TéléMédic
6700, avenue Choquette bur. 200
St-Hyacinthe (Québec)
J2S 8L1
Tél: 1-866-550-1414
Fax: (450) 250-1416
www.telemedic.ca

Operator's Manual

Multi User Multi Sensors

Model MUMS-002

All the requisite efforts have been done to ensure that the information contained in this document was complete and precise at the moment of printing. However, the information can be modified without notice.

Declaration of conformity
This device is registered as CSA International certified. To see the certificates of official declaration, consult the online documentation on TéléMédic's website: http : //www.telemedic.ca
This device complies with Industry Canada's low power radio devices norms RSS-210. Certification number: 6418A-MUMS002
This device complies with the FCC (Federal Communications Commission) intentional radio frequencies transmission.
Identification number: FCC ID : T3W-MUMS-002

Trademark
Vie-Gie Med is registered trademarks. Other brands and products names mentioned in this document are properties of the respective holders.

Ordering information
You can order updates of this document directly on TéléMédic's website: http://www.telemedic.ca .

Comments
TéléMédic appreciates your comments relating to this manual. Please send your comments directly to info@telemedic.ca.

Support
For all technical questions or defectiveness, please contact TéléMédic's user support service at 1-866-550-1414 or at info@telemedic.ca

Meaning of symbols used in this manual:

	**Warning:** Failure to these instructions may lead to unexpected operation or defects of the system.
	**Important:** Important element to consider in the use of this device.

Meaning of device symbols:

	**Warning:** Consult accompanying documents. This manual and the associated sections on TéléMédic's website (see manual for references) should be consulted before using this device.
	This equipment complies with general requirements for safety of medical electrical equipment CAN/CSA C22.2 No.601.1 and CAN/CSA C22.2 No.60601-1-1, UL 2601-1. This equipment also complies with electromagnetic compatibility requirements for medical electrical equipment CAN/CSA C22.2 No 60601-1-2
	This device complies with FCC (Federal Communications Commission) rules part 15 (Radio frequency devices) for the United States.
	This equipment includes radio frequency transmitter which generate non-ionizing radiation.

Table of contain

The Multi User Multi Sensors, MUMS 4
Indications for use 4
Main components 4
Installation 6
Turning on the unit 6
MUMS indicators 6
Language selection 7
Acquiring vital signs session 8
Emergency stop 8
Server data transmission 8
Battery recharge (available only on model MUMS-002) 8
Precautionary measures 8
Functional preventive check-ups 9
Maintenance 9
Optimal operating performance 9
Warranty 9
Technical support 10
Conformity 10
Technical specifications 11

Pictures list

Picture 1: Components of MUMS 4
Picture 2: Accessories port of MUMS 5

Table list

Table 1 List of supported optional medical equipment 6
Table 2 List of accessories on the MUMS 6

The Multi User Multi Sensors, MUMS

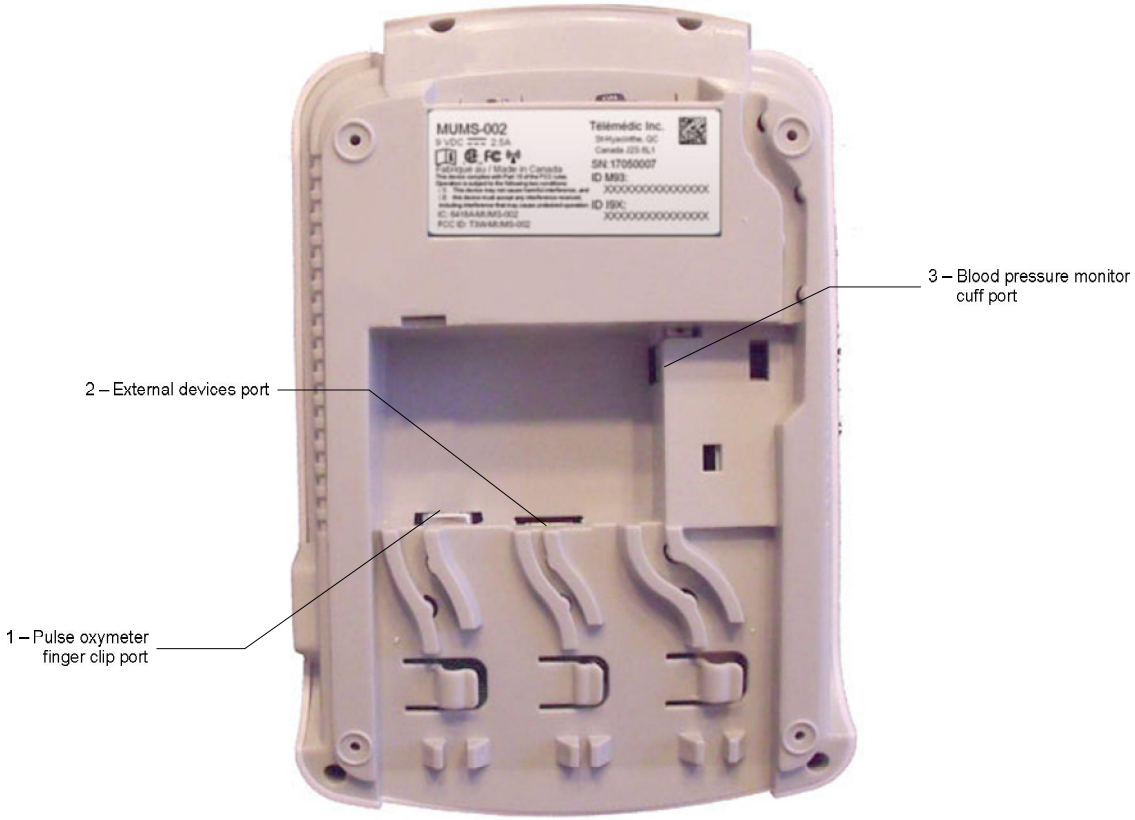
Indications for use

The MUMS is a device that acquires vital signs using internal devices and external devices. Vital signs acquired are displayed on the device and then transmitted to a database on a server accessible on the Internet.

This device can be deployed to several locations. To ensure that data can be transmitted to the server, the device must operate in conjunction with a communication base E90 from TéléMédic. Once vital signs acquired, the MUMS send those in the secure way to communication base TéléMédic E90. This communication base sends those to server database using a network connection or through a phone line.

Main components

Picture 1: Components of MUMS



Picture 2: Accessories port of MUMS

Installation

The MUMS is compatible only with optional medical devices mentioned in Table 1 and the permanent and replaceable accessories in Table 2.

- With the Table 1, choose the appropriate cable for your medical device.
- Connect the flat cable into the external devices port (number 2 of the Picture 2) under the MUMS unit. Note that this connector must be connected in a particular orientation. The two small screws on the connector must be oriented toward the bottom of the cavity so that they are not visible once the connector is connected. Make sure that the small locks on each side of the connector are locked. It is necessary to secure the accessory cables by placing them in the right lock sluts that are made for this purpose.
- Then connect the other end of the cable into the appropriate connector on your external devices (You can refer to the manufacturer's user manual of your equipment if necessary).

Device Type	**Model**	**Manufacturer**	**Appropriate TéléMédic cable**	**Note**
Scale and blood glucose monitor	UC-321P et OneTouch Ultra 2	A&D et LifeScan	31-043	Scale and blood glucose setup
Scale	UC-321P	A&D	31-044	Scale only
Blood glucose monitor	OneTouch Ultra 2	LifeScan	31-042	Blood glucose monitor only

Table 1 List of supported optional medical equipment

Accessories	**Model**	**Manufacturer**	**TéléMédic part number**	**Note**
Pulse oxymeter finger clip	8000AA-1	Nonin Medical	50-11019	Included with the MUMS unit
Blood pressure monitor cuff, medium	UA-280	A&D	50-81003	Included with the MUMS unit
Blood pressure monitor cuff, small	UA-279	A&D	50-81004	Supply on demand
Blood pressure monitor cuff, large	UA-281	A&D	50-81002	Supply on demand

Table 2 List of accessories on the MUMS

Turning on the unit

Connect the power supply provided by TéléMédic **(TéléMédic Part no 50-15007 / Manufacturer CUI Inc. # EPS090250U-P5P-KH)** to the MUMS power input connector (number 6 of the Picture 1). The power supply should then be connected to a standard electrical outlet (120V, 60Hz).

Turn on the power switch at the back of the MUMS (number 7 of the Picture 1). The MUMS should be ready to use in few seconds.

MUMS indicators

Low battery indicator **Battery led level indicator** (number 2 of the Picture 1) **(Available on the MUMS-002 only)**

- Turns on and stays on until the low battery condition is true. (see the section on battery recharge at the page 8)

LCD display

Display instructions to help user in his MUMS session (number 1 of the Picture 1).

- Always on.
- Guide the patient in taking is vital signs.

7 segments display

Display the value of vital signs (number 3 of the Picture 1).

- Turn on when the vital sign are toke and ready to display.
- « Dash, void, dash » means that the acquisition is cancelled.
- « Void, dash, void » means that the acquisition is not toke in time.
- « Numerical value » means that the vital sign is acquired with success and the value of this vital sign.
- If the message “EXX” is displayed, that means that some internal error is occurred. In this case, you should turn off the MUMS unit and then turn it on to take another MUMS session.

Identification Key port

Place where to put the identification key (number 4 of the Picture 1).

- The key port indicator flashes when the user must insert or retire his identification key.

The MUMS indicates a fault when a constant and periodic noise is emitted. In this case, please contact the technical support of TéléMédic.

Language selection

It is possible to change the language of the MUMS by fallowing theses steps:

- Turn off the MUMS by putting the power switch at the “OFF” position (number 7 of the Picture 1).
- Hold down the button (number 5 of the Picture 1).
- Turn on the device by putting the power switch at “ON” (number 7 of the Picture 1).
- Hold down the button (number 5 of the Picture 1) until the menu of language selection appears.
- Press the button (number 5 of the Picture 1) to toggle between “French” and “English”.
- When the arrow point on your choice, release the button (number 5 of the Picture 1) and wait until the MUMS start up with the selected language.

Acquiring vital signs session

When the power switch (number 7 of the Picture 1) is turned ON, the MUMS run a short self initialization. When the initialization is done, the unit is ready to acquire vital signs. To perform a session of acquiring vital signs, follow the instructions that are displayed on the LCD (number 1 of the Picture 1).

A complete MUMS session with all externals devices and accessories connected to it (number 1, 2 and 3 of the Picture 2) can be resuming with those steps:

1. Insert your identification key (number 8 of the Picture 1) in the identification key port (number 4 of the Picture 1) when the MUMS asking for.
2. Fallow the instructions on the LCD display (number 1 of the Picture 1) to take the blood glucose. Press the button (number 5 of the Picture 1) if you want to cancel this step.
3. Fallow the instructions on the LCD display (number 1 of the Picture 1) to take your weight if the weight scale is connected to the MUMS. Press the button (number 5 of the Picture 1) if you want to cancel this step.
4. Install the blood pressure monitor cuff on your arm by fallowing instructions stamped on it (number 9 of the Picture 1).
5. Install the pulse oxymeter finger clip (number 10 of the Picture 1) on your finger tip.
6. Lay down your arm on the table at the height of your heart and don't move this arm.
7. Press the button (number 5 of the Picture 1) to start the measure of the blood pressure monitor and the pulse oxymeter. Stay still for all duration of the acquisition.
8. Remove the blood pressure monitor cuff (number 9 of the Picture 1) and the pulse oxymeter finger clip (number 10 of the Picture 1) when the MUMS asked for it.
9. Remove your identification key (number 8 of the Picture 1) and wait data transferred to the communication base E90.
10. The MUMS comes back at the beginning of his program, ready to proceed to another acquiring session.

Emergency stop

During the blood pressure measure, if you feel uncomfortable, you can press the button (number 5 of the Picture 1) to stop the blood pressure measuring.

Server data transmission

The transmission of data to the server is done automatically at the end of the session. If the server can't be reached, then the vital signs are stored and kept in the unit's internal memory until the link with the communication base E90 or the link with is restored. It is possible to force a transfer of data to the server. Once the MUMS is turned on and waiting for an identification key (number 8 of the Picture 1), press the button (number 5 of the Picture 1) and hold it until the symbol "?" becomes the TéléMédic logo. Wait a few seconds to allow the MUMS device complete it data transfer.

Battery recharge (available only on model MUMS-002)

The MUMS-002 to an internal battery backup that allows it to operate without external power for a period of approximately 5 hours of continuous use.

The charging time for full recharge of the battery is 4 hours. Charging the battery should be performed when the low battery indicator is on, (number 2 of the Picture 1)

Precautionary measures

The MUMS unit is a precise scientific device that requires some basic precautions during use. Following the advice listed below will ensure your MUMS unit longevity, durability and optimal operating performance.

Never:

- Open or dismantle the device.
- Hit or throw the device.
- Subject the device to sudden temperature changes.
- Put the device in an area exposed to high temperature, high moisture or dusty contents.
- Clean the device with a vaporizing liquid, solvent, or detergent.
- Immerse the device.

Functional preventive check-ups

To ensure your MUMS optimal operating performance, do the following check-ups:

- The power switch (number 7 of the Picture 1)has to be up;
- Make sure the power supply is connected to a standard electrical outlet (120V, 60Hz) and that the plug is connected to the MUMS power input connector (number 6 of the Picture 1).

Maintenance

- Use a soft lightly damp cloth.

Optimal operating performance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. This medical equipment needs special precautions regarding electromagnetic compatibility (EMC). Installation and services shall take care of following precautions:

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, 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 antenna.
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Using other than those provided or specified by TéléMédic may affect the electromagnetic compatibility.

For installation adjacent, stacked or very close to electrical equipment, it is important to verify operation of either product. For MUMS refer to functional preventive check-ups above. For the other equipment refer to the manufacturer operating manual.

Also, portable and mobile RF communication equipment may affect the MUMS.

Warranty

This equipment is guaranteed for the period of 1 year after the date of purchase against manufacturing defects when returned along with the proof of date of purchase. During this period, the unit will be repaired or replaced free of charge if the failure is attributable to fault design or manufacture. This warranty does not cover damage or malfunction caused by improper handling or use contrary to the instruction in this manual.

Technical support

If you detect or suspect any malfunction or failure of the MUMS, or if you have questions about its installation or use, please contact TéléMédic's technical support at **1-866-550-1414** or visit our website at www.telemedic.ca.

Conformity

This device complies with Part 15 of the FCC rules (US) and RSS-210 (Canada). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by TéléMédic could void the user's authority to operate the equipment.

Technical specifications

- Radio communication:
  Transmission power = 750µW (-1.25 dBm)
  Transmission range = 100 metres/328 ft.
  Frequency = 916MHz (frequency band ISM)
  TéléMédic's proprietary protocol
- Standby generation:
  Rechargeable internal batteries 3.7V Lithium Ion
  Autonomy = 5 hours
  ⚠ Batteries are not intended to be changed by the operator.
- Power consumption:
  9W when battery is in charge
- Memory capacity:
  Up to 20000 vital signs values
- Data retention:
  40 years
- Inputs/Outputs:
  Communication port for accessories (number 1 and 3 of the Picture 2).
  Communications port for external devices (number 2 of the Picture 2).
  Identification key port (number 4 of the Picture 1).
- Dimensions:
  28 cm x 19 cm x 9 cm /11 in x 7.5 in x 3.5 in
- Weight:
  1.5kg / 3.3lbs.
- Temperature:
  Operation = 10-35 ºC (50-95 ºF)
  Storage = 5-40 ºC (41-104 ºF)
- Humidity:
  Operation = 20-80% / Storage = 15-90%
- Security:
  CAN/CSA C22.2 No.601.1, CAN/CSA C22.2 No.60601-1-1, CAN/CSA C22.2 No.60601-1-2 et UL 2601-1.

Guidance and manufacturer's declaration – electromagnetic emissions		
The MUMS is for use in the electromagnetic environment specified below. The customer or the user of the MUMS should assure that it is used in such an environment		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	GROUP 1	The MUMS uses RF energy only for its internal function. Therefore, its RF emissions are very low and are note likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The MUMS 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	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The unit MUMS is intended to be used in the electromagnetic environment specified below. The customer or the user of the MUMS unit 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	±4 kV contact ±4 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 lines	±1 kV for power supply lines There is no I/O	Mains power quality should be that of a typical commercial or hospital environment. It is recommended that the MUMS be used with a surge protector if the user uses the MUMS where the power quality is lower.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment. It is recommended that the MUMS be used with a surge protector if the user uses the MUMS where the power quality is lower.
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 cycle 70 % U_T (30 % dip in U_T) For 25 cycle <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 cycle 70 % U_T (30 % dip in U_T) For 25 cycle <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 MUMS requires continued operation during power mains interruptions, it is recommended that the MUMS be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) Magnetic field IEC 61000-4-8	3 a/m	3 a/m	
NOTE UT is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity			
The MUMS is intended for use in the electromagnetic environment specified below. The customer or the user of the MUMS should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment – guidance**
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2,5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the MUMS, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1,2\sqrt{P}$ $d = 1,2\sqrt{P}$ 80 MHz to 800 MHz $d = 2,3\sqrt{P}$ 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 MUMS is used exceeds the applicable RF compliance level above, the MUMS should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the MUMS. (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 MUMS

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

	Separation distance according to frequency of transmitter m		
Rated maximum output power of transmitter W	**150 kHz to 80 MHz** $1,2\sqrt{P}$	**80 MHz to 800 MHz** $1,2\sqrt{P}$	**800 MHz to 2,5 GHz** $2,3\sqrt{P}$
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.