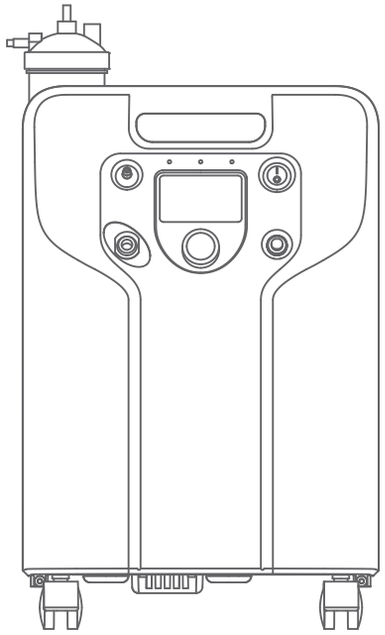
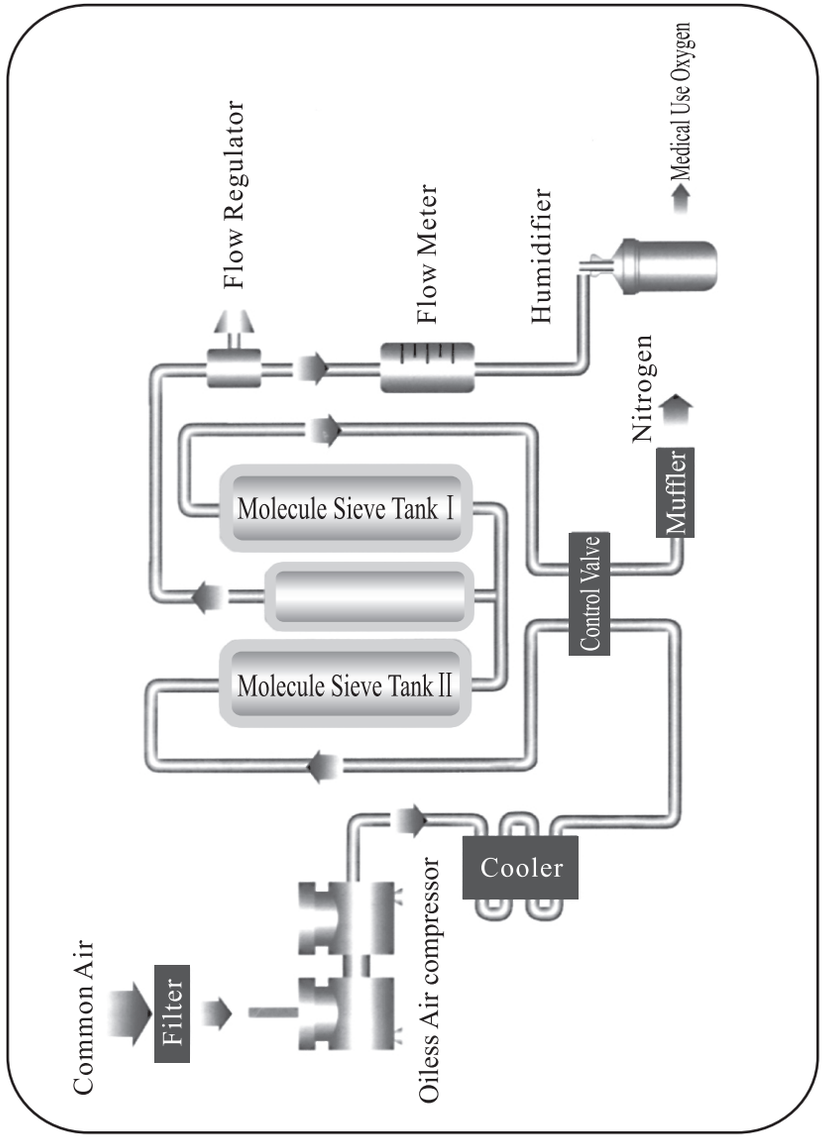
User Manual of Oxygen Concentrator

Professional Quality
with Stable Performance



EC | REP CE 0123

Do have a close read of this operation manual before first using.



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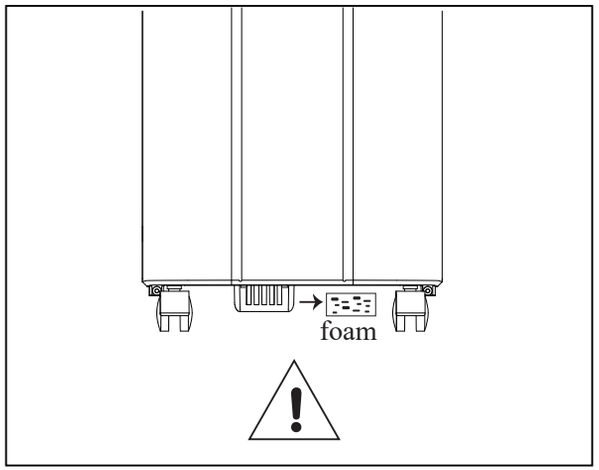


Attention

Please loose the bottom belt and take out the foam pad before first using the machine!

Please retile the belt again once transportion.

Foreword

Thank you for purchasing our products, hope you will be satisfied with our service.
This operation manual contains functions, operation steps, attention and so on.
To ensure your efficient use of the machine, please have a close read of this operation manual before operating it.
Maybe there are some pictures which are different from what you have seen in the real model.

Safety Notice

Warning

●This product cannot be used for life maintaining, it is suggested that if any patient who needs oxygen treatment, please follow doctor's advice to choose the right flow and period for oxygen before using the machine.
●If any adverse reaction appeared or revealed during taking oxygen , please contact with equipment supplier or doctor as soon as possible.
●For serious patients who set an indicating device additional, any adverse reaction appeared, please contact with equipment supplier or doctor as soon as possible.
●Do not put nasal pipe under bed cover or cushion, the oxygen that caused by machine turning on without breathing may be combustion-supporting.
●Turn off the switch if no body takes oxygen.
●For oxygen can be combustion-supporting, keep oxygen concentrator far away from naked light or fire resource, no smoking or naked light around the patient.
●Before cleaning the dust on the net of oxygen concentrator, the plug must be pulled out in case of electric attack.
●When using the machine, do not open the front and back cover at all. In case there are quality problems, do not dismantle it secretly. Any alarm or other abnormal phenomenon has been found, contact with equipment supplier or manufacturer.
● Do not modify this equipment without authorization of the manufacturer.

●The breathing system hoses may cause strangulation due to excessive length.
● Keep the equipment away from the child and pet.
● Be careful of the small parts of accessories, Don't swallow.
● Contact with the doctor if you got allergic reactions.
● Please use accessories and detachable parts specified/authorized by manufacturer to avoid damagine the unit.

Attention ⚠ Notice

●The oxygen concentrator should be set to use in an environment without dust, corruption, oxidizer, and toxicological harm gas.
●Air intake of the oxygen concentrator should be located in well-ventilated space, in case there are polluted air or smog in the oxygen.
●Ensure the bottom exhaustion smooth during operating, or else the machine will be over-heated.
●There is intermitted exhaustion sound during operating (8 seconds in intermission).
●5 minutes are needed for oxygen concentrator from warming up to reach regular function.
●The machine is only for medical oxygen supply, and the oxygen concentration will be up to 90% when rated flow 3L/min.
●Humidifier shall adopt distilled water or cold boiled water, added shall be kept under the scale line.
●Use the humidifier bottle with the machine, do not replace it at will, or else may cause patient uncomfortable or other harms.
●In case state indicator shows abnormal oxygen operator should declare to dealer or factory in favor of maintain.
●The humidifier bottle, air intake filter and paper filter are the items needed to clean, among which humidifier bottle should be cleared every 3 days, and air intake fiter should be cleared every 100 hours, and paper filter should be cleared every 1500 hours.
●Once no gas out when the maximum flow, turn off the machine immediately and have a check for trouble.
●Do not turn on and off frequently: To restart the machine after turning off should have an interval no less than 5 minutes (exhaust internal gas of the machine completely, avoid air compressor turns on with pressure will shorten its life)
●Refresh the water in the humidifier bottle every 2-3 days, especially in summer. If do not use it in several days, please pour out the water completely, and wipe dry the bottle
●Use the oxygen tube and humidifier bottle with the machine or those of the same model, if change to use other model devices, please ensure close connection with the oxygen concentrator. The oxygen tube is only for the patient, and do not throw it at will.
●The oxygen tube, oxygen mask and nebulizer that have touched with the patient should keep clean, disinfected and sterilized.
●The oxygen tube that have touched with the patient after each operation should be disinfected by wiping it with 75% medical use alcohol or other disinfecting methods. To prevent cross infection, do not share oxygen tube.
● Never use greese or oil to avoid the risk of fire and burns.
● Do not remove the cover by unauthorized persons.

Notes for nebulization operation.(for nebulizer type only)

●When using nebulizer function, adjust the flow rate to the lowest (0.5L/min). If not, it will be wrong alarm.
●Use the same model nebulizer which was brought along with the machine.
●If there is not atomization treatment, do loosen the nut of nebulizer joint to ensure no gas leaking.
●When atomizing stuck, check the nebulizer joint first, in case there is a clog, use No. 7 needle to clean it up.
●Do atomizing with distilled water for several seconds after each operation to avoid the crystallization caused by medicine.
●If atomizing still cannot work, please open the cover of the bottle and add some clean water. Then rotate the white ball which lies in the bottle with the gas resource connected and select the proper angle to gain a better atomization.

Notes for SpO2 sensor function (for SpO2 type only)

●Use the same model SpO2 sensor which was brought along with the machine
●The data of SpO2 sensor just for your reference, it can not be the sole evidence to judge your health. Consulting the doctor is still necessary if feel any uncomfortable.
●For more accurately, please use SpO2 sensor in quiet and comfortable environment.
●When using SpO2 sensor, put the device far away from equipment which with strong electric field and strong magnetic field.
●The SpO2 sensor can not be fumigated by high temperature or high pressure, also can not be dipped in liquid for sterilization.

Product Introduction

The oxygen concentrator adopt pressure swing adsorption principle, which can separate oxygen, nitrogen and other gas from the air. At normal temperature, as soon as power is connected, the oxygen can be separated from air constantly. Oxygen is generated by pure physical method. There is no influence on indoor oxygen percent during the concentrator operating.

Using Condition

1.Ambient temperature: 10℃-40℃
2.Relative humidity: 30%-75%
3.Air pressure: 700 hPa-1060 hPa
4.No corrosive gas and strong magnetic field around.

Scope of Application

This device is mainly used for generating medical oxygen ≥90%.

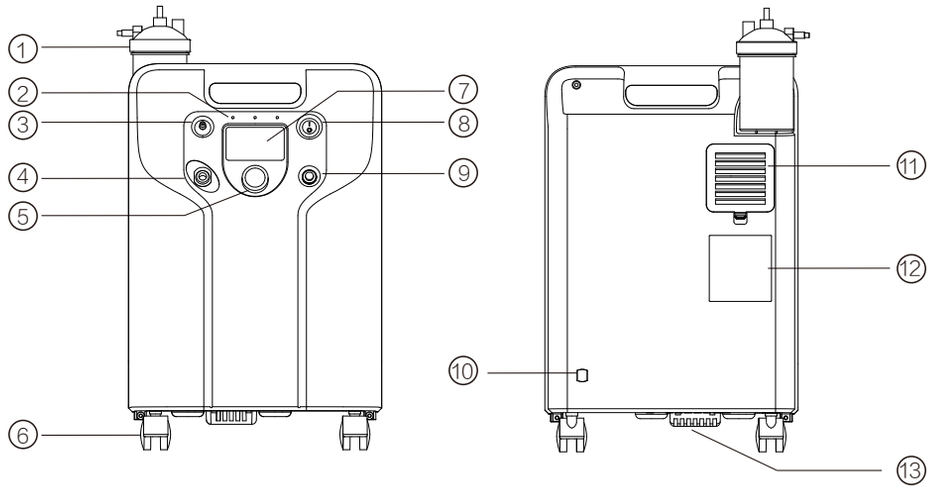
Technical Specifications

Power Consumption	250W
Working Voltage	~220V±10% 50Hz±1Hz
Flow Rate	3L/min
Concentration	≥90%
Outlet pressure	40kPa±10%
Sound Level dB	≤45dB(A)
Electrical Category	Class II Type BF
Net Weight	12Kg
Dimension	W330×D224×H504mm
Operation Mode	Continued Operation
Nebulizer Interface(Application to nebulizer models)	Output Gas Pressure≥0.1MPa

Symbols

Symbol	Description
	Consult instructions for use
	Type BF Applied Part
	Class II
	Date of manufacture
	Caution
IP21	2:Protected against solid objects of 12.5mm ϕ and greater 1:Protection against vertically falling water drops
SN	Serial number
CE	CE mark
MD	Medical device

Operation Introduction



①humidifier bottle

②Indicator light

Total 3 indicator lights, and the code of them are 1,2,3from left to right, and their indication for each model are as follows:

1. Power indicator (normal working -green, power off -red)
2. Oxygen purity (green-normal, ≤ 82% (±3%) -red)
3. Malfunction indicator (normal -off, defective -red)

③Oxygen outlet

④Nebulizer outlet (for nebulizer type only)/spo2 interface(for spo2 type only)

⑤Knob of oxygen flow meter switch

The other name of knob of oxygen flow meter Switch is flow control valve.(L/min) It can adjust and control the outlet oxygen flow.

Do not Switch it over-forced, or else it is easy to damage the valve core. Switch it clockwise to flow up, counterclockwise to flow down.

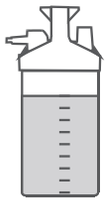
⑥Castor

⑦LCD screen

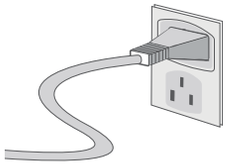
⑧Power Switch

⑨ Resettable short circuit protection switch
⑩ Power Line
⑪ Intake air filter
⑫ Label ⧈ stand for class Ⅱ ⧈ stand for type BF
⑬ Exaust Area

Operation steps for first time using



1. Take off the Humidifier Bottle.
Fill in proper distilled water or cold boiled water within the scale between the top scale line and the lowest one.
Attention: Position of Humidifier Bottle. Please place the Humidifier Bottle on the back casing and fixed. Then connect the oxygen pipe to the oxygen outlet mouth.



2. Connect the power, put the plug of power line Connected with the power socket of the oxygen generator, and the other end of the plug connects with indoor power socket, turn on the power switch.

3. Adjust well oxygen output flow according for the request.
The switch counterclockwise to decrease, Clockwise to increase. Flow rate and absorbing time shall be followed doctor's advice.

4. Insert the intake end of absorbing oxygen tube onto the outlet of Humidifier bottle, then set the absorbing oxygen tube over patient's ears, insert the nasal tube into patient's nostrils to absorb oxygen.

5.When finished using, turn off the power, if there is discontinuity use, please unplug the power plug.

6. Under oxygen generator continuous operation, it will record the working time automatically.
User can switch to timing function by press the switch. When the timing clock flickers, adjust the time by switching it. Adjusting time is 10 minutes for one period, the longest timing can be 5 hours. After choosing the time, press the switch again to confirm. Under timing function, icon ⧗ appear, when appear time is back to 0:00, oxygen generator switch off automatically.

7. Oxygen Purity Alarm. After turning on the oxygen generator, the oxygen percent indicator is green. Judging by the color of the indicator, green indicate normal operation, red indicate that the machine needed maintenance or serving. After 5 minutes(the time for pre-hot of internal oxygen percent sensor), it indicates the scale of oxygen purity that produced after this turning on.

8. In case oxygen generator is connect with power but the whole machine is still in the state of power off with alarm sound, please check out the connection part of power whether it is in good connection, or whether there is a power off in external power supply.

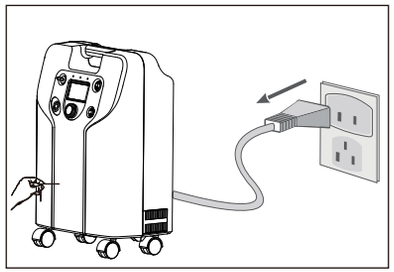
Nebulization operation methods (for nebulization type only)

1.Open the cover of medical glass, and add nebulization remedy that needed, then close the cover.
2.Connect the joint of nebulization nozzle (or mask) with the cover of medical glass, and then connect the other end of nebulization connection tube with the nebulization outlet joint of oxygen concentrator, and screw the nut tied.
3.Turn on the power of oxygen concentrator, and shut up flow meter, then it is ready for nebulization treatment.
4.Do clean the nebulization devices after treatment finished. Clean nebulizer and connection tube with detergent and clean water; as to nebulization nozzle and mask use clean water to clean first, then carry on disinfecting and sterilization by dipping them into medical alcohol for five minutes , again wash them clean with clean water, and finally put them in the packet .

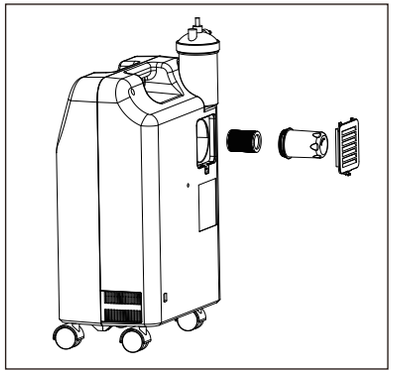
SpO2 sensor operation methods (for SpO2 types only)

1. The SpO2 sensor can test blood oxygen and pulse rate.
2. Under normal working status, put finger into the SpO2 hole, about 4~6 seconds, the screen will automatically switch to SpO2 interface. When get out of finger, screen automatically switch back to flow rate and purity interface.
3. Under blood oxygen and pulse rate interface, rotate the button, the screen switch to flow and purity interface. The flow rate and timing can be adjust as this period, after 4 second, when finger into SpO2 hole, oxygen concentrator will switch to SpO2 interface.

Maintenance Description



1.In the condition of power off, make a clean for the outside body by soft towel with little detergent, and then wipe it up with dry towel, once or twice per month.



2.It is a critical step for daily maintenance to clean filter net for gas intake, at least twice a month.
Detail steps: Please take off intake filter window. Rotate the filter accroding to the arrow direction, get out of the paper filter, use blower to blow the dust away.
Then put it back to the position.If filter cottor broken or machine total working time more than 1500 hours,please change a new filter cotton.

3.The up cover of humidifier bottle should be tighten or oxygen will be decrease because of leakage. It should be clean every 2-3 days in case of bacteria in water.

Condition for Transportation and Storage

Environment temperature scale: -20℃-45℃
Comparative humidity scale: ≤95%
Air pressure scale: 500 hpa –1060 hpa

Note: Please do place the machine at a good ventilation area, please make sure that the exhaust port underneath the machine not be covered.

Quality Warranty

Scale for the whole machine repair: 18 months (8000 hours).

Trouble Shooting

No.	Trouble	Causes	Solution
1	No operation after power connected	1. No connection between circuit of oxygen generator and power 2. Circuit of fuse protector broken 3. Capacitor of compressor broken 4. Compressor broken	1. Check out whether switch, plug, power line in good connection. 2. Replace the fuse protector and find the cause 3. Replace start capacitor 4. Have the compressor replaced
2	No oxygen out or tiny outtake flow	1. Folded inside oxygen tube, no smooth outtake 2. Filter clogged, no smooth intake 3. The cover of dampen bottle leaking	1. Connect the oxygen tube again 2. Clean the filter 3. Take off the cover, screw well the cover, block the outtake by thumb after turning on, and there will some sound from the dampen bottle after 5 second around (the safety valve of dampen bottle turns on)
3	No exhaust sound	1. Air controller cannot work 2. Electrical control board cannot work	Have air control valve replaced Have electric control board replaced
4	Too noisy exhaustion	1. The joint of exhaustion muffler fallen off 2. Exhaustion muffler broken	Connect the joint well Have the muffler replaced

EMC INFORMATION

This equipment has been tested and found to comply with the limits for medical devices to the Electromagnetic Compatibility standard.
These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed according with the instructions, may cause harmful interference to ot her devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving device.
Increase the separation distance between the equipment .
Connect the equipment into an outlet on a circuit different from that which the other device(s) are connected.
Consult the manufacturer or service technician for help.

Guidance and Manufacturer' s declaration - electromagnetic emissions
is intended for u se in the
electromagnetic environment specified below. The customer or the user of the The Turtle series should assure that it is used in
such an environment .

Guidance and manufacturers declaration -electromagnetic emissions		
The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment -guidance
RF emissions CISPR 11	Group 1	The device uses RF energy only for its internalfunction. 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.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturers declaration - electromagnetic immunity			
The device image intensifier is intended for use in the electromagnetic environment specified below. The user of the device image intensifier 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 ±8 kV air	±6 kV contact ± 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 ±1 kV for input/output line not application	±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) ±1kV line(s) to ground not application	±1 kV differential mode	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 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <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 device image intensifier requires continued operation during power mains interruptions, it is recommended that the device image intensifier be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	0.3 A/m	If image distortion occurs, it may be necessary to position the device image intensifier further from sources of power frequency magnetic fields or to install magnetic shielding. The power frequency magnetic field should be measured in the intended installation location to assure that it is sufficiently low.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturers declaration - electromagnetic immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

IMMUNITY test	IEC 60601 TEST LEVEL	Compliance level	Electromagnetic environment - guidance
			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.
Conducted RF	3 Vrms	3 Vrms	Recommended separation distance
IEC 61000-4-6	150 kHz to 80 MHz		$d = 1.2\sqrt{P}$
Radiated RF	3 V/m	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz
IEC 61000-4-3	80 MHz to 2,5 GHz		$d = 1.2\sqrt{P}$ 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 metres (m).
			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]
			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.

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 Model 006 is used exceeds the applicable RF compliance level above, the Model 006 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Model 006.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 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 power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2,5 GHz $d = 2.3\sqrt{P}$
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.