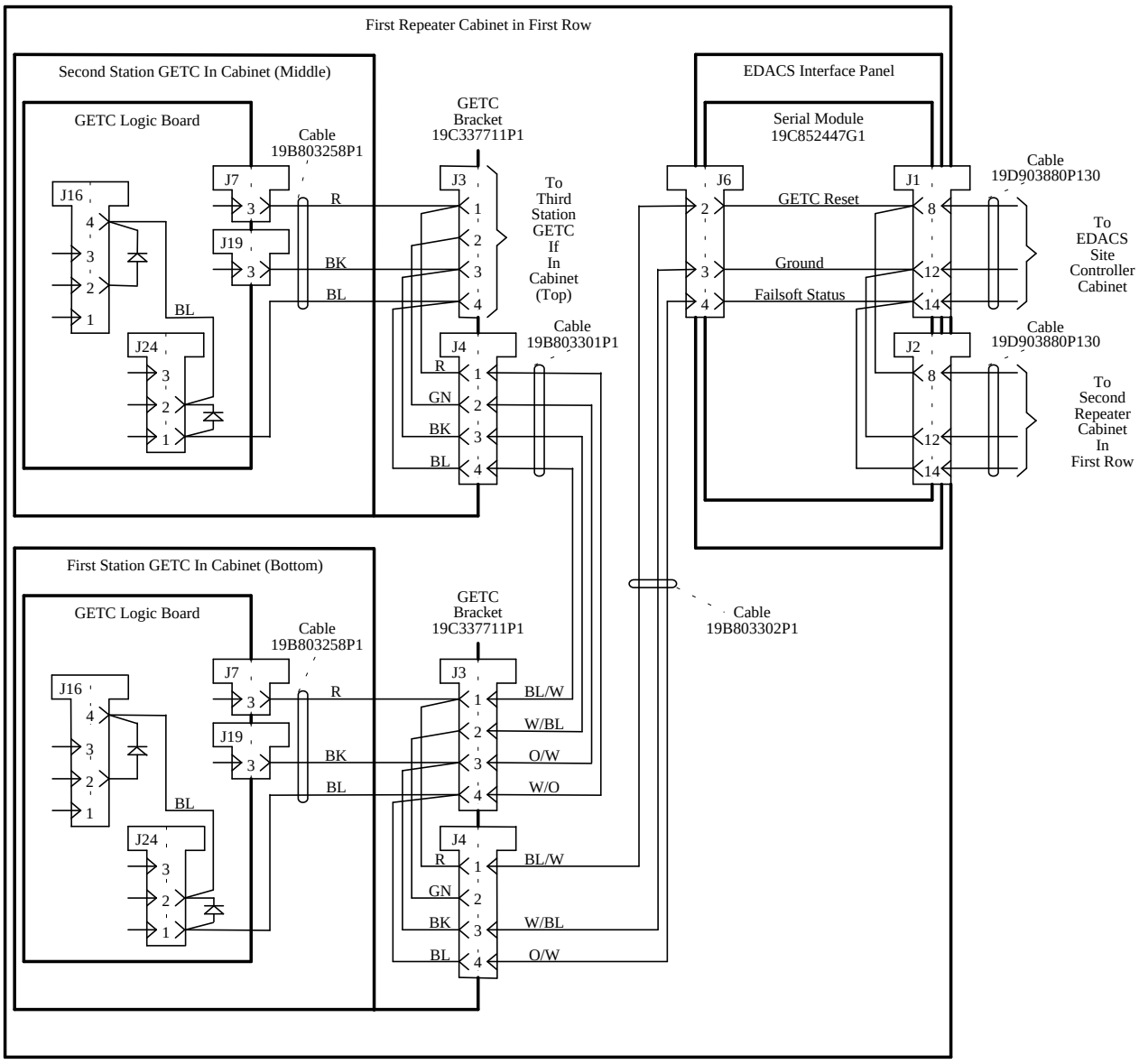
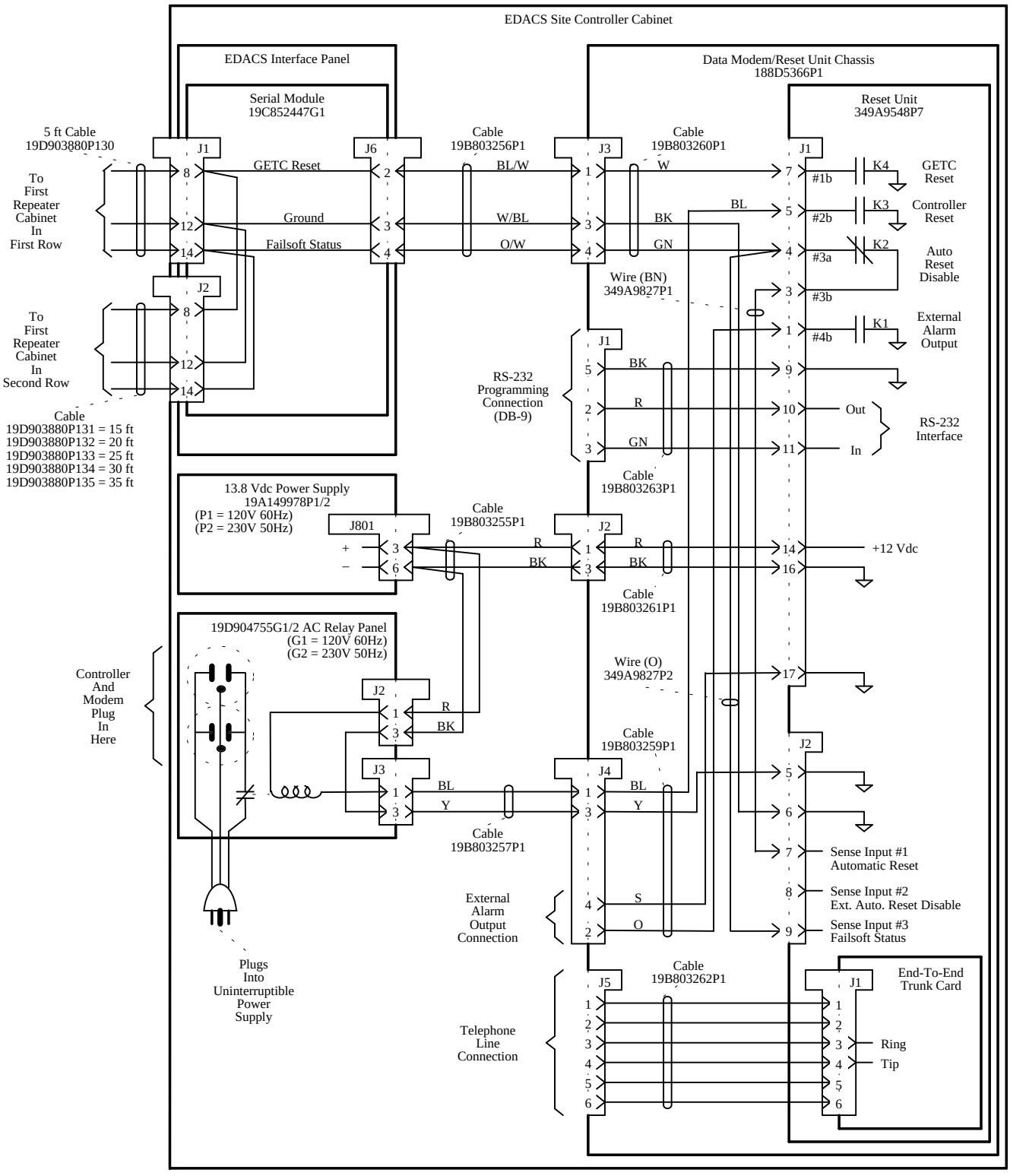
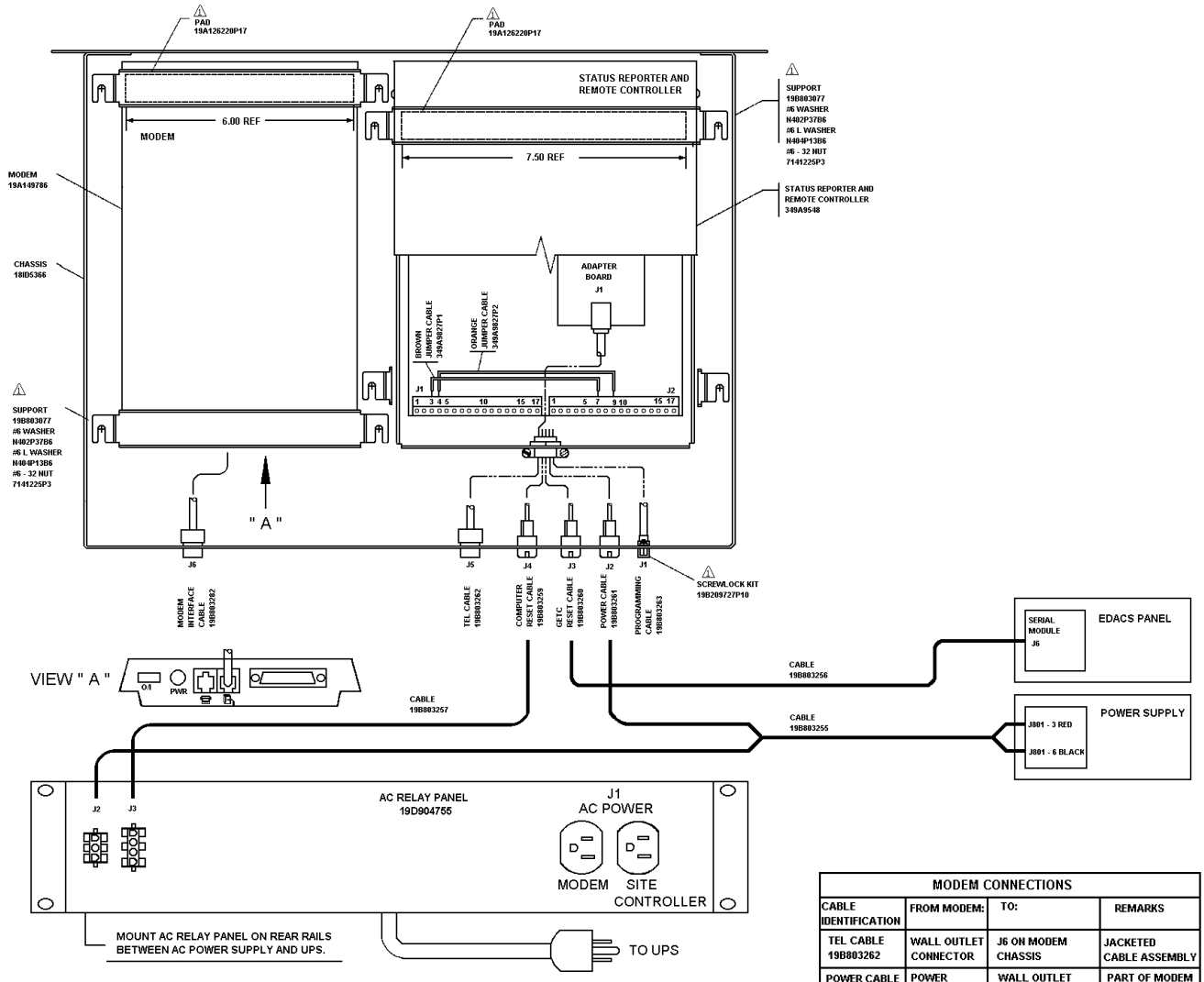


EDACS GUARDOG INTERCONNECTION DIAGRAM
EDACS Repeater Cabinet



EDACS GUARDOG INTERCONNECTION DIAGRAM
EDACS Site Controller Cabinet



MODEM CONNECTIONS			
CABLE IDENTIFICATION	FROM MODEM:	TO:	REMARKS
TEL CABLE 19B803262	WALL OUTLET CONNECTOR	J6 ON MODEM CHASSIS	JACKETED CABLE ASSEMBLY
POWER CABLE	POWER CONNECTOR	WALL OUTLET POWER SUPPLY	PART OF MODEM POWER SUPPLY
SIGNAL CABLE	WALL OUTLET CONNECTOR	J5	DB-25 SIGNAL CONNECTION

CONTROLLER CONNECTIONS			
CABLE IDENTIFICATION	FROM MODEM CHASSIS CONNECTOR	TO STATUS REPORTER & REMOTE CONTROLLER	WIRE COLOR OR DESCRIPTION
COMPUTER RESET CABLE 19B803259	J4 (J4-1) (J4-2) (J4-3) (J4-4)	J1-5 J1-1 J2-5 J1-17	BLUE ORANGE YELLOW GRAY
GETC RESET CABLE 19B803260	J3 (J3-1) (J3-3) (J3-4)	J1-7 J2-8 J1-4	WHITE BLACK GREEN
POWER CABLE 19B803261	J2 (J2-1) (J2-3)	J1-14 J1-16	RED BLACK
PROGRAMMING CABLE 19B803263	J1 (J1-2) (J1-3) (J1-5)	J1-10 J1-11 J1-9	RED GREEN BLACK
TEL CABLE 19B803262	J5	ADAPTOR BOARD J1	JACKETED CABLE

(1) NOTES:

⚠ PART OF HARDWARE KIT 349A9859G1

2 SECURE 220 VOLT MODEM POWER SUPPLY (PRESENT ONLY IN 220 VOLT SYSTEMS) TO REAR CABINET RAILS WITH PLASTIC TIES 19J708152P2 ⚠

EDACS GUARDOG ASSEMBLY DIAGRAM
EDACS Site Controller Cabinet

(188D5339, Sh. 1, Rev. 1A)