



**Yes, you can.**

## **microAIR® MA1000**

***Alternating Pressure Low Air Loss Mattress System***

### **User Manual**



This manual **MUST** be given to the user of the product.  
**BEFORE** using this product, this manual **MUST** be read and saved for future reference.

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# 1. Safety

The safety section contains important information for the safe operation and use of this product. Read this information and any other safety information included with the product.

## Warning

- ❖ Connect the Master Control unit to a proper power source.
- ❖ Don't use the system in the presence of any flammable gases (such as Anesthetic Agents).
- ❖ Keep the pump and mattress away from open flame.
- ❖ Keep sharp objects away from the mattress.
- ❖ The device is not AP/APG protected.
- ❖ Do not place a heating device on or close to the mattress system.
- ❖ Use the product only for its intended use as described in this manual. Do not use attachments not recommended by the manufacturer.
- ❖ If pain, irritation, numbness, swelling, or redness occurs discontinue use and contact a healthcare professional.
- ❖ This device can be used in professional healthcare environment.
- ❖ This device should not be used adjacent to or stacked with other equipment.
- ❖ Medical electrical equipment needs special precautions regarding EMC and needs to be installed according to the EMC information provided.
- ❖ The product should never be left unattended when plugged in.
- ❖ Close supervision is necessary when the product is used by, on, near children or physically challenged individuals.
- ❖ Never block the air opening of this product or place it on a soft surface, such as a bed or couch, where the air openings may be blocked. Keep the air openings free of lint, hair, and other similar debris.
- ❖ Never drop or insert objects into any openings.
- ❖ DISCONNECT POWER SUPPLY BEFORE OPENING.
- ❖ Power cable & pump shall be placed at the foot-side of the patient to prevent any risk of strangulation due to cable.
- ❖ Please ensure the microAIR® MA1000 Alternating Pressure Low Air Loss Mattress System is used with stable power or in connection with UPS.
- ❖ To reduce the risk of electrocution:
  - Always unplug product immediately after use.
  - Do not use while bathing.
  - Do not place or store product where it can fall or be pulled into a tub or sink.
  - Do not place in or drop into water or other liquids.
  - Do not reach for product that has fallen into water. Unplug immediately.

## **⚠Caution**

- ❖ The Alternating System should always be used in accordance with your Institution's pressure care guidelines.
- ❖ Re-positioning of the patient is always recommended when using an alternating pressure air mattress (APAM).
- ❖ The Control unit can only be repaired by an authorized technician.
- ❖ Do not drop the control unit.
- ❖ Do not store the system in direct sunlight or extreme cold conditions.

## **2. The Purpose of this Manual**

This operation manual is mainly focused on the set up, cleaning, and routine maintenance of the microAIR® MA1000 Alternating Pressure Low Air Loss System. We recommend you keeping this manual handy to answer most of the question related to the system.

## **3. Intended Use**

The microAIR® MA1000 system is intended for patients who are at risk of developing pressure ulcers according to your sound clinical judgment. The device can also be used for patients who have an existing stage 1, 2, 3, and 4 pressure ulcer, in conjunction with your policy on pressure area management.

## **4. Indications for Use**

Indicated for patients who are at risk of developing pressure ulcers according to your sound clinical judgment.

## **5. 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.

## **6. Contraindications for use**

Alternating pressure therapy should not be used for patients with unstable fractures, gross oedema, burns or an intolerance to motion.

## **7. Product Description**

The *microAIR® MA1000* system is a unique and innovative specialized mattress replacement unit. The system utilizes true low air loss technology with a high flow rate that provides pressure management for the treatment of pressure ulcers. The advanced 3 in 1 alternating function also provides active prevention for pressure relief (the cells inflate and deflate in a 3:1 cycle, meaning 2/3 of the body is always supported at any one time). The system also comes with pulsation, which simulates a massage to assist in maximizing a patient's comfort. This microAIR® MA1000 system is intended for use by those who are at least

fifteen years in age.

### **Master Control Unit Features**

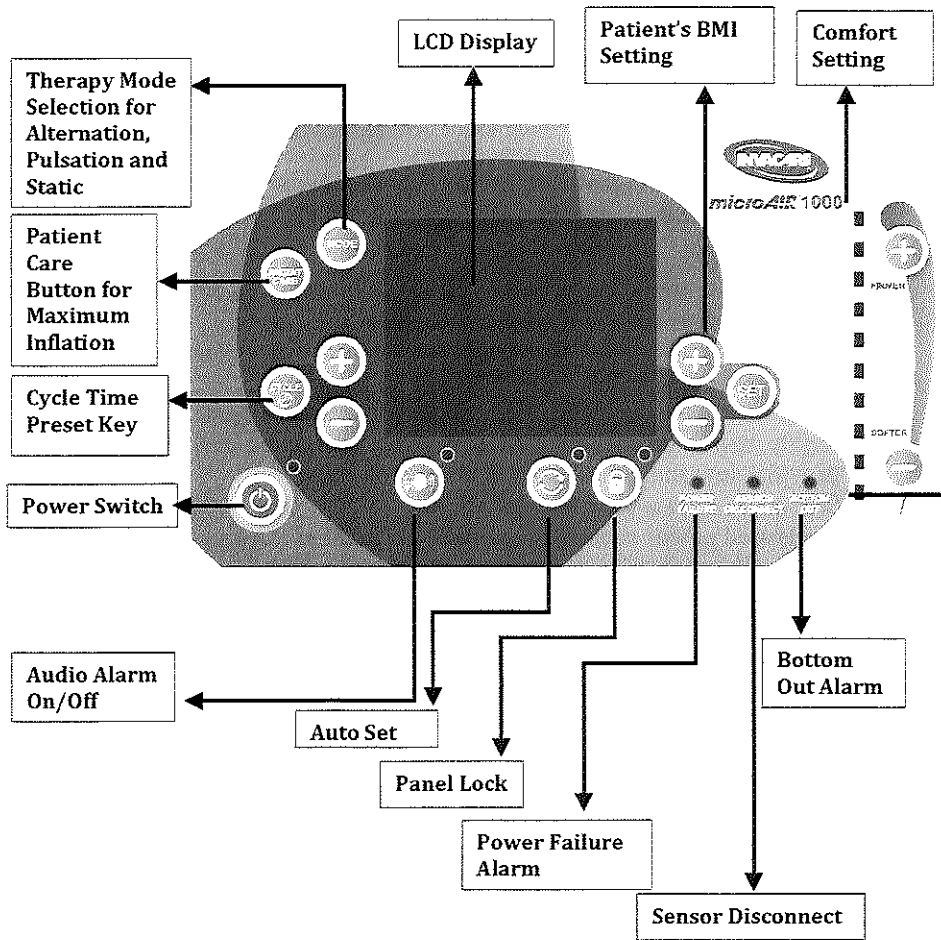
- User-friendly controls
- Large LCD display on each function status.
- CPR quick release
- Patient Care mode provides quick maximum inflation within seconds to help transfers and nursing procedures
- Auto Set mode sets mattress pressure based on patient's height and weight
- Lock out function avoids tampering with settings.

### **Mattress Features**

- Therapeutic low air loss helps manage moisture and provides alternating therapy to prevent and treat pressure ulcers
- Integrated glide sheet to base cover for easy transferring and reduced patient shearing
- Modularized design on each air cell for easy replacement
- Highly vapor permeable and oversized pliable quilted nylon top cover provides low shear, friction and moisture protection
- CPR quick release for rapid deflation
- Integrated power cable management for tidiness
- 2" convoluted foam base provides additional safety
- Incorporate sensor technology with Auto mode to constantly monitor the mattress pressure based on input of the patient's height and weight
- Invacare HeelSense™ Technology provides further therapy and comfort by decreasing pressure in patients vulnerable heel area
- Integrated top cover air bolsters that automatically inflate and deflate.


### **⚠ Caution**

Alternating pressure should not be applied to pain or pain-sensitive patients. In these cases, we recommend the application of static mode or other suitable foam overlays or other materials which can be found in the Invacare product range.



## 8. Technical Data

### Master Control Unit








|                                      |   |
|--------------------------------------|---|
| Model Name                           | microAIR® MA1000  |
| Model No.                            | MA1000P   |
| Size (inch)                          | 12.2" (L) x 6.7" (W) x 13.2" (H)  |
| Weight                               | 13.7 lbs (6.2kg)  |
| Cycle Time (min)                     | 3 – 95 minutes  |
| Min Operating Pressure               | 8 +/- 6mmHg   |
| Max Operating Pressure               | 35 +/- 6mmHg  |
| Max Flow-rate                        | 1275 L/min  |
| Rated Voltage                        | AC 110-120V   |
| Rated Frequency                      | 60 Hz   |
| Max Current                          | 3 Amp   |
| Fuse Rating                          | T5AH 250V   |
| Classification                       | Class II(W/functional earth), Type BF <br>Not AP/APG type |
| Mode of Operation                    | Continuous  |
| Power Cable                          | 15ft, non-shielding, AC powered   |
| Environment (Temperature)            | Operation: 15°C to 35°C (59°F to 95°F)<br>Storage: 5°C to 60°C (41°F to 140°F)  |
| Environment (Humidity)               | 15% to 90% non-condensing   |
| Operation Atmospheric Pressure Range | 800 hPa to 1060 hPa   |
| Standard                             | IEC 60601-1,<br>CAN/CSA C22.2 No. 60601-1,<br>IEC 60601-1-2   |

### Mattress Replacement (applied part)

|                 |   |
|-----------------|---|
| Model Name      | microAIR® MA1000 Air Mattress           |
| Model No        | MA1000M                                 |
| Size (inch)     | 80" (L) x 36" (W) x 10" (H)             |
| Weight (lbs)    | 41 lbs                                  |
| Cells Number    | 18 cells                                |
| Cells Material  | Nylon coated with PU                    |
| Cover Material  | Nylon woven fabric w/ PU coating finish |
| Base Material   | Woven Polyester fabric w/ PVC backing   |
| Weight Capacity | 600 lbs. (272 kgs)                      |

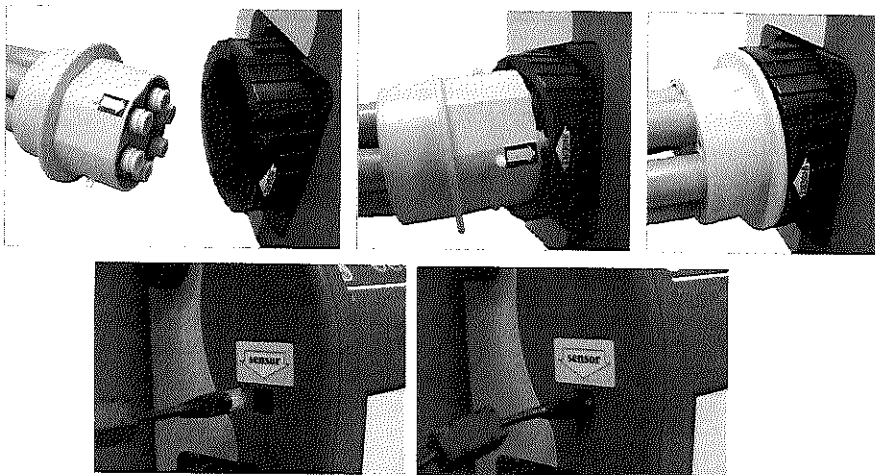


### Symbols information essential for proper use

|   |   |   |                    |
|---|---|---|--------------------|
|  | Type BF<br>Protection Against<br>Electronic Shock |  | Class II Equipment |
|  | Consult instructions for<br>use                   |  | Waste Disposal     |
|  | Caution, Consult<br>accompanying<br>documents     |  | Keep dry           |
|  | SGS product certification<br>mark                 |   |                    |

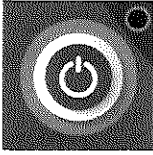
## 9. Instructions for Proper Use

1. Remove the existing mattress from the bed frame.
2. Replace the standard mattress with mattress replacement system (orient mattress so that the air tube is at the foot of the bed). Remove the mattress replacement from the box and place it directly on the bed.
3. Secure straps beneath the mattress to the bed frame.
4. Position the control unit on the foot board of the bed frame.
5. Attach the air tube connector and auto sensor connector to control unit's socket.

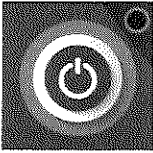


6. Verify that air hoses are not kinked under the mattress.
7. Attach cover to mattress.

8. Plug in the control unit and turn on the power which is located on the left side corner on control panel (the STANDBY LED will illuminate).



9. Press the STANDBY/OPERATE switch button on the control panel (OPERATE LED will now be illuminated and the control unit will be in operation).



### **Auto Set Mode**

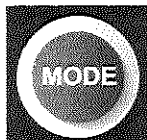


Ensure the auto sensor connector is connected properly before pressing Auto SET button. When Auto SET function is activated, control unit is automatically optimizing patient's comfort setting base on patient's BMI input. Press the PATIENT CARE button for fast inflation. Allow 4-7 min for full inflation.

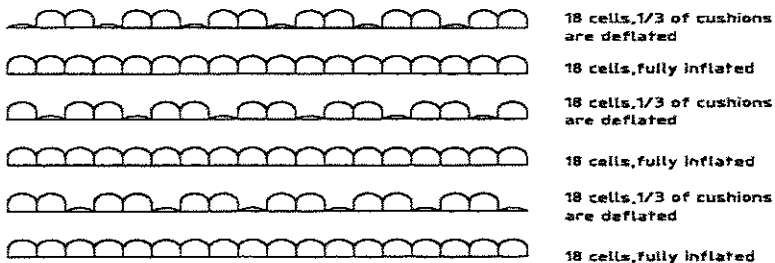
1. Press the SET button to enter into settings mode to input patient's BMI. Settings is divided into three portions. The first settings mode will allow for selection between inch/lbs and cm/kgs (height and weight will flash on LCD screen during this mode). Press the SET button a second time to enter into the next settings mode that allows for selection of height (Height will flash on the LCD screen during this mode). Press the SET button again to enter into the last settings mode that allows for selection of weight (Weight will flash on the LCD screen during this mode). Finally press the SET button to exit settings mode completely with your selected settings for height and weight.
2. When the mattress is fully inflated, the caregiver can transfer the patient onto the mattress. (Note: the mattress can be inflated while a patient is laying on it)
3. Press PATIENT CARE again to return previous setting.
4. By activating the PATIENT CARE function, all chambers of the mattress system are inflated with maximum system pressure for 30 minutes. After 30 minutes, the system defaults back to previous setting.

## Alternate Mode

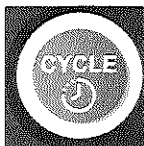
1. Press the "MODE" button to select the Alternate and Static Function to enable the 3-1 alternating functions.



### Alternation Cycle Illustration

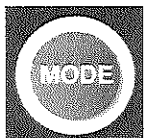


2. Press "CYCLE" button for alternating time setting. Alternating time can be adjusted from 3 min to 20 min by increments of 1 min, and for 20 min to 95 minutes by increments of 5 min. The Alternating time will be displayed on the Time display window on the control panel.



## Static Mode

1. Press the "MODE" button to select the Static Mode and adjust the comfort control by pressing the SOFT/FIRM button to achieve maximum patient comfort.



2. In this mode, the system provides low air loss therapy. Perform a hand check by placing a hand under the patient's buttocks between the cells and foam. The patient should have at least 4 cm of clearance between the buttocks and the bottom of the mattress. If the STATIC function is selected, the time display will remain blank.

**Note:** The caregiver can select the "Static Mode" to provide the patient with only low air loss therapy.

### Fowler

When Fowler function is activated (Auto-Set), the mattress will increase the comfort level setting by 3 levels and provides additional support to the patient (it is **NOT** recommended for the patient to be placed on Fowler setting for more than 60 minutes to prevent being on a higher pressure setting than what is necessary). The Fowler function will engage when patient head angle is larger than 30 degrees.

### Alarm On/Off



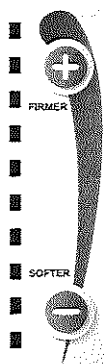
The Alarm will be triggered when a Sensor Disconnect & Bottoming Out is detected. Disable the alarm by pressing the button.

### Lock Button



1. The microAIR® MA1000 is equipped with auto-locking intelligence. All function keys will be automatically disabled if the control panel is not in operation for 2 minutes and when this function is engaged an green LED will illuminate.
2. To unlock the control panel, simply press and hold the "LOCK" button for 5 seconds.

### Comfort Level Setting

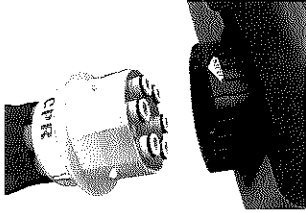


| PATIENT WEIGHT |                |
|----------------|----------------|
| LEVEL          | STANDARD (LBS) |
| 1              | 80             |
| 2              | 100            |
| 3              | 125            |
| 4              | 150            |
| 5              | 175            |
| 6              | 200            |
| 7              | 225            |
| 8              | 250            |
| 9              | 275            |
| 10             | 300            |

**Note:** The pressure level settings on the weight chart are only a guideline. The proper adjustment of the pressure level must be applied according to individual patient.

### CPR Deflation

The air hose connectors can be disconnected from the controller to quick release the air when in an emergency situation where CPR is to be performed.



## 10. Cleaning

### The Mattress

The mattress should be cleaned on the bed weekly using a damp soft cloth and mild detergent. If top cover or base cover becomes grossly soiled, put on clean gloves, plastic gown and eye protection before removing top and base covers and disposing according to standard hospital procedures for contaminated waste and replace with clean covers.

**Covers** can be washed and thermally disinfected in a washing machine by following below procedure: **(Never use phenol based cleaning solutions).**

|            |              |              |            |
|------------|--------------|--------------|------------|
| Industrial | Break washes | Cold         | 10 minutes |
|            | Main washes  | 60°C (140°F) | 16 minutes |
|            | Extraction   |              | 2 minutes  |
|            | Cold Rinses  |              |            |
|            | Extraction   |              | 5 minutes  |
| Domestic   | Pre-wash     | Cold         |            |
|            | Main Wash    | 60°C (140°F) | 10 minutes |
|            | Extraction   |              | 2 minutes  |
|            | Cold Rinses  |              |            |
|            | Extraction   |              | 5 minutes  |

### **Tumble Drying or Tunnel Drying is not recommended.**

Mattress Cells can be wiped over with a solution of sodium hypochlorite 1000ppm or any other non-phenolic germicidal solution.

## The Master Control Unit

### CAUTION

SWITCH OFF THE ELECTRICAL SUPPLY TO THE PUMP AND DISCONNECT THE POWER CORD FROM THE MAIN SUPPLY BEFORE CLEANING AND INSPECTION

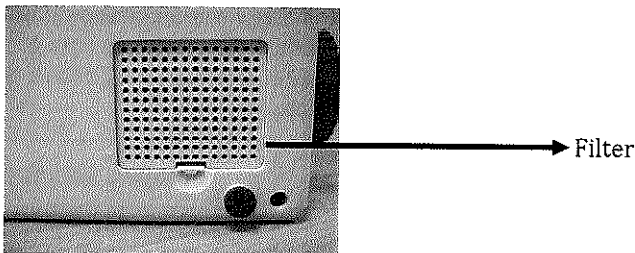
The pump unit should also be cleaned weekly using a damp soft cloth and mild detergent.

The pump casing is manufactured from ABS plastic and if the case is soiled the pump can be wiped down with a sodium hypochlorite solution to dilution of 1000ppm or any EPA- approved hospital grade disinfectant. **(Do not use phenol based cleaning solution).**

The air filter should also be cleaned and checked as often as possible at a minimum of every six months. Air Filter can be removed by pinching center of the filter and pulling outward from the back of the control unit.

### Replace Air Filter

1. Remove air filter and replace with a new one.
2. Use a soft bristle to remove dust and difficult dried-on soil.



### **NOTE:**

1. Do not use phenol based cleaning solutions.
2. Switch off the electrical supply to the pump and disconnect the power cord from the main supply before cleaning and inspection)

### Waste Disposal



This Product has been supplied from an environmentally aware manufacturer that complies with the WEEE.

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according the legislation. Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

## 11. Storage and Handling

### Master Control Unit:

- Check the power cord and plug for abrasions or excessive wear.
- Plug in the unit and verify air flows from the units hose connection ports.
- Place in plastic bag for storage.

### Mattress:

- Check the air manifold for kinks or breaks. Replace if necessary.
- Twist the CPR plug at the head of the mattress and disconnect the air feed tubes. All the air will now be expelled. Starting at the head end, the mattress can now be rolled. Use the base mounted straps for containment.
- Place in plastic bag of storage.

It is recommended the following guidelines are used whenever this system is being stored or transported another location:

Temperature limitations: 5°C ~ 60°C

Relative Humidity: 15% to 90% non-condensing

## 12. Maintenance & Troubleshooting

No daily maintenance is required. It is intended this equipment should only be serviced by properly qualified, authorized technical personnel. In case of minor trouble please refer to the Troubleshooting table in this section. Contact the provider or Invacare for questions and repair information.

| Symptom   | Inspection Procedures  | Possible Solution  |
|---|--|--|
| The pump is not functioning.  | <ol style="list-style-type: none"><li>1. Check for correct power voltage connected.</li><li>2. Check for blown fuse.</li></ol>     | <ol style="list-style-type: none"><li>1. Connect to correct main power source.</li><li>2. Replace new fuse.</li><li>3. Refer to service if problem persist. Contact the provider or Invacare.</li></ol>                            |
| Bottom out LED is constantly illuminated or The mattress is not inflating while pump is in operation. | <ol style="list-style-type: none"><li>1. Check for any loose connections.</li><li>2. Check for air leakage on air cells.</li></ol> | <ol style="list-style-type: none"><li>1. Ensure all connectors are properly attached.</li><li>2. Replace faulty air cell if necessary.</li><li>3. Refer to service if problem persist. Contact the provider or Invacare.</li></ol> |
| Pump is noisy.  | <ol style="list-style-type: none"><li>1. Ensure pump is resting against solid surface.</li></ol>                                   | <ol style="list-style-type: none"><li>1. Reposition the pump.</li><li>2. Refer to service if problem persist. Contact the provider or Invacare.</li></ol>  |

## 13. EMC Related Notifications

### Recommended separation distance between portable and mobile RF communications equipment and the microAIR® MA1000

The microAIR® MA1000 is intended for use in an electromagnetic environment (for professional healthcare) in which radiated RF disturbances are controlled. The customer or the user of the microAIR® MA1000 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the microAIR® MA1000 as recommended below, according to the maximum output power of the communications equipment.

| Rated maximum output power of transmitter<br>W | Separation distance according to frequency of transmitter<br>m |  |   |
|--|--|--|---|
|  | 150 kHz to 80 MHz<br>$d = 1,2\sqrt{P}$                         | 80 MHz to 800 MHz<br>$d = 1,2\sqrt{P}$ | 800 MHz to 2,7 GHz<br>$d = 2,3\sqrt{P}$ |
| 0,01   | 0,12   | 0,12                                   | 0,23                                    |
| 0,1  | 0,38   | 0,38                                   | 0,73                                    |
| 1  | 1,2  | 1,2                                    | 2,3                                     |
| 10   | 3,8  | 3,8                                    | 7,3                                     |
| 100  | 12   | 12                                     | 23                                      |

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

### Manufacturer's declaration-electromagnetic emissions

The microAIR® MA1000 is intended for use in the electromagnetic environment (for professional healthcare) specified below.

The customer or the user of the microAIR® MA1000 should assure that it is used in such an environment.

| Emission test   | Compliance     | Electromagnetic environment-guidance<br>(for professional healthcare environment)   |
|---|----------------|---|
| RF emissions<br>CISPR 11                                    | Group 1        | The <u>microAIR® MA1000</u> uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.                          |
| RF emissions<br>CISPR 11                                    | Class A        | The <u>microAIR® MA1000</u> is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC 61000-3-2                         | Not applicable |   |
| Voltage fluctuations<br>/flicker emissions<br>IEC 61000-3-3 | Not applicable |   |



### Manufacturer's declaration-electromagnetic immunity

The microAIR® MA1000 is intended for use in the electromagnetic environment (for professional healthcare) specified below.

The customer or the user of the microAIR® MA1000 should assure that it is used in such an environment.

| Immunity test   | IEC 60601 test level  | Compliance level   | Electromagnetic environment-guidance (for professional healthcare environment)   |
|---|---|--|--|
| Electrostatic discharge(ESD)<br>IEC 61000-4-2   | Contact:±8 kV<br>Air±2 kV,±4 kV,±8 kV,±15 kV  | Contact:±8 kV<br>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<br>± 1kV for input/output lines  | ± 2kV for power supply lines<br>Not applicable   | Mains power quality should be that of a typical professional healthcare environment.   |
| Surge IEC 61000-4-5   | ± 0.5kV, ±1kV line(s) to line(s)<br>± 0.5kV, ±1kV, ± 2kV line(s) to earth   | ± 0.5kV, ±1kV line(s) to line(s)<br>Not applicable   | Mains power quality should be that of a typical professional healthcare environment.   |
| Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | Voltage dips:<br>0 % UT; 0,5 cycle<br>0 % UT; 1 cycle<br>70 % UT; 25/30 cycles<br><br>Voltage interruptions:<br>0 % UT; 250/300 cycle | Voltage dips:<br>0 % UT; 0,5 cycle<br>0 % UT; 1 cycle<br>70 % UT; 30 cycles<br><br>Voltage interruptions:<br>0 % UT; 300 cycle | Mains power quality should be that of a typical professional healthcare environment. If the user of the <u>microAIR® MA1000</u> requires continued operation during power mains interruptions, it is recommended that the <u>microAIR® MA1000</u> be powered from an uninterruptible power supply. |
| Power frequency(50, 60 Hz) magnetic field IEC 61000-4-8   | 30 A/m<br>50 Hz or 60 Hz  | 30 A/m<br>60 Hz  | The <u>microAIR® MA1000</u> power frequency magnetic fields should be at levels characteristic of a typical location in a typical 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 normal. The cells connected with pump still have air inside which won't affect the use and function of the system.
- \* During DIP, pump will show abnormal but won't affect essential performance and no need to worry the basic safety.

## Manufacturer's declaration-electromagnetic immunity

The microAIR® MA1000 is intended for use in the electromagnetic environment (for professional healthcare) specified below.

The customer or the user of the microAIR® MA1000 should assure that it is used in such and environment.

| Immunity test                 | IEC 60601 test level   | Compliance level  | Electromagnetic environment-guidance (for professional healthcare environment)  |
|-------------------------------|--|---|---|
| Conducted RF<br>IEC 61000-4-6 | 3 Vrms:<br>0,15 MHz – 80 MHz<br><br>6 Vrms:<br>in ISM bands<br>between<br>0,15 MHz and 80<br>MHz<br><br>80 % AM at 1 kHz | 3 Vrms:<br>0,15 MHz – 80 MHz<br><br>6 Vrms:<br>in ISM bands<br>between<br>0,15 MHz and 80<br>MHz<br><br>80 % AM at 1 kHz e) | <p><b>Portable and mobile RF communications equipment should be used no closer to any part of the <u>microAIR® MA1000</u> including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</b></p> <p><b>Recommended separation distance:</b><br/> <math>d = 1,2 \sqrt{P}</math><br/> <math>d = 1,2 \sqrt{P}</math> 80MHz to 800 MHz<br/> <math>d = 2,3 \sqrt{P}</math> 800MHz to 2,7 GHz</p> <p>Where <math>P</math> is the maximum output power rating of the transmitter in watts (<math>W</math>) according to the transmitter manufacturer and <math>d</math> is the recommended separation distance in metres (m).</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>  |
| Radiated RF<br>IEC 61000-4-3  | 3 V/m<br>80 MHz – 2,7 GHz<br>80 % AM at 1 kHz  | 3 V/m<br>80 MHz – 2,7 GHz<br>80 % AM at 1 kHz   | (This cell is shared with the row above and contains the same text as above.)   |

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**

The microAIR® MA1000 is intended for use in the electromagnetic environment (for professional healthcare) specified below.

The customer or the user of the microAIR® MA1000 should assure that it is used in such an environment.

| Test frequency (MHz) | Band <sup>a)</sup> (MHz) | Service <sup>a)</sup>   | Modulation <sup>b)</sup>          | Maximum power (W) | Distance (m) | IMMUNITY TEST LEVEL (V/m) | Compliance LEVEL (V/m) (for professional healthcare) |
|----------------------|--------------------------|---|-----------------------------------|-------------------|--------------|---------------------------|--|
| 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                  |                          |   |                                   |                   |              |                           |  |
| 1 720                | 1 700 – 1 990            | GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS | Pulse modulation b) 217 Hz        | 2                 | 0,3          | 28                        | 28   |
| 1 845                |                          |   |                                   |                   |              |                           |  |
| 1 970                |                          |   |                                   |                   |              |                           |  |
| 2 450                | 2 400 – 2 570            | Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7            | Pulse modulation b) 217 Hz        | 2                 | 0,3          | 28                        | 28   |
| 5 240                | 5 100 – 5 800            | WLAN 802.11 a/n   | Pulse modulation b) 217 Hz        | 0,2               | 0,3          | 9                         | 9  |
| 5 500                |                          |   |                                   |                   |              |                           |  |
| 5 785                |                          |   |                                   |                   |              |                           |  |

**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.

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

**CAUTION:** Please do not use any other cables or accessories not approved by the manufacturer in this manual to avoid negative influence on electromagnetic compatibility.

## 14. Expected Service Life

- For maintain basic safety and essential performance in regards to EMC, the microAIR® MA1000 has an expected service life of two years. To maintain the condition of the alternating mattress system, service the system regularly according to the schedule recommended by INVACARE.
- 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 microAIR® MA1000 Alternating Pressure Low Air Loss Mattress System or any of its components.

## 15. Limited Warranty

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the mattress and cover when purchased new and unused to be free from defects in materials and workmanship for a period of one year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants the electronics of the control unit when purchased new and unused to be free from defects in materials and workmanship for a period of one year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. The internal pump, blower and compressor are warranted for a year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the back cover. Provide dealer's name, address, model number, and the date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number.

Invacare will issue a return authorization. The defective unit or parts must be returned for warranty inspection using the serial number, when applicable, as identification within thirty days of return authorization date. DO NOT return products to our factory without our prior consent. C.O.D. shipments will be refused; please prepay shipping charges.

LIMITATIONS AND EXCLUSIONS: THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR OR FAILURE TO ADHERE TO THE ENCLOSED INSTRUCTIONS. IN ADDITION, THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED; PRODUCTS SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE; OR PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT INCLUDING, BUT NOT LIMITED TO: MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE; PRODUCTS DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL; PRODUCTS REPAIRED BY ANYONE OTHER THAN AN INVACARE DEALER, SUCH EVALUATION SHALL BE SOLELY DETERMINED BY INVACARE.

THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN.

THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. INVACARE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.

THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.



**Yes, you can.**

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