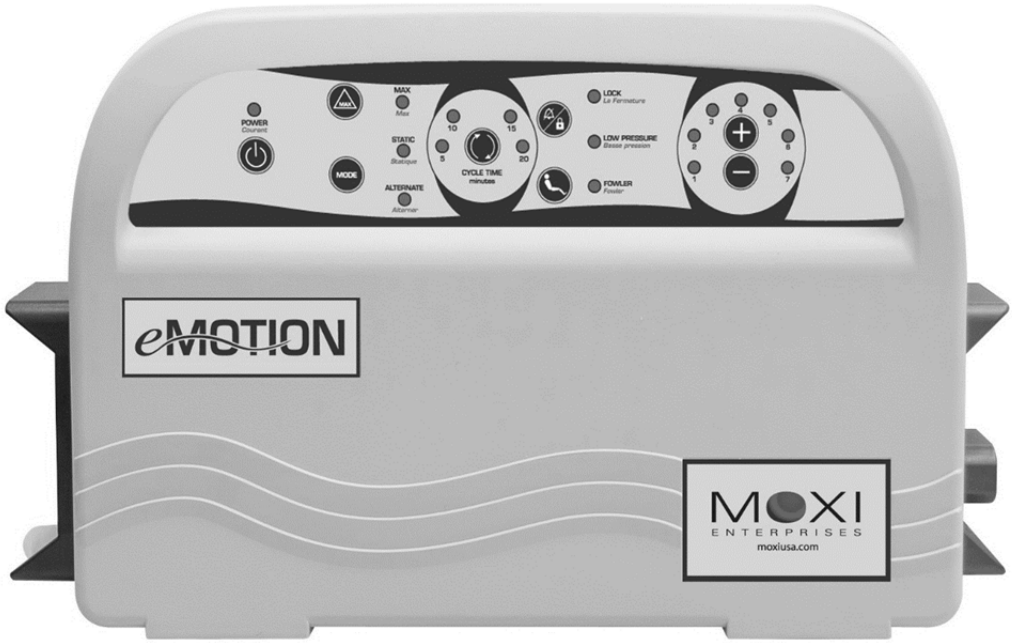
eMOTION controller

User Manual



Part Number: FC-MOX1006(controller) and FM-MOX1006(mattress)

Manufactured by:

MOXI ENTERPRISES LLC

1939 S VANDEVENTER AVE.

ST. LOUIS, MO 63110

Telephone: 314-771-5222

Fax: 314-771-5225

www.moxiusa.com

Please read the manual before operating the Mattress System
Keep the manual for future reference

1. INTRODUCTION

Thank you for purchasing the eMOTION Alternating Pressure Mattress System. This manual contains important safety information, please read it carefully before using the system and refer to this manual as much as required.

Intended use

The purpose of eMOTION Alternating Pressure Mattress System is the assistance of the treatment and prevention of pressure ulcers while optimizing patient's comfort. This product is designed for home care, hospital care, and long-term care patients who are twelve year of age or older.

2. SAFETY PRECAUTIONS

To prevent from personal injury or damage to the system, please read the operating instructions before use, and use the system and accessories only in accordance with these operating instructions. Keep the operating instructions in a safe place and make sure it is accessible to user at all times.

Always check the system before use and inspect the system periodically. If the system is found to be defective or became malfunctioned, DO NOT USE THE PRODUCT. Contact Tech Support or your authorized distributor immediately to prevent from personal injury or damage to the system.

Moxi Enterprise LLC assumes no responsibility for any damage or injury caused by improper assembly or use of this product.

WARNING

- Always unplug the control unit when not in use.
- Do not use this product while bathing.
- Do not place this product in or drop into water or other liquid.
- Do not reach for product that has fallen into water. Unplug immediately.
- Avoid spilling any liquid on pump. If spills do occur, clean fluid from pump wearing rubber gloves or while unit is unplugged to avoid any possibility of shock. Once liquid is removed, check operation of components in area of spill. Any liquid remaining on pump can cause corrosion, which may cause components to fail or operate erratically, possibly producing hazards.
- Do not use the system in the immediate vicinity of a heat source, inflammable gases or in areas where there is a risk of explosion.
- Keep the system away from open flame and heating devices.
- To minimize risk of fire, connect the power cord directly into a wall-mounted power outlet. Do not use extension cords or multiple outlet stripes.
- To avoid danger of choking and strangulation hazard, keep cord/hose out of children's reach.
- Do not drop the control unit or store it in direct sunlight or extreme cold conditions.

- Caution: Please ensure the eMOTION Alternating Pressure System is used with stable power or in connection with UPS.
- To ensure all functions settled correctly, caregivers should check the condition of patients and controller settings every two hours.

Safety notices:

- Service and repair must be done by qualified personnel only.
- No smoking in bed.
- Use only genuine spare parts and expendables.
- Keep sharp objects away from the system.
- Patient entrance/exit – caregiver should provide assistant to patient when entering or exiting the bed. Please ensure a capable patient knows how to get out of bed safely in case of emergency.
- When using side rails, adhere to the specified minimum clearance. If the minimum clearance cannot be adhered to, use a height extension for the side rail.

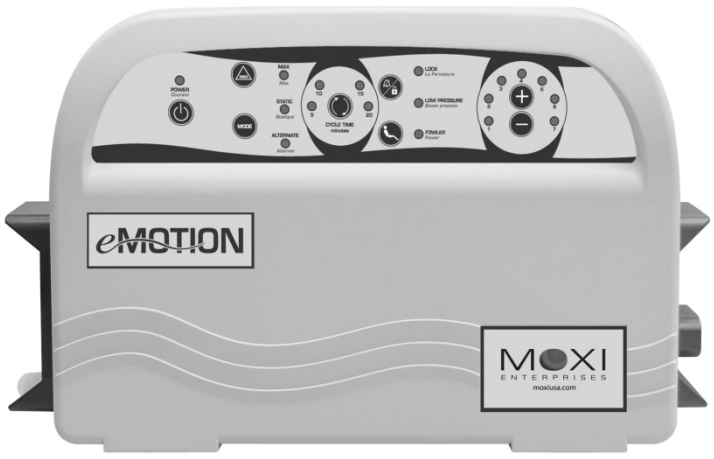
Intended Users

- Healthcare professionals or caregivers who are at least fifteen years in age, with the ability to read and understand English and Westernized Arabic Numerals.
- This device should not be operated by patient.

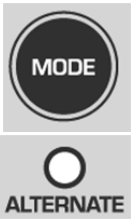
3. FEATURES

The eMOTION Alternating Pressure Mattress System is the assistance of the treatment and prevention of pressure ulcers while optimizing patient's comfort. The 3:1 alternating function also provides active prevention for pressure relief, especially for those in acute care and long-term care settings (the cells inflate and deflate in a 3:1 cycle, meaning 2/3 of the body is always supported at any one time). The soft-firm adjustment allows the patient to adjust the firmness or softness of the surface for optimal comfort with a comfort level dial.

NOTE: Perform a pressure hand check by placing your hand under the patient buttocks between cells and bottom of mattress. The patient should have at least 1 $^{1}/_{2}$ inch (4cm) of clearance between the buttocks and the bottom of the mattress.

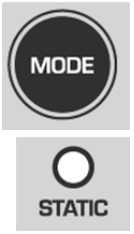


Pump front panel is shown above; descriptions follow of button functions.



Alternating mode: When ALTERNATE mode is selected, it enables the three-one alternate function. Use the +/- button on the front panel to adjust comfort setting to achieve the optimum patient comfort.

Time setting: Under alternating mode, the cycle time can be adjusted to 5, 10, 15, or 20 minutes per cycle by pressing time selection button on the front panel.



Static mode: When needed, the caregiver can select the STATIC mode for special application. Under static mode, all cells are inflated with the same pressure setting and the alternating effect stops. Use the +/- button on the front panel to adjust comfort setting to achieve the optimum patient comfort.

Max function: Upon initial startup, use max function to allow mattress be inflated to the maximum pressure. It will automatically return to previous setting 30 minutes after activation, if it has not been manually changed to other modes.

Seat function: When seat function is turned on, it automatically increases pressure level to support patient when needed, especially during head raised position and during ingress/egress movements.

Lockout function: The pump is also equipped with a lockout function to prevent unintentionally changing the setting. Caregiver can manually activate lockout function by press and hold LOCK button for 3 seconds. To unlock, press and hold LOCK button on the front panel for 3 seconds.

Power failure alarm: At any time when power failure occurs, both visual (amber color LED will illuminate) and audio alarm will trigger.

Low pressure alarm: For added safety, 5 minutes after low pressure is detected, both visual and audio alarm will trigger.

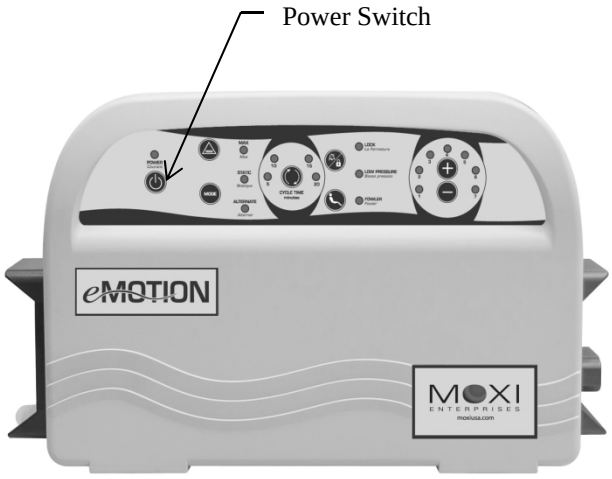
NOTE: The low-pressure alarm function will not be activated until 45 minutes after initial startup. This is to prevent faults alarm during initial inflation.

Mute function: The alarm can be temporarily muted by pressing the mute alarm button on the front panel: it will mute the alarm for 20 minutes.

Maximum load / patient weight: The eMOTION Alternating Pressure Mattress System has a maximum weight capacity of 200kg (440lb).

4. SETUP

Pump Rear View



Pump Front View

1. Remove the control unit from the box, and check for any obvious damage. If damage is evident, notify your authorized distributor.
2. Place pump on a horizontal surface or hang the pump on the foot board of the bed frame with built-in hanger on back of pump.
3. Remove mattress from protective plastic cover and check mattress surface for tears or cracking. Do not use if any damage presents. Notify your authorized distributor of the damages.
4. Connect pump hoses to mattress – connect the main connection tube of the mattress to the connector on the side of the control panel.
   - Make sure the connection hose engages properly.
   - Ensure all air tubing are not kinked and will not be pinched by any articulated bed mechanisms.
   - Check if the CPR valve is set to “CLOSE” position.
5. Plug pump into a properly grounded wall output. Verify power to this outlet is not controlled by a wall switch.

5. OPERATING INSTRUCTION

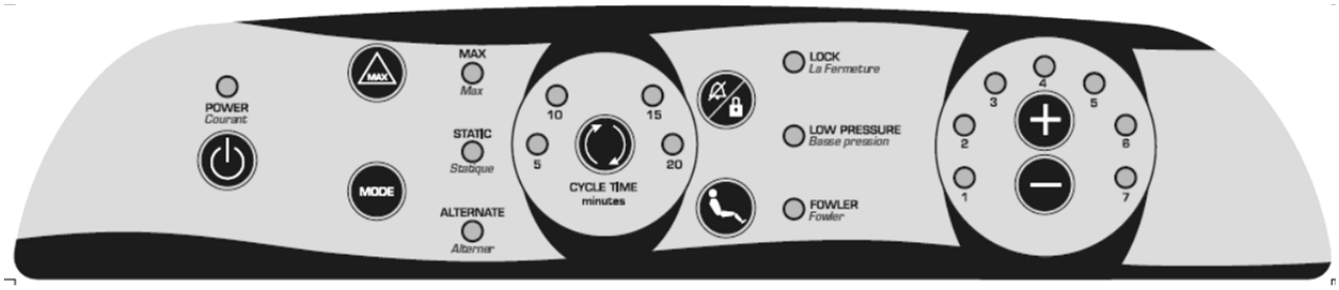


Illustration of Control Panel

1. Press and hold the front panel POWER button  for one second – the POWER LED will now illuminate green indicating that the pump is operating.

2. The Max LED and all comfort levels LED on the front panel will blink during auto firm inflation. After the mattress is fully inflated (takes approximately 30~40 minutes), the patient can be transferred to the mattress.

3. Alternate cycle time can be adjusted using CYCLE TIME button 

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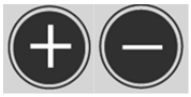
4. Press the button  to adjust comfort level, 1 stands for low, 4 stands for medium and 7 stands for strong level.

6. MAINTENANCE

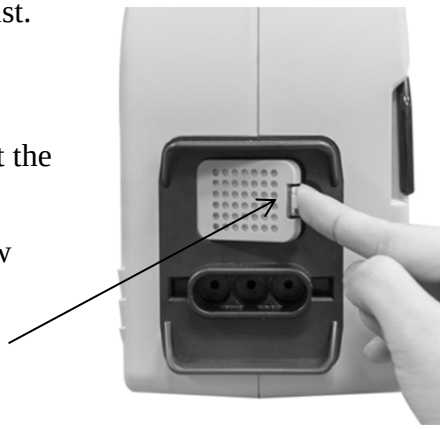
Proper care and maintenance are essential to keeping eMOTION Alternating Pressure Mattress System in a safe operating condition. In addition to inspecting the unit before each use, periodic maintenance checks should also be done.

- Inspect the mattress before each use. Ensure all hardware and accessories are secure and the pump is functioning properly
- Service and repair must be done by qualified personnel ONLY.
- Unauthorized modification of the Mattress System or the use of non- eMOTION replacement parts may change the structure of the Mattress System and could create a hazardous condition, which may result in serious injury and will void the warranty.
- The pump contains no serviceable components. DO NOT attempt to open the pump. If service is required, consult MOXI's tech support for further information.

- When you believe a component or part is not functioning normally, please contact MOXI immediately as a potentially dangerous condition could exist.

Replacing air filters:

1. Switch off the electrical supply to the pump and disconnect the power cable from the wall before replacing the air filter.
2. Remove air filter cover, remove filter, and replace with new filter.
3. Replace air filter cover.
4. Reconnect to wall plug.



7. CLEANING AND DISINFECTION

1. Switch off the electrical supply to the pump and disconnect the power cable from the wall before cleaning and disinfection.
2. Remove the bedding.
3. If necessary, inflate the mattress.
4. Ensure the underside of the mattress is clear of all sharp objects.
5. Examine the surface of the pump and mattress assembly components for visible blood or body fluids.
6. Perform one of the followings:
    a. If blood is present, decontaminate the whole mattress product in line with current facility care protocols.
    b. If blood is not present, remove any soil from the cover with paper towel.

    Info: If grossly soiled, the cover should be removed, cleaned and decontaminated.
7. Using a clean sponge or paper towel, wipe down the surface and cells with a diluted detergent solution or cleaner disinfectant or other germicidal detergent solution. Please noted do not use phenol-based cleaning solution.
8. Cleaning and disinfection may be carried out on the cover by hand with hot water and a neutral detergent or with a sodium hypochlorite (bleach) solution.
9. Alternatively remove the cover and launder at 40°C (104°F), using normal detergent. It is essential that articles be thoroughly dried after all cleaning procedure and before storage.
10. Perform the following steps to clean the power unit and hose fittings:
    a. Wipe all controls, chassis and hose fittings with a damp cloth and a mild detergent.
    b. Using a nylon brush, gently clean all crevices as they can harbor microorganisms.
    c. Air dry all treated surfaces.

8. TROUBLESHOOTING

The following table can help you determine what may be the causes and solutions to the problem that you have with your selected Alternating Pressure Mattress System that caused it not to function as planned. If a problem occurs which is not listed below, contact MOXI for further information.

Do not attempt to repair components or parts, as this may invalidate your warranty or cause further problems that may result in patient injury. Stop using your mattress immediately if it is not functioning correctly or any warning beeps are heard.

Review all selections of this manual before troubleshooting Mattress System.
If any of the following notifications occurs, follow the steps below to troubleshoot:

Symptom	Possible cause	Solution
The pump is not functioning	Power cord or power voltage	Use a power regulator
	Faulty fuse	Replace the fuse
Low pressure alarm goes off	Connector to the pump is not properly connected	Re-connect it and check if the connector is tightly secured
	One or more cells is not properly connected	Check all cells connection along the mattress
	Kinked connection between air cells and manifold	Correct kinking between air cells and manifold
Power failure alarm goes off	Power cord is not properly connected to power source	Check the power cord connection
	Power cord or power voltage	Use a power regulator
	Faulty fuse	Replace the fuse
Patient is bottoming out	Inadequate pressure level for the patient	Adjust comfort setting to o1 or 2 levels higher and wait for a few minutes for best comfort
Air is pumping out from the control unit but the mattress is not inflating	Faulty power source - improper	Use a power regulator
	Kinks in the air tubes	Adjust the air tubes to enable smooth air flow
	Leakage from the air cells	Replace air cell if faulty
	Leakage from air tube between mattress and pump	Replace with new tubes
	Improper air tube connection	Re-connect the tubes
No air produced from some air outlets of the air tube connector	This is a normal situation during alternating mode	Air outlets take turns to produce air during their cycle time
Some of the air cells are not properly inflated	Kinked tubing/manifold	Straighten kinked tubing/manifold
	Leakage from the air cells	Replace air cell if faulty

If any of the problems persist after troubleshooting or you are unable to service it yourself, please contact MOXI Enterprise LLC Support or authorized distributor.

9. SPECIFICATION

Mattress	
Description	eMOTION Mattress
Dimension (LxWxH)	80in x 36in x 8in (203.2cm x 91.4cm x 20.3cm)
Weight	16.3lb (7.4 kg)
Maximum Weight Capacity	440lb (200kg)
Top cover material	Nylon coated with PU + Single Quilting
Base cover material	Polyester laminated with PVC, 4 corner elastic straps

Pump			
Model	**Description**		eMOTION controller
FC-MOX1006	Dimension (LxWxH)		31.5 x 11 x 19.5 cm
	Weight (w/o Power Cord)		2.7kg
	Cycle time		5, 10, 15, 20 minutes
	Flow rate		>5 L/ min. compressor
	Pressure		15~45 (±6) mmHg, 7 Pressure Levels
	Power Input Rating		AC 100-240V 50/60 Hz 0.2-0.1A
	Fuse rating		T2AL 250V
	Classification (Electrical)		Class II, Type BF Not AP or AGP type 
	Temperature	Operation	41°F ~ 104°F (5°C ~ 40°C)
		Storage/Transport	41°F ~ 140°F (5°C ~ 60°C)
	RH (Relative humidity)	Operation	15% ~ 93%
		Storage/Transport	30% ~ 93%
	Operation Atmospheric Pressure Range		800 hPa to 1013 hPa
	Operation Altitude		0 meters to 2000 meters
	Ingress Protection Rating		IP21
	Mode of Operation		Continuous
	Standard		IEC 60601-1 / IEC 60601-1-2 / IEC 60601-1-11
	Power Cable		15ft, non-shielding, AC powered

10. SYMBOL DEFINITION

Symbol	Meaning	Symbol	Meaning
	Refer to Instruction Manual/Booklet		Waste Disposal
	Class II Equipment		Type BF Applied Part
	Caution, consult accompanying documents		

11. EXPECTED SERVICE LIFE

- The eMOTION has an expected service life of five years. To maintain the condition of the alternating mattress system, service the system regularly according to the schedule recommended by MOXI.
- Medical electrical equipment needs special precautions regarding EMC. Shall the device be used within one mile distance from AM, FM, or TV broadcast antennas, it needs to be installed according to the EMC information provided.
- Do NOT use unapproved accessories or attempt to modify, disassemble or otherwise misuse the eMOTION system or any of its components.

12. WASTE DISPOSAL

This product has been supplied from an environmentally aware manufacturer that complies with the WEEE. Please be environmentally responsible and recycle this product through your recycling facility at its end of life or dispose of it in accordance with local regulations.

13. WARRANTY

- MOXI branded product is warrantied to be free of defects in materials and workmanship 1 year from the date of purchase for the original consumer purchaser.
- This device was built to exacting standards and carefully inspected prior to shipment. We offer Limited 1 Year Warranty to service/adjust any equipment returned, and to replace or repair any part that is proven to be a warranty defect, at no charge.
- This warranty excludes equipment damage through shipping, tampering, improper maintenance, carelessness, accident, negligence or misuse, or products that have been altered, repaired or dismantled other than with MOXI’s written authorization and by its approved procedures and by properly qualified technicians.
- If you have any questions regarding this warranty, please contact MOXI or our authorized distributor.

14. EMC RELATED NOTIFICATIONS

Recommended separation distance between portable and mobile RF communications equipment and the eMOTION

The **eMOTION** is intended for use in an electromagnetic environment (for home healthcare and professional healthcare) in which radiated RF disturbances are controlled. The customer or the user of the **eMOTION** can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **eMOTION** 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 2,7 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 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.

NOTE1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Guidance and manufacturer's declaration – electromagnetic emissions

The eMOTION is intended for use in the electromagnetic environment (for home healthcare and professional healthcare) specified below.
The customer or the user of the eMOTION should assure that it is used in such an environment.

Emissions test	**Compliance**	**Electromagnetic environment-guidance (for home healthcare and professional healthcare environment)**
RF emissions CISPR 11	Group 1	The eMOTION 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 eMOTION 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	Compliance	

Manufacturer's declaration-electromagnetic immunity			
The **eMOTION** is intended for use in the electromagnetic environment (for home healthcare and professional healthcare) specified below. The customer or the user of the **eMOTION** should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment-guidance (for home healthcare and professional healthcare environment)**
Electrostatic discharge (ESD) IEC 61000-4-2	Contact:±8 kV Air±2 kV,±4 kV,±8 kV,±15 kV	Contact:±8 kV Air±2 kV,±4 kV,±8 kV,±15 kV	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	± 2kV for power supply lines ± 1kV for input/output lines	± 2kV for power supply lines Not applicable	Mains power quality should be that of a typical home healthcare and professional healthcare environment.
Surge IEC 61000-4-5	± 0.5kV, ±1kV line(s) to line(s) ± 0.5kV, ±1kV,± 2kV line(s) to earth	± 0.5kV, ±1kV line(s) to line(s) Not applicable	Mains power quality should be that of a typical home healthcare and professional healthcare environment.
Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	Voltage dips: 0 % *U*T; 0,5 cycle 0 % *U*T; 1 cycle 70 % *U*T; 25/30 cycles Voltage interruptions: 0 % *U*T; 250/300 cycle	Voltage dips: 0 % *U*T; 0,5 cycle 0 % *U*T; 1 cycle 70 % *U*T; 25/30 cycles Voltage interruptions: 0 % *U*T; 250/300 cycle	Mains power quality should be that of a typical home healthcare and professional healthcare environment. If the user of the eMOTION requires continued operation during power mains interruptions, it is recommended that the eMOTION be powered from an uninterruptible power supply or a battery.
Power frequency (50, 60 Hz) magnetic field IEC 61000-4-8	30 A/m 50 Hz or 60 Hz	30 A/m 50 Hz, 60 Hz	The eMOTION power frequency magnetic fields should be at levels characteristic of a typical location in a typical home healthcare and professional healthcare environment.
NOTE UT is the a.c. mains voltage prior to application of the test level.			

* During DIP interference, the pump will outage these are normal. The pump outage does not affect the motor operation.

Manufacturer's declaration-electromagnetic immunity			
The **eMOTION** is intended for use in the electromagnetic environment (for home healthcare and professional healthcare) specified below. The customer or the user of the **eMOTION** should assure that is used in such and environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment-guidance (for home healthcare and professional healthcare environment)**
Conducted RF IEC 61000-4-6	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 Vrms: 0,15 MHz – 80 MHz 6 Vrms: in ISM and amateur radio bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	**Portable and mobile RF communications equipment should be used no closer to any part of the** eMOTION including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC 61000-4-3	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	**Recommended separation distance:** $d = 1,2\sqrt{P}$ $d = 1,2\sqrt{P}$ 80MHz to 800 MHz $d = 2,3\sqrt{P}$ 800MHz to 2,7 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). Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Manufacturer's declaration-electromagnetic immunity
Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

eMOTION is intended for use in the electromagnetic environment (for home healthcare and professional healthcare) specified below.
The customer or the user of the eMOTION should assure that it is used in such an environment.

Test frequency (MHz)	**Band** [a] (MHz)	**Service** [a]	**Modulation**[b]	**Maximum power** (W)	**Distance** (m)	**IMMUNITY TEST LEVEL** (V/m)	**Compliance LEVEL** (V/m) (for home healthcare and professional healthcare environment)
385	380 – 390	TETRA 400	Pulse modulation b) 18 Hz	1,8	0,3	27	27
450	430 – 470	GMRS 460, FRS 460	FM c) ±5 kHz deviation 1 kHz sine	2	0,3	28	28
710	704 – 787	LTE Band 13, 17	Pulse modulation b) 217 Hz	0,2	0,3	9	9
745							
780							
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation b) 18 Hz	2	0,3	28	28
870							
930							
1720	1700 – 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation b) 217 Hz	2	0,3	28	28
1845							
1970							
2450	2400 – 2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation b) 217 Hz	2	0,3	28	28
5240	5100 – 5800	WLAN 802.11 a/n	Pulse modulation b) 217 Hz	0,2	0,3	9	9
5500							
5785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

a) For some services, only the uplink frequencies are included.
b) The carrier shall be modulated using a 50 % duty cycle square wave signal.
c) As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

*** Recommended separation distances between other equipment and this device – avoid stacking and locating it near other electronic devices.**

*** If abnormal behavior is observed due to EM disturbances, please relocate the device accordingly.**

Distributed by:
Prius Healthcare USA
4027 Tampa Road, #3200
Oldsmar, FL 34677, USA

TEL: (813)854-5464
FAX: (813)854-5442

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