uMEC10/uMEC12/uMEC15/uMEC6/ uMEC7/uMEC15S

Patient Monitor

Operator's Manual

CE 0123

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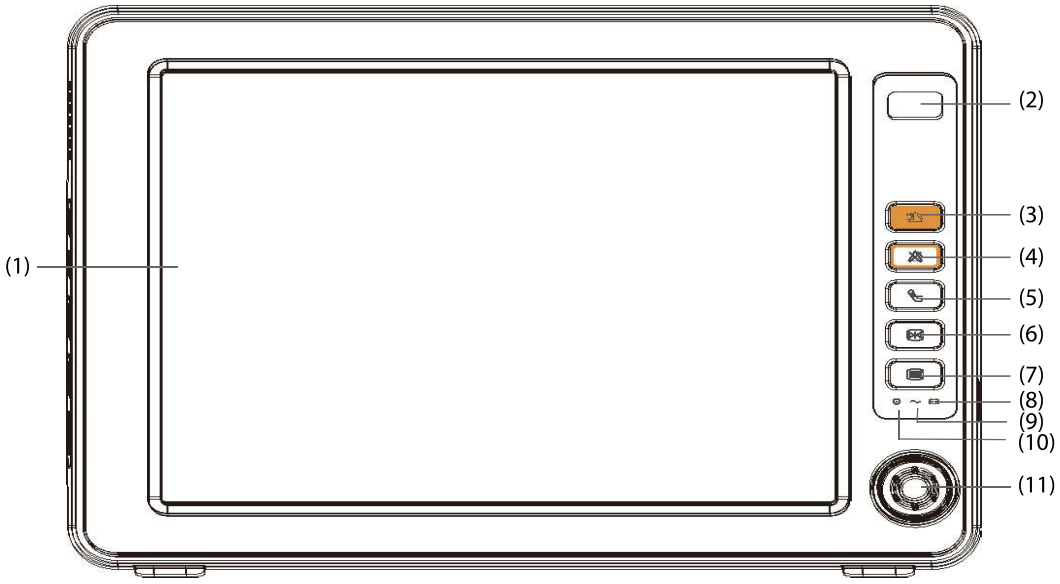
2.2 Front View



(1) Display Screen

(2) Alarm lamp

When a physiological alarm or technical alarm occurs, this lamp will flash as defined below.

- High level alarms: the lamp quickly flashes red.
- Medium level alarms: the lamp slowly flashes yellow.
- Low level physiological alarms: the lamp lights yellow without flashing.
- Low level technical alarms: the lamp does not light.

(3) Press to reset alarms.

(4) Press to pause or restore alarms.

(5) Press to start or stop NIBP measurements.

(6) Press to freeze or unfreeze waveforms.

(7) If no menu is displayed on the screen, pressing it will enter the main menu. If there is a menu displayed on the screen, pressing it will close that menu.

(8) Battery LED

- On: when the battery is installed and the AC source is connected.
- Off: when no battery is installed or the installed battery is malfunction, or no AC source is connected when the patient monitor is power off.
- Flash: when the patient monitor operates on battery power.

(9) AC power LED

It turns on when AC power is connected.

(10) Power On/Off LED

It turns on when the patient monitor is on and turns off when the patient monitor is off.

(11) Knob

Rotate the Knob clockwise or anti-clockwise. With each click, the highlight jumps to the neighboring item. When you reach your desired item, press the Knob to select it.

5 Managing Configurations

5.1 Introduction

When performing continuous monitoring on a patient, the clinical professional often needs to adjust the monitor's settings according to the patient's condition. The collection of all these settings is called a configuration. Allowing you to configure the monitor more efficiently, the monitor offers different sets of configuration to suit different patient categories. You can change some settings from a certain set of configuration and then save the changed configuration as a user configuration.

WARNING

- **The configuration management function is password protected. The configuration management tasks must be performed by clinical professionals.**

The system configuration items can be classified as:

- Parameter configuration items

  These items relates to parameters, e.g., waveform gain, alarm switch, alarm limits..

- Conventional configuration items

  These items define how the monitor works, e.g., screen layout, record, print and alarm settings.

- User maintenance items

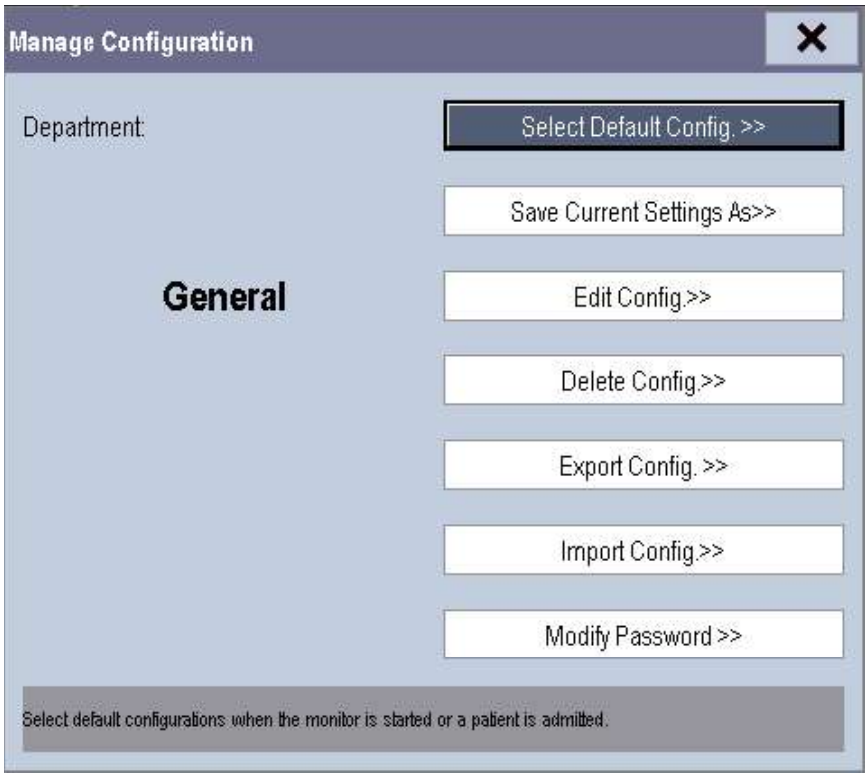
  These items relates to user maintenance settings, e.g., unit setup, time format and data format.

For the important configuration items and their default values and user maintenance items, see appendix ***Configuration Default Information***.

5.2 Entering the [Manage Configuration] Menu

1. Press the hardkey on the monitor's front to enter the main menu.

2. Select **[Maintenance >>]** → **[Manage Configuration >>]**. Enter the required password and then select **[Ok]**.



5.3 Setting Default Configuration

The monitor will load the pre-set default configuration in the following cases.

- The patient monitor restarts after quitting over 120 seconds.
- A patient is admitted.
- A patient is discharged.
- Patient data is cleared.
- Patient category is changed.

To set default configuration:

1. Select **[Select Default Config. >>]** in the **[Manage Configuration]** menu.
2. In the **[Select Default Config.]** menu, select **[Load the Latest Config.]** or **[Load Specified Config.]**.

When you select **[Load Specified Config.]**, the configuration (adult, pediatric or neonate) to be restored is subject to the patient category. This configuration can be either factory configuration or saved user configuration. Take adult as an example, select **[Default Adu Config.]** and toggle between **[Defaults]** or user configuration(s).

NOTE

- **To know what configuration is restored when the patient monitor starts, enter the main screen to check the prompt information at the lower part of the screen (displayed for about 10 seconds).**

5.4 Saving Current Settings

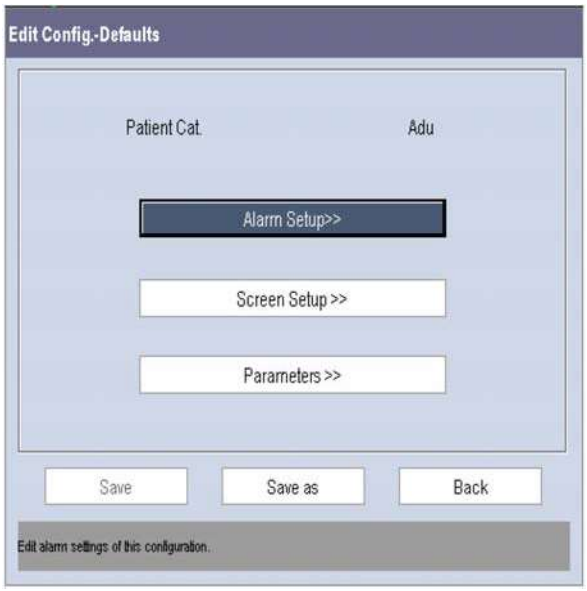
Current settings can be saved as user configuration. Up to 3 user configurations can be saved.

To save current settings:

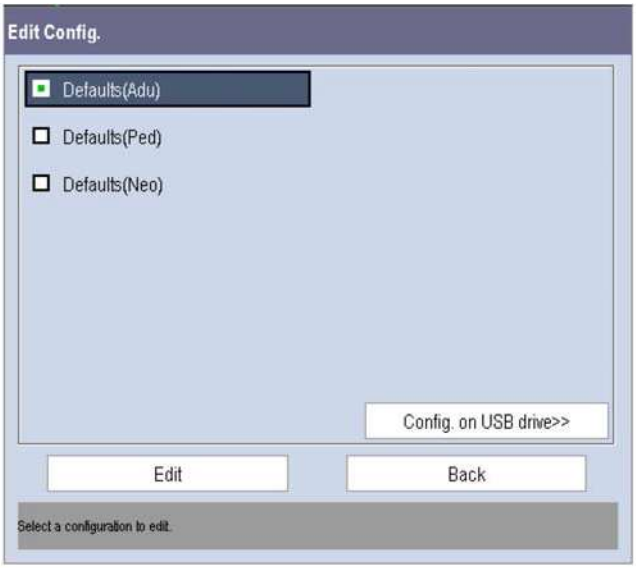
1. Select **[Save Current Settings As >>]** in the **[Manage Configuration]** menu.
2. In the popup dialog box, enter the configuration name and then select **[Ok]**.

5.5 Editing Configuration

1. Select **[Edit Config. >>]** in the **[Manage Configuration]** menu. The following menu appears.



2. The popup menu shows the existing configurations on the monitor. Selecting **[Config. on USB drive >>]** will show the existing configurations on the USB drive. Select the desired configuration and then select the **[Edit]** button. The following menu appears.



3. Select **[Alarm Setup >>]**, **[Screen Setup >>]** or **[Parameter >>]** to enter the corresponding menu in which settings can be changed. The changed items of alarm setup will be marked in red.
4. You can select **[Save]** or **[Save as]** to save the changed configuration. Select **[Save]** to overwrite the original configuration. Select **[Save as]** to save the changed configuration in another name.

5.6 Deleting a Configuration

1. Select **[Delete Config. >>]** in the **[Manage Configuration]** menu.
2. The popup menu shows the existing user configurations on the monitor. Selecting **[Config. on USB drive >>]** will show the existing user configurations on the USB drive. Select the user configurations you want to delete and then select **[Delete]**.
3. Select **[Yes]** in the popup.

5.7 Transferring a Configuration

When installing several monitors with identical user configuration it is not necessary to set each unit separately. An USB drive may be used to transfer the configuration from monitor to monitor.

To export the current monitor's configuration:

1. Connect the USB drive to the monitor's USB port.
2. Select **[Export Config. >>]** in the **[Manage Configuration]** menu.
3. In the **[Export Config.]** menu, select the configurations and **[User Maintenance Settings]** to export. Then select the **[Export]** button. A status message will report completion of the transfer.

To import the configuration on the USB drive to the monitor:

1. Connect the USB drive to the monitor's USB port.
2. Select **[Import Config. >>]** in the **[Manage Configuration]** menu.
3. In the **[Import Config.]** menu, select the configurations and **[User Maintenance Settings]** to import. Then select the **[Import]** button. A status message will report completion of the transfer.

5.8 Loading a Configuration

You may make changes to some settings during operation. However, these changes or the pre-selected configuration may not be appropriate for the newly admitted patient. Therefore, the monitor allows you to load a desired configuration so as to ensure that all the settings are appropriate for your patient.

To load a configuration,

1. Select **[Load Configuration >>]** from the main menu.
2. The popup menu shows the existing configurations on the monitor. Selecting **[Config. on USB drive >>]** will show the existing configurations on the USB drive.
3. Select a desired configuration.
4. Select [View] to view the configuration details. In the popup menu, you can select **[Alarm Setup >>]**, **[Screen Setup >>]** or **[Parameter >>]** to view the corresponding contents. The alarm setup items which are different than those currently used are marked in red.
5. Select **[Load]** to load this configuration.

5.9 Restoring the Latest Configuration Automatically

During operation, you may make changes to some settings. However, these changes may not be saved as user configuration. To prevent the changes from losing in case of a sudden power failure, the patient monitor stores the configuration in real time. The saved configuration is the latest configuration.

The monitor restore the latest configuration if restarts within 60 seconds after the power failure. And it will restore the default configuration rather than the latest configuration if restarts 120 seconds later after the power failure. The monitor may load either the latest configuration or the default configuration if restarts from 60-120 seconds after the power failure.

5.10 Modifying Password

To modify the password for accessing the **[Manage Configuration]** menu,

1. Select **[Modify Password >>]** in the **[Manage Configuration]** menu.
2. Input a new password in the popup menu.
3. Select **[Ok]**.

7.5.3 Setting Alarm Delay Time

You can set the alarm delay time for over-limit alarms of continuously measured parameters. If the alarm-triggered condition disappears within the delay time, the patient monitor will not give the alarm. You can set the **[Alarm Delay]** in the **[Others]** window of **[Alarm Setup]** menu.

To set the alarm delay time,

1. Select **[Main Menu]** → **[Maintenance >>]** → **[User Maintenance >>]**. Enter the required password and then select **[Ok]**.
2. Select **[Alarm Setup >>]** → **[Alarm Delay]**.

Alarm delay is not applied to the following physiological alarms:

- Apnea
- ST alarms
- Arrhythmia alarms
- ECG Weak Signal
- Resp Artifact
- No Pulse
- Measurements of noncontinuous parameters over alarm limits
- HR over alarm limits

You can set **[Apnea Delay]** and **[ST Alarm Delay]** separately.

7.5.4 Setting SpO_2 Technical Alarm Delay

You can set **[Tech. Alarm Delay]** in the **[Others]** tab of the **[Alarm Setup]** menu. The options are **[Off]**, **[5s]**, **[10s]** and **[15s]**. The delay is effective to the following technical alarms: SpO_2 Sensor Off, SpO_2 Too Much Light, SpO_2 Low Signal and SpO_2 Interference.

7.5.5 Setting Recording Length

You can change the length of the recorded waveforms. In the **[Others]** window of the **[Alarm Setup]** menu, select **[Recording Length]** and toggle between **[8 s]**, **[16 s]** and **[32s]**:

- **[8 s]**: 4 seconds respectively before and after the alarm or manual event trigger moment.
- **[16 s]**: 8 seconds respectively before and after the alarm or manual event trigger moment.
- **[32 s]**: 16 seconds respectively before and after the alarm or manual event trigger moment.

7.6 Pausing Alarms

If you want to temporarily prevent alarms from sounding, you can pause alarms by pressing the hardkey on the monitor's front. When alarms are paused:

- No alarm lamps flash and no alarms are sounded.
- No numeric and alarm limit flash.
- No alarm messages are shown.
- The remaining pause time is displayed in the physiological alarm area.
- The alarms paused symbol is displayed in the alarm symbol area.

The patient monitor enters into the alarm paused status as soon as it is turned on. The alarm pause time is fixed to be 2 minutes.

When the alarm pause time expires, the alarm paused status is automatically cancelled and the alarm tone will sound. You can also cancel the alarm paused status by pressing the hardkey.

The alarm pause time can be set to **[1 min]**, **[2 min]**, **[3 min]**, **[5 min]**, **[10 min]**, **[15 min]** or **[Permanent]**. The default alarm pause time is 2 minutes.

1. Select **[Main Menu]** → [**Maintenance >>**] → **[User Maintenance >>]** → enter the required password.
2. Select **[Alarm Setup >>]** → **[Alarm Pause Time]** and then select the appropriate setting from the popup list.

You can also temporarily prolong the alarm pause time after the monitor enters the alarm paused status:

1. Select **[Main Menu]** → **[Maintenance >>]** → **[User Maintenance >>]** → enter the required password → **[Alarm Setup >>]**.
2. In the **[Alarm Setup]** menu, set the **[Max. Alarm Pause 15min]** to **[Enable]**.
3. In the physiological alarm area, select a proper time in the **[Alarm Pause Time]** menu.

NOTE

- **[Max. Alarm Pause 15min] is configured to [Disable] by default. In this case, you cannot prolong the pause time.The prolonged pause time is only effective to the current paused alarms.**

7.7 Switching Off All Alarms

If **[Alarm Pause Time]** is set to **[Permanent]**, the patient monitor enters into the alarm off status after the hardkey is pressed. During the alarm off status,

- As for physiological alarms, no alarm lamps flash and no alarms are sounded.
- As for physiological alarms, no numeric and alarm limit flash.
- No physiological alarm messages are shown.
- **[Alarm Off]** is displayed in the physiological alarm area with red background.
- As for technical alarms, no alarms are sounded.
- The alarm off symbol is displayed in the alarm symbol area.

You can cancel the alarm off status by pressing the hardkey.

WARNING

- **Pausing or switching off alarms may result in a hazard to the patient. Please be very careful.**

7.8 Resetting Alarms

By selecting the QuickKey, you can reset the alarm system to acknowledging the on-going alarms and enable the alarm system to respond to a subsequent alarm condition.

For physiological alarms, except the NIBP-related alarms, when the alarm system is reset:

- The alarm sound is reset.
- A √ appears before the alarm message, indicating that the alarm is acknowledged.
- The icon appears in the alarm symbol area.
- The parameter numeric and alarm limits still flash.

The indication of alarm lamp for the physiological alarm depends on the alarm light setting.

- When **[Alarm Light on Alarm Reset]** is set to **[On]**, the alarm lamp remains flashing.
- When **[Alarm Light on Alarm Reset]** is set to **[Off]**, the alarm lamp stops flashing.

Technical alarms give different alarm indicators when the alarm system is reset:

- For some technical alarms, including the NIBP-related alarms, a √ appears before the alarm message and appears in the alarm symbol area, indicating that the alarm is acknowledged.
- Some technical alarms are changed to the prompt messages.
- Some technical alarms are cleared. The monitor gives no alarm indications.

For details about the indications of technical alarms when the alarm system is reset, refer to ***D.2 Technical Alarm Messages***.

Lead Placement for Surgical Patients

The surgical site should be taken into consideration when placing electrodes on a surgical patient. e.g. for open-chest surgery, the chest electrodes can be placed on the lateral chest or back. To reduce artifacts and interference from electrosurgical units, you can place the limb electrodes close to the shoulders and lower abdomen and the chest electrodes on the left side of the mid-chest. Do not place the electrodes on the upper arm. Otherwise, the ECG waveform will be very small.

WARNING

- **When using electrosurgical units (ESU), patient leads should be placed in a position that is equal distance from the Electrosurgery electrotome and the grounding plate to avoid burns to the patient. Never entangle the ESU cable and the ECG cable together.**
- **When using electrosurgical units (ESU), never place ECG electrodes near to the grounding plate of the ESU, as this can cause a lot of interference on the ECG signal.**

8.3.4 Checking Paced Status

It is important to set the paced status correctly when you start monitoring ECG. The paced symbol  is displayed in the ECG waveform area when the **[Paced]** status is set to **[Yes]**. The pace pulse markers "|" are shown on the ECG wave when the patient has a paced signal. If **[Paced]** is set to **[No]** or the patient's paced status is not selected, the symbol  will be shown in the ECG waveform area.

To change the paced status, you can select either:

- the patient information area, or
- **[Main Menu]** → **[Patient Setup]** → **[Patient Demographics]**, or,
- the ECG parameter window or waveform area → **[Others >>]**,

and then, select **[Paced]** from the popup menu and toggle between **[Yes]** and **[No]**.

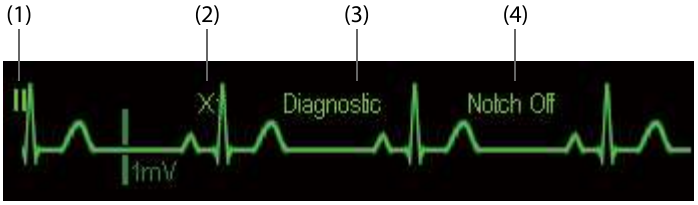
If you do not set the paced status, the patient monitor issues a prompt tone when pace pulse is detected. At the same time, the paced symbol flashes and the message **[Please confirm the pace of patient]** appears in the ECG waveform area. Then, please check and set the paced status of the patient.

WARNING

- **For paced patients, you must set [Paced] to [Yes]. If it is incorrectly set to [No], the patient monitor could mistake a pace pulse for a QRS and fail to alarm when the ECG signal is too weak. Do not rely entirely on rate meter alarms when monitoring patients with pacemakers. Always keep these patients under close surveillance.**
- **For non-paced patients, you must set [Paced] to [No].**
- **The auto pacer recognition function is not applicable to pediatric and neonatal patients.**
- **False low heart rate indicators or false Asystole calls may result with certain pacemakers because of pacemaker artifact such as electrical overshoot of the pacemaker overlapping the true QRS complexes.**

8.4 Understanding the ECG Display

Your display may be configured to look slightly different.



PR from SpO2 Module

Measurement range	20 to 300 bpm
Resolution	1 bpm
Response time	< 30 s (PI > 0.3, no disturbance, PR value sudden change within 25 – 240 bpm)
Accuracy	±3 bpm
Refreshing rate	≤2 s
SpO_2 averaging time	7 s (when sensitivity is set to High) 9 s (when sensitivity is set to Medium) 11 s (when sensitivity is set to Low)

PR from NIBP Module

Measurement range	30 to 300 bpm
Resolution	1 bpm
Accuracy	±3 bpm or ±3%, whichever is greater
Refreshing rate	≤2 s

PR from IBP Module

Measurement range	25 to 350 bpm
Resolution	1 bpm
Accuracy	±1 bpm or ±1%, whichever is greater
Refreshing rate	≤2 s

A.7.5 NIBP

Standards	Meet standards of IEC80601-2-30,			
Technique	Oscillometry			
Mode of operation	Manual, Auto, STAT, Sequence			
Auto mode repetition intervals	1 min, 2 min, 2.5 min, 3 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 h, 1.5 h, 2 h, 3 h, 4 h, 8 h			
STAT mode cycle time	5 min			
Max measurement time	Adult, pediatric: 120 s Neonate: 90 s			
Measurement ranges (mmHg)		Adult	Pediatric	Neonate
	Systolic:	25 to 290	25 to 240	25 to 140
	Diastolic:	10 to 250	10 to 200	10 to 115
	Mean:	15 to 260	15 to 215	15 to 125
Accuracy	Max mean error: ±5 mmHg Max standard deviation: 8 mmHg			
Resolution	1mmHg			

Initial cuff inflation pressure range (mmHg)	Adult: 80 to 280 Pediatric: 80 to 210 Neonate: 60 to 140	
Default initial cuff inflation pressure (mmHg)	Adult: 160 Pediatric: 140 Neonate: 90	
Software overpressure protection	Adult, pediatric: 297±3 mmHg Neonate: 147±3 mmHg	
Static pressure measurement range	0 mmHg to 300 mmHg	
Static pressure measurement accuracy	±3 mmHg	
Alarm limit	**Range (mmHg)**	**Step (mmHg)**
Sys High	Adult: (low limit+5) to 290 Pediatric: (low limit+5) to 240 Neonate: (low limit+5) to 140	NIBP ≤ 50: 1 NIBP > 50: 5
Sys Low	25 to (high limit-5)	
Mean High	Adult: (low limit+5) to 260 Pediatric: (low limit+5) to 215 Neonate: (low limit+5) to 125	
Mean Low	15 to (high limit-5)	
Dia High	Adult: (low limit+5) to 250 Pediatric: (low limit+5) to 200 Neonate: (low limit+5) to 115	
Dia Low	10 to (high limit-5)	

*Measurement accuracy verification: In adult and pediatric modes, the blood pressure measurements measured with this device are in compliance with the Standard for Non-invasive sphygmomanometers (ISO 81060-2) in terms of mean error and stardard deviation by comparing with intra-arterial or auscultatory measurements (depending on the configuration) in a typical patient population. For auscultatory reference, the 5th Korotkoff sound was used to determine the diastolic pressure.

In neonatal mode, the blood pressure measurements measured with this device are in compliance with the American National Standard for Non-invasive sphygmomanometers (ISO 81060-2) in terms of mean error and stardard deviation by comparing with intra-arterial measurements (depending on the configuration) in a typical patient population.

A.7.6 Temp

Standards	Meet standard of ISO 80601-2-56
Technique	Thermal resistance
Operating mode	Direct mode
Measurement range	0 to 50 °C (32 to 122 °F)
Resolution	0.1 °C
Accuracy	±0.1 °C (without probe)
Refreshing rate	≤2 s
Minimum time for accurate measurement	Body surface: <100 s Body cavity: <80 s
Transient response time	Body surface probe: <45 s Body cavity probe: <45 s

D Alarm Messages

This chapter lists only the most important physiological and technical alarm messages. Some messages appearing on your monitor may not be included.

In this chapter:

- The "I" column indicates how indications of technical alarms perform after the alarm system is reset: "A" means that some technical alarms are cleared; "B" indicates that some technical alarms are changed to the prompt messages; and "C" indicates that a "√" appears before the alarm message,  appears in the alarm symbol area, and the indication of the alarm lamp depends on the alarm light setting. Refer to ***7.8 Resetting Alarms*** for details.
- The "L" field indicates the alarm level: H means high, M means medium and L means low. "*" means the alarm level is user-adjustable.
- XX represents a measurement or parameter label, such as ECG, NIBP, HR, ST-I, PVCs, RR, SpO_2, PR, etc.

In the "Cause and Solution" column, corresponding solutions are given instructing you to troubleshoot problems. If the problem persists, contact your service personnel.

D.1 Physiological Alarm Messages

Measurement	Alarm messages	L	Cause and solution
XX	XX Too High	M*	XX value has risen above the high alarm limit or fallen below the low alarm limit. Check the patient's condition and check if the patient category and alarm limit settings are correct.
	XX Too Low	M*	
ECG	ECG Weak Signal	H	The ECG signal is so weak that the monitor can't perform ECG analysis. Check the patient's condition and the ECG connections.
	Asystole	H	Arrhythmia has occurred to the patient. Check the patient's condition and the ECG connections.
	VFib/VTac	H	
	Vtac	H	
	Vent. Brady	H	
	Extreme Tachy	H	
	Extreme Brady	H	
	R on T	M*	
	Run PVCs	L*	
	PVCs	M*	
	Multif.PVC	M*	
	Bigeminy	M*	
	Trigeminy	M*	
	Tachy	M*	
	Brady	M*	
	Vent. Rhythm	M*	
	Nonsus. Vtac	M*	
	Pause	L*	
Resp	Resp Apnea	H	The respiration signal was so weak that the monitor cannot perform respiration analysis. Check the patient's condition and the Resp connections.
	Resp Artifact	H	The patient's heartbeat has interfered with his respiration. Check the patient's condition and the Resp connections.
SpO_2	SpO_2 Desat	H	The SpO2 value has fallen below the desaturation alarm limit. Check the patient's condition and check if the alarm limit settings are correct.
	No Pulse	H	The pulse signal was so weak that the monitor cannot perform pulse analysis. Check the patient's condition, SpO_2 sensor and measurement site.
CO_2	CO_2 Apnea	H	The patient stops breathing, or the respiration signal was so weak that the monitor cannot perform respiration analysis. Check the patient's condition and the RM connections.

D.2 Technical Alarm Messages

Measurement	Alarm message	L	I	Cause and solution
XX	XX SelfTest Err	H	C	An error occurred to the XX module, or there is a problem with the communications between the module and the monitor. Re-plug the module and restart the monitor, or plug the module into another monitor.
	XX Init Err	H	A	
	XX Init Err N	H	A	
	N is within 1 to 8			
	XX Comm Err	H	A	
	XX Comm Stop	H	C	
	XX Limit Err	L	C	XX parameter limit is accidentally changed. Contact your service personnel.
	XX Overrange	L	C	The measured XX value is not within the specified range for XX measurement. Contact your service personnel.
ECG	ECG Lead Off	L*	B	The electrode has become detached from the patient or the lead wire has become disconnected from the adapter cable. Check the connections of the electrodes and leadwires.
	ECG YY Lead Off	L*	B	
	Note: YY represents the leadwires, V, LL, LA, RA, as per AHA standard, or C, F, L and R as per IEC standard.			
	ECG Noisy	L	A	The ECG signal is noisy. Check for any possible sources of signal noise around the cable and electrode, and check the patient for great motion.
	ECG Artifact	L	A	Artifacts are detected on the ECG analysis lead and as a result heart rate cannot be calculated and Asystole, Vfib and Vtac cannot be analyzed. Check the connections of the electrodes and leadwires and check for any possible source of interference around the cable and electrode. Check the patient's condition and check the patient for great motion.
	ECG High Freq. Noise	L	A	High frequency signals are detected on the ECG analysis lead. Check for any possible source of interference around the cable and electrode.
	ECG Low Freq. Noise	L	A	Low frequency signals are detected on the ECG analysis lead. Check for any possible source of interference around the cable and electrode.
	ECG Amplitude Too Small	L	C	The ECG amplitude didn't reach the detected threshold. Check for any possible source of interference around the cable and electrode.
	ECG Config. Err	L	C	ECG configuration is wrongly downloaded. Check the downloaded configuration and re-download the correct configuration.
Resp	Resp Disturbed	L	A	The respiration circuit is disturbed. Restart the monitor.
Temp	Temp Cal. Err	H	C	A calibration failed. Restart the monitor.
	T1 Sensor Off	L	A	The Temp sensor has become detached from the patient or the module. Check the sensor connections.
	T2 Sensor Off	L	A	

Measurement	Alarm message	L	I	Cause and solution
SpO_2	SpO_2 Sensor Off	L*	B	The SpO_2 sensor has become detached from the patient or the module, or there is a fault with the SpO_2 sensor, or an unspecified SpO_2 sensor has been used. Check the sensor application site and the sensor type, and make sure if the sensor is damaged. Reconnect the sensor or use a new sensor.
	SpO_2 Sensor Fault	L	C	
	SpO_2 No Sensor	L	B	
	SpO_2 Unknown Sensor	L	C	
	SpO_2 Sensor Incompatible	L	C	
	SpO_2 Too Much Light	L	C	There is too much light on the SpO_2 sensor. Move the sensor to a place with lower level of ambient light or cover the sensor to minimize the ambient light.
	SpO_2 Low Signal	L	C	The SpO_2 signal is too low or too weak. Check the patient's condition and change the sensor application site. If the error persists, replace the sensor.
	SpO_2 Weak Pulse	L	C	
	SpO_2 Interference	L	C	The SpO2 signal has been interfered. Check for any possible sources of signal noise around the sensor and check the patient for great motion.
	SpO_2 Board Fault	L	C	There is a problem with the SpO_2 measurement board. Do not use the module and contact your service personnel.
NIBP	NIBP Loose Cuff	L	A	The NIBP cuff is not properly connected, or there is a leak in the airway.
	NIBP Air Leak	L	A	
	NIBP Pneumatic Leak	L	A	Check the NIBP cuff and pump for leakages.
	NIBP Cuff Type Wrong	L	A	The cuff type applied mismatches the patient category. Verify the patient category and replace the cuff.
	NIBP Air Pressure Err	L	A	An error occurred to the air pressure. Verify that the monitor application site meets the environmental requirements and check if there is any source that affects the air pressure.
	NIBP Weak Signal	L	A	The patient's pulse is weak or the cuff is loose. Check the patient's condition and change the cuff application site. If the error persists, replace the cuff.
	NIBP Signal Saturated	L	A	The NIBP signal is saturated due to excess motion or other sources.
	NIBP Overrange	L	A	The measured NIBP value exceeds the module measurement range.
	NIBP Excessive Motion	L	A	Check the patient's condition and reduce the patient motion.
	NIBP Cuff Overpress.	L	A	The NIBP airway may be occluded. Check the airway and measure again.
	NIBP Equip Err	H	A	An error occurred during NIBP measurement and therefore the monitor cannot perform analysis correctly. Check the patient's condition and NIBP connections, or replace the cuff.
	NIBP Timeout	L	A	
	NIBP Measure Failed	L	A	
	NIBP Illegally Reset	L	A	An illegal reset occurred during NIBP measurement. Check if the airway is occluded.

Measurement	Alarm message	L	I	Cause and solution
IBP	YY Sensor Off	L*	A	Check the sensor connection and reconnect the sensor.
	YY Disconnected	H	C	The liquid way is disconneted from the patient, or the three-way valve is open to the air. Check the connection of the liquid way, or check the valve is open to the patient. If the problem remains, contact the Customer Services Dept. for help.
	YY Non-Pulsatile	L	A	The catheter may be occluded. Please flush the catheter.
	YY represents an IBP label.			
C.O.	TB Sensor Off	L	A	Check the sensor connection and reconnect the sensor.
CO_2	CO_2 Sensor High Temp	L	C	Check, stop using or replace the sensor.
	CO_2 Sensor Low Temp	L	C	
	CO_2 FilterLine Occluded	L	C	The airway or watertrap was occluded. Check the airway and remove the occlusion.
	CO_2 No Watertrap	L	B	Check the watertrap connections.
	CO_2 Zero Failed	L	A	Check the CO2 connections. After the sensor's temperature becomes stabilized, perform a zero calibration again.
	CO_2 System Err	L	A	Re-plug the module or restart the monitor.
	CO_2: Change Watertrap	L	C	Replace the watertrap.
	CO_2: Watertrap and Patient Mismatch	L	C	Check the patient category and use a correct watertrap.
Power	12V Too High	H	C	There is a problem with the system power supply. Restart the monitor.
	12V Too Low	H	C	
	5V Too High	H	C	
	5V Too Low	H	C	
	3.3V Too High	H	C	
	3.3V Too Low	H	C	
	Battery Too Low	H	C	Connect the monitor to an AC power source and allow the batteries to charge.
	Battery Overload	H	C	The power consumption of the equipment is too high. Power the monitor using an AC power source.
	RT Clock Not Exist	H	C	Contact your service personnel.

Measurement	Alarm message	L	I	Cause and solution
Recorder	Recorder Init Err N	L	A	Restart the monitor.
	N is within 1 to 8.			
	Recorder SelfTest Err	L	A	Stop the recording and restart the monitor.
	Recorder Comm Err	L	A	
	Recorder S. Comm Err	L	A	
	Recorder Unavailable	L	A	
	Recorder Vlt High	L	C	An error occurred to the system power supply. Restart the monitor.
	Recorder Vlt Low	L	C	
	Recorder Head Hot	L	C	The recorder has been working for too long time. Stop the recording and resume the recording till the recorder's printhead cools down.
	Rec Paper Wrong Pos.	L	A	Re-load the recorder paper.
System	System Watchdog Err	H	C	An error occurred to the system. Restart the monitor.
	System Software Err	H	C	
	System CMOS Full	H	C	
	System CMOS Err	H	C	
	System FPGA Err	H	C	
	System Err N	H	C	
	N is within 2 to 12.			
	Other Bed Disconnected	L	A	Check network connection.
	PWR interrupted. Check meas. state	L	A	Power supply failed accidently. Check the measurements when the monitor restarts.
	No CMS	L	A	The monitor is disconnected from the CMS. Check network connection.