



# **User Manual**

Sleep Apnea Therapy Device and Accessories

Auto CPAP / CPAP System

G3 A20 / G3 C20

**CE0123**

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# 1. Symbols

## 1.1 Control Buttons



Home Button



Start / Stop Button



Knob

## 1.2 Device Symbols



Follow Instructions for Use



Operating Instructions



Type BF Applied Part (mask)



Class II (Double Insulated)



AC Power



DC Power

**IP22**

≥ 12.5 mm Diameter, Dripping (15° tilted)



Hot Surface



No SpO<sub>2</sub> Alert



Serial Number of the Product



Manufacturer



Authorized Representative in the European Community



Disassembly is prohibited



Maximum water level



European CE Declaration of Conformity



Lot number



Non-Ionizing Radiation



SD Card



WEEE Marking



Logo of BMC Medical Co., Ltd.



Air Inlet



Air Outlet

## ***2. Warning, Caution and Important Tip***

### ***WARNING!***

Indicate the possibility of injury to the user or operator.

### ***CAUTION!***

Indicate the possibility of damage to the device.

### ***IMPORTANT TIP!***

Place emphasis on an operating characteristics.

Warnings, Cautions, and Important Tips appear throughout this manual as they apply.

## ***3. Intended Use***

The G3 A20 / G3 C20 system is a CPAP (Continuous Positive Airway Pressure) device designed for the treatment of adults Obstructive Sleep Apnea (OSA) only, either in the hospital or at home.

The device is to be used only on the instruction of a licensed health care professional. Your home care provider will make the correct pressure settings according to your health care professional's prescription.

Several accessories are available to make your OSA treatment with the device as convenient and comfortable as possible. To ensure that you receive the safe, effective therapy prescribed for you, use only BMC accessories.

### ***WARNINGS!***

- The device is intended for adults use only.
- The device is not intended for life support.
- The instructions in this manual are not intended to supersede established medical protocols.
- Do not bring the device or accessories into a Magnetic Resonance (MR) environment as it may cause unacceptable risks to the patient or damage to the device or MR medical devices. The device and accessories have not been evaluated for safety in an MR environment.
- Do not use the device or accessories in an environment with electromagnetic equipment such as CT scanners, Diathermy, RFID and electromagnetic security systems (metal detectors) as it may cause unacceptable risks to the patient or damage to the device. Some electromagnetic sources may not be apparent, if you notice any unexplained changes in the performance of the device, if it makes unusual or harsh sounds, disconnect the power cord and stop using it. Contact your home care provider.

### ***CAUTIONS!***

- The device is restricted to sale by or on the order of a physician.
- The patient is an intended operator.

***IMPORTANT TIP!***

- Read and understand the entire user manual before operating this system. If you have any questions concerning the use of this system, contact your home care provider or health care professional.

## ***4. Contraindications***

Studies have shown that the following pre-existing conditions may contraindicate the use of positive airway pressure therapy for some patients:

**Absolute Contraindications:** Pneumothorax, mediastinal emphysema; cerebrospinal fluid leak, traumatic brain injury, or pneumocephalus; shock caused by a variety of conditions before treatment; active epistaxis; upper gastrointestinal bleeding before treatment; coma or impaired consciousness making the use of mask during therapy impossible; giant vocal fold polyp, etc.

**Relative Contraindications:** Severe coronary heart disease complicated with left ventricular failure, acute otitis media, excessive respiratory secretions and weak cough, weak spontaneous breathing, nasal or oral tracheal intubation and tracheotomy, severe nasal congestion caused by a variety of conditions, lung bullae, and allergies to breathing masks, etc.

The following side effects may occur during treatment:

- Dryness of the mouth, nose and throat
- Abdominal bloating
- Ear or sinus discomfort
- Eye irritation
- Skin irritation due to the use of a mask
- Chest discomfort

***IMPORTANT TIPS!***

- An irregular sleep schedule, alcohol consumption, obesity, sleeping pills, or sedatives may aggravate your symptoms.
- Please use a mask which meets ISO 17510: 2015.

***CAUTION!***

- Contact your health care professional if symptoms of sleep apnea recur. Contact your health care professional if you have any questions concerning your therapy.

## 5. Specifications

### **Device Size**

Dimensions (L x W x H): 265 mm × 145 mm × 114 mm

Weight: 1.7 kg

Water capacity: To maximum fill line 360 mL

### **Product Use, Transport and Storage**

Operation	Transport and Storage
Temperature: 5°C to 35°C (41°F to 95°F)	-25°C to 70°C (-13°F to 158°F)
Humidity: 15% to 93% Non-condensing	15% to 93% Non-condensing
Atmospheric Pressure: 760 ~ 1060 hPa	760 ~ 1060 hPa

### **Heated Humidifier**

Humidifier Settings: Off, Auto, 1 to 5 (95°F to 154.4°F / 35°C to 68°C)

Humidifier Output: No less than 15 mg H<sub>2</sub>O/L

Environmental Conditions: Maximum airflow, 35°C, 15% relative humidity

Maximum Operating Pressure: 40 hPa

Pressure Drop with Humidifier: < 0.4 hPa at 60 LPM flow

Maximum Delivered Gas Temperature: ≤ 43°C

### **Cellular Module**

Receiver Frequency Band: 850/900/1800/1900MHz

FCCID: XMR201202M35

Max RF power output: 33.0 dBm

### **WiFi Kit**

FCCID: 2ACSVHF-LPT270

### **Mode of Operation**

Continuous

### **Work Mode**

CPAP, AutoCPAP

### **SD Card**

The SD card can record patient data and fault information

### **AC Power Consumption**

100 - 240 V ~, 50 / 60 Hz, 2.5 A Max

100 - 240 V ~, 50 / 60 Hz, 2A Max

### **Main device input**

24 V, 3.33 A

### **Device offer to Heated Tubing Communications Port**

24 V  $\overline{\text{---}}$  18 W



**Type of Protection Against Electric Shock**

Class II Equipment

**Degree of Protection Against Electric Shock**

Type BF Applied Part

**Degree of Protection Against Ingress of Water**

IP22

**Pressure Range**4 to 20 hPa (in 0.5 hPa increments),  $\leq$  30 hPa under single fault conditions.**Static Pressure Stability** $\pm 0.5$  hPa**Ramp**

The ramp time ranges from 0 to 60 minutes.

**Sound Pressure Level**

&lt; 28 dB (A), when the device is working at the pressure of 10 hPa, Uncertainty: 2 dB (A).

**Sound Power Level**

&lt; 36 dB (A), when the device is working at the pressure of 10 hPa, Uncertainty: 2 dB (A).

**Maximum Flow**

	Test Pressure				
	Pmin	Pmin + 1/4 (Pmax-Pmin)	Pmin + 1/2 (Pmax-Pmin)	Pmin + 3/4 (Pmax-Pmin)	Pmax
Test Pressures (hPa)	4	8	12	16	20
Measured Pressure at the Patient Connection Port (hPa)	3	7	11	15	19
Average Flow at the Patient Connection Port (L/min)	85	135	140	140	140
When the working pressure is set to the values listed in the table, the average flow rate at the patient end should be greater than 80% of the corresponding flow value in the table.					

**Pressure**

Range: 0 ~ 20 hPa

Margin of Error:  $\pm$  (0.4 hPa + 4%)**SpO<sub>2</sub>**

Range: 35% ~ 100%

The margin of error for SpO<sub>2</sub> between 70% and 100% is  $\pm 3\%$ . No strict accuracy requirements for SpO<sub>2</sub> below 70%.**Pulse Rate**

Range: 30 ~ 240 BPM

Margin of Error:  $\pm 2\%$

**Wavelengths**

Red: 663 nanometers

Infrared: 890 nanometers

**Maximal Optical Output Power**

Less than 1.5 mw maximum average.

**Air Tubing**

Air tubing	Length	Inner diameter
Tubing	6 ft. (1.83 m)	19 mm
Heated Tubing	6 ft. (1.83 m)	19 mm

**The Form and the Dimensions of the Patient Connection Port**


The 22 mm conical air outlet complies with ISO 5356-1.

**PM2.5 Filter**

Efficiency: > 90% for 2.5 micron dust

## 6. Available Therapies

The device delivers the following therapies:

**CPAP** – Delivers Continuous Positive Airway Pressure; CPAP maintains a constant level of pressure throughout the breathing cycle. If your health care professional has prescribed ramp for you, you can turn **the Knob**  to reduce the pressure and then gradually increase the pressure to the therapeutic pressure setting so that you can fall asleep more comfortably.

**AutoCPAP** – Delivers CPAP therapy and provides an air pressure no less than the prescribed one based on the patient's needs.

## 7. Glossary

**Apnea**

A condition marked by the cessation of spontaneous breathing.

**AutoCPAP**

Adjust CPAP pressure automatically to improve patient comfort based on monitoring of apnea and snoring events.

**Auto Off**

When this feature is enabled, the device automatically discontinues therapy whenever the mask is removed.

**Auto On**

With this feature, the device automatically initiates therapy when you breathe into the mask. This feature is always enabled.

**SmartC**

In CPAP mode, if SmartC is set to on, the device can adjust Treat P based on the patient's respiratory event during a certain time.

**SmartA**

In AutoCPAP mode, if SmartA is set to on, the device can adjust Initial P and Min APAP based on the patient's respiratory event during a certain time.

**CPAP**

Continuous Positive Airway Pressure.

**iCode**

A feature designed to give access to compliance and therapy management information. "iCode" consists of six separate codes displayed in the Patient Menu, each code being a sequence of numbers. "iCode QR" and "iCode QR+" display two-dimensional codes.

**LPM**

Liters Per Minute.

**OSA**

Obstructive Sleep Apnea.

**Patient Menu**

The display mode in which you can change patient-adjustable device settings, such as the starting pressure of the Ramp feature.

**Ramp**

A feature that increases patient comfort at the beginning of treatment. It reduces the pressure and then gradually increases it the prescribed setting so that the patient can fall asleep more comfortably.

**Reslex**

A therapy feature that is enabled by your home care provider to provide pressure relief during exhalation.

**Standby State**

The state of the device when power is applied but the airflow is turned off.

**min**

Means the time unit "minute".

**h**

Means the time unit "hour".

**yy mm dd / mm dd yy / dd mm yy**

Denotes date.

## 8. Model

Model	Product Description		Work Mode	Maximum Work Pressure (hPa)
	Product Contents	Optional Accessory		
G3 A20	Device (3.5-inch LCD)	Tubing (optional), SpO <sub>2</sub> Kit (optional), Mask( optional), WiFi kit (optional), Cellular Module (optional), Heated Tubing (optional)	CPAP, AutoCPAP	20
G3 C20	Device (3.5-inch LCD)		CPAP	

## 9. Package Contents

After unpacking the system, make sure you have everything shown here (Different models of the product may contain different components):

No.	Articles	Qty.	Notes
1	Device	1	
2	Air Filter	2	
3	Power Adapter	1	
4	Power Cord	1	
5	WiFi kit	1	Optional
6	Cellular Module	1	Optional
7	Mask	1	Optional
8	SpO <sub>2</sub> Kit	1	Optional
9	Tubing	1	Optional
10	Heated Tubing	1	Optional
11	PM2.5 Filter	1	Optional
12	SD Card	1	Optional
13	Carrying Case	1	Optional
14	Accompanying Documents	1	

All parts and accessories are not made of natural rubber latex.

The product's service life is five years if it is used, maintained, cleaned and disinfected in strict accordance with the User Manual.

The Heated Tubing service life is six month. The WiFi kit and Cellular Module service life is one year.

SpO<sub>2</sub> Probe and mask are the application parts of the device.

### **WARNINGS!**

- The device should only be SpO<sub>2</sub> with the mask and accessories manufactured or recommended by BMC. The use of inappropriate masks and accessories may affect the

performance of the device and impair the effectiveness of treatment.

- The use of accessories other than those specified, except for cables sold by the manufacturer of the equipment or system as replacement parts for internal components, may result in increased emissions or reduced immunity of the equipment or system.
- Do not stack the long tubing at the head of the bed, as it may wrap around the head or neck of the patient during sleep.
- Do not attach any equipment to the device unless recommended by BMC or your health care provider.
- Please contact BMC for an SD card if needed.

### ***IMPORTANT TIPS!***

- If any of the above parts are missing, contact your home care provider.
- Contact your home care provider for additional information on the available accessories of the device. When using optional accessories, be sure to follow the instructions that come with the accessories.

## **10. System Features**

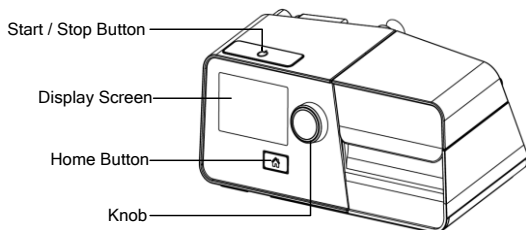


Fig. 10-1

<b>Name</b>	<b>Function</b>
Start / Stop Button	Start / Stop delivering air
Display Screen	Display operation menus, information, monitoring data, etc.
Home Button	Return to the previous menu or main interface
Knob	Adjust device settings

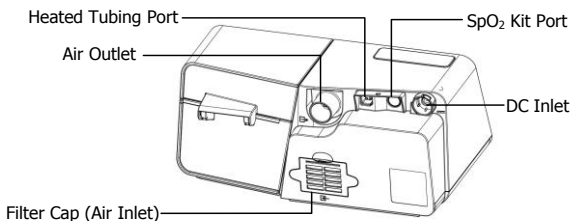


Fig. 10-2

Name	Function
Air Outlet	Deliver pressurized air; connects to the tubing
SpO <sub>2</sub> Kit Port (optional)	Connected to SpO <sub>2</sub> Kit (Not for connection to un-recommended devices)
Heated Tubing Port	Connected to the plug of the heated tubing
DC Inlet	An inlet for the DC power supply
Filter Cap (Air Inlet)	Place the cap on the air filter, which is used to filter dust and pollen in the air entering the device

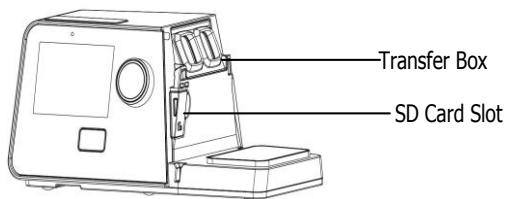


Fig. 10-3

Name	Function
Transfer Box	For the connection of the water chamber to the device
SD Card Slot	Insert the SD card into this slot

**CAUTION!**

- The pictures in this manual are only for reference, if they are different from the material objects, the latter shall prevail.

## **11. First Time Setup**

### **11.1 Placing the Device**

Place the device on a firm, flat surface.

#### ***WARNINGS!***

- If the device has been dropped or mishandled, if the enclosure is broken, or if water enters the enclosure, disconnect the power cord and discontinue use. Contact your home care provider immediately.
- If the room temperature is above 95°F (35°C), the airflow generated by the device may exceed 109.4°F (43°C). The room temperature must be kept below 95°F (35°C) while the patient is using the device.

#### ***CAUTIONS!***

- If the device has been exposed to very hot or very cold temperatures, allow it to acclimate to room temperature (approximately 2 hours) before beginning setup.
- Make sure the device is away from any heating or cooling equipment (e.g., forced air vents, radiators, air conditioners).
- The device is not suitable for use in high humidity environments. Make sure that no water enters the device.
- Make sure that bedding, curtains, or other items are not blocking the filter or vents of the device.
- Keep pets, pests or children away from the device and avoid small objects being inhaled or swallowed.
- To avoid explosion, the device must not be used in the presence of flammable gases (e.g. anesthetics).
- Tobacco smoke may cause tar to build-up in the device, which could lead to the malfunctioning of the device.
- Air must flow freely around the device to allow it to function properly.

### **11.2 Installing the Air Filter and Filter Cap / PM2.5 Filter**

(1) Attach the air filter to the filter cap, as shown in Fig. 11-1.

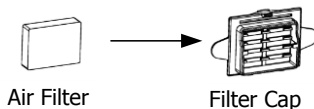


Fig. 11-1

(2) Install the filter cap containing the air filter to the device, as shown in Fig. 11-2.

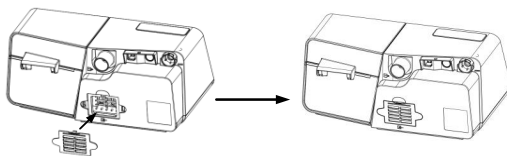


Fig. 11-2

(3) Change the air filter and filter cap to the PM2.5 filter, as shown in Fig. 11-3.

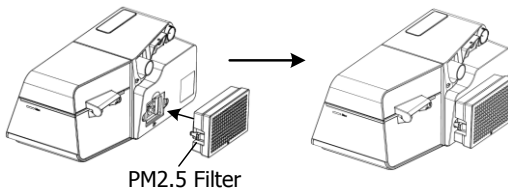


Fig. 11-3

**CAUTION!**

- The air filter or the PM2.5 filter must be in place when the device is operating.

### ***11.3 Connecting Power Supply***

- (1) Insert the plug of the power adapter into the DC Inlet on the back of the device;
- (2) Connect the power cord to the power adapter;
- (3) Plug the other end of the power cord into the power outlet.

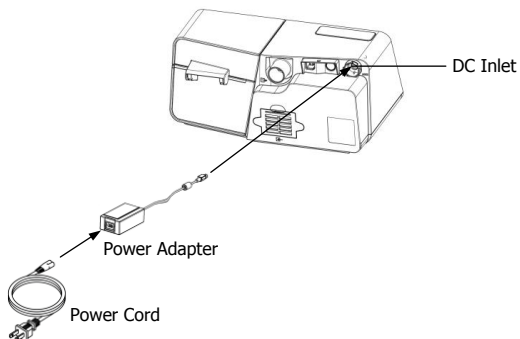



Fig. 11-4

*Note: The length of the power cord and power adapter is 1.5 m and 1.8 m respectively without the function of preventing electromagnetic interference.*



**WARNINGS!**

- The device is powered on for use when the power cord and power adapter are connected. Use **the Knob**  to turn the blower On / Off.
- Using the device at an AC voltage outside the specified range (see Section 5 "AC Power Consumption") may damage the device or cause device failure.
- Connect to the proper power source for proper operation of the device.
- Check the power cord frequently for signs of damage. Replace a damaged cord immediately.

**IMPORTANT TIPS!**

- After interruption and restoration of the power supply, the device will restore its pre-interruption working status automatically.
- To remove AC power, disconnect the power cord from the power outlet.

**11.4 Assembling the Tubing / Heated Tubing and Mask**

(1) Connect one end of the tubing to the air outlet of the device, as shown in Fig. 11-5.

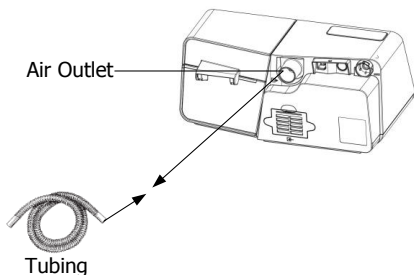


Fig. 11-5

(2) Connect the heated tubing joint to the air outlet of the device, and then insert the power plug into the heated tubing port on the back of the device, as shown in Fig. 11-6.

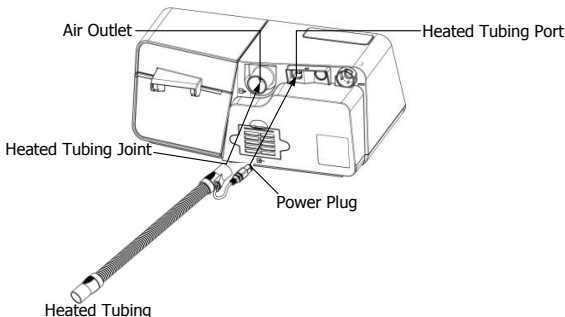



Fig. 11-6

If the heated tubing is connected correctly, the icon  will become a number in the Main Interface on the screen of the device, as shown in Fig. 11-7.

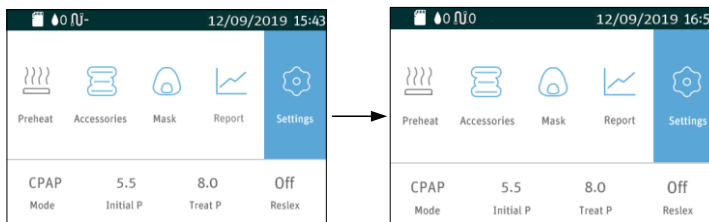




Fig. 11-7

Turn **the Knob**  to turn the heated tubing on or off and to adjust the heat level according to the instructions in the Patient Menu of the device.

There are five heat levels available, and the number of heat levels will appear on the main screen of the device. The number 3 next to the icon  indicates the heat is adjusted to Level 3, as shown in Fig. 11-8.

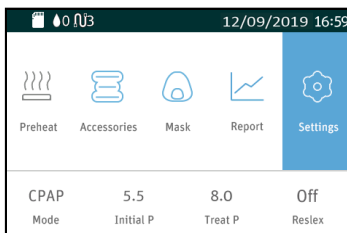


Fig. 11-8

(3) Connect the other end of the tubing to the mask according to the user manual of the mask. Wear the mask.

### ***WARNINGS!***

- If multiple persons are going to use the device (e.g., rental devices), a low-resistance, main flow bacteria filter should be installed in-line between the device and the tubing. Pressures must be verified by your home care provider when using spare or optional accessories.
- If you are using a mask with a built-in exhalation port, connect the mask's connector to the tubing.
- If you are using a mask with a separate exhalation port, connect the tubing to the exhalation port. Position the exhalation port so that the released air blows away from your face. Connect the mask's connector to the exhalation port.
- If you are using a full-face mask (a mask covering both your mouth and nose), the mask must be equipped with a safety (entrainment) valve.
- To minimize the risk of CO<sub>2</sub> rebreathing, the patient should observe the following

instructions:

- Use the accompanying tubing and mask provided by BMC.
- Do not wear the mask for more than a few minutes while the device is not operating.
- Use only masks with vent holes. Do not block or try to seal the vent holes in the exhalation port.

### ***11.5 Using Oxygen with the Device***

Oxygen may be added at the mask connection. Please observe the instructions listed below when using oxygen with the device.

#### ***WARNINGS!***

- Connect the oxygen tube to the oxygen inlet of the mask.
- The oxygen supply must comply with the local regulations for medical oxygen.
- Turn on the device before turning on the oxygen. Turn off the oxygen supply before turning off the device. Explanation of Warning: When the device is turned off, but the oxygen flow still remains, oxygen can accumulate inside the device's enclosure and pose a fire hazard. Turning off the oxygen supply before turning off the device will prevent oxygen accumulation in the device and reduce the risk of fire. This warning applies to CPAP devices.
- Oxygen supports combustion. Keep the device and the oxygen container away from heat, open flames, any oily substances, or other sources of ignition. DO NOT smoke in the area near G3 A20 / G3 C20 or the oxygen container.
- Sources of oxygen should be more than 1 m away from the device.
- When using oxygen with this system, a Pressure Valve must be placed in-line with the patient circuit between the device and the oxygen source. The pressure valve helps prevent the backflow of oxygen from the patient circuit into the device when the unit is off. Failure to use the pressure valve could result in a fire hazard.
- Do not connect the device to an unregulated or high-pressure oxygen source. The pressure of oxygen source does not exceed the working pressure of the device.

### ***11.6 Inserting the SD Card (Only for the device that equipped with SD card)***

Insert the SD card into the SD Card Slot, as shown in Fig. 11-9.

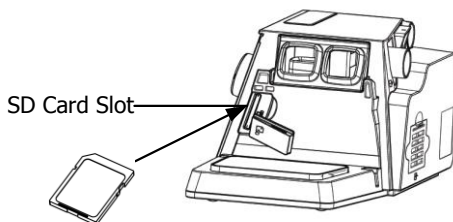




Fig. 11-9


If the SD card is inserted correctly, a symbol  indicating correct insertion will appear on the screen of the device.

If the SD card is inserted incorrectly, a symbol  indicating incorrect insertion will appear on the screen of the device.

### **CAUTIONS!**

- If no SD card is inserted, neither of the symbols will appear on the screen of the device.
- To avoid data loss or any damage to the SD card, the SD card can only be removed after the device stops delivering air.

## **11.7 Starting Treatment**

Connect the device to a power outlet, press **the Start / Stop** , and the device will start delivering air.

### **WARNINGS!**

- Be sure to follow your physician's instructions on adjusting the settings! To order any accessories not included with the device, contact your equipment supplier.
- DO NOT connect any ancillary equipment to the device unless recommended by BMC or your physician. If you suffer from chest discomfort, shortness of breath, stomach bloating, or severe headache when using the device, contact your physician or qualified medical personnel immediately.

## **12. Routine Use**

### **12.1 Connecting the Tubing**

Connect the power cord, power adapter, and tubing properly in accordance with the instructions in the First Time Setup (Chapter 11). Connect the mask and headgear according to the user manual of the mask.


### **CAUTION!**

- Before each use, examine the tubing for any damage or foreign object. If necessary, clean the tubing to remove the foreign object. Replace any damaged tubing. Make sure that the mask does not leak.


### **12.2 Adjusting the Tubing**

Lie down on your bed, and adjust the tubing so it is free to move if you turn over during sleep. Adjust the mask and headgear until you have a comfortable fit and until there is no airflow leakage around the mask.

### **12.3 Turning on the Airflow**

Press **the Start / Stop Button**  to turn on the airflow. The screen will display treatment pressure and other information.

## 12.4 Heating the Water

Pay attention to the number next to the icon  when using the humidifier. The number indicates the On / Off state of the humidifier. It is off when the number next to the icon is 0.

### CAUTION!

- Observe the water level in the water chamber before using the humidifier. Make sure there is sufficient water in the water chamber, and avoid heating the device with an empty water chamber.




## 12.5 Using the Ramp Feature

Every time the feature is enabled, the pressure will drop to the initial pressure, and then gradually rise to the prescribed treatment pressure according to the preset ramp time, so as to make it easy for the patient to fall asleep. The screen displays a real-time countdown of the remaining ramp time in minutes.

### CAUTIONS!

- You can use the ramp feature as often as you wish during sleep.
- The ramp feature is not prescribed for all users.

## 12.6 Accessing the iCode

After the device is powered on, move the cursor to the icon  by turning **the Knob** , as shown in Fig. 12-1. Access the iCode information by pressing **the Knob** , the screen displays the iCode Interface, as shown in Fig. 12-2.

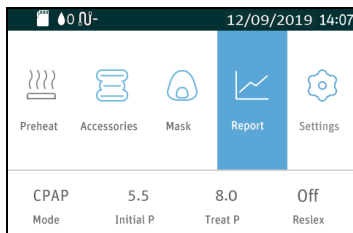


Fig. 12-1

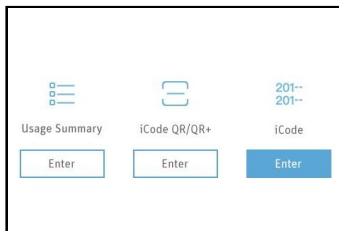



Fig. 12-2

## 12.7 Turning the Device Off

Take off the mask and headgear, press the **Start / Stop Button** , and the device will stop delivering air. Disconnect the power cord from the power outlet to turn off the device.

### **CAUTION!**

- Do not position the device where it is difficult to disconnect the device.

## 13. Heated Humidifier

Humidifiers can be obtained from your home care provider. Humidifiers can may reduce nasal dryness and irritation by adding moisture (and heat if applicable) to the airflow.

### 13.1 Filling the Water Chamber

#### 13.1.1 Removing the Water Chamber

Press down the water chamber, and then remove it, as shown in Fig. 13-1.

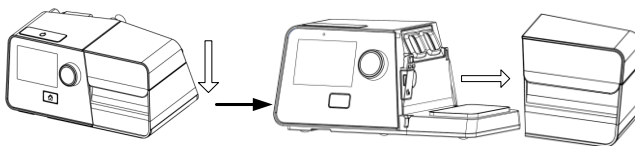


Fig. 13-1

### **WARNING!**

- Turn the device off and allow the heating plate and water to cool for approximately 15 minutes.

#### 13.1.2 Filling the Water

(1) Open the cap, as shown in Fig. 13-2, and fill the water chamber with approximately 360 ml of water, as shown in Fig. 13-3. Make sure that the water does not exceed the maximum water level line.

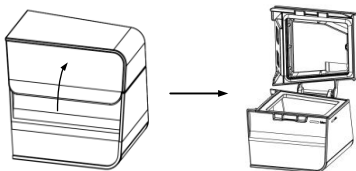


Fig. 13-2

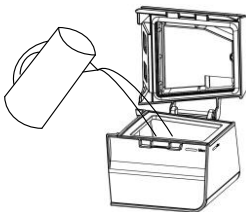


Fig. 13-3

(2) Open the cap, and fill the water chamber with approximately 360 ml of water, as shown in Fig. 13-4. Make sure that the water does not exceed the maximum water level line.

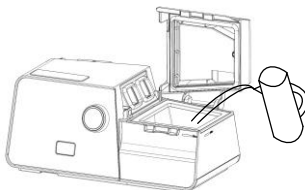


Fig. 13-4

***WARNING!***

- Change water before every use and do not surpass the maximum water level line.

***CAUTIONS!***

- Empty the water chamber when the heated humidifier is not in use.
- Distilled water is recommended.

***IMPORTANT TIP!***

- It is not necessary to remove the water chamber from the device. The users can open the cap of the water chamber with it being attached to the device to fill it with water.

***13.1.3 Putting the Water Chamber back***

Close the cap when the water chamber is filled with water, as shown in Fig. 13-5, and put it back to the device, as shown in Fig. 13-6.

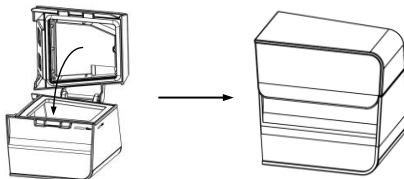


Fig. 13-5

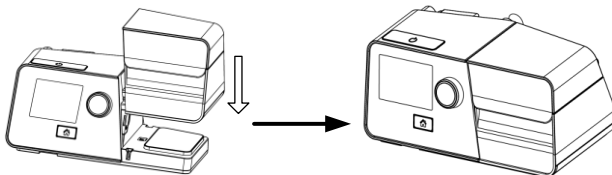


Fig. 13-6

**WARNING!**

- For safety, the device must be placed on a flat surface below the height of the patient's head when he is lying on a bed, so that the condensation flows back to the water chamber rather than remaining in the tubing which can cause droplet spraying.

**CAUTIONS!**

- Avoid moving or tilting the device when the water chamber has water in it.
- Take precautions to protect furniture from water damage.

**13.2 Emptying the Water Chamber**

- (1) **Removing the water chamber** according to instructions in 13.1.1.
- (2) **Emptying the water chamber:** Open the cap, as shown in Fig. 13-7, and pour any remaining water out of the water chamber.

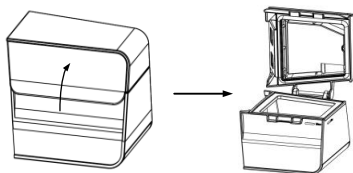



Fig. 13-7

**CAUTION!**

- Empty and air-dry the water chamber when the device is not in use.
- (3) **Putting the water chamber** back according to instructions in 13.1.3.

**13.3 Setting the Humidity Level**

After the device is powered on, turn **the Knob**  to turn the heated humidifier on or off and to adjust the humidity level according to instructions in the Patient Menu of the device.

There are five humidity levels available, and the number of humidity level will appear on the screen of the device. The number 2 next to the icon  indicates that the humidity is adjusted to Level 2, as shown in Fig. 13-8. The water temperature in the water chamber is maintained at a constant set level.



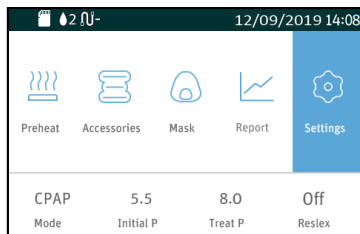


Fig. 13-8

***WARNING!***

- Do not touch the heating plate of the device when it is in operation, otherwise you may get burned. Turn off the humidifier when the heated humidifier is not in use.

***CAUTIONS!***

- Generally speaking, the humidity level inside the mask is low when the water temperature is low.
- The greater the difference between the temperature inside the air tubing and the room temperature, the more likely condensation will occur in the tubing.
- If there is only a small amount of condensed water droplets in the tubing in the morning after treatment, it means that the humidity level is appropriate; if there is a large amount of condensed water droplets inside the tubing and / or the mask, the humidity level is too high and should be set lower. Nasal dryness means that the humidity level is too low and should be set higher.

***14. Using the SpO<sub>2</sub> Kit***

The SpO<sub>2</sub> Kit consists of **SpO<sub>2</sub> Probe** and **Connector**, as shown in Fig. 14-1.

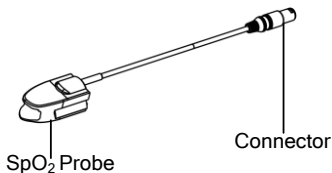


Fig. 14-1

***14.1 Connecting the SpO<sub>2</sub> Kit to the Device***

- (1) Insert the SpO<sub>2</sub> Kit connector into the **SpO<sub>2</sub> Kit Port** of the device, as shown in Fig. 14-2.

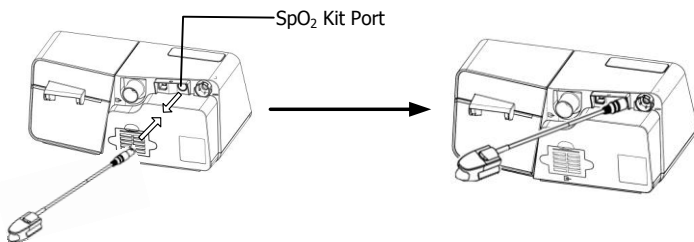


Fig. 14-2

(2) After the device is powered on, start the device, the screen of the device then displays the Main Interface shown in Fig. 14-3. The patient's blood oxygen saturation and pulse rate can be clearly seen during the course of treatment.

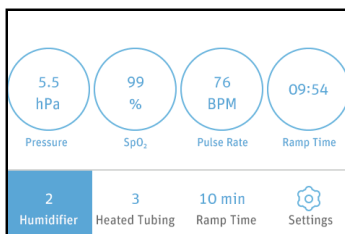


Fig. 14-3

## 14.2 Removing the SpO<sub>2</sub> Kit from the Device

Disconnect the SpO<sub>2</sub> Kit connector from the **SpO<sub>2</sub> Kit Port**, as shown in Fig. 14-4.

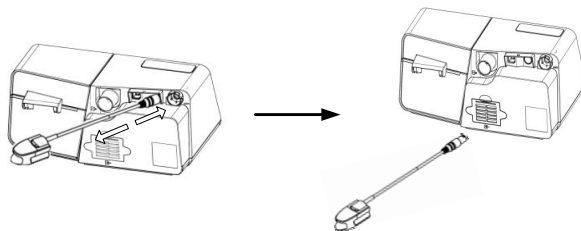


Fig. 14-4

The SpO<sub>2</sub> Kit is intended to be used for continuous, non-invasive functional arterial oxygen saturation (SpO<sub>2</sub>) and pulse rate monitoring for adults weighting greater than 40 kg. The SpO<sub>2</sub> Kit is ready to use immediately when you connect it to the device via the SpO<sub>2</sub> Kit Port.

The model of the SpO<sub>2</sub> Kit is SG-300. The SpO<sub>2</sub> Kit is calibrated to display FUNCTIONAL OXYGEN SATURATION.

Attach its sensor to the patient's index finger or any other finger.

The sampling rate of the SpO<sub>2</sub> signal is about 50 Hz, and the update rate of the frame is 1 Hz. The value of SpO<sub>2</sub> and PR is calculated by the average of the former eight pulse waveforms. If the SpO<sub>2</sub> Kit is in an abnormal state, the value of SpO<sub>2</sub> will be blank or 00.

***CAUTION!***

- The device has no SpO<sub>2</sub> Alert, and the values of blood oxygen saturation and pulse rate are only used as the reference for treatment effectiveness evaluation.

***WARNINGS!***

- Change the measurement point regularly according to the patient's conditions after prolonged use. Change the measurement point, check the patient's skin integrity and circulatory conditions, and make the right adjustments at least every three hours.
- Excessive ambient light, excessive motion, use of intravascular dyes, poorly perfused finger, extreme finger sizes or improper placement may degrade the SpO<sub>2</sub> Kit's performance or affect the accuracy of the measurement.
- Nail polish or false nails should be removed before the finger sensor is used, or it may cause erroneous measurements results.
- Overly low blood pressure, overly low systolic blood pressure, severe anemia, or hypothermia may cause erroneous measurements results.
- The SpO<sub>2</sub> Kit is designed for use with the device only.
- Using an incorrect SpO<sub>2</sub> Kit that the difference in the peak wavelength range of the emitted light may cause erroneous measurement data.
- Verify the compatibility of the device and SpO<sub>2</sub> Kit before use, otherwise it may cause degradation of the device performance and even injury to the patient.
- Misapplication of a SpO<sub>2</sub> Kit with excessive pressure for prolonged periods can induce pressure injury.
- A FUNCTIONAL TESTER cannot be used to assess the ACCURACY of the SpO<sub>2</sub> Kit.
- Do not use the SpO<sub>2</sub> Kit during MRI scanning.
- Do not use the SpO<sub>2</sub> Kit if it appears damaged.
- Do not immerse the SpO<sub>2</sub> Kit as it causes short.
- SpO<sub>2</sub> Kit should only be connected or disconnected with the device unplugged or powered off.

## ***15. Connecting to GPRS or WiFi Network***

### ***15.1 Connecting to GPRS Network***

(1) Turn on the device. The device screen displays the Main Interface shown in Fig. 15-1.

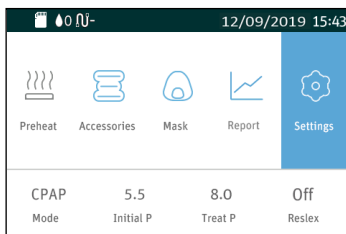


Fig. 15-1

(2) The device starts searching for GPRS signals in a few seconds. Once a GPRS signal is found, the module will automatically connect to it, and a GPRS icon will appear in the status bar at the top of the device screen.

There are four different GPRS icons, as listed in Table 2:

Table 2 Description of GPRS Icons

Icon	Description
	Strong GPRS signal
	Moderate GPRS signal
	Weak GPRS signal
	No GPRS signal found

**Notes:**

- (1) When the GPRS signal is weak, data transmission may become slow and even stop.
- (2) The Cellular Module will keep searching for GPRS signals until one is found.

If the GPRS signal is strong, the GPRS icon will appear on the screen, as shown in Fig. 15-2 (the GPRS icons of different strength appear in a similar way).

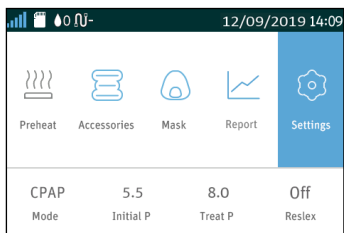


Fig. 15-2

No signal icon will appear on the screen, if the Module is connected to the device improperly or if the Module is not working properly.

**WARNING!**

- To ensure successful data transmission through the Cellular Module, computers, televisions, radios or similar devices should not be placed near the Cellular Module.

## 15.2 Connecting to WiFi Network




(1) Turn on the device. The device screen displays the Main Screen shown in Fig. 15-1. Turn **the Knob**  until the cursor is on the icon , and the screen displays the Initial Setup Interface shown in Fig. 15-3. Press **the Knob** , and the first option on the Initial Setup Interface turns blue, as shown in Fig. 15-4.



Fig. 15-3

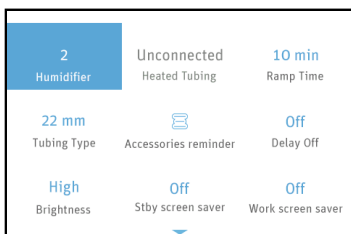




Fig. 15-4

(2) Turn **the Knob**  until the cursor stays on the **"WiFi"** option, as shown in Fig. 15-5. Press **the Knob** , and the interface shown in Fig. 15-6 appears. Wait for 0-5 seconds to automatically access the **"WiFi"** setup interface.

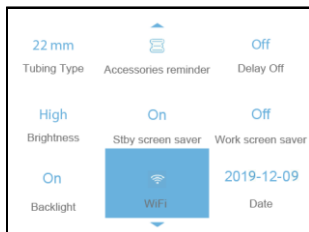


Fig. 15-5

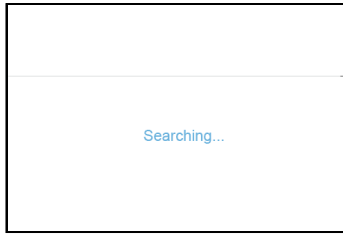


Fig. 15-6



(3) The **WiFi** setup interface displays a certain number of available WiFi networks in a random order, as shown in Fig. 15-7. If a page turning symbol  appears below the WiFi network list, it indicates that when the cursor is on the last WiFi network on that page, the user can turn **the Knob**  to the right to see the remaining WiFi networks, as shown in Fig. 15-8. If the desired WiFi network is not listed, disconnect the device from the power supply, connect it to the power supply again, and then repeat steps (1) (2) to search for WiFi networks. Keep searching until the desired WiFi network is found.



Fig. 15-7

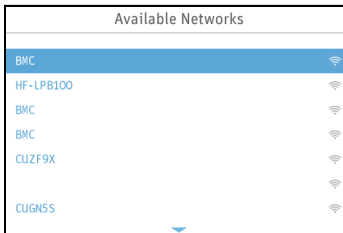


Fig. 15-8

Note:   are page turning symbols.

If no WiFi networks are found, the **WiFi** setup interface displays **No WiFi signal available**, as shown in Fig. 15-9.

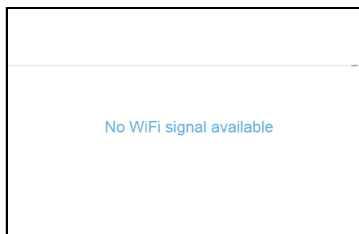








Fig. 15-9

(4) After the desired WiFi network is found, press **the Knob** . Turn **the Knob**  to select this WiFi network. Press **the Knob**  to access the WiFi password input interface. The password is at least 8 characters in length, and can contain uppercase and lowercase English letters and digits 0 ~ 9, as shown in Fig. 15-10. After the password is entered, turn **the Knob**  until the cursor stays on the **Confirmation Key** . Press **the Knob**  to connect to the WiFi network, as shown in Fig. 15-11. At this moment, the user must not perform any operations, and should wait 0 ~ 15 seconds for the connection result.

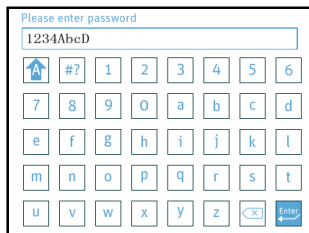


Fig. 15-10

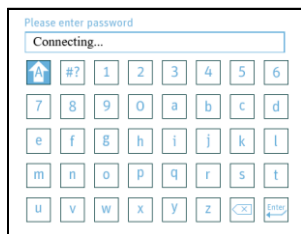



Fig. 15-11

If the WiFi network is connected successfully, the screen will return to the "WiFi" setup interface, and the WiFi symbol  color will become blue, as shown in Fig. 15-12. If connection to the WiFi network fails, the password input box displays "Connection Failed!" as shown in Fig. 15-13.

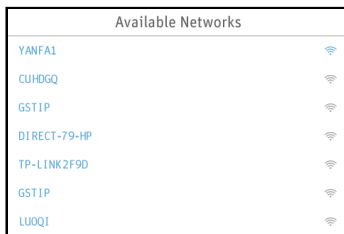


Fig. 15-12

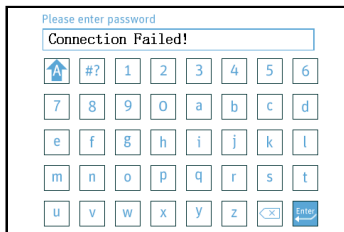





Fig. 15-13

To switch from one connected WiFi network to another, select the desired new network and enter the correct password to connect to it.

If the desired WiFi network is a public network that does not require a password, turn **the Knob**  directly after accessing the password input interface until the cursor stays on the **Confirmation Key** . Press **the Knob**  to connect to the network.

## 16. Navigating the Patient Menu

### 16.1 Steps to Navigate the Patient Menu

#### 16.1.1 Accessing the Main Interface

Connect the power cord and power adapter properly. The screen displays the Main Interface shown in Fig. 16-1.

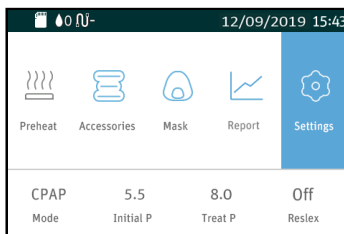


Fig. 16-1

**Note:** The above interface is only applicable to devices that do not have the modes of SmartC or SmartA activated. If SmartC or SmartA is enabled, the symbol **S** will appear in the status bar at the top of the screen, as shown in Fig. 16-2.



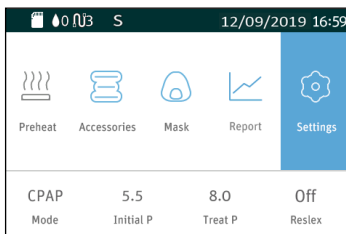









Fig. 16-2

The first icon  on the upper part of the screen is the Preheat Function Icon, the second icon  indicates Accessories, the third icon  is the Mask Setup Icon, the fourth icon  is the Report Interface Icon, the fifth icon  is the Initial Setup Icon. As you turn **the Knob** , the cursor will switch among the five icons.

**Note:** As the humidity is turned off, the Preheat Function Icon  will turn gray, as shown in Fig. 16-2.

### 16.1.2 Bringing up the Initial Setup Interface




After the screen displays the Main Interface shown in Fig. 16-1, turn **the Knob** . When the cursor is on the icon , press **the Knob** , and the screen displays the Initial Setup Interface of the Patient Menu, as shown in Fig. 16-3.



Fig. 16-3

**Note:** The **Heated Tubing** option can only be adjusted when the device is connected to a heated tubing, as shown in Fig. 16-4.

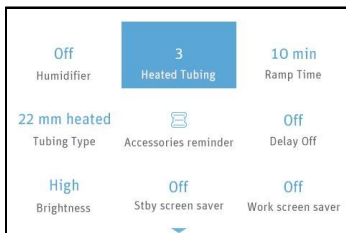




Fig. 16-4

### 16.1.3 Selecting Options

As you turn **the Knob**  clockwise, the cursor moves from one option to another. When the cursor is on a certain option, press **the Knob** , and the color of the option will change, meaning that the option is now adjustable, as shown in Fig. 16-5 by the **Humidifier** option.

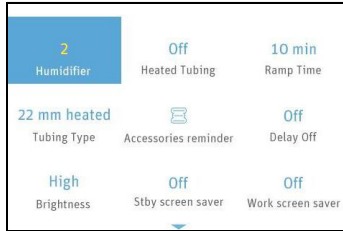





Fig. 16-5

### 16.1.4 Adjusting Options

Adjust the option by turning **the Knob** . As shown in Fig. 16-6, the **Humidifier** option is selected. As you turn **the Knob**  clockwise, the number increases, indicating a higher humidity level. As you turn **the Knob**  counterclockwise, the number decreases, indicating a lower humidity level, as shown in Fig. 16-6.

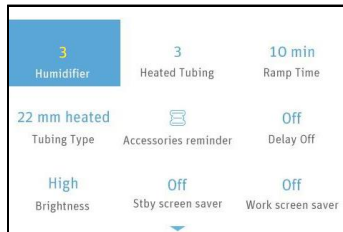


Fig. 16-6

### 16.1.5 Confirming Adjustments



Press **the Knob**  to confirm your adjustment of a particular option. The option is then displayed in white, as shown in Fig. 16-7.



Fig. 16-7

### 16.1.6 Turning Pages

When the cursor is on **Work screen saver**, the last option shown in Fig. 16-7, the remaining options will appear on a new page if you continue to turn **the Knob**  clockwise, as shown in Fig. 16-8.

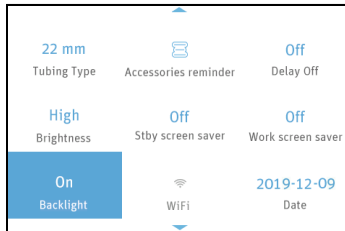








Fig. 16-8




Note:   are page turning symbols.

### 16.1.7 Exiting the Patient Menu

The users can press **the Home button**  to return to the Main Interface shown in Fig. 16-1.

## 16.2 Options in the Patient Menu and Corresponding Descriptions

Option	Range	Description
Humidifier	Off, Auto, 1 ~ 5	There are five humidity levels available. As the number increases, the humidity rises accordingly. "Off" means the humidifier is turned off.
Preheat	On / Off	Set humidifier to preheat by adjusting this option. This feature is automatically turned off after 30 minutes.
Reslex	Off, 1 ~ 3	This feature enables the device to automatically reduce the treatment pressure when the patient exhales, so as to make the patient more comfortable. The higher the number, the more pressure the device reduces. "Off" means this feature is disabled.
Heated Tubing	Off, 1 ~ 5	There are five heat levels available. As the number increases, the heat rises accordingly. "Off" means the heat is turned off. Note: <b>Heated Tubing</b> is displayed in the patient menu only when a heated tubing is connected.
Ramp Time	Auto, 0 ~ Max Ramp	In order to increase comfort and help the patient fall asleep easily, the pressure can be increased gradually, when the Ramp feature is enabled. The ramp time during which the initial pressure rises to the preset treatment pressure can be adjusted. As you turn <b>the Knob</b>  to the nearest point, the number increases or decreases by five seconds. The screen displays a real-time countdown of the remaining ramp time in seconds.
Delay Off	On / Off	When the humidifier is on, this feature allows the airflow to continue for about 15 minutes at a low pressure (about 2 hPa) after you press <b>the Start / Stop button</b>  to discontinue the treatment. In this process, the vapor left in the water chamber will be blown away to avoid any damage to the device. When this feature is set to "Off", which means it is disabled, the device will stop delivering air instantly after you press <b>the Start / Stop button</b>  .
Date	2000-01-01 — 2099-12-31	Set date by adjusting this option.
Date Format	yy mm dd / mm dd yy / dd mm yy	Turn <b>the Knob</b>  to choose among three date formats.

Time	00:00 — 23:59	Set time by adjusting this option.
Time Format	12-hour / 24-hour	Turn <b>the Knob</b>  to choose between two time formats.
Brightness	High / Low	Setting the brightness of the screen by adjusting this option.
Backlight	Auto / On	The backlight of the LCD screen can be set to "Auto" or "On". Turn <b>the Knob</b>  to choose between the two modes. If it is set to "Auto", the backlight will be turned off automatically after 30 seconds of inactivity. If it is set to "On", the backlight will be always on.
Mask Type	Full Face; Nasal; Nasal Pillows; Other	There are three mask types available, Full Face (full-face mask), Nasal (nasal mask), and Nasal Pillows (nasal pillow mask). The patient can choose other suitable masks as well. When selecting masks other than the above three types of BMC masks, the patient can set the mask type as Other.
Mask Fitting Test	Start	Test whether the mask is worn correctly, the screen will display the "great" icon if it is qualified, otherwise the screen will display "need to adjust".
iCode	iCode, iCode QR, iCode QR+	iCode provides access to the patient's compliance data during a recent time period. The iCode mode displays data in number sequence, and the iCode QR / iCode QR+ mode displays data in two-dimensional codes.
WiFi	—	Connect to WiFi network by adjusting this option.
Used Time	0 ~ 50000 h	Use Time displays how long has the device been used by the patient. The use time can be erased.
Accessories	—	Reset the use time of the filter, tubing and mask.
Accessories reminder	30 days/60 days/180 days/365 days /Off	This function is used to set filter reminder, tube reminder and mask reminder. After opening, can set the use time of filter, tube and mask.
Language	English/Español /Português/ Deutsch/ 中文(简体) / Français/ Polski/Italiana/ Türk/Rусский/ Nederlands/ Ελληνικά/ 한국어	Turn <b>the Knob</b>  to choose among these languages available. The setting is only valid when the device is inserted a SD card with language pack.

About	—	Displays related information of the device (Model, SN, Version, ID). This is read-only and cannot be edited.
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## 17. Alert

Alert Message	Description
Power Failure!!!	An audible alert will sound in 6 s if the device is accidentally disconnected from power supply when it is delivering air. Note: (1) The alert will not sound if power failure occurs when the device is in standby state. (2) No alert message will appear on the screen during a power failure.
Device Fault!!!	An audible alert will sound if no airflow comes out of the machine; the screen will display " <b>Device Fault!!!</b> ".
Leak!!	When the airflow is on, an audible alert will sound if the air leak rate is excessive; the screen will display " <b>Leak!!</b> ".
Low Input Voltage!!	If the voltage supplied by power adaptor is lower than 22 V, an audible alert will sound and the screen will display " <b>Low Input Voltage!!</b> ".
Humidifier Failure!!	When humidifier is applied, an audible alert will sound when the humidifier fails to work; the screen will display " <b>Humidifier Failure!!</b> ".
Please change filter!	When the Filter reminder feature is enabled, an audible alert will sound if the preset replacement time is reached but the air filter is not replaced; the screen will display " <b>Please change filter!</b> ".
Please replace tubing!	When the tubing reminder feature is enabled, an audible alert will sound if the preset replacement time is reached but the tubing; the screen will display " <b>Please replace tubing!</b> ".
Please replace mask!	When the Mask reminder feature is enabled, an audible alert will sound if the preset replacement time is reached but the mask is not replaced; the screen will display " <b>Please replace mask!</b> ".
SD Card Full!	The screen will display " <b>SD Card Full!</b> " if the SD card has reached its maximum capacity.
Reinsert SD card!	The screen will display " <b>Reinsert SD card!</b> " if the SD card fails to work.

## ***18. Cleaning and Disinfection***

### ***WARNINGS!***

- Regular cleaning of the device and its accessories is very important for the prevention of respiratory infections.
- To avoid electric shock, always unplug the device before cleaning.
- Use mild soap that is nontoxic to humans.
- Follow the manufacturer's instructions on cleaning the mask and tubing and on determining the frequency of cleaning.
- Before cleaning, check that the device is disconnected from the power supply, whether the power cord is unplugged, and whether the water chamber of the device has cooled down. Make sure that the heating plate has cooled down to room temperature, so that you do not get burned.
- Do not open or modify the device. There are no user serviceable parts inside. Repairs and service should only be performed by an authorized service agent.
- The device shall not be serviced or maintained while a patient is using it.

### ***CAUTIONS!***

- Overheating of the materials could lead to early fatigue of the materials.
- Do not use solutions containing chlorinated lime, chlorine, or aromatic to clean the device and its accessories. Liquid soap containing moisturizing agents or antimicrobials should not be used either. These solutions may harden cleaned materials or reduce their lifespan.
- Do not clean or dry the device and its accessories when the temperature is above 80°C (176°F). High temperatures could reduce product life.
- Do not immerse the device in any fluids.

### ***18.1 Cleaning the Mask and Headgear***

For details, refer to the cleaning instructions in the user manual for the mask.

### ***18.2 Cleaning the SpO<sub>2</sub> Kit***

Wipe the surface of the SpO<sub>2</sub> Kit with a clean, soft, and slightly damp cloth.

### ***CAUTION!***

- It is recommended to clean the SpO<sub>2</sub> Kit once a week.

### 18.3 Cleaning the Water Chamber

(1) **Opening the Water Chamber:** Open the cap of the water chamber, as shown in Fig. 18-1.

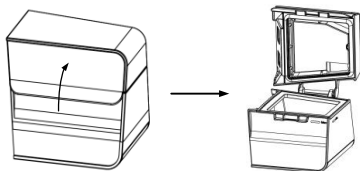


Fig. 18-1

(2) **Cleaning the Water Chamber:** You may also clean the water chamber with a soft cloth which does not scratch the water chamber (dip the soft cloth in liquid soap if necessary), rinse it thoroughly, and then wipe it dry with a soft cloth.

(3) **Putting the Water Chamber back** according to instructions in 13.1.3.

#### **WARNINGS!**

- Emptying and cleaning the water chamber daily will help prevent mold and bacteria growth.
- Allow the water in the chamber to cool down to room temperature before removing it from the device.

#### **CAUTIONS!**

- Clean the water chamber only after the water in it cools. Make sure that no water enters the device.
- After cleaning, rinse the water chamber thoroughly in clean water to make sure that no soap residue is left; then wipe it dry with a lint-free cloth, so as to prevent calcareous accumulations.
- Check the water chamber for any leak or damage. Replace the water chamber if there is any damage.
- It is recommended to do daily cleaning of the water chamber.

### 18.4 Cleaning the Transfer Box

(1) **Removing the Transfer Box:** First remove the water chamber from the device, then remove the transfer box, as shown in Fig. 18-2.

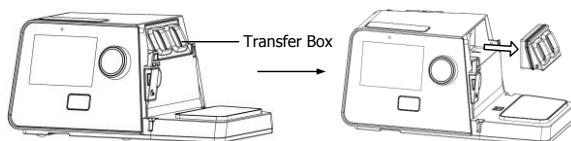


Fig. 18-2



(2) **Cleaning the Transfer Box:** Rinse the transfer box thoroughly in clean water. You may also clean the transfer box with a soft cloth which will not scratch it (dip the soft cloth in liquid soap if necessary). Rinse the transfer box thoroughly, and then wipe it dry with a soft cloth.

(3) **Putting the Transfer Box back:** as shown in Fig. 18-3.

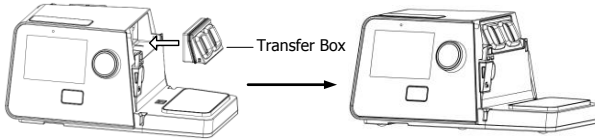


Fig. 18-3

**CAUTION!**

- It is recommended to clean the transfer box once a week.

### **18.5 Cleaning the Enclosure**

Wipe the surface of the device with a soft, slightly damp cloth.

**CAUTIONS!**

- The device can only be used after the enclosure is dry, so that no moisture enters the device.
- It is recommended to clean the enclosure once a week.

### **18.6 Cleaning the Tubing**

- (1) Remove the tubing from the device and mask before cleaning.
- (2) Clean the tubing in warm water which contains washing liquid, and then rinse it in clean water thoroughly.
- (3) After cleaning, air-dry the tubing in a cool, well-ventilated area, and avoid direct sunlight. It takes approximately 30 minutes to completely air-dry the tubing. Check whether the tubing is completely dry before re-use.

**CAUTION!**

- It is recommended to clean the tubing once a week.

### **18.7 Replacing the Air Filter / PM2.5 Filter**

(1) Attach the air filter to the filter cap, as shown in Fig. 18-4.

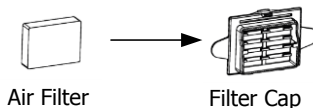


Fig. 18-4

(2) Install the filter cap containing the air filter to the device, as shown in Fig. 18-5.

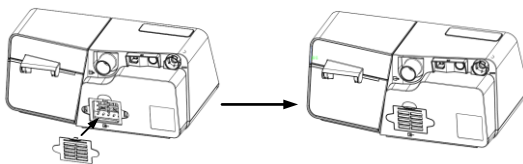


Fig. 18-5

(3) Change the air filter and filter cap to the PM2.5 filter, as shown in Fig. 18-6.

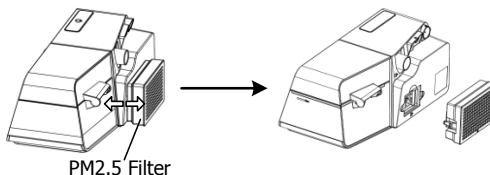


Fig. 18-6

### **CAUTIONS!**

- To avoid material damage, do not place the spare air filter / PM2.5 Filter in direct sunlight, humid environments, or temperatures below the freezing point. The air filter / PM2.5 Filter should be replaced every 6 months (It may be replaced more frequently based on actual sanitary conditions).
- Operating the device with a dirty air filter may stop it from working properly and may cause damage to the device.

## **18.8 Disinfection**

Generally speaking, if you have strictly followed the above cleaning instructions, you do not have to disinfect the device and / or the water chamber. If the device is contaminated or used in clinical trials, you can purchase disinfectants from a home medical equipment company to disinfect the device.

### **Disinfection of the Water Chamber:**

Prior to disinfection, clean the water chamber in accordance with Section 18.3 "Cleaning the Water Chamber". The disinfection methods is as follows:

- (1) Heat disinfection: Soak the water chamber in tap water at  $75^{\circ}\text{C}\pm 2^{\circ}\text{C}$  for 30 minutes for disinfection.
- (2) Use mild disinfectants.

### **Disinfection of the SpO<sub>2</sub> Probe:**

Before disinfection, clean the SpO<sub>2</sub> probe according to Section 18.2 "Cleaning the SpO<sub>2</sub> Kit".

Before each use, disinfect the probe by wiping it with soft gauze which was soaked in 75% medical alcohol or 70% isopropyl alcohol solution. After disinfection, wipe the surface of the probe with a clean, soft, and slightly damp cloth, and leave it to air dry.

***WARNINGS!***

- After disinfection, rinse any disinfected component in clean water thoroughly, especially components in close contact with the patient such as the mask, headgear, and tubing, so as to prevent disinfectant residuals from damaging the skin or respiratory tract or causing allergies.
- Sterilization of the device and its components other than that is recommended is not permitted.
- In order to prevent cross-infection of patients or contamination of equipment, BSF (Breathing System Filter) that meets ISO 23328-1:2003 and ISO 23328-2:2002 standards and has medical device registration certificates can be used.
  - (1) Different patients need to replace a new BSF before using this equipment.
  - (2) When using the BSF, please install and operate it according to the instructions of the BSF, and pay attention to adjust the output pressure setting of the device according to resistance of the BSF to ensure delivering normal treatment pressure.
  - (3) Atomization or humidification will increase the resistance of the BSF. The operator must often monitor the resistance increase and blockage of the BSF to ensure delivering normal treatment pressure.
- If you use ozone or other cleaning and disinfection methods that are not recommended by BMC, BMC will not be able to verify the safety or performance of the equipment.

***CAUTIONS!***

- Disinfectants tend to damage the materials and reduce the life of components. Try to select the appropriate disinfectant, and follow the disinfectant manufacturer's instructions and recommendations.
- After disinfection, check the disinfected component for any signs of damage. Replace any damaged component immediately.

## ***19. Traveling with the Device***

- (1) Use the BMC carrying case to carry the device and accessories along with you. Do not put them in your checked baggage.
- (2) The device operates on power supplies of 100 - 240 V and 50 / 60 Hz, and is suitable for use in any country in the world. No special adjustment is required, but you will need to find out the types of the power sockets at your destination. If necessary, bring a power socket adaptor, which can be purchased at electronics stores.
- (3) Remember to bring a spare air filter and emergency documentation (filled and signed by your physician) about the device. If you plan to travel by air, remember to bring the multilingual emergency documentation about the respiratory therapy, in case that the border

and customs officers in your destination country inspect the device. With emergency documentation, you can prove to them that it is a medical device.

(4) Security Stations: For convenience at security stations, there is a note on the bottom of the device stating that it is medical device. It may be helpful to bring this manual with you to help security personnel understand the device.

### ***CAUTIONS!***

- Empty the water chamber before packing the device for your trip to prevent any remaining water from entering the device.
- Using the device at an incorrect elevation altitude setting may result in higher airflow pressures than the specified setting. Always verify the elevation altitude setting when traveling or relocating.
- If the device is used when the atmospheric pressure is outside the specified range (See Section 5), the accuracy of the leak alert will be affected.

## ***20. Transferring the Device to Another Patient***

If the device is transferred to another patient, components in close contact with the previous user, including the mask, headgear, tubing, and air filter, should be replaced to prevent cross-infection.

## ***21. Reordering***

Contact your home care provider to order accessories or replacement filters.

The device does not require routine service.

### ***WARNINGS!***

- If you notice any unexplained changes in the performance of the device, if it is making unusual or harsh sounds, if it has been dropped or mishandled, if the enclosure is broken, or if water has entered the enclosure, please stop using the device and contact your home care provider.
- If the device fails to work properly, contact your home care provider immediately. Never attempt to open the enclosure of the device. Repairs and adjustments must be performed by BMC -authorized service personnel only. Unauthorized service could cause injury, invalidate the warranty, or result in costly damage.
- If necessary, contact your local authorized dealer or BMC Medical Co., Ltd., for technical support and documents.

## ***22. Technical Support***

Please contact BMC directly if you need the circuit diagram of the device and the list of components for certain purposes such as maintenance or connection to other equipment. BMC will provide the circuit diagram and / or other technical documents in whole or in part according to your needs.

## 23. Disposal

When the device reaches the end of its service life, dispose of the device and packaging in accordance with local laws and regulations.

## 24. Troubleshooting

The table below lists common problems you may encounter with the device and possible solutions to resolve them. If none of the corrective actions solve the problem, please contact your home care provider.

### 24.1 Common Problems in Patients and Corresponding Solutions

Problem	Possible Cause	Solution (s)
Dry, cold, runny, and blocked nose; having a cold	The nose reacts to the airflow and cold. Due to fast airflow, the air becomes cold, resulting in the irritation of nasal mucosa and subsequent dryness and swelling.	Increase the humidity setting of the device. Contact your physician, and continue treatment unless the physician suggests the opposite.
Dry mouth and throat	It may be because the patient sleeps with the mouth open, and the pressurized air flows out through the mouth, causing dryness of the nasal passage and throat.	Use a chin strap to prevent the mouth from opening during sleep, or use a full-face mask. Contact your physician for details.
Eye irritation	The mask may not be the correct size or type, or the mask may be incorrectly positioned resulting in an air leak.	Narrow the distance between the forehead support of the mask and the forehead. Note that adjusting the mask too tight may leave marks on the patient's face. Add additional filling to the mask so it does not leak. Contact your equipment supplier for an appropriate mask. Add additional filling to the mask if necessary.
	Mask cushion (the soft part of the mask) hardens.	Replace the mask or mask cushion.
Facial reddening	The mask is too tight.	Loosen the headgear.
	The distance between the forehead support of the mask and the forehead is not correct.	Try a different distance. The angle and size of the forehead support differ according to the type of masks.

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution (s)</b>
Facial reddening	Wrong mask size.	Contract your equipment supplier for a correct-size mask.
	The patient is allergic to the materials of the mask.	Contact your physician and equipment supplier. Use a mask which is not made of natural rubber latex. Place a lining between the skin and mask.
Water in mask	When the humidifier is used, the humidified air tends to condense in the cold tubing and mask if the room temperature is low.	Turn the humidity setting down, or raise the room temperature. Place the tubing under the quilt, or use the tubing cover. Hang the tubing loosely, and make sure that the lowest part of the tubing should be lower than the patient's head.
Nasal, sinus, or ear pain	Sinus or middle ear inflammation.	Contact your physician immediately.
Discomfort due to inability to adapt to the treatment pressure	The patient will feel uncomfortable when the treatment pressure is higher than 13 hPa. However, the treatment pressure is determined by the patient's conditions, and the device will not be able to treat sleep apnea if the treatment pressure is set too low.	It takes a maximum of four weeks for the patient to adapt to pressurized air. Relax and breathe through the nose. If the problem still exists, contact your physician.
Obstructive sleep apnea symptoms recur	It may be because the patient sleeps with the mouth open, and the pressurized air flows out through the mouth, causing a blockage in the respiratory tract.	Use a chin strap to prevent the mouth from opening during sleep, or use a full-face mask. Contact your physician for details.
The device is too noisy	The tubing is not connected properly.	Reconnect the tubing properly.
Air delivered from the device is abnormally hot	The air inlet of the device may be partially blocked, leading to insufficient airflow into the device.	Replace the air filter (see 18.7 Replacing the Air Filter / PM2.5 Filter), and clean the air inlet.
		Place the device in an area where air flows freely, and make sure that the device is at least 20 centimeters away from the wall, curtain, or other things.

## 24.2 Common Problems in the Device and Corresponding Solutions

Problem	Possible Cause	Solution (s)
The device does not work when it is turned on	The Auto On / Off feature is enabled.	Take a few deep breaths with the mask on, and the device will start automatically.
	Power is not connected properly.	Ensure that the power cord, power adapter, and the device are connected properly.
	There is no voltage.	Check whether a power outage occurs by turning on a light or other means. If you are sure the fuse in the device is broken, contact your equipment supplier for repair.
	Cannot find any cause.	Contact your equipment supplier.
The device is working, but the pressure inside the mask differs from the set treatment pressure	The tubing is not connected properly.	Reconnect the tubing properly.
	There may be holes in the mask or pressure sensing tubing.	Contact your equipment supplier.
	It is a faulty device.	Contact your equipment supplier.
The device produces very low pressures	The air inlet of the device may be blocked.	Replace the air filter (see 18.7 Replacing the Air Filter / PM2.5 Filter), and clean the air inlet. Make sure the air inlet is unblocked.
	The treatment pressure has been changed accidentally.	Contact your physician.
	When the Ramp feature is enabled, it takes some time for the initial pressure to rise to the treatment pressure. This is normal.	If necessary, disable the Ramp feature, or set the ramp time shorter.
After the device is turned on, the screen displays intermittently, or displays nothing at all	The operating system of the device needs to be readjusted or restarted.	Unplug the power cord of the device, and re-plug it 20 seconds later.
The device is in standby, and will not start	The operating system of the device needs to be readjusted or restarted.	Unplug the power cord of the device, and re-plug it 20 seconds later.

## 25. EMC Requirements


<b>Guidance and manufacturer's declaration - electromagnetic emissions</b>		
The device is intended for use in the electromagnetic environment specified below. The user of the device should ensure that it is used in such an environment.		
<b>Emissions Test</b>	<b>Compliance</b>	<b>Electromagnetic Environment - Guidance</b>
RF emissions CISPR 11	Group 1	The device 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 CISPR 11	Class B	The device 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 IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

### ***WARNINGS!***

- The device should not be used in the vicinity or on the top of other electronic equipment such as cell phone, transceiver or radio control products. If you have to do so, the device should be observed to verify normal operation.
- The use of accessories and power cord which are not specified, with the exception of cables sold by the manufacturer of the equipment or system as replacement parts for internal components, may result in increased emissions or decreased immunity of the equipment or system.
- The device may be interfered with by other equipments, even if those equipments comply with CISPR EMISSION requirements.
- During the operation of the device, due to electrostatic interference, the following phenomena may occur: (1) Temporary loss of function or performance degradation, such as abnormal screen display, etc. The device will return to normal after being restarted; (2) Automatic restart of the device. These phenomena will not affect the normal use of the device, nor will they cause permanent performance degradation or loss of function of the device.



<b>Guidance and manufacturer's declaration - electromagnetic immunity</b>			
The device is intended for use in the electromagnetic environment specified below. The user of the device should make sure that it is used in such an environment.			
<b>Immunity Test</b>	<b>IEC 60601 Test Level</b>	<b>Compliance Level</b>	<b>Electromagnetic Environment - Guidance</b>
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floor 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	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment
Surge IEC 61000-4-5	±1 kV Line (s) to line (s)	±1 kV Line (s) to line (s)	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	0% $U_T$ ; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% $U_T$ ; 1 cycle 70% $U_T$ ; 25 / 30 cycle At 0° 0% $U_T$ ; 250 / 300 cycle	0% $U_T$ ; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% $U_T$ ; 1 cycle 70% $U_T$ ; 25 / 30 cycle At 0° 0% $U_T$ ; 250 / 300 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user of the device requires continued operation during power mains interruptions, it is recommended that the device be powered from an uninterruptible power supply or a battery
Power frequency (50 / 60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 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.			

<b>Guidance and manufacturer's declaration - electromagnetic immunity</b>			
The device is intended for use in the electromagnetic environment specified below. The user of the device should make sure that it is used in such an environment.			
<b>Immunity Test</b>	<b>IEC 60601 Test Level</b>	<b>Compliance Level</b>	<b>Electromagnetic Environment - Guidance</b>
Conducted RF IEC 61000-4-6	3 V 0.15 MHz ~ 80 MHz 6 V in ISM and amateur radio bands between 0.15 MHz and 80 MHz	3 V 0.15 MHz ~ 80 MHz 6 V in ISM and amateur radio bands between 0.15 MHz and 80 MHz	Portable and mobile RF communications equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. <b>Recommended separation distance</b> $d = 1.17\sqrt{p}$ $d = 0.35\sqrt{p}$ 80 MHz to 800 MHz $d = 0.70\sqrt{p}$ 800 MHz to 2.5 GHz 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 meters (m). Field strengths from fixed RF transmitter, as determined by an electromagnetic site survey, <sup>a</sup> should be less than the compliance level in each frequency range. <sup>b</sup> Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.7 GHz	10 V/m 80 MHz to 2.7 GHz	
Note 1: At 80 MHz and 800 MHz, the higher frequency range applied. Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
<sup>a</sup> 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 device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device. <sup>b</sup> Over the frequency range 150 kHz to 80 MHz, the field strengths should be less than 10 V/m.			

### Recommended separation distances between portable and mobile RF communications equipment and the device

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

Rated maximum output of transmitter W	150 kHz ~ 80 MHz $d = 1.17\sqrt{p}$	80 MHz ~ 800 MHz $d = 0.35\sqrt{p}$	800 MHz ~ 2.5 GHz $d = 0.70\sqrt{p}$
0.01	0.12	0.04	0.07
0.1	0.37	0.12	0.23
1	1.17	0.35	0.70
10	3.70	1.11	2.22
100	11.7	3.50	7.00


Note 1: At 80 MHz and 800 MHz, the higher frequency range applied.

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

For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in meters (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.

**Recommended separation distances between RF wireless communications equipment**

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

Frequency MHz	Maximum Power W	Distance	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
385	1.8	0.3	27	27	RF wireless communications equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. <b>Recommended separation distance</b> $E = \frac{6}{d} \sqrt{P}$ 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 meters (m). Field strengths from fixed RF transmitter, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol: 
450	2	0.3	28	28	
710	0.2	0.3	9	9	
745					
780					
810					
870	2	0.3	28	28	
930					
1720					
1845	2	0.3	28	28	
1970					
2450					
5240	2	0.3	28	28	
5500					
5785					

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

## ***26. Limited Warranty***

BMC Medical Co., Ltd. warrants that the device shall be free from defects of workmanship and materials and will perform in accordance with the product specifications for a period of one (1) year for main device and three (3) months for all accessories from the date of sale by BMC Medical Co., Ltd. to the dealer. If the product fails to perform in accordance with the product specifications, BMC Medical Co., Ltd. will repair or replace, at its option, the defective material or part. BMC Medical Co., Ltd. will pay customary freight charges from BMC Medical Co., Ltd. to the dealer location only. This warranty does not cover damage caused by accident, misuse, abuse, alteration and other defects not related to material or workmanship.

BMC MEDICAL CO., LTD. DISCLAIMS ALL LIABILITY FOR ECONOMIC LOSS, LOSS OF PROFITS, OVERHEAD OR CONSEQUENTIAL DAMAGES WHICH MAY BE CLAIMED TO ARISE FROM ANY SALE OR USE OF THIS PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

To exercise the rights under this warranty, contact the local authorized dealers or:

### **MANUFACTURER:**

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E-mail: intl@bmc-medical.com

### **MANUFACTURING SITE:**

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