



E**SERIES**® Configuration Guide

real **CPR** help®

see-thru **CPR**®

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TABLE OF CONTENTS

Chapter 1 Introduction 1

Entering System Configuration Mode.....	2
Printing Configuration Settings.....	3
Reading Data from a Memory Card	4
Restoring Default Values.....	5
Accessing and Changing Configuration Parameters	6
Leaving Configuration Mode.....	6

Chapter 2 Configuration Parameters 7

General Parameters	8
Code Markers.....	8
Device Identifier	9
Configuration Mode Passcode	10
ECG Monitoring Parameters	12
Notch Filter	12
Frequency Response	12
Display Lead on Power-Up	12
Gain on Power-Up.....	13
Enable Leads Off	13
Enable Pacer Detection	13
Tone Parameters	14
QRS Volume on Power-Up	14
Low Battery Tone	14
Basic Defibrillation Parameters	15
Defib Default to Pads	15
Basic Auto Energy Escalation	15
Retain Sync After Defib.....	15
Advisory Defibrillation Parameters	16
Energy Level: Shock 1	16
Energy Level: Shock 2	16
Energy Level: Shock 3	17
Auto Charge in Advisory Mode	17
Auto Analyze	17
Stacked Shocks	18
Display DO CPR Message	18
CPR Message After Shock	19
CPR Message After No Shock Advised	19
Duration of CPR Interval	19
Check Pulse	20
Restart Analysis After CPR	20

Check Patient Prompt	20
Enable Voice in Advisory Mode	21
Continual Check Patient Audio Prompt.....	21
Enable SCE	21
Post SCE Result on Display	21
SCE Level.....	22
SCE Alter Adv Decision	23
Semi-Auto Mode Parameters.....	24
Manual Mode Passcode	24
Display ECG in Semi-Auto Mode.....	25
Display Heart Rate in Semi-Auto Mode	25
Auto Analyze on Power Up (Semi-Automatic Mode only).....	25
Extra CPR Interval Before 1st Analysis	26
Duration of Extra CPR Interval.....	26
Enable 12 Lead in Semi-Auto Mode	26
AED Defib Ready Hold Time	27
Emit QRS Beeps (Semi-Automatic Mode only)	27
Pace Parameters.....	28
Pace Rate Setting on Power Up	28
Async Softkey in Pace Mode	28
12-Lead Parameters.....	29
Print 12 Lead 4 X 3	29
12 Lead Printout.....	29
12 Lead Freq Response	30
Print 2 Copies 12 Lead	30
Print 12 Lead Measurements.....	30
Print 12 Lead Interpretation	30
Auto Transmit After 12 Lead.....	31
12 Lead Fax Format.....	31
Cell Phone Type	31
Fax/Communication Phone Numbers	32
Set Lead Groups.....	34
Lead Group Default.....	34
12 Lead Secs Per Lead	35
12 Lead Print Speed	35
MUSE Site and Location.....	35
PTCA Message Enabled.....	36
PTCA Threshold	37
EtCO2 Parameters	38
Default EtCO2 Units.....	38
Displayed Zoom Level	38
Default EtCO2 Comp Setting	38
Power Save Mode at Power Up.....	39
EtCO2 Average On Power Up	39

NIBP Parameters.....	40
NIBP Units	40
Trigger NIBP Meas on BP Alarm	40
Trigger NIBP Meas on HR Alarm.....	40
NIBP Auto Interval Default.....	41
NIBP First Inflate Pressure Default.....	41
NIBP Button Press and Hold.....	41
Alarm Parameters	42
Alarms Active at Power Up	42
Alarms Limits at Power Up.....	42
Trending Parameters	44
Trending Enabled.....	44
Trending Report Restart Delay	44
Trending Report Zoom Level	44
Display Parameters	45
Display Elapsed Time	45
ECG Color.....	45
SpO2 Color	45
EtCO2 Color.....	46
NIBP Color	46
CPR Color.....	46
Set Report Restart Delays Parameters	47
Summary Report Restart Delay	47
Printer Parameters.....	48
Auto Generate Strips	48
Print 3 Leads When Leads Sel.	48
Custom 5 Wire Grouping in Use	49
Data Card Parameters	50
Record ECG Data in Advisory Mode	50
Record Audio in Advisory Mode.....	50
Record SpO2 in Advisory Mode.....	51
Record EtCO2 in Advisory Mode	51
Report Memory Card Errors.....	51
Allow Card Erase	51
Card Capacity Message Enabled	52
Erase Card Prompt at Pwr Off	52
Remove Card Prompt at Pwr Off	52
Sync Defib Excluded.....	53
Time Parameters	54
Clock Synchronization	54
Daylight Savings	55
Display Time Sync. Required Message	55
Communications Parameters	56
Upload Baud Rate.....	56

Bluetooth Baud Rate.....	56
Enable Data Relay	56
CPR Parameters.....	57
Display CPR Compression Bar Graph.....	57
CPR Record Data to Card	57
CPR Guidance Audio Prompts	57
CPR Compression Metronome	58

Chapter 1

Introduction

The E Series[®] is designed with several user selectable features that allow operators to configure the device according to their protocols and local requirements. This manual describes the configuration parameters (options and default settings) and how to change them.

Note: Some features are available to manual mode operators only.

For more information, see the following sections:

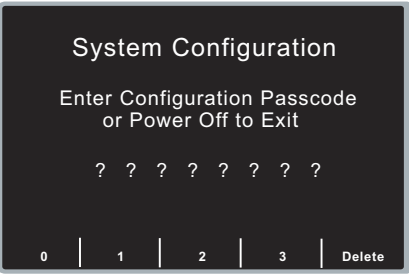
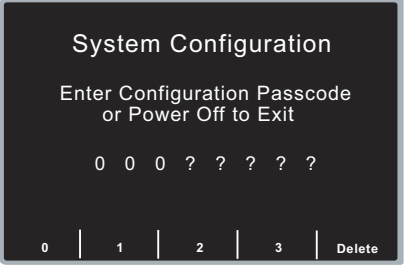
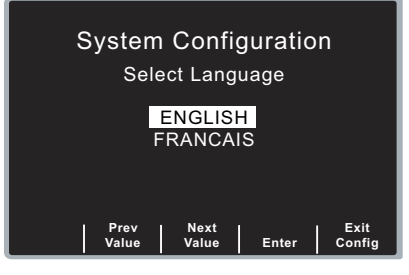
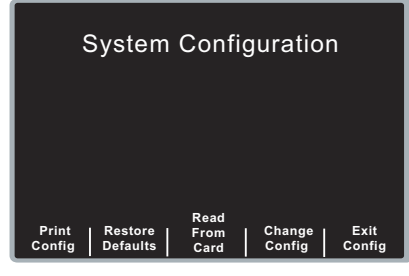
- “Entering System Configuration Mode” on page 2
- “Printing Configuration Settings” on page 3
- “Reading Data from a Memory Card” on page 4
- “Restoring Default Values” on page 5
- “Accessing and Changing Configuration Parameters” on page 6
- “Leaving Configuration Mode” on page 6

Entering System Configuration Mode

In order to make any changes to unit configuration, you must first power on the unit in System Configuration mode.

Procedure

Follow these steps to power on the unit in System Configuration mode:

Step	Action	
1.	Turn the selector switch to OFF, and wait 10 seconds. Simultaneously press and hold the right-most and left-most softkeys (below the monitor) while turning the selector switch to MONITOR (ON for AED units), and hold the softkeys for approximately 4 seconds. The unit powers on in System Configuration mode.	 The screenshot shows a black screen with white text. At the top, it says 'System Configuration'. Below that, it says 'Enter Configuration Passcode or Power Off to Exit'. There are eight question marks in a row for the passcode. At the bottom, there are five buttons: '0', '1', '2', '3', and 'Delete'.
2.	Enter the passcode using the appropriate softkeys. Note: When you enter System Configuration for the first time, enter the default pass code of 00000000. To change a digit, use the Delete softkey to highlight the entry and re-enter the digit. When all 8 digits have been entered, the unit automatically advances to the Select Language screen.	 The screenshot shows a black screen with white text. At the top, it says 'System Configuration'. Below that, it says 'Enter Configuration Passcode or Power Off to Exit'. The first three digits '0 0 0' are entered, followed by five question marks. At the bottom, there are five buttons: '0', '1', '2', '3', and 'Delete'.
3.	Use the Prev Value and Next Value softkeys to toggle the highlighted area between the language options.	 The screenshot shows a black screen with white text. At the top, it says 'System Configuration'. Below that, it says 'Select Language'. There are two options: 'ENGLISH' and 'FRANCAIS'. 'ENGLISH' is highlighted with a white box. At the bottom, there are four buttons: 'Prev Value', 'Next Value', 'Enter', and 'Exit Config'.
4.	Press the Enter softkey to select the highlighted language. All subsequent configuration menus will be in the selected language. The unit automatically advances to the Main Configuration menu.	 The screenshot shows a black screen with white text. At the top, it says 'System Configuration'. Below that, there are five buttons: 'Print Config', 'Restore Defaults', 'Read From Card', 'Change Config', and 'Exit Config'.

Printing Configuration Settings

The default settings shown below are for North American units only. To print the current configuration of your unit, while the unit is in the System Configuration mode, press the **Print Config** softkey from the Main System Configuration menu. For instructions on putting the unit in System Configuration mode, refer to the previous section, “Entering System Configuration Mode.”

Procedure

Press the **Print Config** softkey to print a stripchart of all the unit’s configuration parameters.

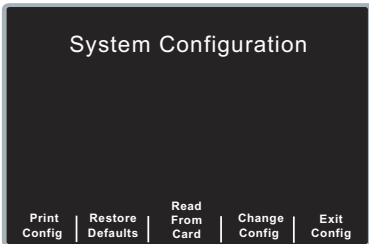
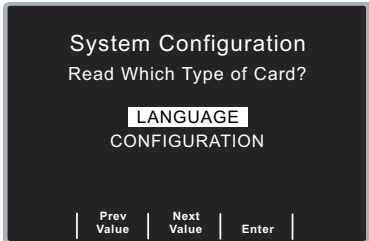
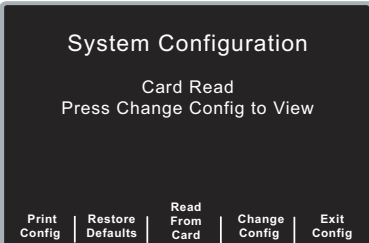
ZOLL E SERIES CONFIGURATION REPORT		GLOBAL OPTIONS	
SYSTEM SERIAL NUM	00000002	NOTCH FILTER	60 Hz
SW REL NUM	02.00.003	LOW BATTERY TONE	1 Min
BOOT	1.00	DISPLAY ELAPSED TIME	Yes
G.A.	3.00	ASYNC SOFTKEY IN PACE	Yes
CONFIGURATION	4.00	CONFIG MODE PASSCODE	00000000
ECU	3.00	ENABLE Data Relay	Yes
UBP	0.07.00	BLUETOOTH BAUD RATE	38400 bps
DATE	26 JUL 06	UPLOAD BAUD RATE	115200 bps
TIME	07:59:40	SUMMARY RESTART DELAY	1.5 Days
LAST CONFIG DATE	21 JUL 06	ENABLE LEADS OFF	Yes
DEVICE ID:	00000000 000	BASIC AUTO ENERGY ESCALATION	No
LANGUAGE	English	ENABLE PACER DETECTION	Yes
	2.00		

Reading Data from a Memory Card

You can load language or configuration data into the unit's memory from a memory card.

Procedure

Follow these steps to load data from a memory card:

Step	Action
1.	Install the memory card in the E Series unit, and power on the unit in System Configuration mode as described in "Entering System Configuration Mode" on page 2. 
2.	Press the Read From Card softkey to display the Read Card screen. Use the Prev Item and Next Item softkeys to toggle the highlighted area between the LANGUAGE and CONFIGURATION card options. 
3.	Press the Enter softkey to initiate reading and storing the settings from the user-installed memory card. Once the card has been read and loaded, the unit displays the <i>CARD READ</i> message (for a language card) or the <i>CARD READ</i> and <i>PRESS CHANGE CONFIG TO VIEW</i> messages (for a configuration card). 

If you want to review configuration settings, press the **Change Config** softkey. See "Accessing and Changing Configuration Parameters" on page 6 for more information. If you want to leave System Configuration mode, press the **Exit Config** softkey. See "Leaving Configuration Mode" on page 6 for more information.

If the unit encounters an error reading the memory card, one of the following error messages is displayed:

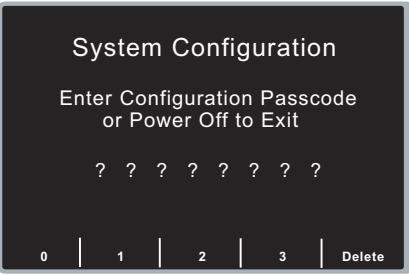
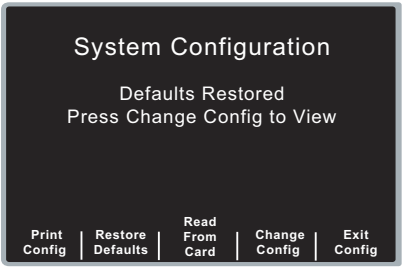
Error Message	Description
<i>CARD READ FAILED</i>	No response is detected from the card reader.
<i>BAD CARD</i>	The unit cannot read from card.
<i>WRONG CARD TYPE</i>	The card is the wrong type.
<i>CONFIG DATA NOT COMPATIBLE</i>	Internal software is unable to read card data.
<i>NO CARD INSERTED</i>	The card is not installed in PCMCIA slot.
<i>CARD EMPTY</i>	There is no data on card.

Restoring Default Values

You can restore all configuration parameter values to their factory default settings. Only the display language, if different from the default, does not change.

Procedure

Follow these steps to restore all configuration parameters to default values:

Step	Action
1.	Power on the unit in System Configuration mode as described in “Entering System Configuration Mode” on page 2. 
2.	Press the Restore Defaults softkey to reconfigure parameter values to their default settings. Once default settings are restored, the unit displays the <i>DEFAULTS RESTORED</i> and <i>PRESS CHANGE CONFIG TO VIEW</i> messages. 

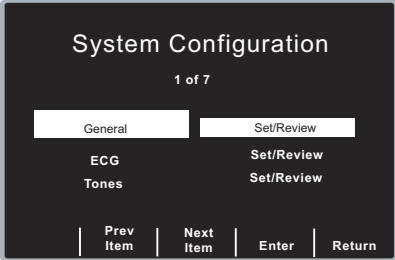
If you want to review configuration settings, press the **Change Config** softkey. See “Accessing and Changing Configuration Parameters” on page 6 for more information. If you want to leave System Configuration mode, press the **Exit Config** softkey. See “Leaving Configuration Mode” on page 6 for more information.

Accessing and Changing Configuration Parameters

You can change the current value for any configuration parameter. You access most of the parameters in the same way as described below. Additional steps are required to access and modify several parameters. For those parameters, there are additional steps provided with the parameter description in the next chapter.

Procedure

Follow these steps to access the parameters.

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The unit advances to the Parameter Categories screen. 
2.	Use the softkeys on the screen to scroll through and select a category, or exit as follows: • Prev Item, Next Item — moves the highlight back and forth through the list of categories. • Enter — provides you access to the options of the highlighted category. • Return — returns you to the Main System Configuration screen.
3.	Once you select and access the options for a category, highlight the specific parameter you want to change, and press the Change Value softkey until the appropriate value is displayed.
4.	When you are finished, you can either press the Return softkey to return to the Category screen, or press the Prev Item or Next Item softkey to move to another category whose parameters you want to modify.

Leaving Configuration Mode

If you press the **Exit Config** softkey on the Main System Configuration screen, the unit prompts you to save or discard any changes. Select the appropriate option, and then press the **Enter** softkey.

Chapter 2

Configuration Parameters

This chapter describes all of the configuration parameters on the E Series and includes the following sections.

- “General Parameters” on page 8
- “ECG Monitoring Parameters” on page 12
- “Tone Parameters” on page 14
- “Basic Defibrillation Parameters” on page 15
- “Advisory Defibrillation Parameters” on page 16
- “Semi-Auto Mode Parameters” on page 24
- “Pace Parameters” on page 28
- “12-Lead Parameters” on page 29
- “EtCO2 Parameters” on page 38
- “NIBP Parameters” on page 40
- “Alarm Parameters” on page 42
- “Trending Parameters” on page 44
- “Display Parameters” on page 45
- “Set Report Restart Delays Parameters” on page 47
- “Printer Parameters” on page 48
- “Data Card Parameters” on page 50
- “Time Parameters” on page 54
- “Communications Parameters” on page 56
- “CPR Parameters” on page 55

Note: The instructions in this chapter assume that you powered on the unit in System Configuration mode as described in “Entering System Configuration Mode” on page 2, and are familiar with how to access the parameters, see “Accessing and Changing Configuration Parameters” on page 6.

General Parameters

General parameters are attributes that affect the unit's basic operation and accessibility and include:

- Code Markers
- Device Identifier
- Configuration Mode Passcode

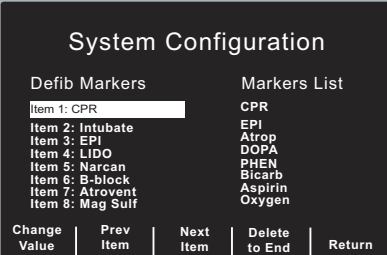
Code Markers

This parameter allows you to review and change the preconfigured list of Code Markers for use in DEFIB, MONITOR, and PACE modes. Code Marker settings are language dependent. You can specify up to three groups (MONITOR, DEFIB, and PACE) of 20 entries each.

Note: MONITOR code markers are not used in AED units.

Procedure

Follow these steps to review, change, or reset code marker settings:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. 
2.	Select General and press the Enter softkey, then press the Change Value softkey.
3.	Select either DEFIB CODE MARKERS, MONITOR CODE MARKERS, or PACE CODE MARKERS, then press the Change Value softkey to toggle between Change/Review or Set to Defaults. • If you select Set to Defaults, press the Enter softkey to set the chosen code markers to their default values. • If you select Change/Review, press the Enter softkey to access the screen that allows you to change the marker, as shown. This example shows the DEFIB CODE MARKERS screen. 

Step	Action
4.	Use the softkeys as follows: • Prev Item and Next Item — scrolls the highlight to the next or previously highlighted code marker feature. • Change Value— allows you to pick a new marker for the selected item number. • Delete to End — delete all configured markers from the highlighted item number to the end of the list. You can then enter new clinical actions for each item. • Return — returns you to the previous menu.

Device Identifier

The Device Identifier feature allows you to set an 11-digit device identifier code. This code is divided into two sub codes: the site ID (consisting of eight alphanumeric characters) and the device ID (consisting of three alphanumeric characters). The device identifier is printed on the 12-lead strip chart, summary report, fax and Catalyst MUSE printouts.

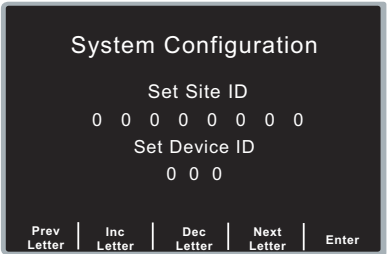
If you are transmitting 12-lead ECG data to a Catalyst MUSE system, you should set up the device identifier.

Values are as follows:

Possible Values:	0 through 9, A through Z, blank and underscore inclusive for each digit.
Default:	00000000 000

Procedure

Follow these steps to set up a device identifier.

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select General, then press the Enter softkey.
	
2.	Select Device Identifier and press the Change Value softkey. The Device Identifier screen is displayed.
	

Step	Action
3.	Use the softkey as follows: • Prev Letter — moves the highlight left to the previous digit. • Inc Letter or Dec Letter — increments or decrements the selected digit. • Next Letter — moves the highlight right to the next digit to be entered. • Enter— saves the values that you entered and returns the unit to the General Configuration menu.

Configuration Mode Passcode

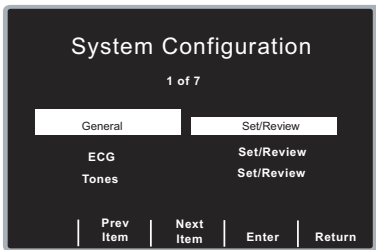
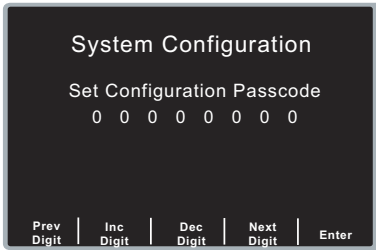
This feature allows you to set an 8-digit system configuration passcode. Once set, only those people who know the passcode can access configuration mode and modify parameters.

Values are as follows:

Possible Values:	0 through 3 inclusive for each digit
Default:	00000000

Procedure

Follow these steps to set up a configuration mode passcode:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears Select General, then press the Enter softkey. 
2.	Select Configuration Mode Passcode and press the Change Value softkey. The Set Configuration Passcode screen is displayed. 

Step	Action
3.	Use the softkeys as follows: • Prev Digit — moves the highlight left to the previous digit. • Inc Digit or Dec Digit — increments or decrements the value of the selected digit. • Next Digit — moves the highlight right to the next digit to be entered. • Enter— saves the values that you entered and returns the unit to the General Configuration menu.

ECG Monitoring Parameters

ECG monitoring parameters are attributes associated with using the E Series unit for ECG monitoring, and include:

- Notch Filter
- Frequency Response
- Display Lead on Power-Up
- Gain on Power-Up
- Enable Leads Off
- Enable Pacer Detection

Notch Filter

This parameter allows you to set the ECG Notch Filter frequency for proper ac mains interference rejection.

Values are as follows:

Possible Values:	50 Hz, 60 Hz
Default:	60 Hz

Frequency Response

This parameter allows you to select the ECG filter bandwidth to be used during ECG monitoring. You can set the unit's frequency to either help reduce noise, help with the diagnostic response, or set it as a default response.

Values are as follows:

Possible Values:	0.67 - 21 Hz, 0.67 - 27 Hz, 1 - 21 Hz
Default:	0.67 - 21 Hz

Display Lead on Power-Up

This parameter allows you to select the lead to be displayed on power-up.

For AED units, when the unit powers on in semi-automatic mode, this option is ignored. The unit powers on in Lead II, and switches leads automatically between leads II and MFE for Auto Monitor and Auto Defib modes, respectively. When the unit enters Manual Mode (Manual Mode override sequence is completed), the lead switches to the setting specified in the "Display Lead on Power-Up" option.

Values are as follows:

Possible Values:	Paddles/Pads, Lead I, Lead II, Lead III
Default:	Paddles/Pads

Gain on Power-Up

This parameter allows you to set the default size of the displayed ECG signal at unit power on.

Values are as follows:

Possible Values:	0.5 cm/mV, 1.0 cm/mV, 1.5 cm/mV, and 2.0 cm/mV
Default:	1.5 cm/mV for AED mode 1.0 cm/mV for Manual mode

Enable Leads Off

This parameter specifies whether the unit displays the *ECG LEADS OFF* message and a flat dashed ECG waveform when the unit detects that ECG leads do not have proper contact with the patient or the cable is not properly attached to the E Series unit. When set to No, the unit displays the *POOR LEAD CONTACT* message and the detected ECG signals when the cable or ECG leads are not properly attached to the patient or unit. When set to Yes, the unit displays the *ECG LEADS OFF* message and a flat dashed ECG waveform when the cable or ECG leads are not properly connected.

Caution	Use care when interpreting ECG waveforms when the <i>POOR LEAD CONTACT</i> message displays; the ECG waveform may include a significant amount of artifact. Whenever possible, re-attach the leads before interpreting the waveform.
----------------	--

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Note: When in 12-Lead or Pacer mode, the E Series unit functions as if this configuration is set to Yes.

Enable Pacer Detection

This parameter allows you to specify whether the unit should detect pacemaker signals from a patient with an implantable pacemaker and indicate those signals on the display. When you set this parameter to Yes, a pacemaker marker is displayed on the ECG trace whenever the unit detects implanted pacer stimuli.

You can override this setting during normal operations. This parameter simply indicates the default setting at power on.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Tone Parameters

The Tone parameters control audio functions on the E Series unit, and include:

- QRS Volume on Power-Up
- Low Battery Tone

QRS Volume on Power-Up

This parameter allows you to select the default QRS beeper volume following power on of the unit. If you set this parameter to Off, the unit does not beep during ECG monitoring.

Values are as follows:

Possible Values:	On, Off
Default:	On

Low Battery Tone

This parameter allows you to set the interval between Low Battery warning beeps. The Low Battery warning message is displayed once per minute, regardless of this setting.

Values are as follows:

Possible Values:	1 minute, 5 minutes
Default:	1 minute

Basic Defibrillation Parameters

The Basic Defibrillation parameters control functions related to performing defibrillation with the E Series unit in manual mode and include:

- Defib Default to Pads
- Basic Auto Energy Escalation
- Retain Sync After Defib

Defib Default to Pads

This parameter allows you to override the “Display Lead on Power-Up” setting and use Pads/Paddles whenever the unit is switched to DEFIB mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Basic Auto Energy Escalation

This parameter allows you to configure the unit to automatically increment defibrillation energy to pre-specified levels after each of the first two shocks in manual mode (see “Energy Level: Shock 1” on page 16, “Energy Level: Shock 2” on page 16, and “Energy Level: Shock 3” on page 17). When set to Yes, the *ENERGY INCREMENTED* message is displayed whenever the unit automatically increments the selected defibrillator energy after delivery of a shock with paddles or MFE pads.

Note: Manually changing the energy level outside the pre-programmed sequence and delivering a shock disables the auto energy escalation function until the unit is turned off for more than 10 seconds, then turned back on.

This option increments the energy level regardless of Shock Advisory activation or status.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Retain Sync After Defib

This parameter allows you to configure the unit to remain in SYNC mode after a synchronized cardioversion shock. SYNC mode remains on until the **Sync On/Off** softkey is pressed again or the unit is switched out of DEFIB mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Advisory Defibrillation Parameters

The Advisory Defibrillation parameters control functions related to performing defibrillation with an E Series unit in semiautomatic and advisory mode and include:

- Energy Level: Shock 1
- Energy Level: Shock 2
- Energy Level: Shock 3
- Auto Charge in Advisory Mode
- Auto Analyze
- Stacked Shocks
- Display DO CPR Message
- CPR Message After Shock
- CPR Message After No Shock Advised
- Duration of CPR Interval
- Check Pulse
- Restart Analysis After CPR
- Check Patient Prompt
- Enable Voice in Advisory Mode
- Continual Check Patient Audio Prompt
- Enable SCE
- Post SCE Result on Display

Energy Level: Shock 1

This parameter allows you to select the energy level used for the first shock delivered by the defibrillator when the unit is:

- in semi-automatic or advisory mode and using pads
- in Manual mode, using external paddles or pads, and Basic Auto Energy Escalation is set to Yes

Energy Level: Shock 1 is the energy level to which the unit defaults when power is turned on with external paddles or pads connected.

Values are as follows:

Possible Values:	1-10, 15, 20, 30, 50, 70, 85, 100, 120, 150, and 200 J
Default:	120 J

Energy Level: Shock 2

This parameter allows you to select the energy level used for the second shock delivered by the defibrillator when the unit is:

- in semi-automatic or advisory mode and using pads
- in Manual mode, using external paddles or pads, and Basic Auto Energy Escalation is set to Yes

Values are as follows:

Possible Values:	1-10, 15, 20, 30, 50, 70, 85, 100, 120, 150, and 200 J
Default:	150 J

Energy Level: Shock 3

This parameter allows you to select the energy level used for the third and all subsequent shocks delivered by the defibrillator when the unit is:

- in semi-automatic or advisory mode and using pads
- in Manual mode, using external paddles or pads, and Basic Auto Energy Escalation is set to Yes

Values are as follows:

Possible Values:	1-10, 15, 20, 30, 50, 70, 85, 100, 120, 150, and 200 J
Default:	200 J

Auto Charge in Advisory Mode

This parameter allows you to specify whether the unit automatically charges the defibrillator to the configured or user-selected energy setting after detection of a shockable rhythm by ECG analysis. When set to Yes, the unit automatically charges the defibrillator to the configured or user-selected energy setting. When set to No, it does not.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Auto Analyze

This parameter allows you to specify whether the unit automatically repeats ECG rhythm analyses after the delivery of shocks in the AED and Advisory modes and works in conjunction with the Stacked Shocks parameter described next. Enabling this parameter also enables the occurrence of post-shock CPR intervals. When set to No, which is the Manual mode default, the unit does not perform foreground analysis automatically (with the exception of the first analysis on power-up in Auto-Defib mode, if the unit is configured to analyze on power-up).

When set to Yes, and the Stacked Shocks options is set to 3, the unit automatically analyzes the patient's ECG rhythm after the first and second shocks in each three-shock sequence. Following delivery of the final shock, the unit stops automatic re-analysis and either displays a *CHECK PULSE* prompt, or immediately begins a CPR interval, depending on additional parameter settings. This function operates only when the Auto Charge in Advisory Mode is set to Yes.

When set to Semi-Auto Only, the unit functions as described above only when it is in AED Semi-Auto mode. If the unit is changed to Manual mode from AED Semi-Auto mode, the unit

terminates any automatic analysis/re-analysis sequencing. If the **ANALYZE** button is pressed, the unit analyzes only once.

Values are as follows:

Possible Values:	Yes, No, Semi-Auto Only
Default:	Manual: No, AED: Semi-Auto Only

Stacked Shocks

The parameter specifies the number of stacked shocks that must be administered prior to the activation of a CPR interval and works in conjunction with the Auto Analyze parameter.

Values are as follows:

Possible Values:	1, 3
Default:	3

Display DO CPR Message

This parameter allows you to specify whether the unit displays the configured CPR prompt (described below) for the configured CPR time interval after each set of stacked shocks, even if a perfusing rhythm is present. The unit behaves differently depending on this particular parameter value.

- When set to No (the Manual mode default), the unit behaves as follows:
 - At the end of any analysis with an outcome of no shock advised, the unit displays the *NO SHOCK ADVISED* message. The unit then remains idle for the configured CPR interval duration. After the CPR interval, if the **ANALYZE** button has not been pressed, the *PRESS ANALYZE* message is displayed and remains until a new analysis is started or the mode is changed.
 - At the end of a stacked shock sequence (assuming the final shock is delivered) and when the optional 10 second *CHECK PULSE* message disappears, the CPR interval begins. The unit remains idle for the duration of the CPR interval. After the CPR interval, if the **ANALYZE** button has not been pressed, the *PRESS ANALYZE* prompt is displayed and remains until a new analysis is started or the mode is changed.
 - If the defibrillator disarms itself after it was charged (because the Defib Ready time elapsed before a shock was delivered), the unit displays the *PRESS ANALYZE* prompt until the **ANALYZE** button is pressed.
- When set to Yes, the unit behaves as follows:
 - At the end of any analysis with an outcome of no shock advised, the unit displays the *NO SHOCK ADVISED* message for 10 seconds, after which the message is cleared and the configured CPR prompt is displayed for the duration of the CPR interval. After the CPR interval, the *PRESS ANALYZE* prompt is displayed until a new analysis is started or a mode change occurs. You can start a new analysis during the CPR interval by pressing the **ANALYZE** button.

- At the end of a stacked shock sequence (assuming the final shock is delivered) and when the optional 10 second *CHECK PULSE* message disappears, the CPR interval begins. The configured CPR prompt is displayed for the duration of the CPR interval.
- If the defibrillator disarms itself after it was charged (because the Defib Ready time elapsed before a shock was delivered), the unit displays the *PRESS ANALYZE* prompt until the **ANALYZE** button is pressed.

The Display DO CPR Message feature is operational only when the Auto Charge in Advisory Mode and Auto Analyze options are both set to Yes.

Note: When set to Only in Semi-Auto, the unit functions as described above only when it is in AED semi-auto mode.

Values are as follows:

Possible Values:	Yes, No, Semi-Auto Only
Default:	Manual/Advisory units: No, AED units: Semi-Auto Only

CPR Message After Shock

This parameter determines which CPR message/voice prompt is issued during the CPR interval after the delivery of the final shock in a stacked shock sequence. The selected message is displayed throughout the entire CPR interval.

Values are as follows:

Possible Values:	IF NO PULSE, PERFORM CPR; PERFORM CPR
Default:	IF NO PULSE, PERFORM CPR

CPR Message After No Shock Advised

This parameter determines which CPR message/voice prompt is issued during the CPR interval after a No Shock Advised analysis result. The selected message is displayed throughout the entire CPR interval.

Values are as follows:

Possible Values:	IF NO PULSE, PERFORM CPR; PERFORM CPR
Default:	IF NO PULSE, PERFORM CPR

Duration of CPR Interval

This parameter allows you to specify the duration of the CPR interval as described in the Display DO CPR Message parameter. Values are as follows:

Possible Values:	1, 1.5, 2, 2.5, 3, 3.5 or 4 minutes
Default:	1 minute

Check Pulse

This parameter works in conjunction with the Auto Analyze parameter and determines whether the unit displays the prompt *CHECK PULSE* for 10 seconds immediately after delivery of the final shock in a stacked shock sequence, after each No Shock Advised analysis result, or both. During this 10-second time interval, the *CHECK PATIENT* and *PRESS ANALYZE* prompts are suppressed on AED units in semi-auto mode, although background analysis is active. After *CHECK PULSE* clears, the CPR interval begins.

When set to No, the unit immediately begins the CPR interval following delivery of the final shock.

Values are as follows:

Possible Values:	Yes, No, After No Shock Only, After Shock Only
Default:	Yes

Restart Analysis After CPR

When this parameter is set to Yes, the analysis starts automatically after the CPR interval following each shock. Analyses do not automatically restart after a CPR interval following No Shock Advised results. When this parameter is set to No, the *PRESS ANALYZE* message is displayed, but the analysis does not restart.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Check Patient Prompt

This parameter allows you to change the display message and the voice prompt issued when a shockable rhythm has been detected by background ECG analysis and Heart Rate Alarms are enabled or the unit is operating in Semi-Automatic mode.

Values are as follows:

Possible Values:	<i>CHECK PATIENT, PRESS ANALYZE</i>
Default:	<i>CHECK PATIENT</i>

Enable Voice in Advisory Mode

This parameter allows you to enable or disable voice prompts when using shock advisory functions (ECG analysis) in Manual mode. If enabled, the voice prompts sound at the appropriate time. If disabled, the unit emits two beeps instead of the voice prompts in Manual mode.

Note that in Semi-Auto mode, the unit emits voice prompts regardless of the setting of Voice Prompts. Voice prompts are in the language specified by the Language option.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Continual Check Patient Audio Prompt

This parameter allows you to select the “Check Patient” audio prompting method that accompanies the output of the *CHECK PATIENT* display message. When set to Yes, “Check Patient” audio prompts will be sounded repeatedly during a *CHECK PATIENT* condition. When set to No, the “Check Patient audio prompt will be issued once with the onset of the *CHECK PATIENT* condition.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Enable SCE

This parameter allows you to enable the Shock Conversion Estimator (SCE). The Shock Conversion Estimator is only applied to adults in single advisory mode with ECG rhythms classified as shockable. When enabled, the result of the SCE will be sent to the data card, the stripchart, and to the unit’s summary report.

Note: If this parameter is set to Off, the following parameters will not function: Post SPI Number, SCE Level, SCE Alter Adv Decision.

Values are as follows:

Possible Values:	On, Off
Default:	Off

Post SCE Result on Display

When this parameter is set to Yes, the decision result of the SCE system will be posted on the display with the shock result, with the message *NO SHOCK ADV. SCE LOW* or *SHOCK ADVISED SCE HIGH*.

Note: If the Enable SCE parameter is set to No, this parameter will not function.

Values are as follows:

Possible Values:	Yes, No
Default:	No

SCE Level

This parameter allows you to set one of the following SCE Levels: HIGH, MEDIUM, or LOW. The SCE Levels correspond to SPI thresholds in the following manner:

Table 2-1. Accuracy Table of SCE Levels and Corresponding SPI Thresholds

SCE Level	SPI Threshold (mV-Hz)	Sensitivity %	Specificity %
HIGH	7.4	95	57
MEDIUM	8.3	90	65
LOW	10.8	80	80

Note: Table 2-1 is based on data from the ZOLL Database that was constructed using 258 patient records and a total of 586 delivered shocks. Refer to the Appendix A in the E Series Operator's Guide for more information on the ZOLL Database.

The SCE system compares the computed SPI number to the SPI threshold. If the computed number is less than the threshold and the algorithm is configured to alter advisory decisions, the system will change a *SHOCK ADVISED* decision to *NO SHOCK ADVISED* for a pre-configured number of ECG analyses after power up.

You can adjust the SCE Level to emphasize greater sensitivity or specificity. Sensitivity is defined as the number of correctly predicted successful shocks (shocks that convert) divided by the total number of successful shocks. Specificity is defined as the number of correctly predicted unsuccessful shocks (shocks that did not convert) divided by the total number of shocks that did not convert. The default setting of HIGH results in a SPI threshold of 7.4 mV-Hz, with 57% specificity and 95% sensitivity.

By setting the SCE Level to HIGH (which corresponds with a lower SPI threshold), sensitivity will increase and specificity will decrease — this favors delivering a shock even when conversion probability is estimated to be low. The HIGH setting favors earlier shocks, but could deliver shocks that are ineffective and delay compressions. By setting the SCE Level to LOW (which corresponds with a higher SPI threshold), it will result in lower sensitivity and higher specificity — this favors the immediate resumption of CPR over low estimated probability of successful shocks. The LOW setting favors delivering compressions and the later delivery of shock, but it could delay a shock for a convertible rhythm. Refer to the 2005 AHA Guidelines for CPR and ECC regarding the importance of performing early CPR during resuscitation.

Refer to Table 2-1 for a complete listing of SCE Level settings and their corresponding SPI thresholds, sensitivities, and specificities.

Note: If the Enable SCE parameter is set to Off, this parameter will not function.

Values are as follows:

Possible Values:	HIGH, MEDIUM, LOW
Default:	HIGH

Note: Refer to Appendix A in the E Series Operator's Guide for more information on the background and clinical results of the Shock Conversion Estimator system.

SCE Alter Adv Decision

This parameter setting determines how many shocks (after power up) will be withheld (in favor of immediately resuming CPR) when a shockable rhythm is present but the Shock Conversion Estimator's Shock Predictive Index (SPI) indicates that the probability of successful defibrillation is low.

When set to 1, 2, 3, or 4, the calculated SPI index for the analyzed rhythm is compared to the pre-configured threshold value. If the SPI value is below the threshold (in the presence of a shockable rhythm) or the ECG rhythm is non-shockable, then a *NO SHOCK ADVISED* message is issued. If the ECG rhythm is shockable and the SPI value is above the threshold, then a *SHOCK ADVISED* message is issued. When set to Off, the calculated SPI value is not used in the Shock/No Shock determination. Only the presence or absence of VF or shockable VT is considered.

The numerical value of this parameter (1, 2, 3, or 4) determines how many successive ECG analyses after power up will use SCE results for Shock/ No Shock determination. For example, setting the parameter to 2 will cause the E Series to use SPI index results for the first two analyses after power up. All subsequent rhythm analyses will base the shock/no shock determination only upon the presence or absence of VF or shockable VT. **Applying SCE logic to a number of early advisory analyses emphasizes the performance of CPR when a shockable rhythm is unlikely to convert to a spontaneous rhythm.**

When the E Series is turned off for more than 10 seconds, the unit resets its SCE analysis counter to zero.

Note: According to the database used to develop the Shock Conversion Estimator system, 85% of patients received 4 or less therapy shocks. Of those patients that received a therapy shock, 95% of the patients that converted to an organized rhythm did so with 4 or less therapy shocks.

Values are as follows:

Possible Values:	Off, 1, 2, 3, 4
Default:	1

Semi-Auto Mode Parameters

The Semi-Auto mode parameters are attributes that affect functions related to performing defibrillation with an E Series unit in Semi-Automatic mode and include:

- Manual Mode Passcode
- Display ECG in Semi-Auto Mode
- Display Heart Rate in Semi-Auto Mode
- Auto Analyze on Power Up (Semi-Automatic Mode only)
- Extra CPR Interval Before 1st Analysis
- Duration of Extra CPR Interval
- Enable 12 Lead in Semi-Auto Mode
- AED Defib Ready Hold Time
- Emit QRS Beeps (Semi-Automatic Mode only)

Manual Mode Passcode

This parameter allows you to set or change the three-digit manual mode passcode. Each digit you enter can be set only between 0 (zero) and 3 (three) inclusive.

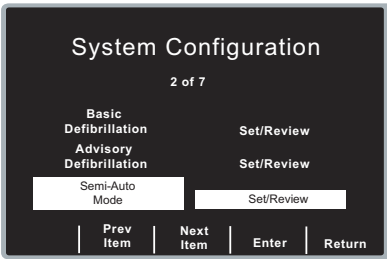
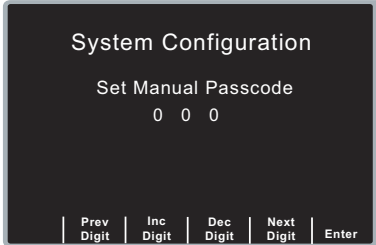
Entering “000” (default) as the passcode disables password protection of the Manual mode, and no password is required to enter the Manual Defibrillation mode.

Values are as follows:

Possible Values:	0 through 3 inclusive for each digit
Default:	000

Procedure

Follow these steps to set up a manual mode passcode:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select Semi-Auto Mode, then press the Enter softkey.
	
2.	Select Manual Mode Passcode, and press the Change Value softkey. The Set Manual Passcode screen is displayed.
	

Step	Action
3.	Use the softkey as follows: • Prev Digit — moves the highlight left to the previous digit. • Inc Digit or Dec Digit — increments or decrements the value of the selected digit. • Next Digit — moves the highlight right to the next digit to be entered. • Enter— selects the values that you entered and returns the unit to the Semi-Auto mode configuration menu.

Display ECG in Semi-Auto Mode

This parameter allows you to set the unit to either display or not display the patient's ECG trace on the monitor while in Semi-Auto mode.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Display Heart Rate in Semi-Auto Mode

This parameter allows you to set the unit to display the patient heart rate on the monitor while in Semi-Auto mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Auto Analyze on Power Up (Semi-Automatic Mode only)

This parameter allows you to specify whether or not the unit automatically begins an ECG rhythm analysis when the device is turned on and pads are properly connected. When this parameter is set to Yes, the unit automatically begins the ECG rhythm analysis. The *ANALYZING ECG* message is displayed for 5 seconds and a *STAND CLEAR* prompt is displayed and announced, indicating the start of the analysis. If the Auto Analyze option is set to Yes, the analysis is the first of a stacked shock sequence.

Note: The unit must be turned off for 10 seconds or more then turned on again for the analysis to auto-start.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Extra CPR Interval Before 1st Analysis

This parameter pertains only to Auto Defib mode in AED units.

When this parameter is set to No (default), and the unit detects a pad connection upon power-on, it displays the *PRESS ANALYZE* prompt. If the unit is powered on with no pads connected, the unit displays the *ATTACH PADS* prompt until pads are connected. Once pads are connected, the *PRESS ANALYZE* prompt is displayed.

When this parameter is set to Yes, the unit displays alternating prompts: *CHECK PULSE* and *IF NO PULSE, PERFORM CPR* for the configured Extra CPR interval at power on. At the end of the CPR period, if the unit does not detect a pads connection, it displays the prompt *ATTACH PADS* until pads are connected. If a pads connection is detected, and the system is configured to Auto Analyze On Power Up, the unit automatically starts an ECG analysis. If the unit is not configured to Auto Analyze On Power Up, it displays the prompt *PRESS ANALYZE*. You can start an ECG analysis during the CPR interval by pressing the **ANALYZE** button.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Duration of Extra CPR Interval

This parameter allows you to specify the duration of the extra CPR interval (see previous entry). It has no effect if “Extra CPR Interval Before 1st Analysis” is set to No.

Values are as follows:

Possible Values:	1, 1.5, 2, 2.5, 3, 3.5 or 4 minutes
Default:	1 minute

Enable 12 Lead in Semi-Auto Mode

This parameter allows you to specify whether or not 12-lead analyses, transmissions and print-outs are available in semi-automatic (AED) mode.

When set to Yes, 12-lead analyses, transmissions and print-outs are available in semi-automatic (AED) mode (ECG leads on the patient with MFE Pads disconnected) depending on other configuration option settings. If set to No, 12-lead functions are available in Manual mode only.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

AED Defib Ready Hold Time

This parameter allows you to specify the number of seconds the unit remains in the charge ready state before it automatically disarms the defibrillator.

Values are as follows:

Possible Values:	15 seconds, 60 seconds
Default:	15 seconds

Emit QRS Beeps (Semi-Automatic Mode only)

This parameter allows you to control whether or not the E Series unit emits beeps in response to the detection of each R-wave in semi-automatic mode.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Pace Parameters

The Pace parameters are attributes that control functions related to performing pacing with an E Series unit and include:

- Pace Rate Setting on Power Up
- Async Softkey in Pace Mode

Pace Rate Setting on Power Up

This parameter allows you to set the default pace rate, pulses per minute (ppm), of the E Series unit at power-on.

Values are as follows:

Possible Values:	30 ppm to 102 ppm (inclusive in increments of 4 ppm)
Default:	70 ppm

Async Softkey in Pace Mode

This parameter allows you to set the unit to display the **Async Pacing On/Off** softkey when the unit is in pace mode. For information about Asynchronous Pacing, refer to the E Series Operator's Guide.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

12-Lead Parameters

12-Lead configuration parameters are only available if the 12-Lead ECG monitoring option is installed in the unit, and include:

- Print 12 Lead 4 X 3
- 12 Lead Printout
- 12 Lead Freq Response
- Print 2 Copies 12 Lead
- Print 12 Lead Measurements
- Print 12 Lead Interpretation
- Auto Transmit After 12 Lead
- 12 Lead Fax Format
- Cell Phone Type
- Fax/Communication Phone Numbers
- Set Lead Groups
- Lead Group Default
- 12 Lead Secs Per Lead
- 12 Lead Print Speed
- MUSE Site and Location
- PTCA Message Enabled
- PTCA Threshold

Print 12 Lead 4 X 3

This parameter value indicates the number of copies of a 12-lead 4x3 report (or limited 2 x 3 report) printed after pressing and holding the **RECORDER** button for three seconds. When set to None, pressing and holding the **RECORDER** button causes a one- or three-lead DIAG BANDWIDTH ECG strip to print.

Values are as follows:

Possible Values:	1 Copy, 2 Copies, None
Default:	None

12 Lead Printout

This parameter allows you to specify the format for 12-lead 4x3 printouts (or limited 2 x 3 reports). When set to Standard, the 12-lead 4x3 printout uses the standard lead format. When set to Cabrera, the 12-lead 4x3 printout uses the Cabrera-style lead format.

Values are as follows:

Possible Values:	Standard, Cabrera
Default:	Standard

12 Lead Freq Response

This parameter allows you to set the 12-lead filter settings and printing format.

Values are as follows:

Possible Values:	0.05-150 Hz 4x3, 0.05-150 Hz Cont, 0.05-40 Hz 4x3
Default:	0.05-40 Hz 4x3

Refer to the 12- Lead ECG Monitoring Operator's Guide insert for details on each setting.

Print 2 Copies 12 Lead

This parameter allows you to specify whether or not to print 2 copies of the 12-lead 4x3 report. When this parameter is set to Yes, two copies of the 12-lead 4x3 report and 12SL™ analysis print on the strip chart. This setting only affects 12-lead reports that are generated by pressing the **Acquire** softkey.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Print 12 Lead Measurements

This parameter allows you to set the unit to print lead measurements. When set to Yes, the 12SL analysis produces and prints a measurements matrix including measurements for each lead. Global measurements are produced and printed regardless of this setting. This setting affects the strip chart and summary report printouts as well as the fax transmission. When set to Yes, any faxed 12-lead report contains two pages. The second page of the report contains the computed measurements matrix. When set to No, lead measurements are not printed.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Print 12 Lead Interpretation

This parameter allows you to set the unit to print interpretive statements.

When set to Yes, the 12SL interpretive statements print following the acquisition of a 12-lead ECG. This setting affects the strip chart and summary report printouts as well as the fax transmission.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Auto Transmit After 12 Lead

When set to Yes, this parameter allows you to set the unit to automatically enter the transmission set-up screen following completion of a 12-lead analysis.

Note: To fax using 2x6 format, this must be set to Yes.

Values are as follows:

Possible Values:	Yes, No
Default:	No

12 Lead Fax Format

This parameter allows you to specify the 12-lead fax format.

When set to 4x3 Standard, the 12-lead format on the fax output is identical to the format on the strip chart with the addition of a 10-second Lead II rhythm strip. If 12 Lead Printout is set to Cabrera, the fax is Cabrera as well.

When set to 2x6, the 12-lead format on the fax output is configured for two columns of 6 leads, each with 5 seconds of data. The fax does not contain the 12SL interpretative statements or the 10-second Lead II rhythm strip. In addition, you must set Auto Transmit After 12 Lead to Yes.

If you select 4x3 Median Compl, the 12-lead ECG waveforms on the strip chart, summary report, and fax will contain a single median complex beat computed by the GE Medical Systems Information Technologies 12SL analysis program.

Values are as follows:

Possible Values:	4x3 Standard, 2x6, 4x3 Median Compl
Default:	4x3 Standard

Cell Phone Type

This parameter controls the active cellular phone profile for PCMCIA modem cards. It has no effect on landline functionality.

Select the phone manufacturer corresponding to your target cellular phone. For additional information on cellular phone compatibility, contact ZOLL Technical Support.

Values are as follows:

Possible Values:	Motorola, Nokia, Ericsson
Default:	Nokia

Fax/Communication Phone Numbers

This parameter allows you to pre-configure up to 24 locations and phone numbers and delete obsolete phone numbers. The E Series uses the phone numbers to transmit data to a fax machine or Catalyst MUSE system following 12-lead analysis.

If you are transmitting to a Catalyst MUSE system, you can configure multiple phone numbers to access the same system. This enables you to quickly try alternate numbers if you encounter difficulty transmitting to the Catalyst MUSE system. The system administrator provides these numbers when you initially set up access to the system. See Appendix B of the 12-Lead ECG Monitoring insert for more information.

You must also configure the Catalyst MUSE site and location identifiers before you can transmit to a Catalyst MUSE system. See “MUSE Site and Location” on page 35.

It is also recommended that you set up the E Series device identifier. See “Device Identifier” on page 9 for more information.

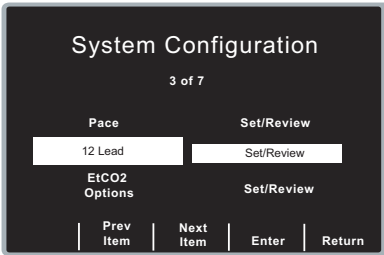
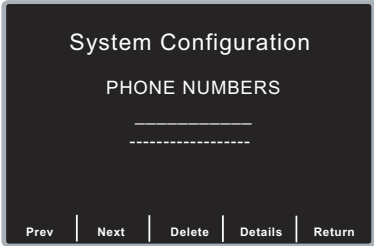
Updating Fax/Communication Information

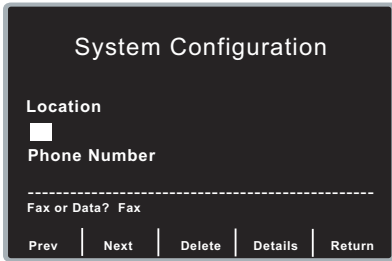
To transmit data to a fax machine or a Catalyst MUSE system, you must configure the following:

- location of the medical facility to which data will be transmitted
- phone number to which data will be transmitted
- type of data to be transmitted (“Fax” if transmitting to a fax machine; “Data” if transmitting to Catalyst MUSE)

Procedure

Follow these steps to update fax and communication phone number and location:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select 12 LEAD, then press the Enter softkey. 
2.	Select Fax/Communication Phone Numbers and press the Change Value softkey. The Phone Numbers screen is displayed. 

Step	Action
3.	Press the Next or Prev softkey until either: - The phone number you want to change is highlighted - An empty line is highlighted (if adding a new phone number) Press the Details softkey to select the field. The Location and Phone Number menu displays. 
4.	Update the location of a medical facility using the softkeys as follows: Prev Letter or Next Letter — moves the highlight left or right to the appropriate letter. Inc Letter or Dec Letter — increments or decrements the value of the highlighted letter. Enter — moves the cursor to the first digit of the phone number field.
5.	Update the phone number of the medical facility using the softkeys as follows: Prev Letter or Next Letter — moves the highlight left or right to the appropriate digit. Inc Letter or Dec Letter — increments or decrements the value highlighted digit. Enter — moves the cursor to the Fax or Data? field.
6.	Specify the type of phone number using the softkeys as follows: Inc Letter — toggles the highlight between Fax and Data. Enter — enters the values you specified and returns you to the previous screen.
7.	Optionally, if you need to delete a phone number, press the Next Item softkey until FAX/ COMMUNICATION PHONE NUMBERS is highlighted in the 12-Lead Configuration menu. Press the Change Value softkey. The Phone Numbers menu displays. Press the Next or Prev softkey to scroll the highlight to the phone number you want to delete, then press the Delete softkey to delete phone number.

Set Lead Groups

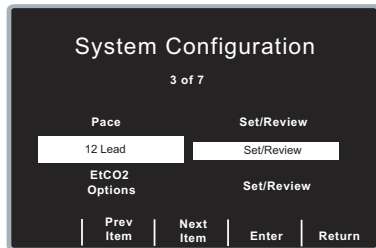
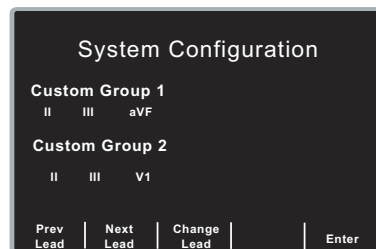
This parameter allows you to configure two custom lead groups (of 3 leads each) as described in the 12-Lead ECG Monitoring insert.

Values are as follows:

Possible Values:	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6
Default:	Custom Group 1: II, III, aVF Custom Group 2: II, III, VI

Procedure

Follow these steps to configure custom lead groups:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select 12 LEAD, then press the Enter softkey. 
2.	From the list of options, select Set Lead Groups, and press the Change Value softkey. The Lead Group Configuration screen is displayed. 
3.	Update the lead groups using the softkeys as follows: • Prev Lead or Next Lead — moves the highlight to the previous or next lead. • Change Lead — changes the selected lead. Repeatedly pressing this key cycles the selected lead through all twelve possibilities. • Enter— returns you to the previous screen.

Lead Group Default

This parameter allows you to select the default lead group. Refer to the 12-Lead ECG Monitoring Operator's Guide insert for details on each setting.

Values are as follows:

Possible Values:	Standard, Custom Group 1, Custom Group 2
Default:	Standard

12 Lead Secs Per Lead

This parameter allows you to set the number of seconds of ECG data printed for each lead on the 12-lead 4x3 strip. This setting affects only 12-lead reports generated by pressing the **Acquire** softkey.

Values are as follows:

Possible Values:	2.5, 5.0, 7.5, 10.0 seconds
Default:	2.5 seconds

12 Lead Print Speed

This parameter allows you to set the print speed of the 12-lead 4x3 reports. This setting affects only 12-lead reports generated by pressing the **Acquire** softkey.

Values are as follows:

Possible Values:	25 mm/second, 50mm/second
Default:	25 mm/second

MUSE Site and Location

This parameter allows you to set the Catalyst MUSE site and location identifiers needed to transmit 12-lead ECG data to a Catalyst MUSE system. The medical facility's Catalyst MUSE system administrator provides these numbers when you initially set up access to the system. The Catalyst MUSE site has a value between 01 and 32, and the location has a value between 001 and 600.

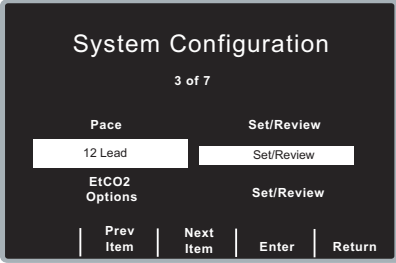
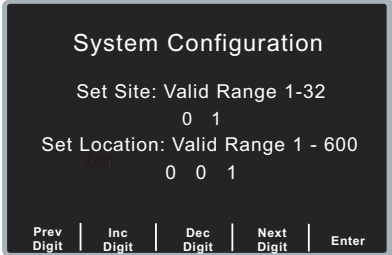
You must also configure the Catalyst MUSE communications phone number(s). See "Fax/Communication Phone Numbers" on page 32.

Values are as follows:

Possible Values:	Site: 01 - 32 Location: 001 - 600
Default:	Site: 01 Location: 001

Procedure

Follow these steps to set the Catalyst MUSE site and location identifiers:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select 12 LEAD, then press the Enter softkey.
	
2.	From the list of options, select Muse Site and Location and press the Change Value softkey. The Muse Site and Location screen is displayed.
	
3.	Specify the site identifier using the softkeys as follows: • Prev Digit or Next Digit — moves the highlight to the previous or next digit. • Inc Digit and Dec Digit — changes the value of the highlighted digit. • Enter— moves the cursor to the first digit of the location.
4.	Specify the location identifier using the softkeys as described in Step 3, then press the Enter softkey to accept the values and return to the previous screen.

PTCA Message Enabled

This parameter allows you to review, or make changes to, Percutaneous Transluminal Coronary Angioplasty (PTCA) settings if the E Series unit includes the 12-Lead Reperfusion Algorithm option. It determines whether or not the E Series unit prints a PTCA message (if appropriate).

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

PTCA Threshold

This parameter allows you to set the threshold, in mV, for issuing the PTCA message. This parameter is valid only when PTCA Message Enabled option is set to Yes.

Values are as follows:

Possible Values:	0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, and 2.0 mV
Default:	1.5 mV

EtCO₂ Parameters

EtCO₂ configuration parameters are available for update only if the EtCO₂ monitoring option is installed on the unit and include:

- Default EtCO₂ Units
- Displayed Zoom Level
- Default EtCO₂ Comp Setting
- Power Save Mode at Power Up
- EtCO₂ Average On Power Up

Default EtCO₂ Units

This parameter allows you to set the EtCO₂ unit of measurement.

Values are as follows:

Possible Values:	mmHg (millimeters of mercury), kPa (kilopascals), % (percent)
Default:	mmHg

Displayed Zoom Level

This parameter allows you to set the default scale setting for the displayed capnographic waveform. It does not affect the printed waveform or the waveform data stored on the data card.

Values are as follows:

Possible Values:	mmHg: 0-12.5, 0-25, 0-50, 0-75, 0-100 kPa: 0-1.7, 0-3.3, 0-6.6, 0-10.0, 0-13.3
Default:	mmHg: 0-50 kPa: 0-6.6

Default EtCO₂ Comp Setting

This parameter allows you to set the default compensation for CO₂.

Values are as follows:

Possible Values:	None, O ₂ , N ₂ O, O ₂ & N ₂ O
Default:	None

Power Save Mode at Power Up

When this parameter is set to Yes, the unit automatically enters EtCO₂ power save mode when powered on with a CAPNOSTAT sensor connected. The user must then enable the EtCO₂ device using the **Param/EtCO₂** softkey menu before use.

Values are as follows:

Possible Values:	Yes, No
Default:	No

EtCO₂ Average On Power Up

This parameter sets the default time period over which the EtCO₂ values are averaged.

Values are as follows:

Possible Values:	1 breath, 10 seconds, 20 seconds
Default:	10 seconds

NIBP Parameters

NIBP configuration parameters are available for update only if the NIBP monitoring option is installed on the unit, and include:

- NIBP Units
- Trigger NIBP Meas on BP Alarm
- Trigger NIBP Meas on HR Alarm
- NIBP Auto Interval Default
- NIBP First Inflate Pressure Default
- NIBP Button Press and Hold

NIBP Units

This parameter allows you to set the NIBP unit of measurement.

Values are as follows:

Possible Values:	mmHg (millimeters of mercury), kPa (kilopascals)
Default:	mmHg

Trigger NIBP Meas on BP Alarm

This parameter allows you to specify whether or not the E Series unit initiates a single additional blood pressure measurement when any of the NIBP alarms trigger.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Trigger NIBP Meas on HR Alarm

This parameter allows you to specify whether or not the E Series unit initiates a single blood pressure measurement when the heart rate/pulse rate alarm triggers.

Values are as follows:

Possible Values:	Yes, No
Default:	No

NIBP Auto Interval Default

This parameter allows you to set the default for the amount of time between automatic measurements.

Values are as follows:

Possible Values:	2.5, 5, 10, 15, 20, 30, 45, 60, 90, 120 minutes
Default:	30 minutes

NIBP First Inflate Pressure Default

This parameter allows you to set the default NIBP cuff inflation pressure (the pressure to which the NIBP cuff inflates at the beginning of its first measurement after power up).

Values are as follows:

Possible Values:	mmHg: 120, 140, 160, 180, 200, 220, 240, 260 kPa: 16.0, 18.7, 21.3, 24.0, 26.7, 29.3, 32.0, 34.7
Default:	180 mmHg

NIBP Button Press and Hold

This parameter allows you to define which NIBP function is activated when you press and hold the front panel **NIBP** button. You can configure the unit to either:

- Begin a sequence of STAT NIBP measurements, or
- Begin taking NIBP measurements at repeating, selected intervals.

Values are as follows:

Possible Values:	NIBP Auto, NIBP Stat
Default:	NIBP Auto

Alarm Parameters

Alarm parameters are attributes associated with Alarm states and thresholds for the E Series unit and include:

- Alarms Active at Power Up
- Alarms Limits at Power Up

Alarms Active at Power Up

This parameter allows you to specify whether alarms are automatically active at power on. This setting applies to all alarms enabled by the Alarm Limits At Power Up parameter.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Alarms Limits at Power Up

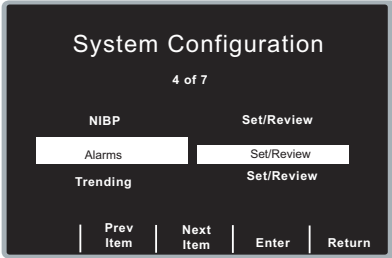
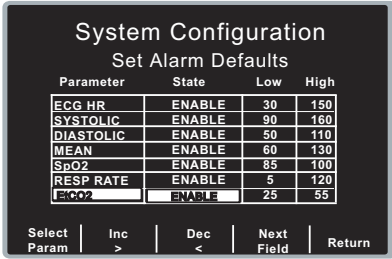
This option allows you to enable or disable, and set high and low threshold values for each alarm on the E Series unit. Possible values and defaults for each alarm are as follows:

Alarm	Maximum Default/Values	Minimum Default/Values
Heart Rate	Default: 150 BPM Possible Values: 60 - 280 beats per minute (BPM) inclusive in 5 BPM increments	Default: 30 BPM Possible Values: 30 - 100 beats per minute (BPM) inclusive in 5 BPM increments
SpO ₂	Default: 100% Possible Values: 99%, 100%	Default: 85% Possible Values: 70 - 98%
Respiration Rate	Default: 120 breaths/min. Possible Values: 5 - 150 breaths/min. in increments of 5	Default: 5 breaths/min. Possible Values: 0 - 100 breaths/min. in increments of 5
EtCO ₂	Default: 55 mmHg or 7.3 kPa Possible Values: In mmHg: 55 - 100 mmHg in increments of 5 In kPa: 8.0, 8.6, 9.3, 10.0, 10.6, 11.3, 12.0, 12.6, 13.3	Default: 25 mmHg or 3.3 kPa Possible Values: In mmHg: 0 - 50 mmHg in increments of 5 In kPa: 0.0, 0.6, 1.3, 2.0, 2.6, 3.3, 4.0, 4.6, 5.3, 6.0, 6.6, 7.3
Systolic Blood Pressure	Default: 160 mmHg or 21.3 kPa Possible Values: In mmHg: 145 - 260 mmHg inclusive in increments of 5 In kPa: 12.7, 13.3, 14.0, 14.7, 15.3, 16.0, 16.7, 17.3, 18.0, 18.7, 19.3, 20.0, 20.7, 21.3, 22.0, 22.7, 23.3, 24.0, 24.7, 25.3, 26.0, 26.7, 27.3, 28.0, 28.7, 29.3, 30.0, 30.7, 31.3, 32.0, 32.7, 33.3, 34.0, 34.7	Default: 90 mmHg or 12.0 kPa Possible Values: In mmHg: 40 - 140 mmHg inclusive in increments of 5 In kPa: 5.3, 6.0, 6.7, 7.3, 8.0, 8.7, 9.3, 10.0, 10.7, 11.3, 12.0, 12.7, 13.3, 14.0, 14.7, 15.3, 16.0, 16.7, 17.3, 18.0, 18.7

Alarm	Maximum Default/Values	Minimum Default/Values
Diastolic Blood Pressure	Default: 110 mmHg or 14.7 kPa Values: In mmHg: 105 - 200 inclusive in increments of 5 In kPa: 14.0, 14.7, 15.3, 16.0, 16.7, 17.3, 18.0, 18.7, 19.3, 20.0, 20.7, 21.3, 22.0, 22.7, 23.3, 24.0, 24.7, 25.3, 26.0, 26.7	Default: 50 mmHg or 6.7 kPa Values: In mmHg: 25 - 100 inclusive in increments of 5 In kPa: 3.3, 4.0, 4.7, 5.3, 6.0, 6.7, 7.3, 8.0, 8.7, 9.3, 10.0, 10.7, 11.3, 12.0, 12.7, 13.3
Mean Blood Pressure	Default: 130 mmHg or 17.3 kPa Values: In mmHg: 125 - 220 inclusive in increments of 5 In kPa: 16.7, 17.3, 18.0, 18.7, 19.3, 20.0, 20.7, 21.3, 22.0, 22.7, 23.3, 24.0, 24.7, 25.3, 26.0, 26.7, 27.3, 28.0, 28.7, 29.3	Default: 60 mmHg or 8.0 kPa Values: In mmHg: 30 - 120 inclusive in increments of 5 In kPa: 4.0, 4.7, 5.3, 6.0, 6.7, 7.3, 8.0, 8.7, 9.3, 10.0, 10.7, 11.3, 12.0, 12.7, 13.3, 14.0, 14.7, 15.3, 16.0

Procedure

Follow these steps to change the state or value of any of the alarms:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select Alarms, then press the Enter softkey. 
2.	Select Alarm Limits at Power Up, and press the Change Value softkey. The Set Alarm Defaults screen is displayed. 
3.	Modify alarms using the softkeys as follows: • Select Param — moves the highlight through the various physiological parameters. • Inc > and Dec < — toggles the state of the highlighted alarm between enable and disable. • Next Field — moves to the next field you want to change. Use this key to change the High and Low settings. • Return — enters the values you specified, and returns you to the previous screen.

Trending Parameters

Trending parameters are associated with the trend report function and how trend reports are displayed, and include:

- Trending Enabled
- Trending Report Restart Delay
- Trending Report Zoom Level

Trending Enabled

This parameter allows you to specify whether or not the E Series unit prints and displays trend reports (as long as the appropriate hardware is installed).

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Trending Report Restart Delay

This parameter allows you to review or change the length of time the device must be turned off before it erases all data stored in trend memory.

Values are as follows:

Possible Values:	5, 15, 30, 90 minutes, 6 hours, 12 hours, 18 hours, 1.5 days
Default:	15 minutes

Trending Report Zoom Level

This parameter allows you to set the power-up resolution for the displayed trend report.

Trend data values for all physiological parameters are simultaneously sampled by the E Series and stored in memory once every 30 seconds. When displaying this data in tabular format on the E Series screen, however, you can choose to view all or only a subset of the stored trend data. The factory default zoom level causes all 30-second data samples to be displayed when viewing the trend table. If lower resolution is desired, you can set this configuration option to display only the samples taken every 5, 10, 15, 30, or 60 minutes. All data samples are printed on the strip chart regardless of this setting.

Values are as follows:

Possible Values:	All (30 sec), 5 min, 10 min, 15 min, 30 min, 60 min
Default:	All

Display Parameters

The Display parameters are attributes that control what and how things appear on the E Series monitor and include:

- Display Elapsed Time
- ECG Color
- SpO₂ Color
- EtCO₂ Color
- NIBP Color
- CPR Color

Display Elapsed Time

This parameter value specifies whether to display the elapsed time since the unit was turned on. The elapsed time continues to be counted for up to 10 seconds after power down. This gives the operator adequate time to change the battery without resetting the elapsed timer.

Elapsed time is reset to zero (00:00) whenever the unit has been off for more than 10 seconds.

Values are as follows:

Possible Values:	Yes, No
Default:	AED mode: Yes Manual Advisory mode: No

ECG Color

This parameter allows you to set individual display colors for the ECG waveform and information displayed on the E Series monitor.

Values are as follows:

Possible Values:	Red, Cyan, Purple, Blue, Green, Yellow, White
Default:	Green

SpO₂ Color

This parameter allows you to specify the color of the SpO₂ information displayed on the E Series monitor.

Values are as follows:

Possible Values:	Red, Cyan, Purple, Blue, Green, Yellow, White
Default:	Blue

EtCO₂ Color

This parameter allows you to specify the color of the EtCO₂ waveform and information displayed on the E Series monitor.

Values are as follows:

Possible Values:	Red, Cyan, Purple, Blue, Green, Yellow, White
Default:	Yellow

NIBP Color

This parameter allows you to specify the color of the NIBP information displayed on the E Series monitor.

Values are as follows:

Possible Values:	Red, Cyan, Purple, Blue, Green, Yellow, White
Default:	White

CPR Color

This parameter allows you to specify the color of the CPR information displayed on the E Series monitor.

Values are as follows:

Possible Values:	Red, Cyan, Purple, Blue, Green, Yellow, White
Default:	Purple

Set Report Restart Delays Parameters

Presently, this category contains just one parameter: Summary Report Restart Delay.

Summary Report Restart Delay

This parameter allows you to review or change the length of time the device must be turned off before it erases all data stored in summary report memory.

Values are as follows:

Possible Values:	5 min, 15 min, 30 min, 90 min, 6 hours, 12 hours, 18 hours, 1.5 days
Default:	15 minutes

Printer Parameters

The Print Parameters are attributes that affect the way the strip chart recorder operates and include:

- Auto Generate Strips
- Print 3 Leads When Leads Sel.
- Custom 5 Wire Grouping in Use

Auto Generate Strips

This parameter allows you to set the strip chart recorder to automatically begin printing after a defibrillator discharge or whenever alarms are triggered while in Manual mode.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Print 3 Leads When Leads Sel.

This parameter allows you to specify whether or not the strip chart recorder automatically prints 3 simultaneous leads of the patient ECG when Leads are selected and a 5-wire or 10-wire ECG cable is in use.

Note that 3 leads of patient ECG are printed only when there is no waveform displayed on Wave 2. If the SpO₂, EtCO₂, or Filt ECG waveform is displayed, the unit overrides this parameter setting and prints the displayed ECG waveform and the waveform displayed on Wave 2. If the CPR Compression Bar Graph is displayed on Wave 2, the unit prints 3 leads of the patient ECG.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Custom 5 Wire Grouping in Use

This parameter allows you to specify whether you are using a standard (default) ECG lead group or a custom 5 wire grouping (II, III, aVF). When this parameter value is set to No, leads are printed as follows:

Selected Lead	Leads Printed (top to bottom)
I	I, II, III
II	II, I, III
III	III, I, II
aVR	aVR, aVL, aVF
aVL	aVL, aVR, aVF
aVF	aVF, aVR, aVL
V1 (5 Wire Cable)	V1, I, aVR

When this parameter is set to Yes, leads are printed as follows:

Selected Lead	Leads Printed (top to bottom)
II	II, III, aVF
III	III, II, aVF
aVF	aVF, II, III

Values are as follows:

Possible Values:	Yes, No
Default:	No

Data Card Parameters

Data Card Parameters are attributes that control what gets recorded to the PCMCIA card, whether or not you can erase a card, and how the card operates; these parameters include:

- Record ECG Data in Advisory Mode
- Record Audio in Advisory Mode*
- Record SpO2 in Advisory Mode*
- Record EtCO2 in Advisory Mode*
- Report Memory Card Errors
- Allow Card Erase
- Card Capacity Message Enabled
- Erase Card Prompt at Pwr Off
- Remove Card Prompt at Pwr Off
- Sync Defib Excluded

* These parameters can be set to Yes only if the Record ECG Data in Advisory Mode parameter is set to Yes.

Record ECG Data in Advisory Mode

This parameter allows you to set the unit to record the ECG waveform continuously to the PCMCIA card while in Manual/Advisory mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Record Audio in Advisory Mode

This parameter allows you to set the unit to record audio data continuously to the PCMCIA card while in Manual/Advisory mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Record SpO₂ in Advisory Mode

This parameter allows you to set the unit to record the SpO₂ waveform continuously to the PCMCIA card while in Manual/Advisory mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Record EtCO₂ in Advisory Mode

This parameter allows you to set the unit to record the EtCO₂ waveform continuously to the PCMCIA card while in Manual/Advisory mode.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Report Memory Card Errors

This parameter allows you to disable or enable memory card error messages and voice prompts.

If this option is set to No, the unit suppresses all error messages and prompts related to the use of the memory card (i.e., *INSERT CARD*, *REPLACE CARD*, *CARD FULL*, *CARD LOW < n MINUTES*, *CARD WRITE PROTECTED*, *NOT AN E SERIES DATA CARD*, *ERASE CARD*, and *CARD NOT ERASED PROPERLY*).

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Allow Card Erase

This parameter, when set to Yes, allows you to erase PCMCIA data cards on the E Series unit.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Card Capacity Message Enabled

This parameter allows you to specify whether or not the E Series displays the *CARD LOW* message when the remaining storage capacity of the card reaches 30, 15, and 5 minutes. Data recording needs to be enabled and a data card must be present.

To enable this option, Report Memory Card Errors must also be set to Yes; otherwise, the option is ignored.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Erase Card Prompt at Pwr Off

This parameter allows you to set the E Series unit so that you can erase the data card at power off if the card contains only self test and, optionally, synchronized cardioversion data. To enable this option, the Allow Card Erase option must also be set to Yes.

When set to Yes, the unit displays the prompt *Erase Card -- Yes/No?* when you turn the Selector switch to the OFF position and the following criteria are met:

- A data card is installed in the E Series unit.
- The unit has NOT performed a defibrillation, other than a self test, since power on.
Note: You can also configure the E Series unit to display the *Erase Card -- Yes/No?* prompt if the card contains only synchronized cardioversion data. See the “Sync Defib Excluded” on page 53 for more information.
- The unit has NOT delivered a pacing current greater than 25 mA since power-up.

If you select Yes at the prompt within 15 seconds, the card will be erased, verified, and the unit will subsequently shut off. If you select No, or 15 seconds is exceeded without a response, the unit will shut off without erasing the card.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Remove Card Prompt at Pwr Off

This parameter allows you to set the E Series unit to prompt you to remove the data card at power off if the card contains any information other than self test and, optionally, synchronized cardioversion data.

When set to Yes, the unit displays the prompt *Remove Card* when you turn the Selector switch to the OFF position and the following criteria are met:

- A data card is installed in the E Series unit.
- The unit has performed a defibrillation, other than a self test, since power on.
Note: You can configure the E Series to not display the *Remove Card* prompt if the card contains only synchronized cardioversion data. See the “Sync Defib Excluded” on page 53 for more information.

- The unit has delivered a pacing current greater than 25 mA since power-up.

When this option is enabled, the *Remove Card* prompt is displayed for 10 seconds, then the E Series unit shuts off.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Sync Defib Excluded

This parameter allows the exclusion of synchronized cardioversion from the criteria for determining whether the Erase Card or Remove Card messages are issued following power off.

When set to Yes, if the E Series unit has only discharged self-test or synchronized cardioversion defibrillations, and has not delivered pacing current greater than 25 mA, the unit displays the *Erase Card -- Yes/No?* prompt at power off if so configured. Otherwise, the unit displays the *Remove Card* prompt at power off if so configured.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Time Parameters

The Time parameters are attributes related to clock synchronization and time on the E Series unit and include:

- Clock Synchronization
- Daylight Savings
- Display Time Sync. Required Message

Clock Synchronization

This parameter allows you to specify:

- Time zone, which is used by dial up and GPS synchronization.
- Dial location and dial prefix, which are used for dial-up clock synchronization for dialing into the NIST (National Institute of Science and Technology) clock in Hawaii or Colorado.

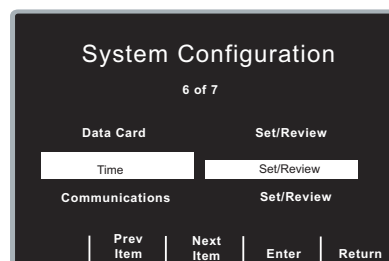
Values are as follows:

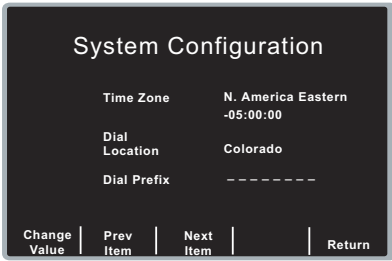
Parameter	Default	Valid Values
Time Zone	N. America Eastern	Dateline, Samoa, Hawaii, Alaska, N. America Pacific, N. America Mountain, N. America Central, N. America Eastern, Cuba, Atlantic, Chile, Falkland Islands, Paraguay, Newfoundland, Greenland, Mid Atlantic, Azores, UTC, Western Europe, Central Europe, Namibia, Eastern Europe, Egypt, Lebanon, Syria, Kaliningrad, Iraq, Moscow, Iran, Arabia, Samara, Afghanistan, Western Asia, Yekaterinburg, India, Central Asia, Novosibirsk, Southeast Asia, Krasnoyarsk, Irkutsk, Western Australia, Korea, Yakutsk, Cental Australia, Eastern Australia, Tasmania, Vladivostok, Central Pacific, Magadan, New Zealand, or Petropavlovsk
Dial Location	Colorado	Hawaii, Colorado
Prefix (at start of dialing location phone number)	none	any 8 digits (0 through 9 inclusive for each) or the following characters (+, &, !, *, or comma)

Procedure

Follow these steps to modify the Clock Synchronization parameters:

Step	Action
1.	Press the Change Config softkey from the Main System Configuration screen. The Parameter Categories screen appears. Select Time, then press the Enter softkey.



Step	Action
2.	Select Clock Synchronization, and press the Change Value softkey. The Clock Synchronization parameters screen is displayed. 
3.	Use the Prev Item or Next Item softkeys to scroll through the list of parameters and highlight the one you want to change. Press the Change Value softkey.
4.	Modify the parameters using the softkeys as follows: - For Time Zone and Dial Location, use the Prev Value and Next Value softkeys to scroll through and select the desired value, then press the Enter softkey. - For Dial Prefix, use the Prev Digit and Next Digit softkeys to move from one digit to the next, or to move backward. Use the Inc Digit and Dec Digit to set the numerical value for each digit. Press Enter when you are done setting the Clock Synchronization parameters, then press Return.

Daylight Savings

This parameter allows you to specify whether the E Series unit automatically adjusts the time for Daylight Savings when you dial the selected NIST location or sync the clock via GPS. If the selected time zone does not adhere to Daylight Savings, this parameter will be set to No.

Values are as follows:

Possible Values:	Yes, No
Default:	No

Display Time Sync. Required Message

When this parameter is set to Yes, and more than two weeks pass without any form of time synchronization, the unit will display a warning whenever it is powered down stating that time synchronization is required.

Values are as follows:

Possible Values:	Yes, No
Default:	Yes

Communications Parameters

The Communication parameters are attributes that relate to E Series unit transmissions and include:

- Upload Baud Rate
- Bluetooth Baud Rate
- Enable Data Relay

Upload Baud Rate

This parameter allows you to set the upload transmission rate for RS232 transmission.

Values are as follows:

Possible Values:	9600 bps, 38400 bps, 115200 bps
Default:	115200 bps

Bluetooth Baud Rate

This parameter allows you to set the upload transmission rate for Bluetooth™ wireless transmission.

Values are as follows:

Possible Values:	9600 bps, 38400 bps, 115200 bps
Default:	38400 bps

Enable Data Relay

This parameter allows you to specify whether the selection called “Data Relay” is presented in the phone number list for outputting patient records via the serial connection. Data Relay specifies that data will be sent to the Data Relay application on a PC.

When this parameter is set to Yes, “Data Relay” is a selection along with the pre-configured locations on the 12 Lead transmission set-up screen (see “Fax/Communication Phone Numbers” on page 32). When Bluetooth is installed, you can change the serial communication selection between Bluetooth and RS232 during operation modes. This change remains in effect until the system is powered off or you change the selection.

This option is valid only when the Auto Transmit After 12 Lead parameter value is set to Yes; otherwise, it is ignored.

Valid values are as follows:

Possible Values:	Yes, No
Default:	Yes

CPR Parameters

The CPR parameters are attributes that relate to the E Series Real CPR Help[®] functionality and include:

- Display CPR Compression Bar Graph
- CPR Record Data to Card
- CPR Guidance Audio Prompts
- CPR Compression Metronome

Display CPR Compression Bar Graph

When set to Yes, this parameter specifies that the CPR compression bar graph will automatically replace the second waveform on the E Series display whenever chest compressions are detected.

Values are as follows:

Possible Values:	Yes, No
Default:	No

CPR Record Data to Card

This parameter, when set to Yes, causes CPR data to be recorded to the PCMCIA card whenever **CPR-D•padz[®]** are in use. This parameter can be set to Yes only if Record ECG Data in Advisory Mode is set to Yes.

Values are as follows:

Possible Values:	Yes, No
Default:	No

CPR Guidance Audio Prompts

This parameter allows you to select the modes in which CPR-related audio prompts will be issued, Semi-Auto Only (default), Yes (Manual and Semi-Auto), or No (no prompts regardless of mode). In Semi-Auto Only, or Yes, the audio prompts are:

- PUSH HARDER when the detected compression depth is consistently less than 1.5 inches (3.8 cm).
- GOOD COMPRESSIONS when the rescuer responds by increasing compression depth to 1.5 inches (3.8 cm) or more.

Values are as follows:

Possible Values:	Yes, Semi-Auto Only, No
Default:	Semi-Auto Only

CPR Compression Metronome

This parameter allows you to select in which modes you want the CPR metronome enabled, Semi-Auto Only (default), Yes (Manual and Semi-Auto), or No (no prompts regardless of mode). If this parameter is set to Yes and the unit is in Manual Mode, the metronome is activated when compressions fall to below 80 compressions per minute during CPR. If this parameter is set to Semi-Auto Only or Yes and the unit is in Semi-Auto Mode, the metronome is always on during CPR periods. If this parameter is set to No, the metronome is disabled.

Values are as follows:

Possible Values:	Yes, Semi-Auto Only, No
Default:	Semi-Auto Only