iMEC8 Vet

Portable Multi-Parameter Veterinary Monitor

Operator's Manual

0 5-2019

- 0 9-01
- 3.0

Intellectual Property Statement

This posting serves as notice under 35 U.S.C.§287(a) for Mindray patents: http://www.mindrayna.com/patents.

Manufacturer's Responsibility

WARNING

- **This equipment must be operated by skilled/trained clinical professionals.**
- **It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or personal injury.**

Service

NOTE

- **Upon request, Mindray provides circuit diagrams, component part lists, descriptions, calibration instructions, or other information which assist the user's appropriately qualified technical personnel to repair those parts of the equipment which are designated by Mindray DS USA, Inc. as repairable.**

Preface

Manual Purpose

Intended Audience

Illustrations

Conventions

- *Italic text*
- →

Contents

1 Safety

1.1 Safety Information

⚠ **DANGER**

- **Indicates an imminent hazard that, if not avoided, will result in death or serious injury.**

⚠ **WARNING**

- **Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury.**

⚠ **CAUTION**

- **Indicates a potential hazard or unsafe practice that, if not avoided, could result in minor personal injury or product/property damage.**

NOTE

- **Provides application tips or other useful information to ensure that you get the most from your product.**

1.1.1 Dangers

1.1.2 Warnings

WARNING

- **The device is intended for animal monitoring by trained personnel in the specified places.**
- **This equipment is used for one patient at a time.**
- **Before putting the system into operation, the operator must verify that the equipment, connecting cables and accessories are in correct working order and operating condition.**
- **The equipment must be connected to a properly installed power outlet with protective earth contacts only. If the installation does not provide for a protective earth conductor, disconnect it from the power line and operate it on battery power, if possible.**
- **To avoid explosion hazard, do not use the equipment in the presence of oxygen-rich atmospheres, flammable anesthetics, or other flammable agents (such as gasoline).**
- **Do not open the equipment housings. All servicing and future upgrades must be carried out by the personnel trained and authorized by our company only.**
- **Do not come into contact with patients during defibrillation, otherwise serious injury or death could result.**
- **Do not touch the equipment's metal parts or connectors when in contact with the patient, otherwise patient injury may result.**
- **Before connecting the equipment to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the equipment's label or in this manual.**
- **Do not rely exclusively on the audible alarm system for monitoring. Adjustment of alarm volume to a low level or off may result in a hazard to the patient. Remember that alarm settings should be customized according to different patient situations and always keeping the patient under close surveillance is the most reliable way for safe monitoring.**
- **The physiological data and alarm messages displayed on the equipment should be reviewed by a clinician before being used for diagnostic interpretation and treatment.**
- **To avoid inadvertent disconnection, route all cables in a way to prevent a stumbling hazard. Wrap and secure excess cabling to reduce risk of entanglement or strangulation by patients or personnel.**
- **Ensure that the monitor is supplied with continuous electric power during work. Sudden power failure may lead to the loss of patient data.**
- **Never mix patient electrode types or brands. Dissimilar metals or other incompatibilities may cause considerable baseline drift and may increase trace covery time after defibrillation.**

1.1.3 Cautions

CAUTION

- **To ensure patient safety, use only parts and accessories specified in this manual.**
- **At the end of its service life, the equipment, as well as its accessories, must be disposed of in compliance with the guidelines regulating the disposal of such products. If you have any questions concerning disposal of the equipment, please contact Mindray.**
- **Magnetic and electrical fields are capable of interfering with the proper performance of the equipment. For this reason make sure that all external devices operated in the vicinity of the equipment comply with the relevant EMC requirements. Mobile phones, X-ray equipment or MRI devices are a possible source of interference as they may emit higher levels of electromagnetic radiation.**
- **Before connecting the equipment to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the equipment's label or in this manual.**
- **Always install or carry the equipment properly to avoid damage caused by drop, impact, strong vibration or other mechanical force.**
- **Dry the equipment immediately in case of rain or water spray.**

1.1.4 Notes

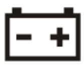
NOTE

- **Put the equipment in a location where you can easily see the screen and access the operating controls.**
- **Keep this manual in the vicinity of the equipment so that it can be obtained conveniently when needed.**
- **The software was developed in compliance with IEC 60601-1-4. The possibility of hazards arising from software errors is minimized.**
- **When disposing of the packaging material, be sure to observe the applicable waste control regulations and keep it out of children's reach.**
- **This manual describes all features and options. Your equipment may not have all of them.**

1.2 Equipment Symbols

NOTE

- **Some symbols may not appear on your equipment.**

	[illegible]		
	[illegible]		[illegible]
	[illegible]		[illegible]

2 The Basics

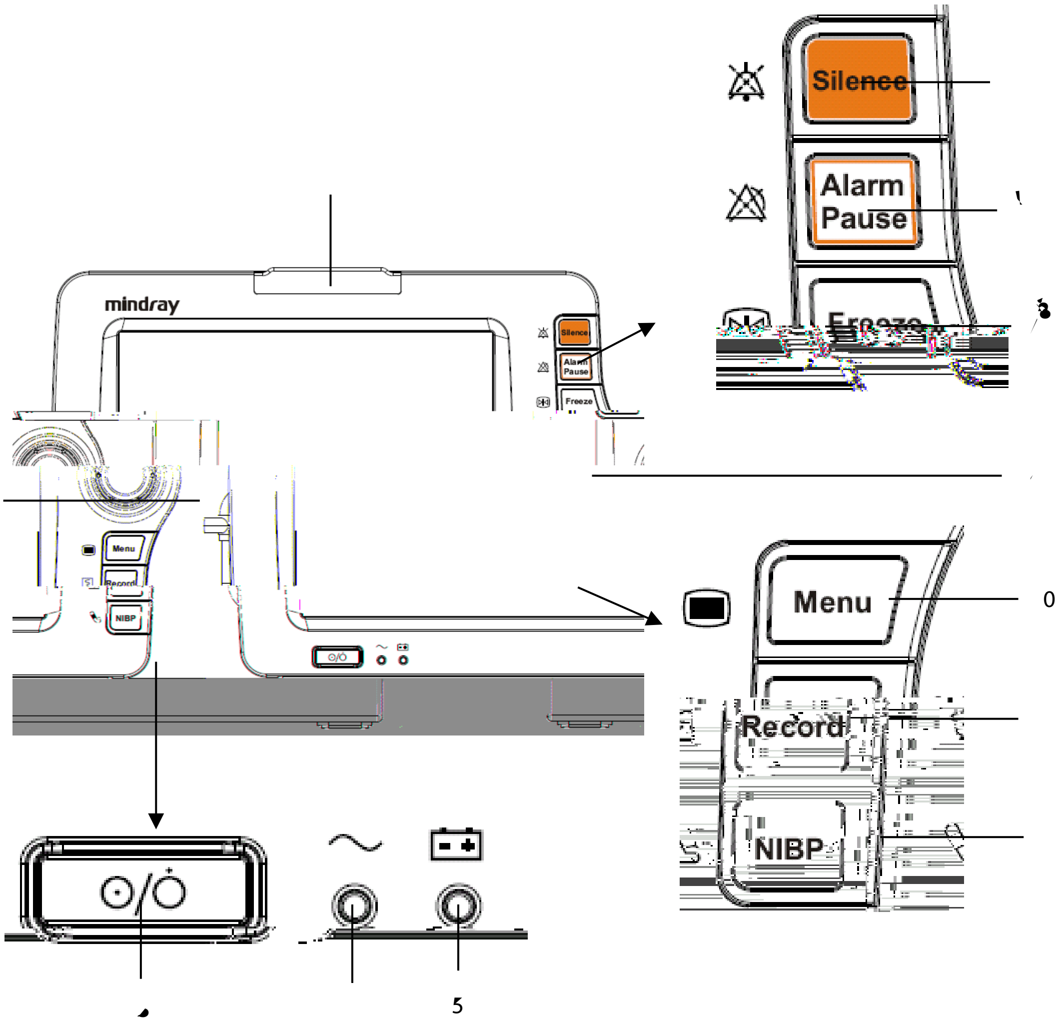
2.1 Monitor Description

2.1.1 Intended Use

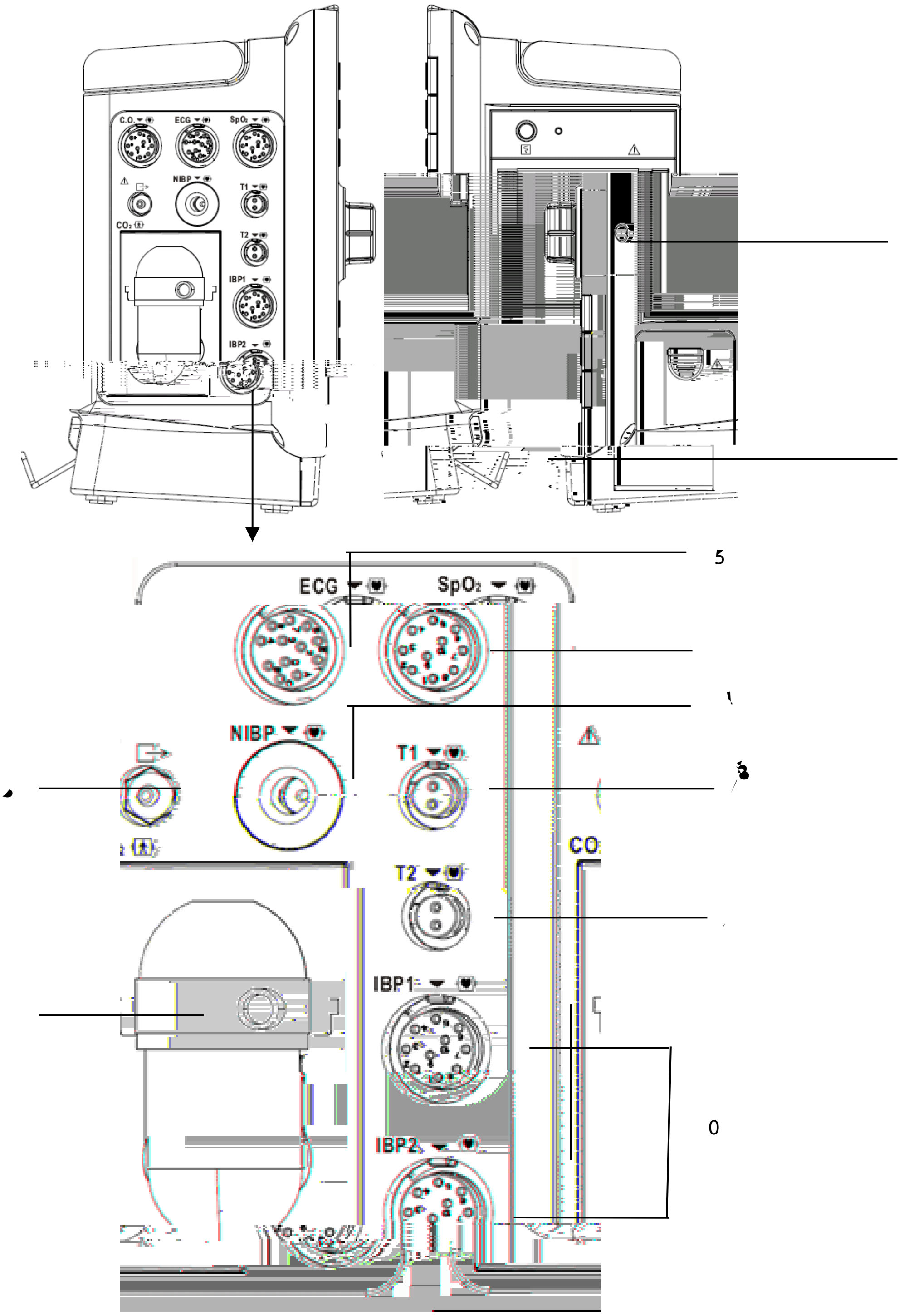
WARNING

- **This monitor is intended for use only by clinical professionals or under their guidance. It must only be used by persons who have received adequate training in its use. Anyone unauthorized or untrained must not perform any operation on it.**

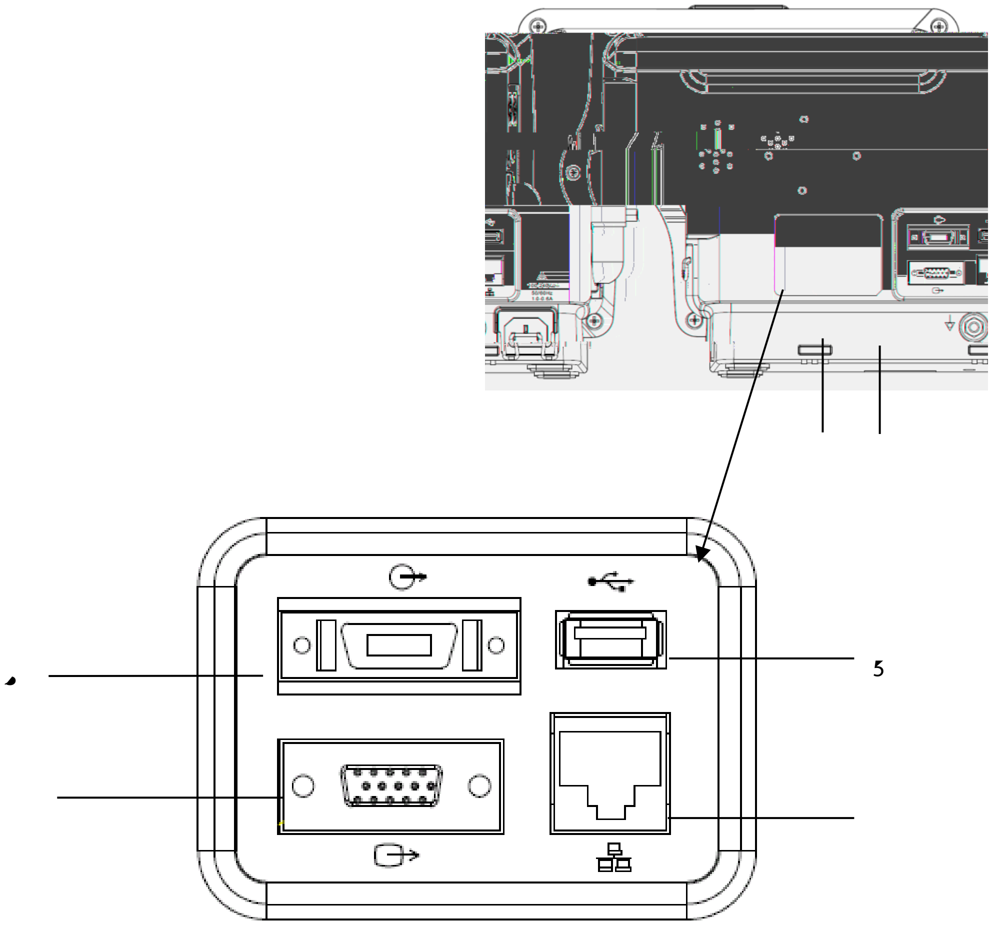
2.2 Front View



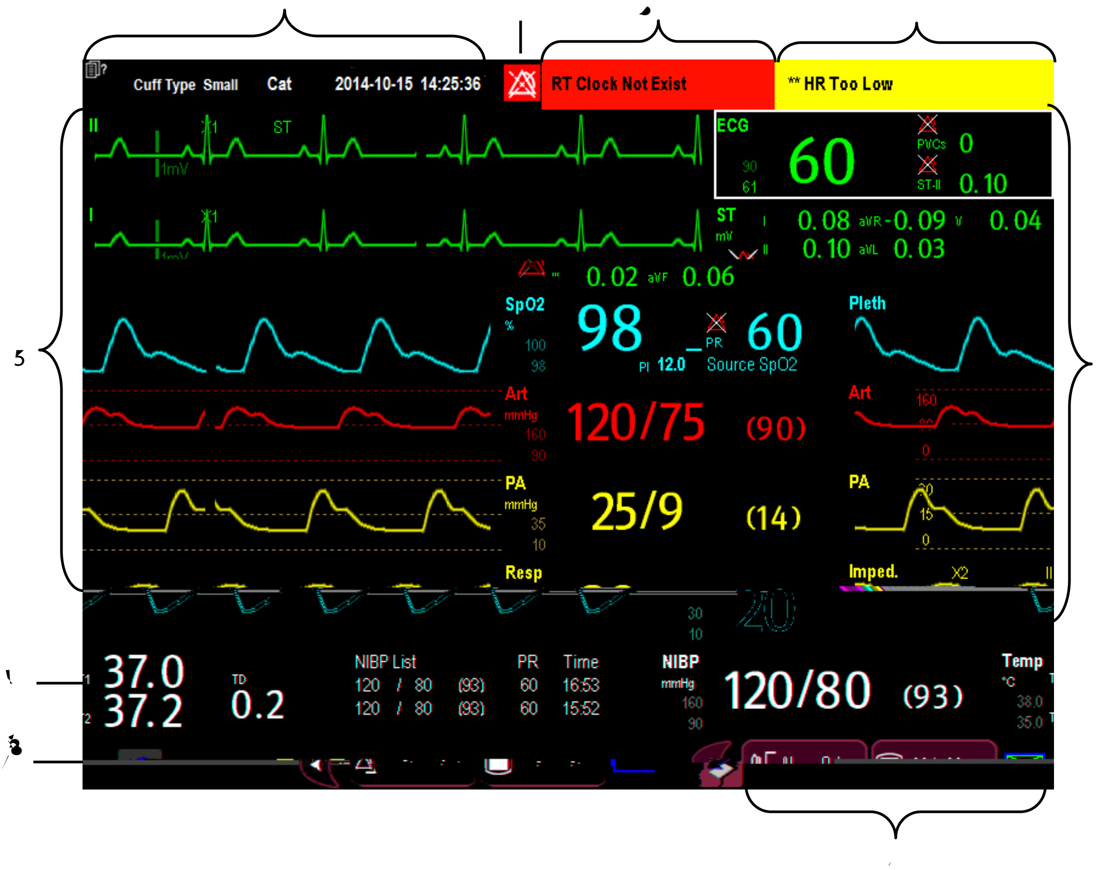
2.3 Side View



2.4 Rear View



2.5 Display Screen



Patient Setup **Patient Demographics**

Parameters

Unit Setup

1. Main Menu → Maintenance → Manage Configuration >> → … → Ok.
2. Manage Configuration … Edit Config.>>.
3. … Edit.
4. … Screen Setup >>.
5. Select QuickKeys …

3 Basic Operations

3.1 Installation

WARNING

- **Devices connected to the equipment must meet the requirements of the applicable IEC standards (e.g. IEC 60950 safety standards for information technology equipment and IEC 60601-1 safety standards for medical electrical equipment). The system configuration must meet the requirements of the IEC 60601-1-1 medical electrical systems standard. Any personnel who connect devices to the equipment's signal input/output port are responsible for providing evidence that the safety certification of the devices has been performed in accordance with IEC 60601-1-1. If you have any question, please contact Mindray.**
- **If it is not evident from the equipment specifications whether a particular combination with other devices is hazardous, for example, due to summation of leakage currents, please consult the manufacturers or else an expert in the field, to ensure the necessary safety of patients and all devices concerned will not be impaired by the proposed combination.**

CAUTION

- **The equipment shall be installed by personnel authorized by Mindray.**

NOTE

- **The software copyright of the equipment is solely owned by Mindray. No organization or individual shall resort to modifying, copying, or exchanging it or to any other infringement on it in any form or by any means without due permission.**

3.1.1 Unpacking and Checking

NOTE

- **Save the packing case and packaging material as they can be used if the equipment must be reshipped.**

WARNING

- **When disposing of the packaging material, be sure to observe the applicable waste control regulations and keep it out of children's reach.**
- **Before use, please verify that the packages are intact, especially the packages of single use accessories. In case of any damage, do not apply it to patients.**

3.1.2 Environmental Requirements

[illegible]

[illegible]

[illegible]

CAUTION

- **Make sure that the operating environment of the equipment meets the specific requirements. Otherwise unexpected consequences, e.g. damage to the equipment, could result.**
- **Put the equipment in a location where you can easily see the screen, access the operating controls, and disconnect the equipment from AC power.**

3.2 Getting Started

3.2.1 Turning Power On

[illegible]

[illegible]

[illegible]

3.2.2 Starting Monitoring

1.

2.

3.

4. **Patient Cat**, **Paced**

5.

3.6 Setting the Screen

Screen Setup **Main Menu]** → **Screen Setup** → **Screen Layout >>**

- **Screen Setup**
- **Parameters Switch**

WARNING

- **The parameters whose positions are not allocated in the [Screen Setup] window will not be displayed. However, the monitor can still give alarms of these parameters.**

3.7 Using the On-screen Keyboard

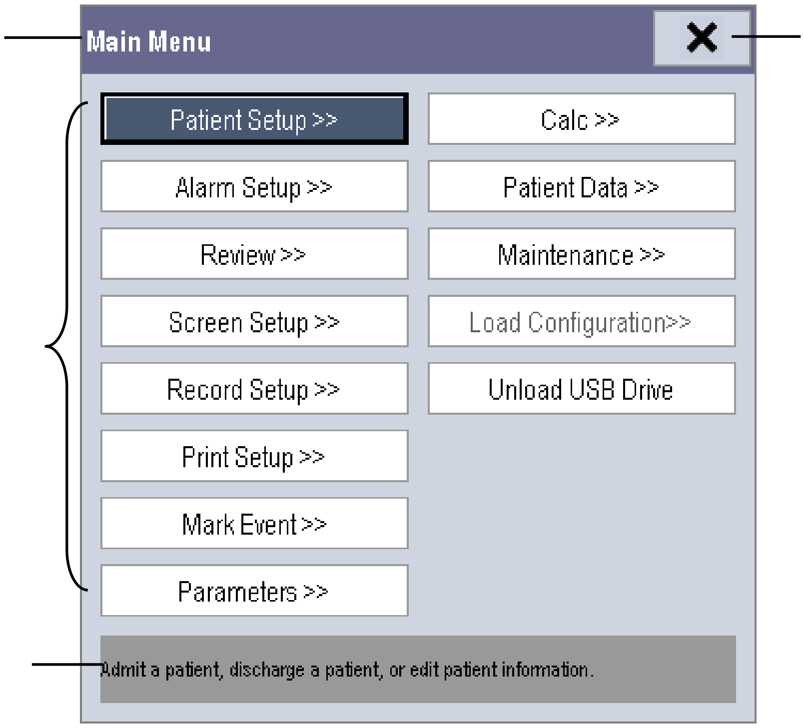
- ←
- (shift key icon)
- ↵
- @!#
- (return key icon)

3.8 Using the Timer

1. **Main Menu** → **Screen Setup>>** → **Screen Layout >>** **Screens**.
2. **Screen Setup**.
3. **Timer** *3.6 Setting the Screen*.
4. ×
   - **Start** **Pause**
   - **Clear**
   - **Setup** **Timer Setup** **Direction** **Up** **Down** **Down**
     - **Run Time(h:min:s)** 0 00 5
     - **Reminder Vol** 0 0 0.0 0

3.9 Using the Main Menu

Main Menu]



3.10 Changing General Settings

3.10.1 Setting up a Monitor

Main Menu → Maintenance >> → User Maintenance >> →

User Maintenance, Monitor Name, Department, Bed No,

3.10.2 Changing Language

Main Menu → Maintenance >> → User Maintenance >> →

User Maintenance Language

3.10.3 Adjusting the Screen Brightness

Main Menu → Screen Setup >> → Brightness.

3.10.4 Showing/Hiding Online Help Information

Main Menu → Screen Setup >>.

Help On Off.

3.10.5 Setting the Date and Time

Main Menu → Maintenance >> → System Time >>.

Date Format yyyy-mm-dd, mm-dd-yyyy dd-mm-yyyy.

Time Format 24h 12h.

CAUTION

- **If you change the date and time, the display time of stored trends and events will be changed accordingly.**

3.10.6 Adjusting Volume

Alarm Volume

Alarm Setup →

3.12 Operating Modes

3.12.1 Monitoring Mode

3.12.2 Night Mode

8i 8

■ Battery Too Low System will shut down soon. Please replace the batteries or use the external power.

⚠ **WARNING**

- **During privacy mode, all audible alarms are suppressed and the alarm light is deactivated at the monitor. Alarms sound only at the central station.**

3.12.4 Demo Mode

Main Menu → **Maintenance >>**.

Demo >>. **Ok**.

Main Menu → **Maintenance >>** → **Exit Demo**.

⚠ **WARNING**

- **The Demo mode is for demonstration purposes only. To avoid simulated data being mistaken for a monitored patient's data, you must not change into Demo mode during monitoring. Otherwise, improper monitoring and delayed treatment could result.**

3.12.5 Standby Mode

.

4 Managing Patients

4.1

4.2 Quick Admitting a Patient

Quick Admit

1. Patient Setup Main Menu] → Patient Setup >>.
2. Quick Admit Ok
   - ◆ Yes
   - ◆ No
3. Ok.

4.3 Querying and Obtaining Patient Information

1. Main Menu] → Maintenance >> → User Maintenance >> → → Gateway Comm Setting >>, IP Address Port ADT Query On.
2. Patient Demographics
3. Obtain Patient Info. >> Obtain Patient Information
4. Query.
5. Import.
6. Obtain Patient Information

NOTE

- The option [Obtain Patient Information] is available in the [Patient Setup] menu only when [ADT Query] is set to [On].
- When obtaining patient information from HIS, the monitor will only update patient information. The patient's monitoring data is not changed and the patient is not discharged.

4.4 Associating Patient Information

NOTE

- **A keyword takes effect only when being defined in eGateway. Refer to *eGateway Integration Manager Installation Guide* for details.**
- **The monitor displays corresponding patient information only when all the keywords have been inputted.**

4.5 Editing Patient Information

Patient Setup **Main Menu** → **Patient Setup >>**.

Patient Demographics

Ok.

4.6 Discharging a Patient

Patient Setup **Main Menu** → **Patient Setup >>**.

Discharge Patient

- ◆ **Ok**
- ◆ **Standby** **Ok**.
- ◆ **Cancel**

NOTE

- **Discharging a patient clears all data history in the monitor.**

4.7 Transferring a Patient

[illegible]

[illegible] **Others >>** [illegible] **User Maintenance** [illegible] **Transferred Data Length**. [illegible] **4 h**. [illegible] **Data Transfer Method**. [illegible] **Off**.

WARNING

- **Do not discharge a patient before the patient is successfully transferred.**
- **After a patient is successfully transferred, check if the patient settings (especially patient category, paced status and alarm limits settings, etc) on the monitor are appropriate for this patient.**

NOTE

- **The system automatically switches on the HR alarm and lethal arrhythmia alarm after transferring the patient data.**

4.7.1 Transferring Data from the Monitor to a USB Drive

1. [illegible] **Main Menu** → **Patient Setup >>**.
2. [illegible] **Transfer to Storage Medium** [illegible] **Ok**.
3. [illegible] **Transfer to storage medium successful. Please remove the USB drive**.
4. [illegible]

4.7.2 Transferring Data from a USB Drive to the Monitor

- **Transfer**
- **Cancel Transfer**
- **Unload USB Drive**

Transfer

Patient Demographics **Ok**

- **Yes**
- **No**

Transfer from storage medium successful.

WARNING

- **The USB drive you use may have a write-protect function. In this case, please make sure the USB drive for data transfer is in read/write mode.**
- **Do not discharge a patient before the patient is successfully transferred.**
- **Do not remove the storage medium during the data transfer process. Otherwise, data files may be damaged.**
- **After a patient is successfully transferred, check if the patient settings (especially patient category, paced status and alarm limits settings, etc) on the monitor are appropriate for this patient.**

NOTE

- **The system automatically switches on the HR alarm and lethal arrhythmia alarm after transferring the patient data.**

4.8 Connecting to a Central Monitoring System

5 Managing Configurations

5.1 Introduction

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

Configuration Default Information.

5.2 Entering the [Manage Configuration] Menu

Maintenance >> → **Manage Configuration >>** . **Ok** .

5.3 Setting Default Configuration

5.6 Deleting a Configuration

1. **Delete Config. >>** **Manage Configuration**

2. **Config. on USB drive >>**
Delete

3. **Yes**

5.7 Transferring a Configuration

1. **Export Config. >>** **Manage Configuration**

2. **Export Config.** **User Maintenance Settings**
Export

1. **Import Config. >>** **Manage Configuration**

2. **Import Config.** **User Maintenance Settings**
Import

5.8 Loading a Configuration

6 User Screens

6.1 Tailoring Your Screens

6.1.1 Changing the Wave Line Size

Main Menu → **Maintenance >>** → **User Maintenance >>** →

Others >>.

Wave Line **Thick**, **Mediate** **Thin**.

6.1.2 Changing Measurement Colors

Main Menu → **Screen Setup >>** → **Measurement Color Setup >>**.

6.1.3 Changing Screen Layout

Screens **Main Menu** → **Screen Setup >>** → **Screen Layout >>** **Screens**.

- **Choose Screen**.
- **Screen Setup** *Setting the Screen*.
- **Big Numerics Screen Setup**.
- **Parameters Switch**.

6.2 Viewing Minitrends

6.2.1 Having a Split-Screen View of Minitrends

- Minitrends
- Screens → Choose Screen → Minitrends Screen →
- Main Menu → Screen Setup → Screen Layout → Choose Screen → Minitrends Screen →

◆ Screens → Choose Screen → View Others Screen → ×.

◆ Main Menu → Screen Setup → Screen Layout → Choose Screen → View Others Screen → ×.

Setup View Other Patient

Connected Monitor List ×

6.4.2 Viewing the Care Group Overview Bar

View Other Patient

■

■

■

■

View This Patient

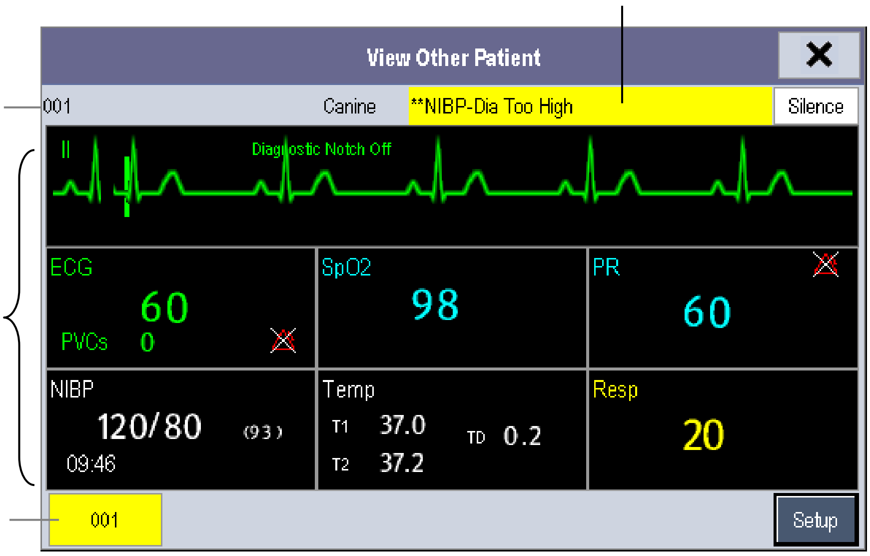
View Other Patient

Alarms

6.4.3 Understanding the [View Other Patient] Window

View Other Patient

View Other Patient



View Other Patient

Switch to Parameter Area

Switch to Waveform Area.

Alarm Information List

WARNING

- **The data presented in the [View Other Patient] window may have a delay. Do not rely on this window for realtime data.**

6.5 Understanding the Big Numerics Screen

FOR YOUR NOTES

7.2 Alarm Levels

	Physiological alarms	Technical alarms
High level	[illegible]	[illegible]
Medium level	[illegible]	[illegible]
Low level	[illegible]	[illegible]

7.3 Alarm Indicators

7.3.1 Alarm Lamp

7.3.2 Alarm Message

(*)

- ***
- **
- *

7.4 Alarm Tone Configuration

7.5.1 Setting Alarm Properties for All Parameters

Alarm Setup >> → Parameters

On/Off Record

⚠ WARNING

- **Make sure that the alarm limits settings are appropriate for your patient before monitoring.**
- **Setting alarm limits to extreme values may cause the alarm system to become ineffective.**

7.5.2 Adjusting Alarm Limits Automatically

Alarm Setup >> → Parameters → Auto Limits → Ok

Module	Parameter	Low alarm limit	High alarm limit	Auto alarm limits range
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Module	Parameter	Low alarm limit	High alarm limit	Auto alarm limits range
[illegible]	[illegible]	[illegible] 0. [illegible] + [illegible]	[illegible] 0. [illegible] + [illegible]	5 [illegible] 0
	[illegible]	[illegible] 0. [illegible] + [illegible]	[illegible] 0. [illegible] + [illegible] 5 [illegible]	[illegible] 0 [illegible] 0
[illegible]	[illegible]	([illegible] 0.5)	([illegible] + 0.5)	[illegible]
	[illegible]	([illegible] 0.5)	([illegible] + 0.5)	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	([illegible] 5) [illegible] 5 [illegible] ([illegible])	([illegible] + [illegible] 5) [illegible] 05 [illegible] ([illegible])	[illegible] 5 [illegible] 5
	[illegible]	([illegible] 5) [illegible] 0 [illegible] ([illegible])	([illegible] + [illegible] 5) [illegible] 0 [illegible] ([illegible])	0 [illegible] 0
	[illegible]	([illegible] 5) [illegible] 5 [illegible] ([illegible]) (		

7.5.3 Setting Alarm Delay Time

Alarm Delay

Others **Alarm Setup**

Apnea Delay **ST Alarm Delay** **Others** **Alarm Setup**

7.5.4 Setting SpO_2 Technical Alarm Delay

Tech. Alarm Delay **Others** **Alarm Setup** **Off**, **5 s**, **10 s**

15 s.

7.5.5 Setting Recording Length

Others **Alarm Setup**

Recording Length **8 s**, **16 s** **32 s**

- **8s**
- **16s**
- **32s**

7.5.6 Intubation Mode

Intubation Mode

7.6 Pausing Alarms

1 min, 2 min, 3 min, 5 min, 10 min, 15 min, Permanent.

Main Menu → Maintenance >> → User Maintenance >> →

Alarm Setup >> → Alarm Pause Time

7.7 Switching Off All Alarms

Alarm Pause Time Permanent

- Alarm Off

WARNING

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

7.11 Testing Alarms

7.13.2 Setting Care Group Alert Tone

1. **Screen Setup >>** → **Screen Layout >>** → **Choose Screen**.
2. **Choose Screen** **View Others Screen**.
3. **View Other Patient** **Setup>>**, **Alert Tone** **Repeat**, **Once** **Off**.

7.13.3 Silencing Care Group Alarms

View Other Patient **Alarm Setup** **User Maintenance**.

Silence **View Other Patient**.

WARNING

- **Silencing care group alarms may cause a potential hazard. Please act with caution.**

8 Monitoring ECG

8.1 Introduction

8.2 Safety

WARNING

- **Use only ECG electrodes and cables specified by the manufacturer.**
- **When connecting electrodes and/or patient cables, make sure that the connectors never come into contact with other conductive parts, or with earth. In particular, make sure that all of the ECG electrodes are attached to the patient, to prevent them from contacting conductive parts or earth.**
- **Periodically inspect the electrode application site to ensure skin quality. If the skin quality changes, replace the electrodes or change the application site.**
- **Use defibrillator-proof ECG cables during defibrillation.**
- **Do not touch the patient, or table, or instruments during defibrillation.**

NOTE

- **After defibrillation, the screen display recovers within 10 seconds if the correct electrodes are used and applied in accordance with the manufacturer's instructions for use.**
- **Interference from a non-grounded instrument near the patient and electrosurgery interference can cause problems with the waveform.**

8.3 Preparing to Monitor ECG

8.3.1 Preparing the Patient and Placing the Electrodes

8.3.3 ECG Lead Placements.

5.

8.3.2 Choosing AHA or IEC Lead Placement

1. **ECG Setup**

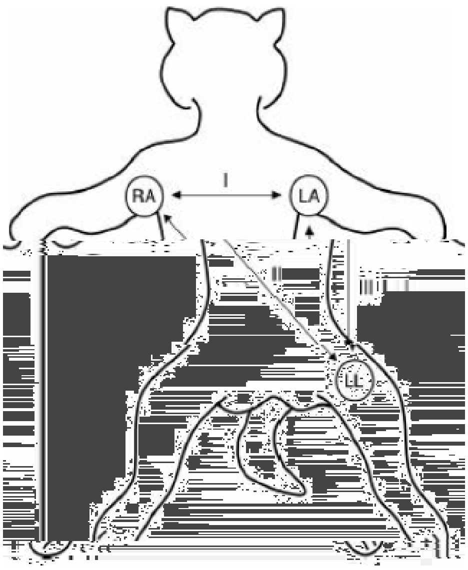
2. **Others** → **Lead Set** **3-lead**, **5-lead**, **Auto**

3. **Main Menu** → **Maintenance >>** → **User Maintenance >>** →

4. **Others >>** → **ECG Standard** **AHA** **IEC**

8.3.3 ECG Lead Placements

3-Leadwire Electrode Placement



■ ( )

■ ( )

■ ( )

( ) ( )

American Standard		European Standard	

5-Leadwire Electrode Placement

NOTE

- **The exploring lead is used for diagnostic purposes as needed. Otherwise, it may be left unplugged.**

American Standard		European Standard	
[redacted]			

⚠ WARNING

- **When using electrosurgical units (ESU), patient leads should be placed in a position that is equidistant 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

 **Paced** **Yes** **Paced** **No**

- **Main Menu** → **Patient Setup** → **Patient Demographics**
- → **Others >>** **Paced** **Yes** **No**

Please confirm the pace of patient

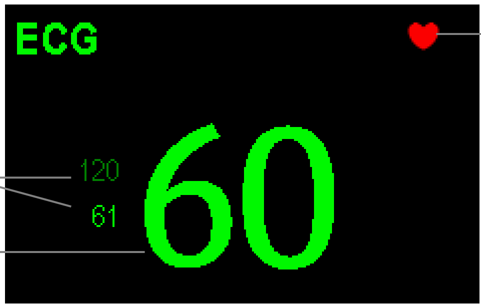
⚠ Warning

- **For paced patients, you must set [Paced] to [Yes]. If it is incorrectly set to [No], the 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.**

8.4 Understanding the ECG Display

Paced

Yes.



8.5 Changing ECG Settings

8.5.1 Accessing ECG Menus

ECG Setup

8.5.2 Choosing the Alarm Source

Alm Source **ECG Setup**

- **HR**
- **PR**

- **Auto** **Alm Source** **Auto**

8.5.3 Setting the ECG Lead Set

Lead Set **ECG Setup** → **Others>>** **Lead Set** **Auto**

8.5.4 Choosing an ECG Display Screen

5 **Screens** **Choose Screen**

- **Normal Screen**
- **ECG 7-Lead Full-Screen**
- **ECG 7-Lead Half-Screen**

Normal Screen

Screens → **Screen Setup**.

ECG1 Casc

8.5.5 Changing the ECG Filter Settings

Filter **ECG Setup**

- **Monitor**
- **Diagnostic**
- **Surgery** **Surgery**
- **ST**

Warning

- **The [Diagnostic] filter is recommended when monitoring a patient in an environment with slight interference only.**

8.5.6 Setting the Notch Filter

Filter **Diagnostic**, **Notch Filter** **Filter** **Diagnostic**, **Filter** **Diagnostic**, **Others >>**.

Notch Filter

- **Strong**
- **Weak**
- **Off**

Notch Filter **Main Menu** → **Maintenance >>** → **User Maintenance >>** →

Others >> → **Notch Freq** **50Hz** **60Hz**

8.5.7 Changing the Pacer Reject Settings

ECG Setup → **Others>>** → **Pacer Reject**, **On** **Off**.

Paced **Yes**

- **Pacer Reject**
-

Paced **No**, **Pacer Reject**

8.5.8 Changing ECG Wave Settings

ECG Setup

- **ECG**, **ECG1**, **ECG2**
  -
  -
  - 0.
- **Gain** **Auto** **Gain**,
- **Sweep**

8.5.9 Enabling Smart Lead Off

Others >> ECG Setup Smart Lead Off

On Off

8.5.10 Setting the Alarm Level for ECG Lead Off Alarms

Alarm Setup >> User Maintenance ECGLeadOff Lev

8.5.11 Adjusting QRS Volume

Others >> ECG Setup

0.0 0 ( )

ST Analysis

8.6.4 Saving the Current ST Segment as Reference

Save Ref **ST Analysis** 0

NOTE

- **If the memory is full and you do not delete a group before saving a new one, the oldest saved group is deleted automatically.**

8.6.5 Changing the Reference Segment

Change Ref

8.6.6 Deleting a Reference Segment

Delete Ref **ST Analysis** **Ok**

8.6.7 Recording the ST Segment

Record **ST Analysis**

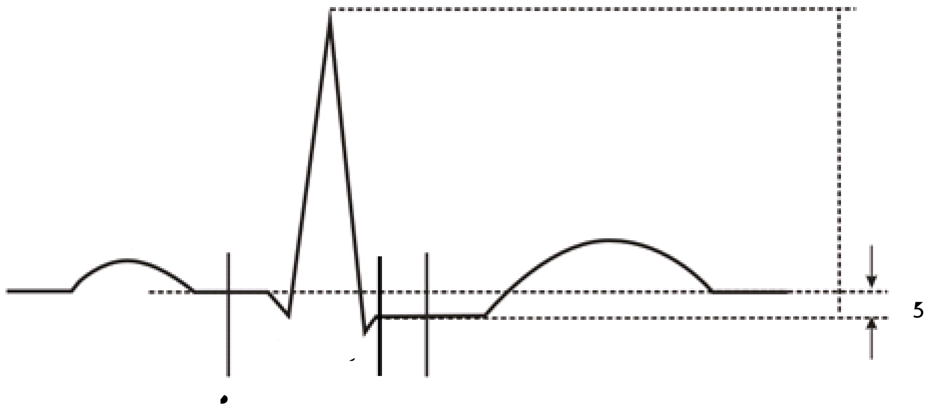
8.6.8 Changing the ST Alarm Limits

ST Alarm Setup >> **ST Analysis**

8.6.9 Setting the ST Alarm Delay Time

Others **Alarm Setup**

8.6.10 Adjusting ST Measurement Points



3.

5.

> ⚠ **WARNING**
>
> - **Always make sure that the positions of ST measurement points are appropriate for your patient.**

1. **ST Analysis** **Adjust ST Point >>** **Adjust ST Point**
2. **View Leads**
3. **ISO**, **J** **ST Point**
   -
   -
   - **J+60/80ms**, **J+40ms**, **J+60ms** **J+80ms**. **J+60/80ms**

8.7.2 Changing Arrhythmia Alarm Settings

→ **ECG Setup** → **Arrh. Analysis >>** **Alm Lev** **High**, **Med**, **Low** **Message**, / ff **Alarm Setup** **User Maintenance** / ff

---

⚠ **WARNING**

- **If you switch off all arrhythmia analysis alarms, the monitor cannot give any arrhythmia analysis alarm. Always keep the patient under close surveillance.**

8.7.3 Changing Arrhythmia Threshold Settings

→ **Arrh. Analysis >>** → **Arrh. Threshold**,

0

0

Arrh. event	Range	Default	Step	Unit
	00	0		/l
	0	5		
	0 00	0	5	l
	5 0	0	5	l
l	0 00	00	5	l
l	5 0	0	5	l
f		5		/l
	00 00	0	5	l
				/l
l	.5, .0, .5		/	
		5		/l
	5 0	0	5	l

8.7.4 Setting the Extended Arrhythmia

f f l

- l
- l
- .
- .
- f
- l
-

Main Menu → **Maintenance >>** → **User Maintenance >>** → → **Alarm Setup >>**, **Extended Arrh.** **Enable** **Disable**. **Extended Arrh.** **Disable**,

l l l .

CAUTION

- **Set [Extended Arrh.] to [Disable] when the monitor is connected to the Central Monitoring System of version prior to 06.01.00. Failure to do so may cause the Central Monitoring System to be unable to display extended arrhythmia related alarms normally when extended arrhythmia occurs.**

8.7.5 Reviewing Arrhythmia Events

Review

8.8 ECG Relearning

8.8.1 Initiating an ECG Relearning Manually

Relearn **ECG Learning**

CAUTION

- **Take care to initiate ECG relearning only during periods of normal rhythm and when the ECG signal is relatively noise-free. If ECG learning takes place during ventricular rhythm, the ectopics may be incorrectly learned as the normal QRS complex. This may result in missed detection of subsequent events of V-Tach and V-Fib.**

8.8.2 Automatic ECG Relearning

- **Stop Calibrating ECG**

9 Monitoring Respiration (Resp)

9.1 Introduction

9.2 Safety Information

⚠ Warning

- **When monitoring the patient's respiration, do not use ESU-proof ECG cables.**
- **If you do not set the detection level for the respiration correctly in manual detection mode, it may not be possible for the monitor to detect apnea. If you set the detection level too low, the monitor is more likely to detect cardiac activity, and to falsely interpret cardiac activity as respiratory activity in the case of apnea.**
- **The respiration measurement does not recognize the cause of apneas. It only indicates an alarm if no breath is detected when a pre-adjusted time has elapsed since the last detected breath. Therefore, it cannot be used for diagnostic purpose.**
- **If operating under conditions according to the EMC Standard EN 60601-1-2 (Radiated Immunity 3V/m), field strengths above 1V/m may cause erroneous measurements at various frequencies. Therefore it is recommended to avoid the use of electrically radiating equipment in close proximity to the respiration measurement unit.**

9.3 Understanding the Resp Display

Resp Waveform

Resp Setup

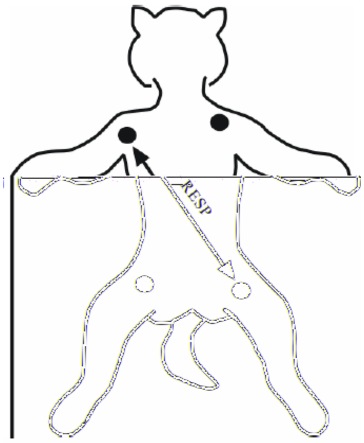
NOTE

- **Respiration monitoring is not for use on patients who are very active, as this will cause false alarms.**

9.4 Placing Resp Electrodes

NOTE

- **Please select the ECG cable with no resistance for RESP monitoring.**
- **To optimize the respiration waveform, place the RA and LA electrodes horizontally when monitoring respiration with ECG Lead I; place the RA and LL electrodes diagonally when monitoring respiration with ECG Lead II.**
- **Place the electrodes to try to avoid crossing the liver area and the ventricles of the heart with the electrodes line.**



9.4.1 Optimizing Lead Placement for Resp

9.4.2 Cardiac Overlay

9.4.3 Abdominal Breathing

9.4.4 Lateral Chest Expansion

9.5 Choosing the Respiration Lead

- **Resp**

9.8 Changing Resp Wave Settings

⚠WARNING

- **When monitoring in manual detection mode, make sure to check the respiration detection level after you have increased or decreased the size of the respiration wave.**

Resp Setup

- **Gain**
- **Sweep**

9.9 Setting RR Source

Resp Setup

RR Source **Auto**

Auto

RR Source **Auto**

RR Source

Option	Description
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

9.10 Setting alarm properties

Alarm Setup >> **Resp Setup**

9.11 Switching Resp Measurement On/Off

Imped. Resp Measure. ON **Resp Setup** **Imped. Resp Measure. OFF** **Resp Setup** **Yes** **Measurement OFF**

10 Monitoring PR

10.1 Introduction

10.2 Setting the PR Source

SpO Setup]

PR Source

Auto

Auto

10.3 Selecting the Active Alarm Source

Alm Source **ECG Setup** **SpO Setup**

- **HR**
- **PR**
- **Auto** **Alm Source** **Auto**

10.4 QRS Tone

Beat Vol **SpO Setup**

11 Monitoring SpO_2

11.1 Introduction

11.2 Safety

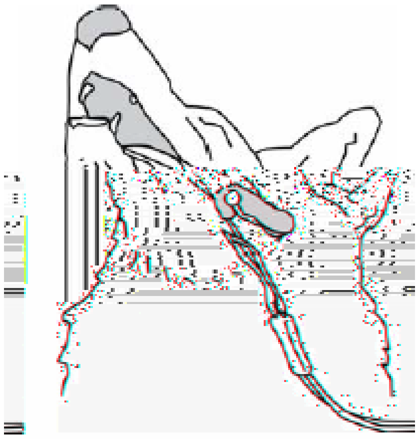
WARNING

- **Use only SpO_2 sensors specified in this manual. Follow the SpO_2 sensor's instructions for use and adhere to all warnings and cautions.**
- **When a trend toward patient deoxygenation is indicated, blood samples should be analyzed by a laboratory co-**

11.4 Applying the Sensor

5.

Tongue Sensor Placement



NOTE

- **Be sure that the sensor cable is positioned along the side of the animal's face and body to avoid entanglement with the animal.**

11.5 Changing SpO_2 Settings

11.5.1 Accessing SpO_2 Menus

SpO Setup

11.5.2 Adjusting the Desat Alarm

Alarm Setup >> **SpO Setup** **Desat**. **SpO Desat**

11.5.3 Setting SpO_2 Sensitivity

- **Sensitivity** **Normal** **Maximum** **SpO_2 Setup** **Sensitivity** **Maximum**

11.5.9 Setting the SpO_2 Tone Mode

Others >> **User Maintenance** **SpO Tone** **Mode 1** **Mode 2**.

⚠**WARNING**

- **The same SpO_2 tone mode shall be used for the same monitors in a single area.**

11.6 Measurement Limitations

11.7 Masimo Information

5IJT QPTUJOH TFSWFT BT OPUJDF VOEFS 6 4 $ f B GPS .BTJNP QBUFOUT

11.8 Nellcor Information

■

5IJT QPTUJOH TFSWFT BT OPUJDF VOEFS 6 4 $ f B GPS $PWJEJFO QBU

■

FOR YOUR NOTES

12 Monitoring NIBP

12.1 Introduction

NOTE

- **Blood pressure measurements determined with this device are equivalent to those obtained by a trained observer using the cuff/stethoscope auscultatory method or an intra-arterial blood pressure measurement device, within the limits prescribed by the American National Standard, Manual, electronic, or automated sphygmomanometers.**

12.2 Safety

WARNING

- **Be sure to select the correct patient category setting for your patient before measurement. Do not measure NIBP on patients with sickle-cell disease or any condition where skin damage has occurred or is expected.**
- **Use clinical judgement to determine whether to perform frequent unattended blood pressure measurements on patients with severe blood clotting disorders because of the risk of hematoma in the limb fitted with the cuff.**
- **Do not use the NIBP cuff on a limb with an intravenous infusion or arterial catheter in place. This could cause tissue damage around the catheter when the infusion is slowed or blocked during cuff inflation.**
- **If you doubt the NIBP readings, determine the patient's vital signs by alternative means and then verify that the monitor is working correctly.**

12.3 Measurement Limitations sd(o)110 (w)-5

12.5 Setting Up the NIBP Measurement

12.5.1 Preparing to Measure NIBP

Interval 20min, 0, 0, 0, 5 00,

NIBP Setu Clock On.

NOTE

- **The clock function is available only when the auto measurement internal is 5 minutes or more.**

12.5.5 Starting a STAT Measurement

NIBP Setup

NIBP STAT. 5

WARNING

- **Continuous non-invasive blood pressure measurements may cause purpura, ischemia and neuropathy in the limb with the cuff. Inspect the application site regularly to ensure skin quality and inspect the extremity of the cuffed limb for normal color, warmth and sensitivity. If any abnormity occurs, move the cuff to another site or stop the blood pressure measurements immediately.**

12.6 Understanding the NIBP Numerics

5

5.

12.7 Changing NIBP Settings

NIBP Setup

12.7.1 Setting the Initial Cuff Inflation Pressure

NIBP Setup **Initial Pressure**

12.7.2 Setting NIBP Alarm Properties

Alarm Setup >> **NIBP Setup**

12.7.3 Displaying NIBP List

Screens → **Screen Setup** **NIBP List**

NIBP List

12.7.4 Setting the Pressure Unit

Unit Setup >> **User Maintenance** **Press. Unit**

mmHg **kPa**

12.7.5 Switching On NIBP End Tone

NIBP Setup

12.8 Assisting Venous Puncture

VeniPuncture >> **NIBP Setup** **Cuff Press.**

VeniPuncture

Stop All

13 Monitoring Temp

13.1 Introduction

13.2 Safety

WARNING

- **Verify that the probe detection program works correctly before monitoring. Unplug the temperature probe cable from the T1 or T2 connector, and the monitor can display the message [T1 Sensor Off] or [T2 Sensor Off] and give alarm tones correctly.**

13.3 Making a Temp Measurement

13.4 Understanding the Temp Display

Alarm Setup.

5

1. **Temp Setup**.
2. .
3. .
4. .
5. .

13.5 Setting the Temperature Unit

Unit Setup >> **User Maintenance** **Temp Unit]**

°C **°F**

14 Monitoring IBP

14.1 Introduction

14.2 Safety

WARNING

- **Use only pressure transducers specified in this manual. Never reuse disposable pressure transducers.**
- **Make sure that the applied parts never contact**

WARNING

- **If measuring intracranial pressure (ICP) with a sitting patient, level the transducer with the top of the patient's ear. Incorrect leveling may give incorrect values.**

14.5 Understanding the IBP Display

[illegible]

14.6 Changing IBP Settings

14.6.1 Changing a Pressure for Monitoring

[illegible]

[illegible] **Label** [illegible]

Label	Description	Label	Description
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]

Sensitivity **High**, **Med** **Low**.

14.6.5 Setting Up the IBP Wave

- **Sweep**
- **Scale** **Auto**
- **Filter**

14.6.6 Enabling PPV Measurement and Setting PPV Source

PPV Measurement **On**.

WARNING

- **This monitor can calculate PPV from beat-to-beat values of any arterial pulsatile pressure. The circumstances under which the calculation of a PPV value is clinically meaningful, appropriate and reliable must be determined by a physician.**
- **The clinical value of the derived PPV information must be determined by a physician. According to recent scientific literature, the clinical relevance of PPV information is restricted to sedated patients receiving controlled mechanical ventilation and mainly free from cardiac arrhythmia.**
- **PPV calculation may lead to inaccurate values in the following situations:**
  - **at respiration rates below 8 rpm**
  - **during ventilation with tidal volumes lower than 8 ml/kg**
- **for patients with acute right ventricular dysfunction ("cor pulmonale").**

14.6.7 Setting the Pressure Unit

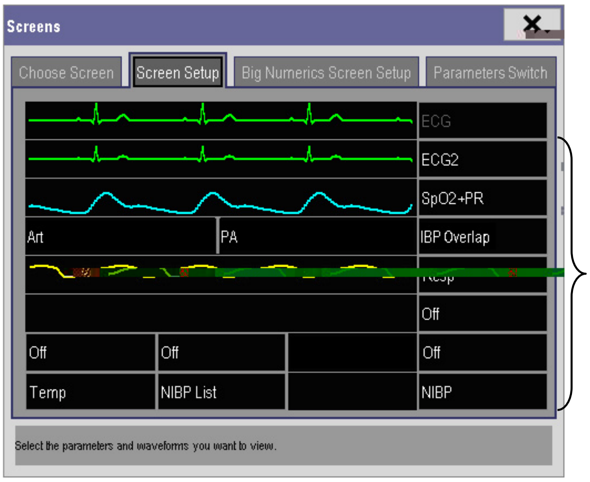
Unit Setup >> **User Maintenance** **Press. Unit** **mmHg** **kPa**. **CVP Unit** **mmHg**, **cmH O** **kPa**.

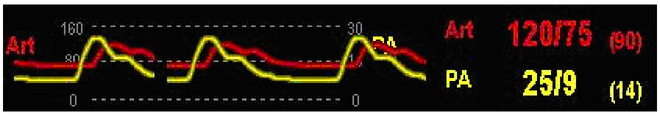
14.7 Overlapping IBP Waveforms

Main Menu → Screen Setup>> → Screen Layout>> Screens

Screen Setup

IBP Overlap





Overlapping Waveform Setup

- Left Scale [Right Scale
- CVP Scale
- PA Scale
- Gridlines On Off
- Sweep
- Filter

Note

- **CVP scale is changed together with right scale. The unit of CVP scale is consistent with CVP parameter unit.**

14.8 Measuring PAWP

14.8.1 Preparing to Measure PAWP

PA

PAWP

NOTE

- **After entering the PAWP measurement window, the monitor will turn off the PA alarm automatically.**

14.8.2 Setting Up the PAWP Measurement

Freeze

Adjust

Confirm

Next Measure.

WARNING

- **Prolonged inflation can cause pulmonary hemorrhage, infarction or both. Inflate the balloon for the minimum time necessary to get an accurate measurement.**
- **If the PAWP is greater than the PA (systolic), deflate the balloon and report the incident in accordance with hospital policy. Because the pulmonary artery could be accidentally ruptured, and the PAWP value derived will not reflect the patient's hemodynamic state, but will merely reflect the pressure in the catheter or balloon.**

14.8.3 Understanding the PAWP Setup Menu

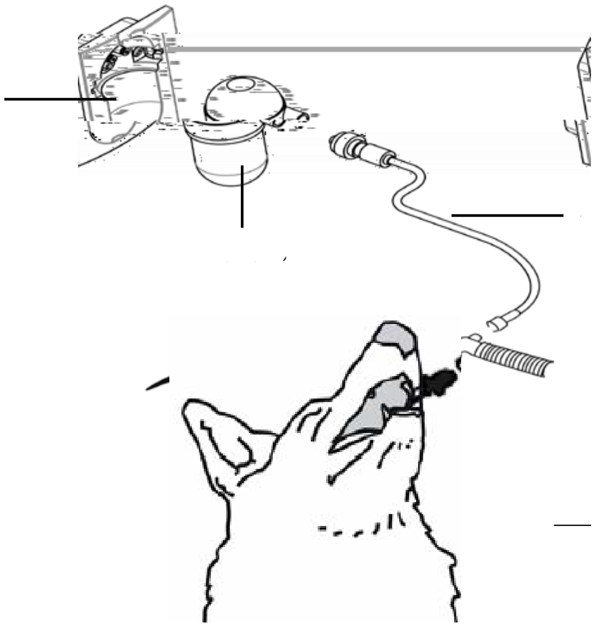
Setup **PAWP Setup**

15 Monitoring Carbon Dioxide (CO_2)

15.1 Introduction

15.2 Measuring CO_2

15.2.1 Making a Sidestream CO_2 Measurement



CO2 Sensor Warmup

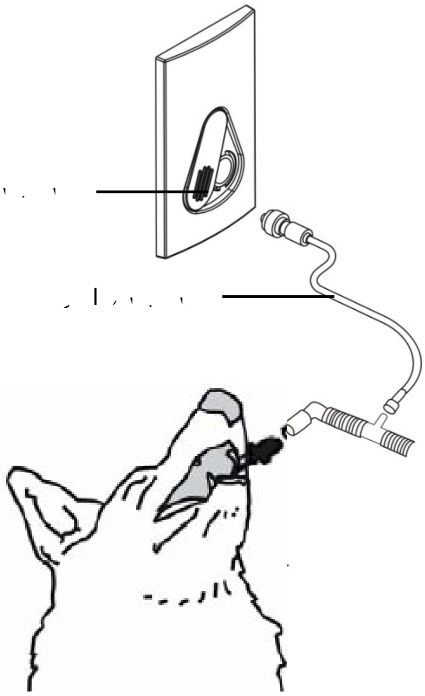
⚠CAUTION

- **The watertrap collects water drops condensed in the sampling line and therefore prevents them from entering the module. If the collected water reaches a certain amount , you should drain it to avoid blocking the airway.**
- **The watertrap has a filter preventing bacterium, water and secretions from entering the module. After long-term use, dust or other substances may compromise the performance of the filter or even block the airway. In this case, replace the watertrap. It is recommended to replace the watertrap once a month, or when the watertrap is found leaky, damaged or contaminated.**

NOTE

- **To extend the lifetime of the watertrap and module, disconnect the watertrap and set the operating mode to standby mode when CO_2 monitoring is not required.**

15.2.2 Making a Microstream CO_2 Measurement



15.3 Changing CO_2 Settings

15.3.1 Accessing CO_2 Menus

CO Setup

15.3.2 Entering the Standby Mode

Operating Mode **CO Setup**

Standby **Measure**

CO Setup Auto Standby

15.3.3 Setting the CO_2 Unit

Unit Setup >> User Maintenance CO_2 Unit

mmHg, % kPa.

15.3.4 Setting up Gas Compensations

WARNING

- **Make sure that the appropriate compensations are used. Inappropriate compensations may cause inaccurate measurement values and result in misdiagnosis.**

CO Setup.

- O Compen
- N O Compen
- Des Compen

15.3.5 Setting up Humidity Compensation

( ),

( ).

$$P_{co2}(mmHg) = CO_2(vol\%) \times P_{amb}/100$$

$$P_{CO2}(mmHg) = CO_2(vol\%) \times (P_{amb} - 47)/100$$

P_{CO2}, vol%, P_{amb}

CO2 Setup BTPS Compen.

On Off

15.3.6 Setting the Apnea Alarm Delay

- **CO2 Setup** **Apnea Delay** **Apnea Delay**

WARNING

- **The respiration measurement does not recognize the cause of apneas. It only indicates an alarm if no breath is detected when a pre-adjusted time has elapsed since the last detected breath.**

15.4 Setting RR Source

CO2 Setup

RR Source Auto

RR Source *Setting RR Source* *Resp*.

15.5 Setting Barometric Pressure Compensation

Main Menu → Maintenance >> → User Maintenance >> → → Maintain CO2 >> → Calibrate CO2 >>.

Barometric Pressure

15.6 Measurement Limitations

■

■

■ 0 (00)

■

15.7 Leakage Test

Need maintenance. Enter CO_2 setup menu, **User Maintenance >>** → **[Maintain CO_2 >>**

15.8 Troubleshooting the Sidestream CO_2 Sampling System

15.9 Removing Exhaust Gases from the System

WARNING

- **Anesthetics: When using the Sidestream or Microstream CO_2 measurement on patients who are receiving or have recently received anesthetics, connect the outlet to a scavenging system, or to the anesthesia machine/ventilator, to avoid exposing medical staff to anesthetics.**

15.10 Zeroing the Sensor

15.10.1 For Sidestream and Microstream CO_2 Modules

Main Menu → **Maintenance** → **User Maintenance** → → **Maintain CO2**.

Calibrate CO2 → **Start Zero Cal**.

15.11 Calibrating the Sensor

23

15.12 Oridion Information

Oridion Patents

No Implied License

16 Freezing Waveforms

16.1 Freezing Waveforms

Freeze

16.2 Viewing Frozen Waveforms

- Scroll
- Scroll

0 s

16.3 Unfreezing Waveforms

- Freeze
-
-

16.4 Recording Frozen Waveforms

Freeze , **Wave 1** , **Wave 2** **Wave 3** .

Record .

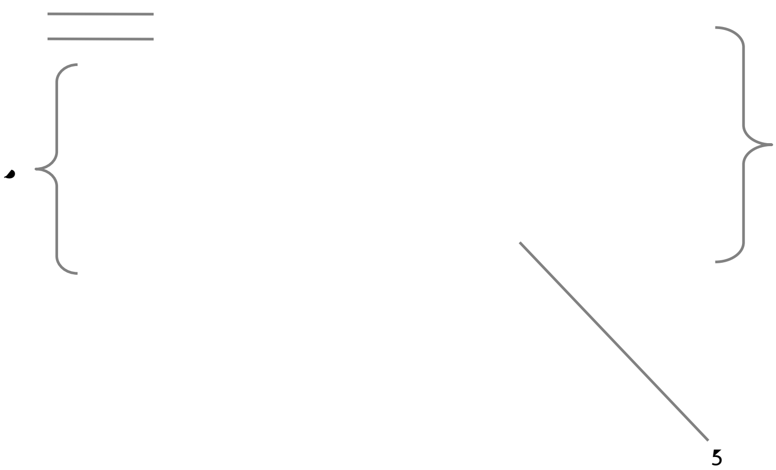
17 Review

17.1 Accessing Respective Review Windows

- **Review** … **Main Menu** → **Review >>**.
- **Graphic Trends**, **Tabular Trends**, **Events**, **Full Disclosure** …

17.2 Reviewing Graphic Trends

- **Review** … **Graphic Trends** …



- 5.

- **Trend Group** … **Custom 1** … **Custom 2** … **Define Trend Group**.
- … **Zoom**.
- … **Waves**.
- …
  - … **Scroll** …
  - …

- **Event**
- **Record**

17.3 Reviewing Tabular Trends

Review **Tabular Trends**

- **Trend Group** **Custom 1** **Custom 2** **Define Trend Group**.
- **Interval**
  - **5 s** **30 s** 5- 0-
  - **1 min**, **5 min**, **10 min**, **15 min**, **30 min**, **1 h**, **2 h** **3 h** 0
  - **NIBP**
-
  - **Scroll**
  -

- **Event**
- **Record** **Record Setup**

  Record, ( ) (.00 ( ) () ( ) ( ) 0 ((.) 0 0 ( ) -0.00 0. 0.00 -0.00

17.4.2 Reviewing Events

- **Review** **Events**

-
  - **Event**.
  - **Level**.

Details

NOTE

- **A total loss of power has no impact on the saved events.**

-
  - **Event**
  - **Gain**
  - **Sweep**.

- Record
- Events List

17.5 Reviewing Waveforms

- Review Full Disclosure

- Save Waves >>
- Scroll
- Gain
- Sweep
- Record
- Event

18 Calculations

18.1 Introduction

■

■

18.2.4 Drug Calculation Formulas

Abbreviation	Unit	Formula
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]		[illegible]
[illegible]	[illegible]	[illegible]

18.3 Oxygenation Calculations

18.3.1 Performing Calculations

[illegible]

1. [illegible] **Main Menu** → **Calculations >>** → **Oxygenation >>** [illegible] **Calculations** [illegible] → **Oxygenation >>**.
2. [illegible]
3. [illegible] **Calculate** [illegible]
   - [illegible] **Range** [illegible]
   - [illegible] ---.

[illegible] **Oxygenation Calculation** [illegible]

- [illegible] **Press. Unit**, **Hb Unit** [illegible] **OxyCont Unit** [illegible]
- [illegible] **Record** [illegible]
- [illegible] **Review**.

18.3.2 Entered Parameters

Abbreviation	Unit	Full spelling
[illegible]	%	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	%	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	%	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]

Abbreviation	Unit	Full spelling
	l /	
	l /l	
	l l	
	l	

18.3.3 Calculated Parameters and Formulas

Abbreviation	Unit	Full spelling	Formula
	l	f	0. 5 0. 5 0.00 /
(-)	l /	ff	
	%		00 (-) /

- **Ventilation Calculation** [illegible]
- [illegible] **Press. Unit** [illegible]
- [illegible] **Record** [illegible]
- [illegible] **Review** .

18.4.2 Entered Parameters

Abbreviation	Unit	Full spelling
[illegible]	%	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]		[illegible]
[illegible]	[illegible]	[illegible]

18.4.3 Calculated Parameters and Formulas

Abbreviation	Unit	Full spelling	Formula
[illegible]	[illegible]	[illegible]	([illegible]) [illegible] / 00 [illegible] / 00 ([illegible] / 00) / [illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	00 [illegible] / [illegible]
/ [illegible]	%	[illegible]	00 [illegible] / [illegible]
[illegible]	/ [illegible]	[illegible]	([illegible]) / 000
[illegible]	[illegible]	[illegible]	([illegible] / [illegible])
/ [illegible]	%	[illegible]	00 [illegible] /
[illegible]	/ [illegible]	[illegible]	([illegible]) [illegible] / 000

[illegible]

- [illegible]

4. [illegible] **Calculate** [illegible]

- [illegible] **Range** [illegible]

- [illegible] --- .

- **Hemodynamic Calculation** [illegible]

- [illegible] **Record** [illegible]

- [illegible] **Review**.

18.5.2 Entered Parameters

Abbreviation	Unit	Full spelling
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

18.5.3 Calculated Parameters and Formulas

Abbreviation	Unit	Full spelling	Formula
[illegible]	[illegible]	[illegible]	[illegible] 0.00[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.0 [illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	0.0 [illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	%	[illegible]	00 [illegible]

18.6 Renal Calculations

18.6.1 Performing Calculations

1. **Main Menu** → **Calculations >>** → **Renal >>**, **Calculations** → **Renal >>**.
2. [illegible]
3. **Calculate** [illegible]
   - [illegible] **Range** [illegible]
   - [illegible] ---.

Renal Calculation [illegible]

- [illegible] **Record** [illegible]
- [illegible] **Review**.

18.6.2 Entered Parameters

Abbreviation	Unit	Full spelling
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

18.6.3 Calculated Parameters and Formulas

Abbreviation	Unit	Full spelling	Formula
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	%	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	%	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]
[illegible]	*	[illegible]	[illegible]
[illegible]		[illegible]	[illegible]

* [illegible]

18.7 Understanding the Review Window

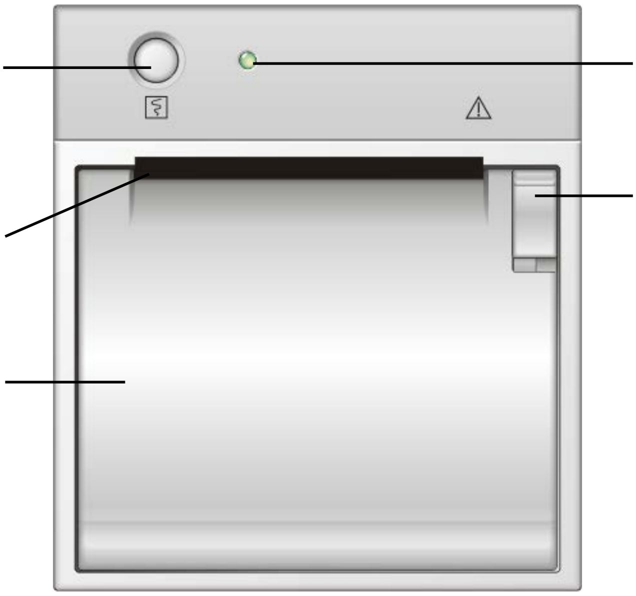
[illegible] **Review** [illegible] **Hemodynamic Calculation** [illegible].

[illegible]

- [illegible]
- [illegible] **Unit** [illegible] **Unit** [illegible] **Range**.
- [illegible] **Original Calc**. [illegible]

19 Recording

19.1 Using a Recorder



19.2 Overview of Recording Types

19.3 Starting and Stopping Recordings

-
- **Record**

-
- **Alarm** **Alm Rec**

-
- **Clear All Tasks** **Record Setup**

-
-
-

-
-

19.4 Setting up the Recorder

19.4.1 Accessing the Record Setup Menu

Main Menu → **Record Setup >>** **Record Setup**

19.4.2 Selecting Waveforms for Recording

Waveform 1, **Waveform 2** **Waveform 3** **Record Setup** **Off**.

19.4.3 Setting the Realtime Recording Length

Record Setup **Length** **8 s** **Continuous**.

- **8 s**
- **Continuous**

19.4.4 Setting the Interval between Timed Recordings

Record Setup **Interval**

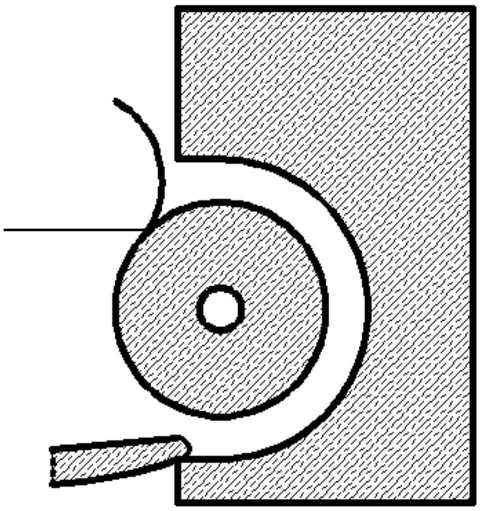
19.4.5 Changing the Recording Speed

- **Record Setup** **Paper Speed** **25 mm/s** **50 mm/s**

19.4.6 Clearing Recording Tasks

- **Record Setup** **Clear All Tasks**

19.5 Loading Paper



CAUTION

- **Use only specified thermal paper. Otherwise, it may cause damage to the recorder's printhead, the recorder may be unable to print, or poor print quality may result.**
- **Never pull the recorder paper with force when a recording is in process. Otherwise, it may cause damage to the recorder.**
- **Do not leave the recorder door open unless you reload paper or remove troubles.**

19.6 Removing Paper Jam

19.7 Cleaning the Recorder Printhead

CAUTION

- **Do not use anything that may destroy the thermal element.**
- **Do not add unnecessary force to the thermal head.**

20 Other Functions

20.1 Analog Output

20.3.2 Transferring Data by Different Means

NOTE

- **Never enter the data transfer mode when the monitor is in normal operation or performs monitoring. You must re-start the monitor to exit the data transfer mode.**

Transfer data via a crossover network cable

Main Menu → **Patient Data >>** → **Transfer Data**.

Yes

Start

Transfer data within a LAN

20.4 Nurse Call

(*PN: 009-003116-00*)

Main Menu → **Maintenance >>** → **User Maintenance >>** →

Others >> **Others**

Nurse Call Setup >>

- **Signal Type** **Pulse** **Continuous**.
  - **Pulse**
  - **Continuous**

- **Contact Type**, **Normally Open**, **Normally Closed**.
  - **Normally Open**
  - **Normally Closed**
- **Alm Lev**
- **Alarm Cat**

IP Address WLAN Test >>

Connection Test.

20.5.3 Setting the IP Address, Subnet Mask and Gateway

Network Setup

NOTE

- **The design, installation, restruction and maintenance of the wireless network's distribution shall be performed by authorized service personnel of our company.**
- **The existence of obstacles (such as wall) will exert impact on data transferring or even cause network interruption.**
- **The Central Monitoring System is capable of connecting up to 32 bedside monitors via the wireless network.**

21 Batteries

21.1 Overview

21.2 Replacing a Battery

21.3 Battery Guidelines

WARNING

- **Keep the battery out of the reach of children.**
- **Use only the battery specified by the manufacturer.**
- **If the battery shows signs of damage or signs of leakage, replace it immediately. Do not use a faulty battery in the monitor.**
- **Use only specified batteries.**
- **Charge the batteries in this monitor.**
- **High ambient temperature shortens battery run time.**
- **Extremely high ambient temperature may cause battery overheat protection, resulting the monitor power off.**
- **The Lithium-ion batteries have a service life of three years. Please replace your battery when it reaches the end of its service life. Failure toreplace the battery may cause serious damage to your device from battery overheating.**

21.4 Battery Maintenance

Conditioning a Battery

NOTE

- **The battery charge level indicator does not indicate the capacity or operating time of the battery. It only indicates the current battery charge level. The actual battery capacity decreases over time with the use of the battery. For an old battery, its capacity and operating time may not fulfill battery specifications even the battery charge level indicates the battery is in full charge. Please replace the battery if its operating time is significantly lower than the specified time.**

[illegible]

Checking a Battery

[illegible]

WARNING

- **Do not disassemble batteries, or dispose of them in fire, or cause them to short circuit. They may ignite, explode, leak or heat up, causing personal injury.**

22 Care and Cleaning

22.1 General Points

WARNING

- **Be sure to shut down the system and disconnect all power cables from the outlets before cleaning the equipment.**

CAUTION

- **If you spill liquid on the equipment or accessories, contact Mindray or your service personnel.**

NOTE

- **To clean or disinfect reusable accessories, refer to the instructions delivered with the accessories.**

22.2 Cleaning

- ( )
- (6%)
- (70%)
- (70%)

22.3 Disinfecting

70%, 70%, (

).

⚠ **CAUTION**

- **Never use EtO or formaldehyde for disinfection.**

23.2 Maintenance and Testing Schedule

[illegible]

Check/Maintenance Item		Recommended Frequency
Preventative Maintenance Tests		
[illegible]		[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
Performance Tests		
[illegible]	[illegible]	[illegible]
[illegible]		
[illegible]		
[illegible]	[illegible]	
	[illegible]	
[illegible]		
[illegible]	[illegible]	
[illegible]	[illegible]	
	[illegible]	
[illegible]		[illegible]
[illegible]		
Electrical Safety Tests		
[illegible]		[illegible]
Other Tests		
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]		[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]

23.3 Checking Monitor and Module Information

Main Menu → **Maintenance >>** → **Monitor Information >>**.

Main Menu → **Maintenance >>** → **Software Version >>**.

23.4 ECG Verification

5%,

23.5 NIBP Leakage Test

23.6 NIBP Accuracy Test

23.7 CO_2 Test

23.8 Calibrating the Touchscreen

Main Menu → Maintenance >> → Cal. Touchscreen.

Screen Calibration Completed! Ok

23.9 Electrical Safety Tests

E Electrical

24 Accessories

0 0 - -

> ⚠ **WARNING**
>
> - **Use accessories specified in this chapter. Using other accessories may cause damage to the monitor or not meet the claimed specifications.**
> - **Single-use accessories are not designed to be reused. Reuse may cause a risk of contamination and affect the measurement accuracy.**
> - **Check the accessories and their packages for any sign of damage. Do not use them if any damage is detected.**

24.1 ECG Accessories

ECG Electrodes

Model	Quantity	Patient Category	Part No.
/		/	0 - 0-5 0

12-Pin Separable Trunk Cables

Leadwire supported	Compatible with	Type	Part No.
-		f - f	00 0- 0- 0
-		- f	00 0- 0-
-	/	f - f	0 0-000 5 -00
/5-		f - f	00 0- 0-
/5-		- f	00 0- 0-

Cable Sets

3-Electrode Cable Sets					
Type	**Compatible with**	**Model**	**Part No.**	**Length**	**Remark**
		0	00 0- 0-		
		0	00 0- 0-	0.	/
		05	00 0- 0-		
		0	00 0- 0-		
			0 0-000 -00		

5-Electrode Cable Sets					
Type	**Compatible with**	**Model**	**Part No.**	**Length**	**Remark**
		50	00 0- 0-	0.	/
		50	00 0- 0-	.	
		50	00 0- 0- 5	.	

24.2 SpO_2 Accessories

Extension Cable

Module type	Remarks	Part No.
		00 0- 0-

SpO_2 Sensors

0 -

Nellcor SpO_2 Module				
	( )	.		0 - 0-5

- .
- 0 0 .
- .

.

24.3 NIBP Accessories

Tubing

Type	Length	Part No.
[illegible]	[illegible]	00-[illegible]0-0[illegible]
[illegible]	[illegible]	00-[illegible]0- 5 0

Reusable Cuff

Model	Limb Circumference (cm)	Bladder Width (cm)	Part No.
/	0 [illegible]	[illegible]	0 [illegible]- 5-000 -0
/	[illegible]	.	0 [illegible]- 5-000 -0
/	5 [illegible]5	5·	0 [illegible]- 5-000[illegible]-0
/	[illegible]	[illegible]	0 [illegible]- 5-000 -0
/		·5	0 [illegible]- 5-0005-0
/	5 [illegible]5	/	0 [illegible]- 5-000 -0
/	[illegible]	/	0 [illegible]- 5-000[illegible]-0

Single-Patient Cuff

Model	Limb Circumference (cm)	Bladder Width (cm)	Part No.
[illegible] 500	[illegible] 5·	.	00 -[illegible]0-[illegible]0 (0, /,)
[illegible] 500	[illegible] .0	[illegible]	00 -[illegible]0-[illegible]0 (0, /,)
[illegible] 500	5· 0.	[illegible]	00 -[illegible]0-[illegible]0 (0, /,)
[illegible] 500	[illegible]	[illegible]	00 -[illegible]0-[illegible]0 5 (0, /,)
/	0 [illegible]	[illegible]	0 [illegible]- -000 -0
/	[illegible]	[illegible]	0 [illegible]- -000 -0
/	5 [illegible]5	[illegible]	0 [illegible]- -000[illegible]-0
/	[illegible]	·5	0 [illegible]- -000 -0
/		0.5	0 [illegible]- -0005-0
/	5 [illegible]5	/	0 [illegible]- -000 -0
/	[illegible]	/	0 [illegible]- -000[illegible]-0 (0, /,)

24.4 Temp Accessories

Temp Cable

Type	Model	Remark	Part No.
[illegible] ([illegible])	[illegible] 0	[illegible]	00 -[illegible]0-[illegible]
[illegible] (-[illegible] [illegible])	[illegible]	/	00 0-[illegible]0- [illegible]05

Manufacturer	Accessories
[illegible]	[illegible] (50- 0) [illegible] ([illegible] .) [illegible] (50- 50) [illegible] (50- 00) [illegible] (50- 05)
[illegible]	* [illegible] (00 0- - [illegible]) [illegible] . ([illegible] [illegible] .) [illegible] [illegible]

24.6 CO_2 Accessories

Sidestream CO_2 module

Material	Remark	Part No.
[illegible]	[illegible]	00- 0- 05 0
[illegible]		00- 0- 05
[illegible] .5	[illegible]	00- 0- 05
[illegible] .5		00- 0- 0555
[illegible]		0 - 0- 5
[illegible]		0 - 0- 5
[illegible]		0 - 0- 50
[illegible]	[illegible]	000- 0-0

Mainstream CO_2 Module

Material	Model	Remark	Part No.
[illegible]	0	[illegible]	00 0- 0-
		[illegible]	00 0- 0-
	00	[illegible]	00 0- 0- 5
	[illegible]	[illegible]	00 0- 0-
	05	[illegible]	00 0- 0-
[illegible]	0	/	00 0- 0- 0
	0	.	00 0- 0-
	0	/	00 0- 0-
[illegible]	-00	/	00 0- 0-
[illegible]	5	/	00 0- 0-
[illegible]	0	[illegible]	00- 0-50 0

24.7 Others

Material	Part No.
[illegible]	0 -00000 -00
[illegible]	00 - 5-000
[illegible]	000- -00
[illegible]	00 -00 -00
[illegible]	00 -00 -00
[illegible]	00 -00 -00
[illegible]	0000- 0-
[illegible]	0 -000 -00
[illegible]	0- 0
[illegible]	0-00000 ---
[illegible]	0 5-000 -00
[illegible]	0 5-00 -00
[illegible]	0 5-00 -00
[illegible]	0 5-00 -00

A.4 Hardware Specifications

A.4.1 Display

Host display			
	Screen Size (diagonal)	Screen type	Resolution
iMEC8 Vet	[illegible]	[illegible]	[illegible]
External display			
[illegible]	[illegible]		

A.4.2 Recorder

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] 5%
[illegible]	[illegible]

A.4.3 LEDs

[illegible]	([illegible])
[illegible]	([illegible])
[illegible]	([illegible])
[illegible]	([illegible])

A.4.4 Audio Indicator

[illegible]	[illegible]

A.4.5 Monitor Interface Specifications

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	
[illegible]	
[illegible]	

A.4.6 Outputs

Analog Output	
[illegible]	[illegible]
ECG Analog Output	
[illegible]	0.05 … 0.5 … [illegible]
[illegible]	[illegible]
[illegible]	[illegible] 5%
[illegible]	[illegible] 5% [illegible]
IBP Analog Output	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] 5%
Nurse Call Signal	
[illegible]	[illegible] < 0.5 [illegible]
[illegible]	[illegible]
Defib Sync Pulse	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] < 0.5 [illegible]
[illegible]	[illegible] 100%
[illegible]	[illegible]
Alarm output (Network connector)	
[illegible]	[illegible]

A.5 Data Storage

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

A.6 Wireless Network

[illegible]	[illegible]

A.7 Measurement Specifications

[illegible]

A.7.1 ECG

ECG	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] 0%
[illegible]	[illegible] 0%
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] 5%
[illegible]	[illegible]

[illegible]	[illegible]	
[illegible]	[illegible]	
Pace Pulse		
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
HR		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
ST Segment Analysis (Not available in USA)	
[illegible]	[illegible]
[illegible]	[illegible] 0.0 [illegible] 0%, [illegible]
[illegible]	0
[illegible]	0.0 [illegible]

A.7.2 Resp

[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible] (0%)	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible] 0%	
Respiration Rate		
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
Alarm limit	**Range (rpm)**	**Step (rpm)**
[illegible]	[illegible]	
[illegible]	[illegible]	

A.7.3 SpO_2

Alarm limit	Range (%)	Step (%)
[illegible]	([illegible] +) [illegible] 00	

A.7.4 PR

Alarm limit	Range (bpm)	Step (bpm)
[illegible]	[illegible] 00	[illegible]
[illegible]	5 [illegible]	

PR from Mindray SpO$_2$ Module

[illegible]	0 [illegible] 5 [illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	
[illegible]	[illegible] [illegible] [illegible]

PR from Masimo SpO$_2$ Module

[illegible]	5 [illegible] 0 [illegible]
[illegible]	[illegible]
[illegible]	[illegible] [illegible] 5 [illegible]
[illegible]	
[illegible]	[illegible] 0 [illegible]
[illegible]	[illegible] 0.0 % [illegible] 5%
[illegible]	[illegible]

PR from Nellcor SpO$_2$ Module

[illegible]	0 [illegible] 00 [illegible]
[illegible]	[illegible]
[illegible]	0 [illegible] 50 [illegible] 5 [illegible] 00 [illegible]
[illegible]	

PR from IBP Module

[illegible]	5 [illegible] 50 [illegible]
[illegible]	[illegible]
[redacted]	[illegible] %, [illegible]

A.7.5 NIBP

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible] (mmHg)		[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible] (mmHg)	[illegible]
[illegible] (mmHg)	[illegible]
[illegible]	[illegible]

PR

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Alarm limit	Range (mmHg)	Step (mmHg)
[illegible]	[illegible] (+5) [illegible] [illegible] (+5) [illegible] [illegible] (+5) [illegible]	5
[illegible]	[illegible] (-5)	
[illegible]	[illegible] (+5) [illegible] [illegible] (+5) [illegible] [illegible] (+5) [illegible]	
[illegible]	[illegible] (-5)	
[illegible]	[illegible] (+5) [illegible] [illegible] (+5) [illegible] [illegible] (+5) [illegible]	
[illegible]	[illegible] (-5)	

* [illegible]

A.7.6 Temp

[illegible]	[illegible] 0-
[illegible]	[illegible]
[illegible]	0 [illegible] 50 B] ([illegible])
[illegible]	0. B]
[illegible]	0. B]([illegible])
[illegible]	
[illegible]	[illegible] 00 [illegible] 0

Alarm limit	Range	Step
[illegible]	([illegible] +) [illegible] 50 B]	0. B]
[illegible]	0. [illegible] ([illegible] -) B]	
[illegible]	0. [illegible] 50 B]	

A.7.7 IBP

[illegible]	[illegible] 0 0 - [illegible] 0 0 - [illegible]
[illegible]	[illegible]
IBP	
[illegible]	-50 [illegible] 00 [illegible]
[illegible]	[illegible]
[illegible]	% [illegible] ([illegible])
[illegible]	
Pressure transducer	
[illegible]	5 [illegible] %
[illegible]	5 [illegible] / [illegible]
[illegible]	00 [illegible] 000

Alarm limit	Range (mmHg)	Step (mmHg)
[illegible]	([illegible] +) [illegible] 00	[illegible]
[illegible]		
[illegible]		
[illegible]	-50 [illegible] ([illegible])	
[illegible]		
[illegible]		

A.7.8 CO_2

Sidestream CO_2 Module

	0
*	0 0 5% 0%
	0 / 00 /
	5% 5 /
	5 0
	.5 < 00 0 / < 0 00 / < 00 0 / < 0 50 /
	.5 < 00 / < .5 0 /
	0 0
	0 , 5 , 0 , 5 , 0 , 5 , 0

Note: The response time is the sum of the rise time and the delay time.

Effect of interference gases on CO_2 measurements		
Gas	**Concentration (%)**	**Quantitive effect***
	0	
	5	
	5	
	5	
	5	
* 0- 0		

Alarm limit	**Range**	**Step**
	(+)	
	(-)	

[illegible]	(+) 50	[illegible]
[illegible]	0 (-)	

Microstream CO_2 Module

[illegible]	[illegible]
[illegible]	0 [illegible]
[illegible] *	0 [illegible] [illegible] 5% [illegible] +0.0 % ([illegible])
[illegible]	[illegible]
* [illegible] 0 [illegible] 0 [illegible] % [illegible] %.	
[illegible]	[illegible]
[illegible]	50 7.5 15 [illegible] / [illegible]
[illegible]	0 ([illegible])
[illegible]	[illegible] ([illegible]) 5 ([illegible]) ([illegible]) [illegible] < 0 [illegible] (0% [illegible] 0%) [illegible] ([illegible])
[illegible]	0 [illegible] 50 [illegible]
[illegible]	0 [illegible] 0 [illegible] [illegible] 0 [illegible] 50 [illegible]
[illegible]	0 , 5 , 0 , 5 , 0 , 5 , 0

Alarm limit	Range	Step
[illegible]	(+) [illegible]	[illegible]
[illegible]	(-) [illegible]	
[illegible]	[illegible]	
[illegible]	(+) 50	[illegible]
[illegible]	0 (-)	

FOR YOUR NOTES

B EMC and Radio Regulatory Compliance

B.1 EMC

[illegible] 0 0 - - [illegible] *Chapter 25* [illegible] 0 0 - - [illegible].

Note

- **Using accessories, transducers and cables other than those specified may result in increased electromagnetic emission or decreased electromagnetic immunity of the device.**
- **The device or its components should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the device or its components should be observed to verify normal operation in the configuration in which it will be used.**
- **The device needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided below.**
- **Other devices may interfere with this device even though they meet the requirements of CISPR.**
- **When the inputted signal is below the minimum amplitude provided in technical specifications, erroneous measurements could result.**
- **Portable and mobile communication equipment may affect the performance of this device.**
- **Other devices that have RF transmitter or source may affect this device (e.g. cell phones, PDAs, and PCs with wireless function).**

Guidance and Declaration - Electromagnetic Emissions		
[illegible]		
Emission tests	**Compliance**	**Electromagnetic environment - guidance**
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible] 000- [illegible]	[illegible]	
[illegible] 000- [illegible]	[illegible]	

WARNING

- **This equipment/system is intended for use by healthcare professionals only. This equipment/ system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the [ME EQUIPMENT or ME SYSTEM] or shielding the location.**

Guidance and Declaration - Electromagnetic Immunity			
[illegible]			
Immunity test	**IEC60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
( ) 000- -	[illegible]	[illegible]	[illegible] 0%.
000- -	[illegible]	[illegible]	[illegible]

Guidance and Declaration - Electromagnetic Immunity

Recommended separation distances between portable and mobile RF communications equipment and the device			
[illegible]			
Rated maximum output power of transmitter (W)	**Separation distance in meters (m) according to frequency of the transmitter**		
	50 … 0 … $d = 1.2\sqrt{P}$	0 … 00 … $d = 1.2\sqrt{P}$ ($d = 3.5\sqrt{P}$)	00 … .5 … $d = 2.3\sqrt{P}$ ($d = 7\sqrt{P}$)
0.0	0.	0. (0. 5)	0. (0. 0)
0.	0.	0. (.)	0. (.)
	. 0	. 0 (.50)	0 (.00)
0	. 0	. 0 (.0)	0 (.)
00	.00	.00 (5.00)	.00 (0.00)
[illegible]			

B.2 Radio Regulatory Compliance

[illegible]

Item	Description		
	IEEE 802.11b	IEEE 802.11g	IEEE 802.11n
[illegible] ( )	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible] ( )	< 0	< 0	< 0

[illegible] 0 0 [illegible] 5 [illegible]

[illegible]

[illegible] -00 [illegible] -00 [illegible]

WARNING

- **Keep a distance of at least 20cm away from the device when Wi-Fi function is in use.**

FOR YOUR NOTES

C Default Configurations

Item Name	O.M		General	User Defaults
	*	*	-/0l	
			/l	
			+ 0l	

Arrh. Analysis

Item Name	O.M		General	User Defaults
	C	M		
Arrhythmia Threshold Settings				
	*	*	0	
	*	*	0	
	*	*	50	
	*	*	5	
	*	*	0	
	*	*		
	*	*	5	
	*	*	0	
	*	*	5	
	*	*	0	
	*	*	5	
	*	*		
Arrhythmia Alarm Settings				
	*	*	ff	
	*	*	ff	
	*	*	ff	
	*	*	ff	
	*	*	ff	
	*	*	ff	
	*	*		
	*	*		
	*	*		
	*	*		
	*	*		
	*	*		
	*	*	ff	
	*	*		
	*	*		
	*	*		
	*	*		
	*	*		
	*	*		
	*	*		

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	

[illegible]

C.1.2 RESP

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*		
[illegible]	*	*	00	
[illegible]	*	*	0	
[illegible]	*	*	5	
[illegible]	*	*	[illegible]	
[illegible]		*	[illegible]	

C.1.3 PR

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	00	
[illegible]	*	*	00	
[illegible]	*	*	[illegible]	
	*	*		

C.1.4 SpO_2

Item Name	O.M C	O.M M	General	User Defaults
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	5	
[illegible]	*	*	0	
[illegible]	*	*	0	
[illegible]	*	*	5	
[illegible]		*	ff	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	0	
[illegible]	*	*		

C.1.5 Temp

Item Name	O.M C	O.M M	General	User Defaults
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	.0	
[illegible]	*	*	5.0	
[illegible]	*	*	.0	

C.1.6 NIBP

Item Name		O.M C	O.M M	General	User Defaults
[illegible]		*	*		
[illegible]		*	*	[illegible]	
[illegible]		*	*	5	
[illegible]		*	*	ff	
		*	*		
[illegible]	[illegible]	*	*	0	
	[illegible]			0	
	[illegible]			0	
[illegible]	[illegible]	*	*	0	
	[illegible]			0	
	[illegible]			0	
Alarm Limits					
[illegible]	[illegible]	*	*	0	

Item Name		O.M C	O.M M	General	User Defaults
[illegible]	[illegible]			0	
	[illegible]			0	
[illegible]	[illegible]	*	*	0	
	[illegible]			0	
	[illegible]			0	
[illegible]	[illegible]	*	*	0	
	[illegible]			0	
	[illegible]			0	
[illegible]	[illegible]	*	*	0	
	[illegible]			50	
	[illegible]			5	
[illegible]	[illegible]	*	*	0	
	[illegible]			0	
	[illegible]			0	
[illegible]	[illegible]	*	*	50	
	[illegible]			0	
	[illegible]			0	

C.1.7 IBP

Item Name

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*	*	55	
[illegible]	*	*	0	
[illegible]	*	*	5	
[illegible]	*	*	0	
[illegible]	*	*	0	
PA Alarm Limits				
[illegible]	*	*	0	
[illegible]	*	*		
[illegible]	*	*		
[illegible]	*	*		
[illegible]	*	*		
[illegible]	*	*	-	
CVP, LAP, RAP, ICP, UVP, P3-P4 Venous Pressure Alarm Limits				
[illegible]	*	*		
[illegible]	*	*	0	
Art, Ao, BAP, FAP, LV, P1-P2 Arterial Pressure Scale				
[illegible]	*	*	0- 0	
PA Scale				
[illegible]	*	*	0- 0	
CVP, LAP, RAP, ICP, UVP Scale				
[illegible]	*	*	0- 0	
UAP, P3-P4 Venous Pressure Scale				
[illegible]	*	*	0- 0	
IBP Overlapping Left Scale				
[illegible]	*	*	0- 0	
IBP Overlapping Right Scale				
[illegible]	*	*	0- 0	

C.1.8 CO_2

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*	*		
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	50	
[illegible]	*	*	5	
[illegible]		*	[illegible]	
Sidestream CO_2 Setup				
[illegible]	*	*	[illegible]	
[illegible]	*	*	[illegible]	
[illegible]	*	*	0	
[illegible]	*	*		
[illegible]	*	*	0	
Microstream CO_2 Setup				
[illegible]		*	[illegible]	
[illegible]	*	*	0	
[illegible]	*	*	0	
Alarm Limits				
[illegible]	*	*	5	
[illegible]	*	*	0	
[illegible]	*	*		
[illegible]	*	*	00	
[illegible]	*	*	0	

C.2 Routine Configuration

C.2.1 Alarm

Item Name	O.M		General	User Defaults
	C	M		
[illegible]	*			
[illegible]	*	*		
[illegible]	*	*		

C.2.2 Screens

Item Name		O.M C	O.M M	General	User Defaults
		*	*		
		*	*		
		*			
		*	*		
	5				
		*	*		

C.2.3 Waveform

Item Name		O.M C	O.M M	General	User Defaults
			*		

Item Name	O.M C	O.M M	General	User Defaults
		*		
		*		
		*		
		*		
	*	*		
	*	*		
	*	*		
		*	ff	
		*		
ff		*		
ff		*		
		*	0 / 0	
		*		
		*		
E		*		
		*		
		*		
		*	50	
f		*		
f		*		
		*		
	*	*	■ Para Switch Authority Protected ■ Unprotected	
		*		
		*		
		*		

D Alarm Messages

D.1 Physiological Alarm Messages

Measurement	Alarm Messages	L	Cause and Solution
		*	
		*	
		*	

Measurement	Alarm Messages	L	Cause and Solution
		*	
		*	
		*	
		*	
		*	

Measurement	Alarm Message	L	I	Cause and Solution

Measurement	Alarm Message	L	I	Cause and Solution
[illegible]	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]		[illegible]	
	[illegible]		[illegible]	
	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]	*	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]
	[illegible]		[illegible]	[illegible]
	[illegible]			
[illegible]	[illegible]			[illegible]
	[illegible]			[illegible]
	[illegible]			[illegible]
	[illegible]			[illegible]
	[illegible]			
	[illegible]			[illegible]

Measurement	Alarm Message	L	I	Cause and Solution
	5			
	5			
	5			

E Electrical Safety Inspection

E.1 Power Cord Plug

Test Item		Acceptance Criteria
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]		[illegible]

E.2.2 Contextual Inspection

Test Item	Acceptance criteria
	[illegible]
	[illegible]
	[illegible]

E.3 Device Labelling

[illegible]

- [illegible]
- [illegible]

E.4 Protective Earth Resistance

[illegible]

E.5 Earth Leakage Test

[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible]

E.6 Patient Leakage Current

- 0
- 50

- 00
- 500

E.7 Mains on Applied Part Leakage

0%

0%

- 50
- 5000

E.8 Patient Auxiliary Current

■

■

■

■

■

■

■

■

◆ 0

◆ 50

■

◆ 00

◆ 500

NOTE

- **Make sure the safety analyzer is authorized comply with requirement of IEC61010-1.**
- **Follow the instructions of the analyzer manufacturer.**

F Symbols and Abbreviations

F.1 Symbols

-

%

/

+

<

-

F.2 Abbreviations

0 -00/ -00(.0)