# UM-211

## Digital Blood Pressure Monitor

| | |
|---|---|
| Instruction Manual | Original |
| Manuel d'instructions | Traduction |
| Manual de instrucciones | Traducción |
| Manuale di Istruzioni | Traduzione |
| 使用手冊 | 翻譯 |

1WMPD4003532

A&D Medical

# Contents

# Dear Customers

Congratulations on purchasing a state-of-the-art A&D blood pressure monitor, one of the most advanced monitors available today. This device is designed for ease of use and accuracy.
**We recommend that you read through this manual carefully before using the device for the first time.**

# Preliminary Remarks

- ❑ This device conforms to the European Directive 93/42 EEC for Medical Products. This is made evident by the CE0123 mark of conformity. (0123: The reference number to the involved notified body)
- ❑ The device is designed for use on adults.
- ❑ Environment for use: The device is for indoor use.
- ❑ This device is designed to measure blood pressure and pulse rate of people for diagnosis.

# Precautions

**Installation or storage location for the device**

- ❑ Do not use the device where flammable gases such as anesthetic gases are present. It may cause an explosion.
- ❑ Do not use the device in highly concentrated oxygen environments, such as a high-pressure oxygen chamber or an oxygen tent.
- ❑ Extremes in room temperature, humidity, direct sunlight, shock or dust should be avoided.
- ❑ Use or keep the device in a stable location where there is no slope, no vibration and no mechanical shock (including when shipping).
- ❑ Use or keep the device in a location where the chemicals, medicines or gases are not present.
- ❑ The device and cuff are not water resistant.
- ❑ Measurement may be distorted if the device is used close to televisions, microwave ovens, cellular telephones, X-ray or other devices with strong electrical fields.
- ❑ A strong shock to the device may result in mechanical error or possible injury due to debris.
- ❑ Avoid tightly folding the cuff or storing the hose tightly twisted for long periods, as such treatment may shorten the life of the components.

**Confirmation before use**

- ❑ Confirm that the device is safe and secure for accurate operation.
- ❑ Operate the device using the provided specified AC adapter.
- ❑ Only the specified options and consumables are allowed for use with this device.
- ❑ When reusing the device, confirm that the device is clean.
- ❑ Do not apply the cuff to an arm if another electrical medical device is already attached.
- ❑ Do not apply the cuff on an arm receiving an intravenous drip or blood transfusion.
- ❑ This device should be used at a doctor or medical worker only. The device is not designed to be operated by a patient to avoid accidents and ensure accurate results. Also, do not use the device for home health care.
- ❑ Do not use the device in an ambulance or ambulance helicopter. Doing so will prevent the device from providing accurate measurements.
- ❑ Do not use the device where plugging and unplugging of the AC adapter may be difficult.
- ❑ Clinical testing has not been conducted on newborn infants and pregnant women. Do not use on newborn infants or pregnant women.
- ❑ Confirm that there is no harm to the patient when the cuff is applied to the patient's arm and if the patient has had a mastectomy then avoid the adjacent arm.

**Precautions during using the device**

- ❑ When error display appears on the device or there are some doubts in the measurement values, confirm the patient's vital signs by using the palpation or auscultation method. Check that the air hose has not been bent or blocked.
- ❑ Should an error be displayed on the device or test subject, stop the device and take corrective actions to regain safety.
- ❑ Do not wrap the cuff on the arm with a wound. That may not only result in reopening the wound but could also cause an infection.
- ❑ Ensure that the position of the cuff is applied at the same level as the heart. (Otherwise, the blood pressure value results in an error.)
- ❑ Do not start to measure the blood pressure without wrapping the cuff around the arm. That may result in the cuff bursting or other damage.
- ❑ Regularly confirm patient status when the measurement is performed frequently or for a long time. Otherwise, it may cause damage due to peripheral arterial disease.
- ❑ Use the device so that the air hose is not bent or blocked. Using the cuff while the air hose is kinked or bent may result in a peripheral circulatory failure due to a hemostasis in the arm, remaining the air in the cuff.
- ❑ Do not apply the excessive force to the AC adapter cable, such as lifting the device or pulling out the AC adapter, by holding the AC adapter cable.
- ❑ Do not pull out or do not connect the specified AC adapter with a wet hand. That may result in an electrical shock or getting a burn.
- ❑ While measuring, do not connect or disconnect the AC adapter or battery or perform maintenance on them.

- ❑ Do not simultaneously touch the DC jack and the patient. That may result in electrical shock.
- ❑ To measure blood pressure, the arm must be squeezed by the cuff hard enough to cause some numbness and possibly a temporary red mark to the arm.
- ❑ Follow local instructions specified in the hospital when the cuff is used on several or infectious patients. Otherwise cross infection may result.
- ❑ If the patient has a very weak or irregular heart beat, the device may have difficulty in determining the blood pressure.
- ❑ Should the battery short-circuit, it may become hot and potentially cause burns.

**Note**

- ❑ Do not modify the device.
- ❑ The patient should be relaxed and avoid moving or talking during measurement. Otherwise that may result in a measurement error.
- ❑ To ensure accurate measuring, we recommend measuring the blood pressure after being in a relaxed state for at least five minutes.

**Care for after use**

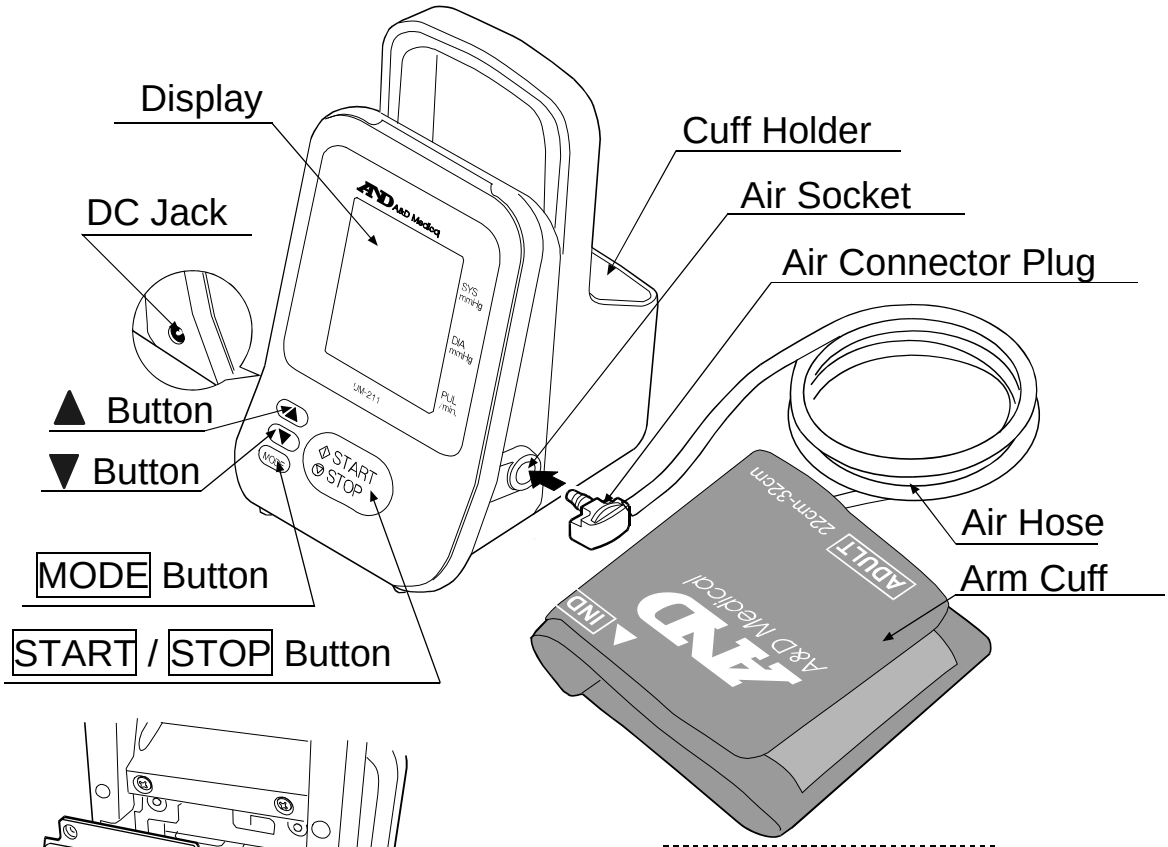
- ❑ When the cuff is infected by blood or body fluid, it should be safely disposed of according to local instructions or protocol to avoid any potential spread of infectious disease.
- ❑ Clean the device and cuff with a dry, soft cloth or a cloth dampened with water and a neutral detergent. Never use benzene, thinner or other harsh chemical to clean the device. For full details please read page 28.
- ❑ When carrying out maintenance on the device, turn the power off and remove the power cable from the outlet to prevent a risk of electrical shock.
- ❑ Do not spray, do not pour or do not spill a liquid on the main body, accessories, connectors, buttons or outlet ports.
- ❑ Do not perform autoclave or gas sterilization (EOG, formaldehyde gas or high concentration ozone, etc.) on the device as this could result in degradation.
- ❑ The user (Hospital, clinic, etc.) should have the management responsibility for a use and maintenance for the medical electronic device. Be sure to perform the specified daily and maintenance inspection for safe use.

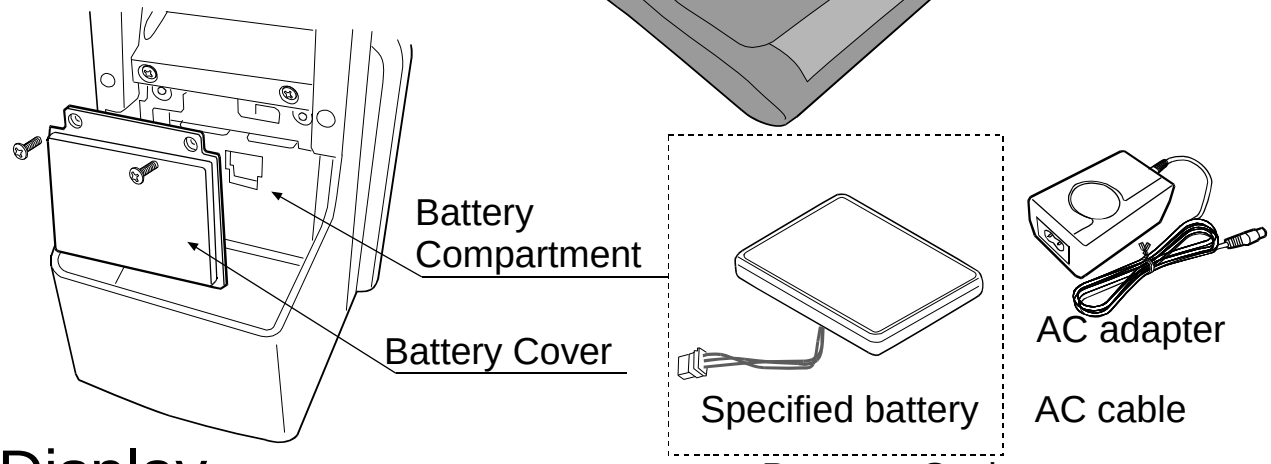
**Specified battery pack**

- ❑ Only the specified battery pack is allowed to be used with this device.
- ❑ Used equipment, parts and battery are not treated as ordinary household waste, and must be disposed of according to the applicable local regulations.
- ❑ Be sure to remove the specified AC adapter from the device when the specified battery pack is being re-installed in the device. Otherwise that may result in an electrical shock.
- ❑ Remove the specified battery pack from the device, and keep it elsewhere if you are not going to use the device for a month or more. Recharge the battery once every six months. Otherwise the battery may degrade.

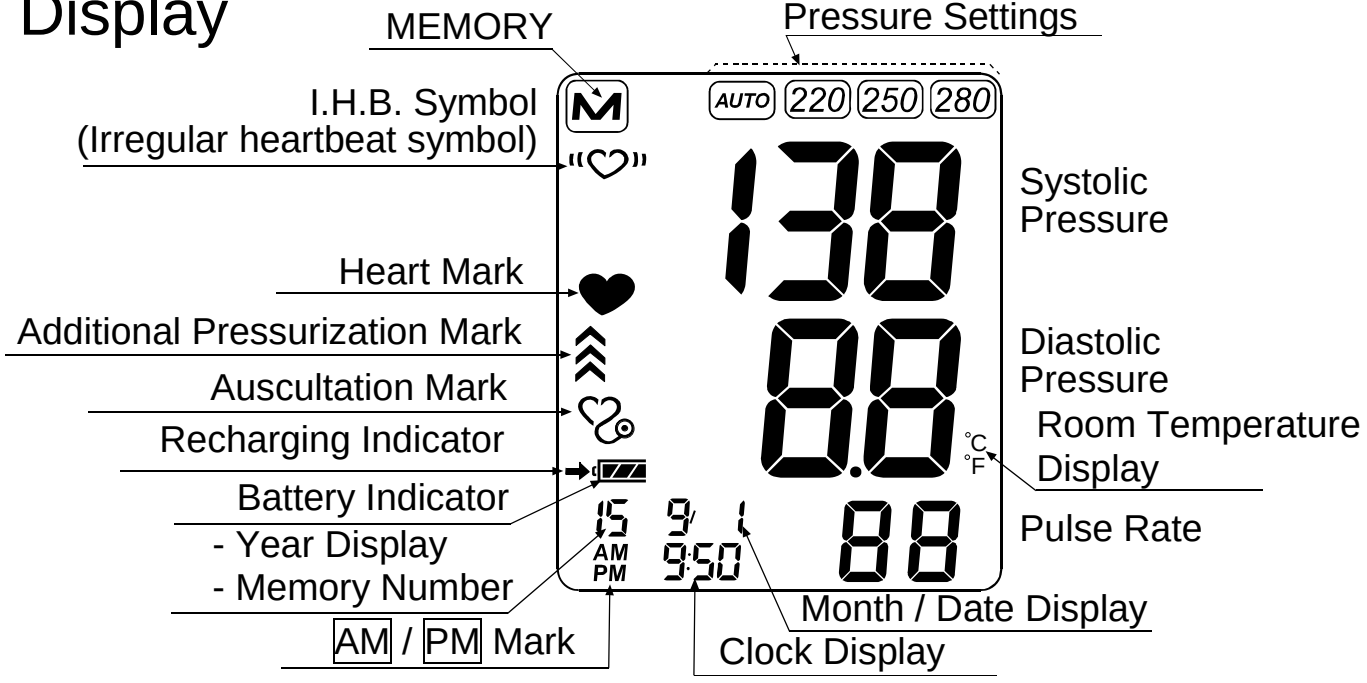
- ❑ Be sure to use the device after the battery was recharged. Otherwise that may avoid from proper use for the device using the battery in emergency.
- ❑ If the liquid leaked from the specified battery pack gets into an eye, avoid rubbing it and fully rinse it off using water, then immediately seek medical attention.
- ❑ The specified battery pack should be used only on this device. Do not heat the battery pack, or do not break it up. That may cause a heat generation, catching fire, short circuit or explosion.
- ❑ Do not apply a pressure or mechanical shock to the specified battery pack. That may result in an expansion or explosion.
- ❑ Replace the specified battery pack with new one when the measurement time with this device is extremely short even after fully recharging.

# Parts Identification



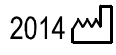




## Display



# Symbols

Symbols that are printed on the device case and the AC adapter

| Symbols | Function / Meaning | Recommended Action |
|---|---|---|
|  | The blood pressure measurement is started when the START/STOP button is pressed at the standby mode.<br>The blood pressure measurement is stopped when the START/STOP button is pressed during measuring the blood pressure.<br>The device proceeds to standby mode when the START/STOP button is pressed for at least three seconds. | _____ |
| SYS | Systolic blood pressure in mmHg | _____ |
| DIA | Diastolic blood pressure in mmHg | _____ |
| PUL | Pulse per minute | _____ |
|  | Direct current | _____ |
| SN | Serial number | _____ |
|  | Date of manufacture | _____ |
|  | Type BF: Device, cuff and tubing are designed to provide special protection against electrical shocks. | _____ |
|  | EC directive medical device label | _____ |
|  | WEEE label | _____ |
|  | Manufacturer | _____ |
|  | EU-representative | _____ |
|  | Refer to instruction manual/booklet | _____ |
|  | Class II device | _____ |
|  | Polarity of DC jack | _____ |
|  | UL Recognized Component Marks for Canada and the United States | _____ |
|  | Do Not Dissasemble | _____ |
|  | Indoor Dry Location Use Only | _____ |
|  | Consult the instruction manual | _____ |
|  | PSE Recognized Component | _____ |
|  | Warnig-Hot surface | _____ |

## Symbols that appear on the display

| Symbols | Function / Meaning | Recommended Action |
|---|---|---|
|  | Appears while measurement is in progress. It blinks when the pulse is detected. | Measurement is in progress. Remain as still as possible. |
|  | **I**rregular **H**eart**b**eat symbol (I.H.B.) Appears when an irregular heartbeat is detected. It may light when a very slight vibration like shivering or shaking is detected. | ——— |
|  | Previous measurements stored in memory. | ——— |
|  | Illuminates in order from bottom when the ▲ button is pressed to add the pressurization during constant speed exhaustion at the auscultation mode | ——— |
|  | Illuminates when the auscultation mode is ON. | ——— |
|  | FULL BATTERY<br>The battery power indicator during measurement. | ——— |
|  | LOW BATTERY<br>The battery power is low when it blinks. | Recharge the device using the AC adapter. |
|  | Illuminates when the AC adapter is connected to the device.<br>Blinks while the battery is being recharged. | ——— |
| Err | Unstable blood pressure due to movement during measurement. | Take another measurement. Remain still during measurement. |
| Err | The systolic and diastolic values are within 10 mmHg of each other. | Apply the cuff correctly, and take another measurement. |
| Err | The pressure value did not increase during the inflation. | |
| Err CUF | The cuff is not applied correctly. | |
| E | PUL DISPLAY ERROR<br>The pulse is not detected correctly. | |

| | | |
|---|---|---|
| ErrE<br>ErrF<br>Err9 | Blood pressure monitor internal error | Remove the batteries and press the START/STOP button, and then install the batteries again. If the error still appears, contact the dealer. |
| AM | Means morning when the clock function is set to 12H display. | ——— |
| PM | Means afternoon when the clock function is set to 12H display. | ——— |
| AUTO 220 250 280 | Pressure settings<br>Indicates the pressure value previously set by the user. | ——— |
| Room Temperature (°C, °F) | Means Celsius or Fahrenheit of room temperature. | |

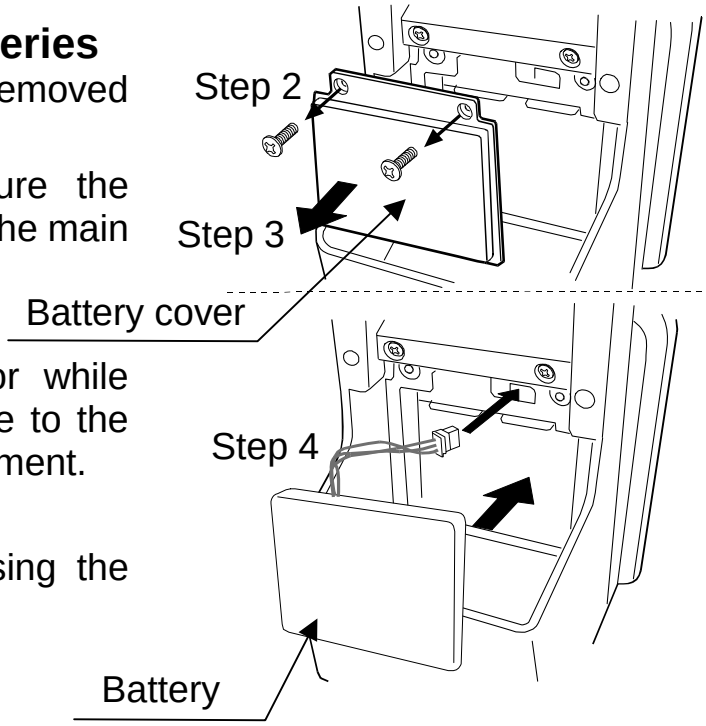
# Mode List

| Mode No. | Mode name | Function |
|---|---|---|
| F01 | Pressurization value setting | A pressurization value at the blood pressure measuring can be changed. |
| F02 | Auscultation setting | A setting about whether the auscultation measurement is carried out at the blood pressure measuring is possible. |
| F03 | Auscultation exhaust speed changing | An exhaust speed for when the auscultation measurement is performed can be switched between “Hi” or “Lo”. |
| F 10 | Clock setting | A current date and time can be set. |
| F 11 | Clock display setting | A clock display can be switched between 12H or 24H. |
| F 12 | Auto power OFF time setting | A time for timeout for when no operation is made can be switched between “5” or “10” minutes. |
| F 14 | Room temperature unit changing | A unit for displayed room temperature can be switched between °C or °F. |

# Using the Monitor

## Installing / Changing the Batteries

1. Confirm that the AC adapter is removed from outlet.
2. Remove the screws that secure the battery cover on the rear side of the main body.
3. Remove the battery cover.
4. Connect the battery's connector while pushing the hook at the left side to the connector in the battery compartment.
5. Close the battery cover.
6. Secure the battery cover by using the screws.

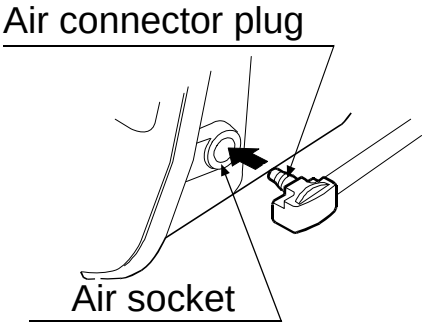



**CAUTION**

- ❑ When (LOW BATTERY mark) blinks on the display, recharge the battery. Replace the battery two seconds or more after the device turns off. If (LOW BATTERY mark) appears even after the battery is replaced, make a blood pressure measurement. The device may then recognize the new battery.
- ❑ (LOW BATTERY mark) does not appear when the battery is drained.
- ❑ The battery life varies with the ambient room temperature and may be shorter at low room temperatures.
- ❑ Use the specified battery only.
- ❑ Remove the battery if the device is not to be used for a long time. The battery may leak and cause a malfunction.
- ❑ Exchange the battery with new one when an operation time using the battery with this device is extremely short even after recharging.
- ❑ We recommend exchanging the battery once every two years.
- ❑ Be sure the time was reset when the battery was replaced.

## Connecting the Air Hose

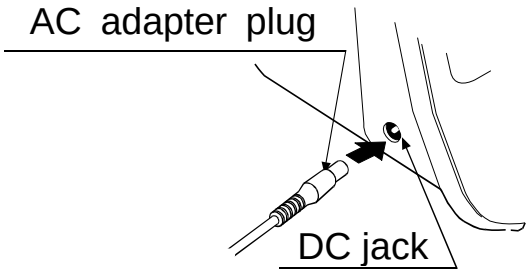
Insert the air connector plug into the air socket firmly.



## Connecting the AC Adapter

Insert the AC adapter plug into the DC jack.
Next, connect the AC adapter to an electrical outlet.

❑ Use the specified AC adapter.
(Refer to page 30.)




Note: The device is operated using the battery when the power is not supplied to the main body from the AC adapter.

## Recharging the Battery

- By connecting the AC adapter to the device, the recharging is started.
- The recharging completes about four hours after the AC adapter is connected to the device.
- The recharging mark (➡) blinks during recharging.
- The recharging mark continues to illuminate when completing recharging.

Note: A certain amount of time is required for the device temperature display to reach room temperature after recharging.

# Operation

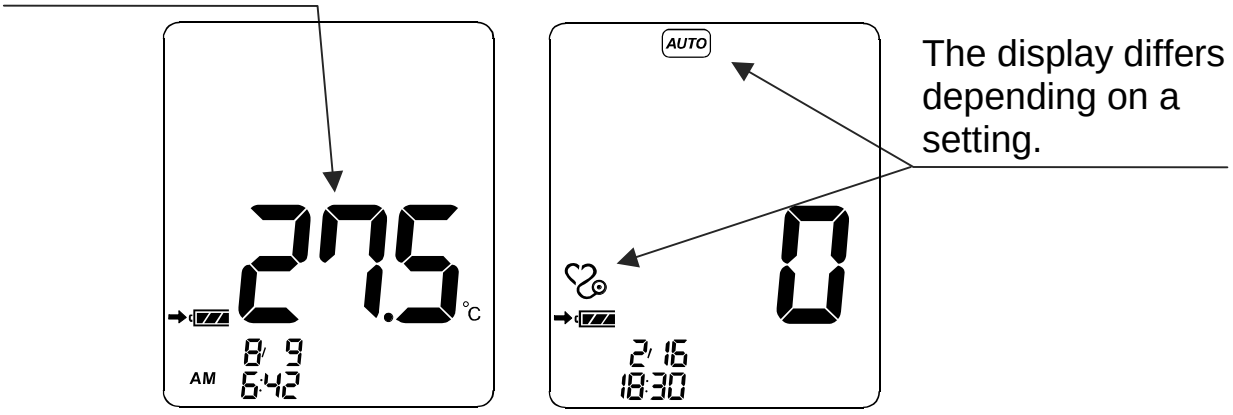
## Standby Mode

- The device goes into standby mode when the power is turned on, and a current room temperature is displayed at the display for diastolic pressure.
- The device proceeds to standby mode when the START/STOP button is pressed and held, or no operation is made for a regular time at all status other than blood pressure mode and auscultation mode.
- Press the ▲ or ▼ button to read out the memory.
- Press the MODE button to proceed to the pressurization value setting mode.
- Press and hold the MODE button to proceed to the clock setting mode.
- Press the START/STOP button to start the measurement.

## Measurement Standby Mode

- The device proceeds to measurement standby mode when the auscultation mode is set to OFF at the auscultation setting mode, or the MODE button is pressed at the auscultation exhaust speed changing mode, or the measurement is stopped.
- Also, the device proceeds to measurement standby mode when the measurement is completed. In this case, the device remains measurement results displayed.
- Press the ▲ or ▼ button to read out the memory.
- Press the MODE button to proceed to the pressurization value setting mode.
- The device proceeds to the standby mode automatically after a regular time.
- Press the START/STOP button to start the measurement.

A current temperature is displayed.




Standby mode  Measurement standby mode

Model UM-211 is designed to detect the pulse and to inflate the cuff to a systolic pressure level automatically.
If re-inflation occurs repeatedly, use the following methods.

## Measurement with the SET Pressure

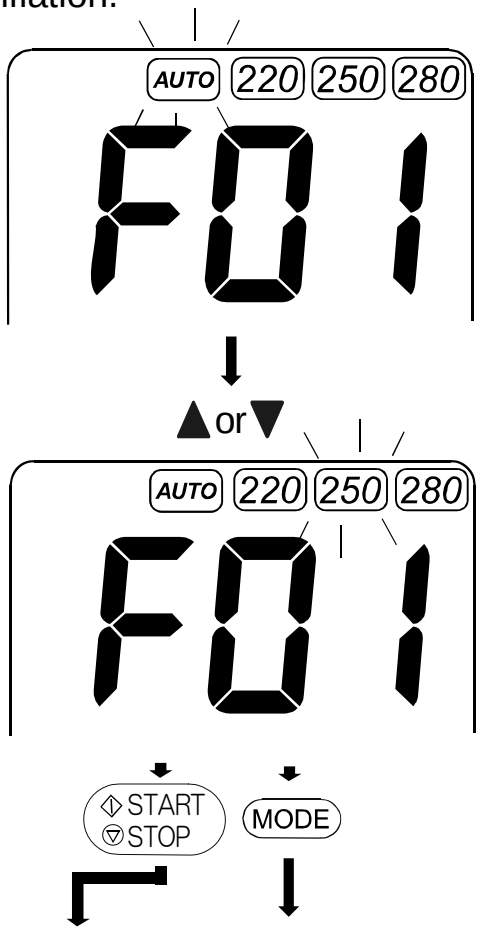
During the blood pressure measurement, re-inflation may occur.
A fixed pressure value can be set to avoid re-inflation.

1. Press the MODE button to go to the pressurization value setting mode. The current setting blinks.

2. Press the ▲ or ▼ button to select a pressure value about 30 mmHg or more above your expected systolic pressure from the following.

   AUTO : Automatic pressurization (default value)
   220 : Pressure value of 220 mmHg (fixed)
   250 : Pressure value of 250 mmHg (fixed)
   280 : Pressure value of 280 mmHg (fixed)

3. Press the MODE button to go to the auscultation setting mode.
   Press the START/STOP button to start the measurement. The device will proceed to standby mode automatically when no operation is made for a regular time.
   The next measurement will be performed with the new pressure value.

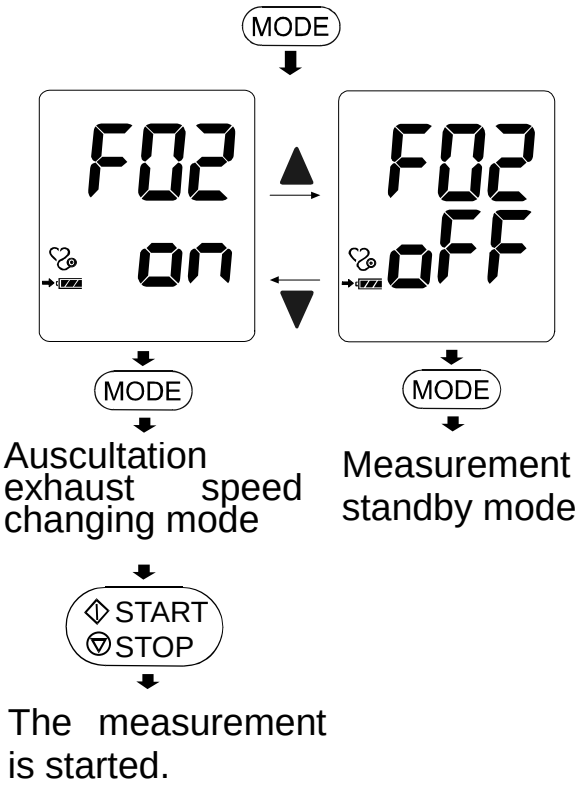



The measurement is started.

Auscultation setting mode

## Auscultation Setting

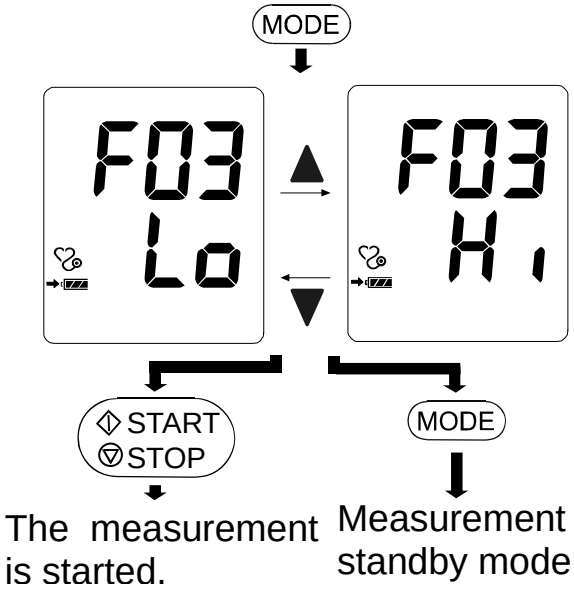
1. Press the MODE button at the pressurization setting mode to go into auscultation setting mode. “F02” is displayed at the display for systolic pressure, and the current status is displayed at the display for diastolic pressure
2. Press to the ▲ or ▼ button to switch between ON or OFF. The device illuminates the auscultation mark when the auscultation mode is set to ON.
3. Press the MODE button when the auscultation mode is set to ON to proceed to auscultation exhaust speed changing mode.
   Press the MODE button when the auscultation mode is set to OFF to proceed to measurement standby mode.
   Press the START/STOP button to start the measurement. Also, the device proceeds to standby mode automatically after a regular time.




## Auscultation Exhaust Speed Changing

Note: Select “Lo” when measuring normally. Should the patient pulse appear to be 100 or higher, measuring at “Hi” is possible.

1. Press the MODE button at the auscultation setting mode when the auscultation setting is set to ON to go into auscultation exhaust speed changing mode.
   “F03” is displayed at the display for systolic pressure, and the current status is displayed at the display for diastolic pressure
2. Press to the ▲ or ▼ button to switch between Hi or Lo.
3. Press the MODE button to proceed to measurement standby mode.
   Press the START/STOP to start the measurement. Also, the device proceeds to standby mode automatically after a regular time.



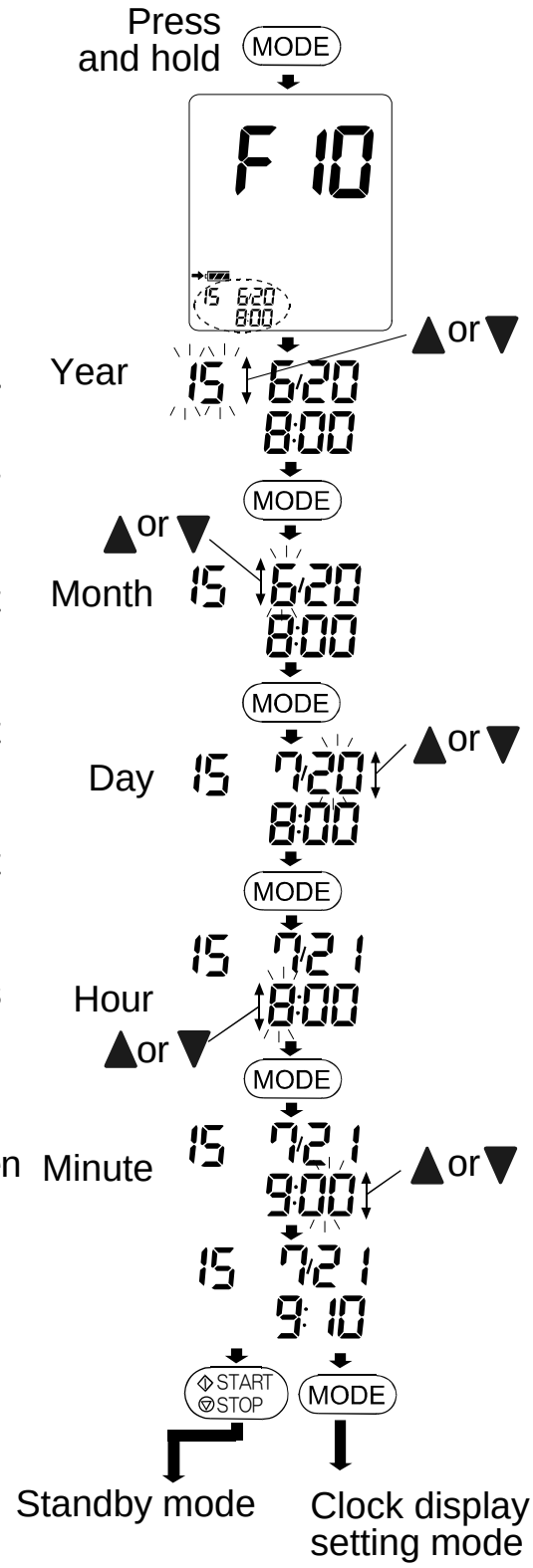
## Adjusting the Built-in Clock

Adjust the clock prior to use.

1. Press and hold the MODE button at the standby mode to go into clock setting mode. “F10” is displayed at the display for systolic pressure, and the far right two digits of A.D. blink.
2. Select the year using the ▲ or ▼ button. Press the MODE button to set the current year and move to month/day selection. The date can be set anywhere between the years 14 and 59.
3. Select the month using the ▲ or ▼ button. Press the MODE button to set the current month and move to day selection.
4. Select the day using the ▲ or ▼ button. Press the MODE button to set the current day and move to hour/minute selection.
5. Select the hour using the ▲ or ▼ button. Press the MODE button to set the current hour and move to minute selection.
6. Select the minute using the ▲ or ▼ button. Press the MODE button while the minute is being adjusted to proceed to clock display. Press the START/STOP button while the time is being set to proceed to standby mode.

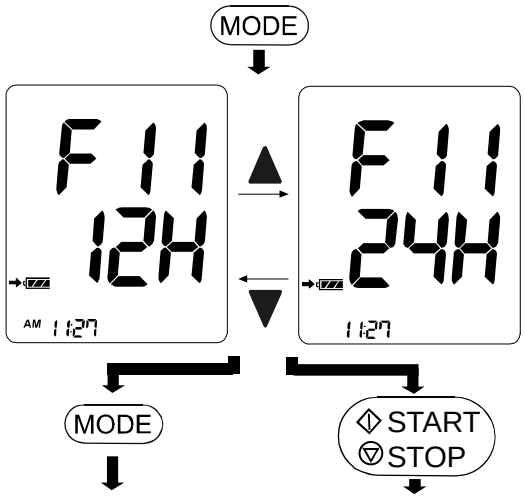
Note: The device proceeds to standby mode when no operation is made for a regular time.

❑ Holding down the ▲ or ▼ button will change the value continuously.



## Clock Display Setting

1. Press the MODE button when the minute at the clock setting is being set to go into clock display setting mode.
   "F11" is displayed at the display for systolic pressure, and "12H" or "24H" is displayed at the display for diastolic pressure.
2. Press to the ▲ or ▼ button to switch between 12H or 24H.
   Press the MODE button to proceed to auto power OFF time setting mode.
   Press the START/STOP button to proceed to standby mode.



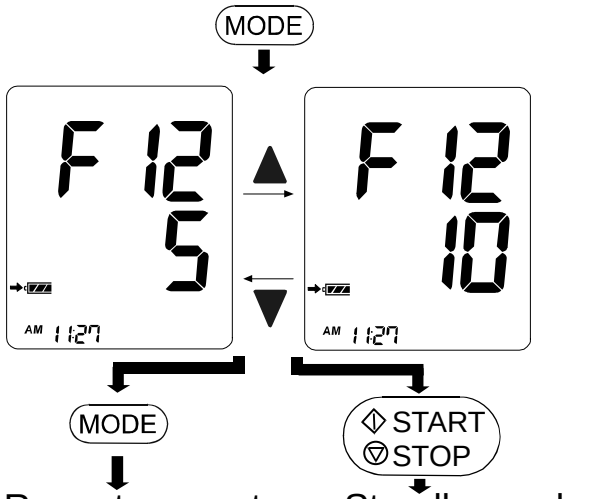

Auto power OFF time setting mode

Standby mode

## Auto Power OFF Time Setting

Set a time for timeout for when no operation is made. Either of five or ten minutes can be selected.

1. Press the MODE button at the clock display setting mode to go into auto power OFF time setting mode.
   "F12" is displayed at the display for systolic pressure, and "5" or "10" is displayed at the display for diastolic pressure.
2. Press to the ▲ or ▼ button to switch between five or ten minutes.
3. Press the MODE button to proceed to room temperature unit changing mode.
   Press the START/STOP button to proceed to standby mode.



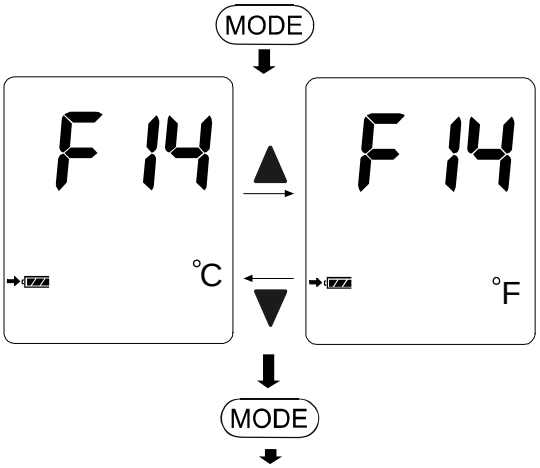

Room temperature unit changing mode

Standby mode

## Room Temperature Unit Changing

A unit for displayed room temperature can be switched between °C or °F.

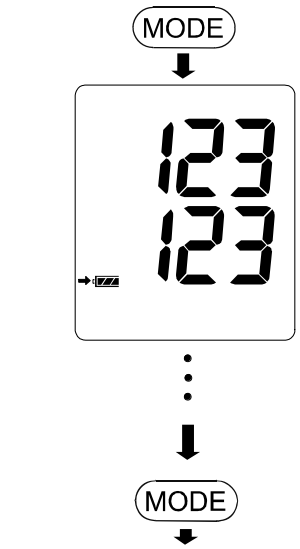
1. Press the MODE button at the auto power OFF time setting mode to go into room temperature unit changing mode.
   "F14" is displayed at the display for systolic pressure.
2. Press to the ▲ or ▼ button to switch between °C or °F at the right end on the display to switch a unit for room temperature.
3. Press the MODE button to proceed to Pressure confirmation mode. Press the START/STOP button to complete the setting. The device proceeds to standby mode.




Pressure confirmation mode

## Pressure Confirmation Mode

1. Press the MODE button at the temperature unit changing mode to go into pressure confirmation mode.
   The current pressure value is displayed at the display for systolic pressure and diastolic pressure.
2. When the pressure reaches 320 mmHg or higher, the value indicated on the display flashes 320 mmHg. After that, the display returns to previous one when the pressure display is less than 320 mmHg.
3. Press the MODE button to proceed to clock setting mode. Press the START/STOP button to complete the confirmation. The device proceeds to standby mode.




Clock setting mode

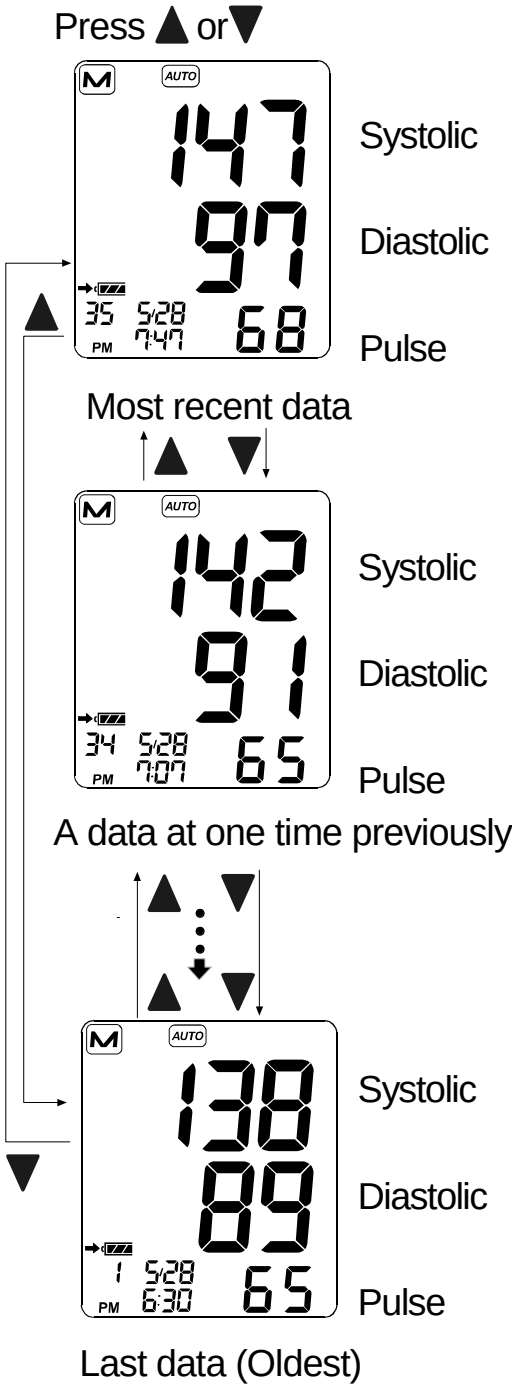
# Recalling the Memory Data

Note: This device stores the last 99 measurements in memory.

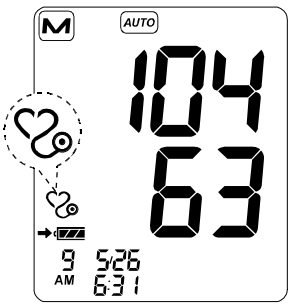
## Recalling the Memory Data

1. Press the ▲ or ▼ button to display a most recent memory data.
   If no data, the memory number, time, SYS, DIA and PUL is displayed in bar display. Press the START/STOP button to carried out the measurement.
2. Each time the ▼ button (or the ▲ button to display the data in the reverse order) is pressed, the memory data is displayed as follows.

   Most recent data (No.n, in the example, No.35)
   The measurement data is displayed.
   ⋮
   Last data (No.1)
   The measurement data is displayed.
3. After the last data is displayed, press the ▼ button to display the most recent data.
4. Press the START/STOP button to carried out the measurement. The device will proceed to standby mode automatically when no operation is made for a regular time.




When the auscultation measurement is carried out and was completed, the device displays the auscultation mark and measurement results without displaying a pulse rate as shown in the figure at the right.

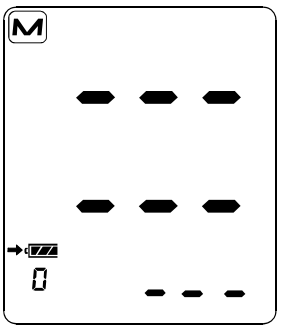


## Deleting all Data Stored in Memory

Press and hold the MODE button for at least three seconds to illuminate the M and battery mark only.

Again press and hold the MODE button for at least three seconds to delete the saved data all.

The device shows a display as shown in the figure at the right when the ▲ or ▼ button is pressed when there is no memory data in the device.



# Measurements

## Selecting the Correct Cuff Size

Using the correct cuff size is important for an accurate reading. If the cuff is not the proper size, the reading may yield an incorrect blood pressure value.

- ❑ The arm size is printed on each cuff.
- ❑ The arm cuff is a consumable. If it becomes worn, purchase a new one.

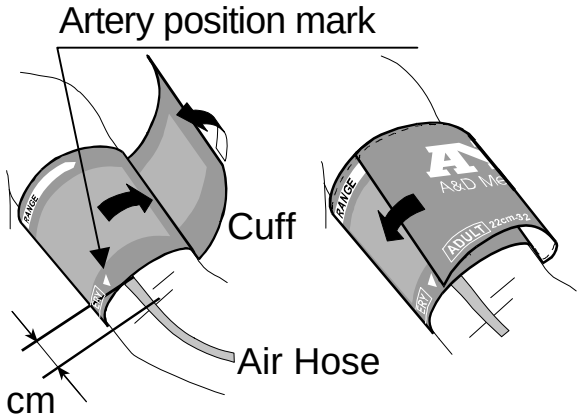
| Arm Size | Cuff Size | Symbols | Catalog Number |
|---|---|---|---|
| 41 cm to 50 cm | LL cuff | LL | CUF-KS-LL |
| 31 cm to 45 cm | LA cuff | LARGE ADULT | CUF-KS-LA |
| 22 cm to 32 cm | A cuff | ADULT | CUF-KS-A |
| 16 cm to 24 cm | SA cuff | SMALL ADULT | CUF-KS-SA |

Arm size: The circumference of the biceps.

## Applying the Arm Cuff

1. Face the palm of the left arm upward, and wrap the cuff around the upper arm, about 1-2 cm above the inside of the elbow.
   A range where the INDEX mark can be overlapped on the RANGE mark shows a proper fit range for the cuff.
2. Place the cuff on the upper arm so that the ▼ mark is overlapped on the artery.
3. Wrap while keeping the looseness with the cuff around the upper arm so that it allows the one or two fingers to insert between the cuff and arm.

Do not roll up shirtsleeve tightly.



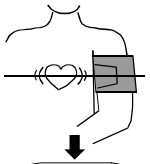

Printing contents with the cuff

| Symbols | Descriptions |
|---|---|
| REF | Means a code for when ordering the cuff to the manufacture. |
| ▲ INDEX | Index symbol<br>Means the symbol for showing that the cuff is wrapped in a proper fit range if this symbol is within the RANGE line. |
| ARTERY | ARTERY symbol<br>Place this symbol on the artery at the upper arm or thigh. |
| LATEX FREE | Means the symbol for showing that the latex is not included in this product. |
| CE | Means the symbol for showing the conformability mark. |
| LOT | Means the symbol for showing a lot number for when manufacturing.<br>The lot number is printed by the carved seal around this mark. |

| | |
|---|---|
| RANGE | RANGE symbol<br>The index symbol with the cuff should be in a range of this symbol. |
| ⚠ | Means the symbol for suggestions on operation. |
| THIS SIDE TO PATIENT | Means the symbol for the patient side. |

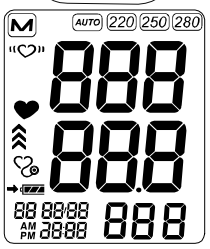
## Normal Measurement

1. Place the cuff on the arm.
   Sit quietly during measurement.



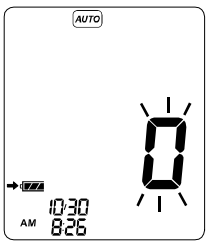

2. Press the START/STOP button.
   All of the display segments are displayed.
   Zero (0) is displayed blinking briefly.
   The display changes, as indicated in the figure at the right, as the measurement begins. The cuff starts to inflate. It is normal for the cuff to feel very tight.

   Note: If you wish to stop inflation at any time, press the START/STOP button again.

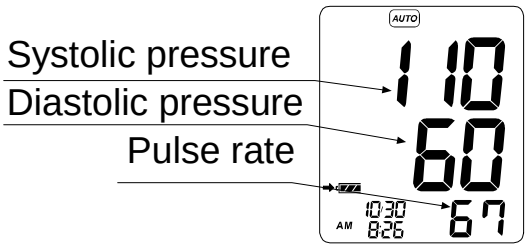

3. When inflation is complete, deflation starts automatically and ♥ (heart mark) blinks, indicating that the measurement is in progress. Once the pulse is detected, the mark blinks with each pulse beat.

   Note: If an appropriate pressure is not obtained, the device starts to inflate again automatically. To avoid re-inflation, see "Measurement with the SET Pressure" on page 14.





4. When the measurement is complete, the systolic and diastolic pressure readings and pulse rate are displayed.
   The cuff exhausts the remaining air and deflates completely.




5. Press the START/STOP button to carry out the measurement again.
   The device will proceed to standby mode automatically when no operation is made for a regular time.

Exhausts remaining air automatically

## Auscultation Measurement

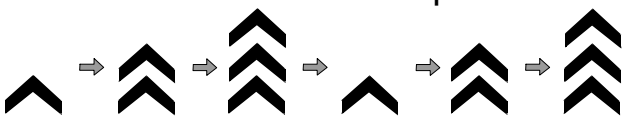
The auscultation measurement is performed when the auscultation setting mode is set to ON. Also, Press the START/STOP button while pressing the MODE button to perform the auscultation measurement.

The auscultation measurement is returned to OFF automatically when the device goes into standby mode.

1. Press the START/STOP button to start pressurization. When conditions for the pressurization to be completed will be arranged, the device starts the constant speed exhaustion after completing pressurization.
2. The device exhausts at constant speed. Press the MODE button to confirm the systolic pressure value. Press the MODE button again to confirm the diastolic pressure value, and the device exhausts at quick speed.
3. Press the ▲ button during exhausting at constant speed to perform the additional pressurization while the ▲ button is being pressed. The additional pressurization mark illuminates in order from bottom during the additional pressurization. When additional pressurization is applied up to the systolic pressure value or more, the systolic pressure value is cleared.

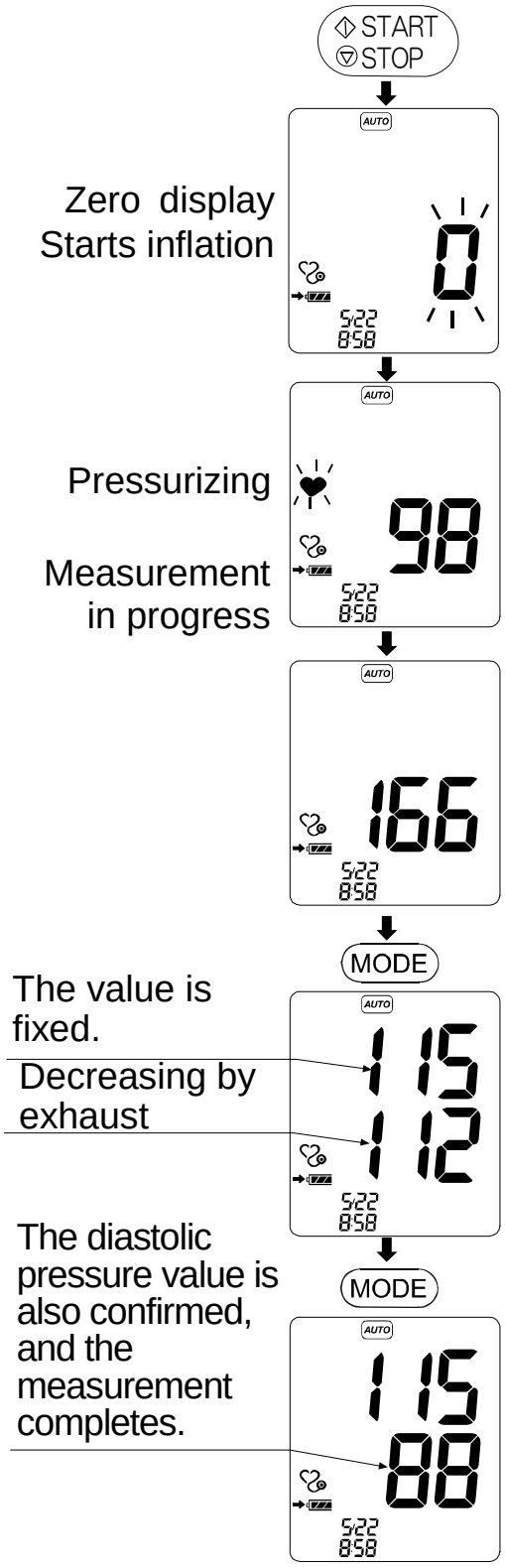
   Note: When the device is pressured at 300 mmHg or more, the device performs forced exhaust automatically.

   A mark for the additional pressurization



4. Press the START/STOP button after measuring to carry out the auscultation measurement again.

   Note: Allow at least three minutes between measurements on the same person.



## After Measurement

After measurement, the device proceeds to the standby mode when the START/STOP button is pressed and held (Three seconds). The device will proceed to the standby mode automatically when no operation is made for a regular time.
Remove the cuff and record the data.

## Notes for Accurate Measurement

- ❑ Let a patient sit down in a comfortable position. Confirm that a patient does not cross the legs, patient's legs touch on the floor and patient's back and arms are supported. Let a patient place the arm on a table with the palm facing upward and the cuff at the same level as patient's heart.

- ❑ Let a patient relax for about five to ten minutes before taking a measurement. If a patient is excited or depressed by emotional stress, the measurement will reflect this stress as a higher (or lower) than normal blood pressure reading and the pulse reading will usually be faster than normal.

- ❑ An individual's blood pressure varies constantly, depending on what a patient is doing and what a patient has eaten. What a patient drinks can have a very strong and rapid effect on patient's blood pressure.

- ❑ This device bases its measurements on the heartbeat. If a patient has a very weak or irregular heartbeat, the device may have difficulty determining patient's blood pressure.

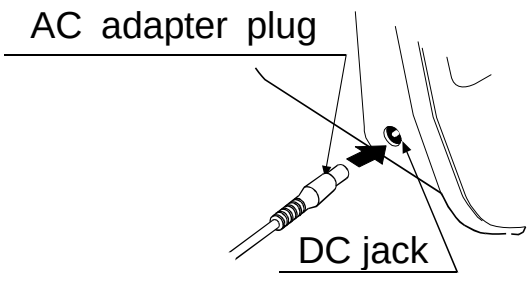
- ❑ Should the device detect a condition that is abnormal, it will stop the measurement and display an error symbol. Refer to page 8 for the description of symbols.

- ❑ The blood pressure measurement may be affected by cuff position, patient's posture (standing, sitting or supine), exercise or physiological conditions.

- ❑ The automatic blood pressure monitor's performance may be affected by excessive temperature or humidity, or altitude.

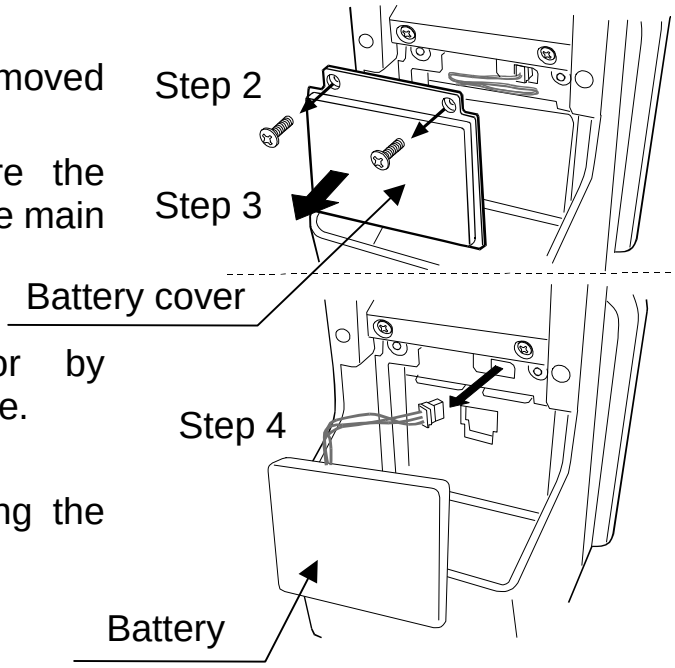
## Unplug the AC adapter

Unplug the AC adapter from the outlet.
Unplug the AC adapter plug from the DC jack.



## Removing the Battery

1. Confirm that the AC adapter is removed from outlet.
2. Remove the screws that secure the battery cover on the rear side of the main body.
3. Remove the battery cover.
4. Unplug the battery connector by depressing the hook on the left side.
5. Close the battery cover.
6. Secure the battery cover by using the screws.




Note: Should both the AC adapter and battery be disconnected from the device, the clock is initialized.

# What is an Irregular Heartbeat

The UM-211 blood pressure monitor provides a blood pressure and pulse rate measurement even when an irregular heartbeat occurs. An irregular heartbeat is defined as a heartbeat that varies by 25% from the average of all heartbeats during the blood pressure measurement.

# Troubleshooting

| Problem | Possible Reason | Recommended Action |
|---|---|---|
| Nothing appears on the display, even when the power is turned on. | Battery is drained. | Recharge the battery. |
| | Useful life for the battery was over. | Replace the old battery with new one. |
| The cuff does not inflate. | Battery voltage is too low. (LOW BATTERY mark) blinks. If the battery is drained completely, the mark does not appear. | Recharge the battery. |
| The device does not measure. Readings are too high or too low. | The cuff is not applied properly. | Apply the cuff correctly. |
| | Patient moved patient's arm or body during measurement. | Make sure patient remain still and quiet during measurement. |
| | The cuff position is not correct. | Sit comfortably and still.<br>Place patient's arm on a table with patient's palm facing upward and the cuff at the same level as patient's heart. |
| | ——— | If patient have a very weak or irregular heart beat, the device may have difficulty in determining patient's blood pressure. |
| The battery runs out soon even after recharging the battery. | The battery has exhausted. | Replace the old battery with new one. |
| Other | ——— | Remove the batteries. Place them back properly and take another measurement. |

Note: If the actions described above do not solve the problem, contact the dealer. Do not attempt to open or repair this product, as any attempt to do so will make your warranty invalid.

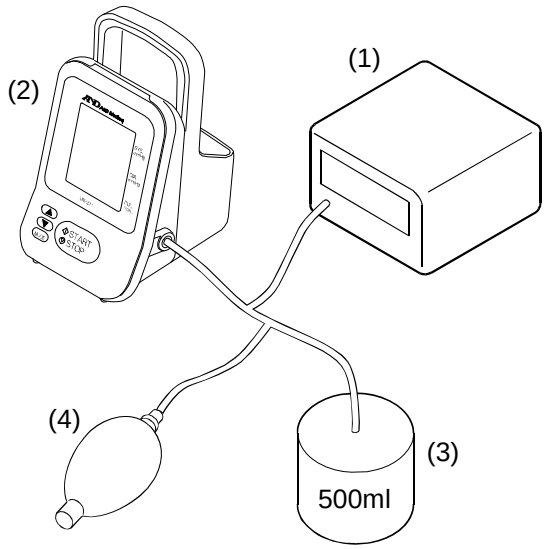
# Maintenance

## Maintenance

Do not attempt to open the device as the delicate electrical components and intricate air unit inside could be damaged. If you cannot solve the problem using our troubleshooting guide, request assistance from your authorized dealer or from any A&D service group.
The device was designed and manufactured for a long service life. However it is generally recommended to have the device inspected every 2 years, to ensure proper functioning and accuracy. Please contact either your authorized dealer or A &D for maintenance.

## Pressure confirmation

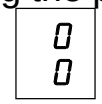
- Example of connection




(1) Calibrated pressure gauge
(2) UM-211
(3) Tank：500ml
(4) Pressure generating device

1. Press and hold the MODE button at standby mode. The device goes into the built-in clock adjusting mode, and F10 is displayed at the display.

2. Press the MODE button several times to proceed to pressure confirmation mode.
   * Refer to the page 18 in this manual for its setting.

3. Add the pressure using the pressure generating device once the display at the UM-211 became  , and confirm the pressure at the pressure gauge and UM-211.

## Cleaning

- ❑ Remove the AC adapter from the device when cleaning the device.
- ❑ When the main body or cuff is dirty, wipe them fully by using a gauze or cloth dampened with warm water and a neutral detergent avoiding excess water.
- ❑ Do not use a moisten cloth to wipe the DC jack and air socket. The DC jack and air socket must remain dry.
- ❑ To prevent a risk due to infection, disinfect the main body and cuff regulary. When disinfecting them, wipe them gently by using the gauze or dampened cloth with local antiseptic solution then wipe the moisture off the surface by using a dry soft cloth.
- ❑ Use the following disinfectants to clean the main body and cuff.

| |
|---|
| Ethanol (70%) |
| Isopropanol (70%) |
| Chlorhexidine Gluconate Solution (0.5%) |
| Benzalkonium Chloride Solution (0.05%) |
| Sodium Hypochlorite (0.05%) |

- ❑ Clean the device about once every month, basing on a policy or instruction specified in the hospital or clinic.

**CAUTION**

- ❑ The blood pressure monitor is not waterproof device. Do not splash water on it and avoid exposure to moisture.
- ❑ Do not use a organic solvent such as thinner or benzine.
- ❑ The blood pressure monitor cannot be sterilized by autoclave, EOG or formaline gas, etc.

## Regular inspection

- ❑ The blood pressure monitor is a precision device. Therefore, inspect it regularly. Request an inspection to the dealer where you have purchased the device when the device is in needs of an inspection,
- ❑ The cuff is consumable. Regularly exchange the cuff with new one.

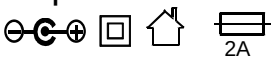
## Disposal

This equipment and battery are not treated as ordinary household waste and must be disposed of according to the applicable local regulations.

| Item | Parts | Material |
|---|---|---|
| Package | Box | Cardboard |
| | Cushion | Cardboard |
| | Bag | PE |
| Main unit and accessories | Enclosure | ABS, SR |
| | Internal parts | General electronic components |
| Battery pack | Outer case | ABS |
| | Cell battery | Nickel-hydrogen battery |
| | Internal parts | General electronic components |

# Technical Data

| | |
|---|---|
| Type | UM-211 |
| Measurement method | Oscillometric measurement |
| Measurement range | Pressure: 0 - 299 mmHg<br>Systolic pressure: 60 - 279 mmHg<br>Diastolic pressure: 40 - 200 mmHg<br>Pulse: 40 - 200 beats / minute |
| Measurement accuracy | Pressure: ±3 mmHg<br>Pulse: ±5% |
| Temperature unit | °C or °F |
| Temperature accuracy | ±2.5°C (+5°C to +40°C) |
| Power supply | Built-in 3.6V battery (UM-211-20) or<br>AC adapter (TB-268) |
| Number of measurements | Approx. 300 measurements, when built-in battery is used, with pressure value of 180 mmHg at room temperature of 23°C |
| Classification | Internally powered ME equipment (Supplied by batteries) /<br>Class II (Supplied by adapter)<br>Continuous operation mode |
| Clinical test | According to ISO81060-2 2013 |
| EMC | IEC 60601-1-2: 2007 |
| Memory | Last 99 measurements |
| Operating condition | +5°C to +40°C / 10%RH to 85%RH (Not condensed)<br>800 hPa to 1060 hPa |
| Transport / Storage conditions | -20°C to +60°C / 10%RH to 95%RH (Not condensed)<br>700 hPa to 1060 hPa |
| Dimensions | Approx. 120 [W] x 200 [H] x 140 [D] mm |
| Weight | Approx. 550 g, excluding the battery |
| Applied part | Cuff Type BF  |
| Useful life | Device: 5 years<br>Cuff: 2 years<br>AC adapter: 5 years |

| | |
|---|---|
| Rechargeable Battery (UM-211-20) | Nickel-Metal Hydride Battery<br>3.6V Typ.2000 mAh<br>Min.1750 mAh |
| AC adapter (TB-268) | The AC adapter is required to be inspected or replaced periodically.<br>Input: 100-240 V<br>Output: 6 V ⎓ 2000 mA<br>  |

Accessories sold separately

Cuff

| Arm Size | Cuff Size | Catalog Number |
|---|---|---|
| 41 cm to 50 cm | LL cuff | CUF-KS-LL |
| 31 cm to 45 cm | LA cuff | CUF-KS-LA |
| 22 cm to 32 cm | A cuff | CUF-KS-A |
| 16 cm to 24 cm | SA cuff | CUF-KS-SA |

AC adapter

| Catalog Number |
|---|
| TB-268 |

Note: Specifications are subject to change without prior notice.

AC cable

| Catalog Number | Plug |
|---|---|
| KO1886 | Type A |
| KO1887 | Type C |
| KO1888 | Type BF |

Rechargeable battery

| Catalog Number |
|---|
| UM-211-20 |

Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the following.
Portable and mobile RF communication equipment (e.g. cell phones) can affect Medical Electrical Equipment.
The use of accessories and cables other than those specified may result in increased emissions or decreased immunity of the unit.

| **Guidance and manufacturer's declaration – electromagnetic emissions** | | |
|---|---|---|
| The UM-211 is intended for use in the electromagnetic environment specified below. The customer or the user of the UM-211 should assure that it is used in such an environment. | | |
| **Emissions test** | **Compliance** | **Electromagnetic environment – guidance** |
| RF emissions<br>CISPR 11 | Group 1 | The UM-211 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| RF emissions<br>CISPR 11 | Class B | The UM-211 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC 61000-3-2 | Class A | |
| Voltage fluctuations / flicker emissions<br>IEC 61000-3-3 | Complies | |

**Recommended separation distances between portable and mobile RF communications equipment and the UM-211**

The UM-211 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the UM-211 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the UM-211 as recommended below, according to the maximum output power of the communications equipment.

| **Rated maximum output power of transmitter**<br>W | **Separation distance according to frequency of transmitter m** | | |
|---|---|---|---|
| | **150 kHz to 80 MHz**<br>$d = 1.2\sqrt{P}$ | **80 MHz to 800 MHz**<br>$d = 1.2\sqrt{P}$ | **800 MHz to 2.5 GHz**<br>$d = 2.3\sqrt{P}$ |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *p* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

| Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The UM-211 is intended for use in the electromagnetic environment specified below. The customer or the user of the UM-211 should assure that it is used in such an environment. | | | |
| **Immunity test** | **IEC 60601 test level** | **Compliance level** | **Electromagnetic environment – guidance** |
| Conducted RF<br>IEC 61000-4-6<br>Radiated RF<br>IEC 61000-4-3 | 3 $V_{rms}$<br>150 kHz to 80 MHz<br>3 V/m<br>80 MHz to 2.5 GHz | 3 $V_{rms}$<br><br>3 V/m | Portable and mobile RF communications equipment should be used no closer to any part of the UM-211, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br>**Recommended separation distance:**<br>$d = 1.2\sqrt{P}$<br>$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz<br>$d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz<br>where $P$ is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and $d$ is the recommended separation distance in metres (m).<br>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range.[b]<br>Interference may occur in the vicinity of equipment marked with the following symbol:  |
| NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.<br>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. | | | |

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the UM-211 is used exceeds the applicable RF compliance level above, the UM-211 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the UM-211.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

| Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The UM-211 is intended for use in the electromagnetic environment specified below. The customer or the user of the UM-211 should assure that it is used in such an environment. | | | |
| **Immunity test** | **IEC 60601 test level** | **Compliance level** | **Electromagnetic environment – guidance** |
| Electrostatic discharge (ESD) IEC 61000-4-2 | ± 6 kV contact<br>± 8 kV air | ± 6 kV contact<br>± 8 kV air | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient/burst IEC 61000-4-4 | ± 2 kV for power supply lines<br>± 1 kV for input/output lines | ± 2 kV for power supply lines<br>± 1 kV for input/output lines | Mains power quality should be that of a typical commercial or hospital environment. |
| Surge IEC 61000-4-5 | ± 1 kV line to line<br>±2 kV line to earth | ± 1 kV line to line<br>±2 kV line to earth | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips,short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | < 5% $U_T$ (> 95% dip in $U_T$) for 0.5 cycle<br>40% $U_T$ (60% dip in $U_T$) for 5 cycles<br>70% $U_T$ (30% dip in $U_T$) for 25 cycles<br>< 5% $U_T$ (> 95% dip in $U_T$) for 5 s | < 5% $U_T$ (> 95% dip in $U_T$) for 0.5 cycle<br>40% $U_T$ (60% dip in $U_T$) for 5 cycles<br>70% $U_T$ (30% dip in $U_T$) for 25 cycles<br>< 5% $U_T$ (> 95% dip in $U_T$) for 5 s | Mains power quality should be that of a typical commercial or hospital environment. If the user of the UM-211 requires continued operation during power mains interruptions, it is recommended that the UM-211 be powered from an uninterruptible power supply or a battery. |
| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |
| NOTE : $U_T$ is the AC mains voltage prior to application of the test level. | | | |

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