MINI ONE XL - MANUAL

MINI ONE XL ORIGINAL INSTRUCTIONS
Year: 2019

Manufacturer: Preservatech Europe sp z o.o.
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       info@preservatech.eu

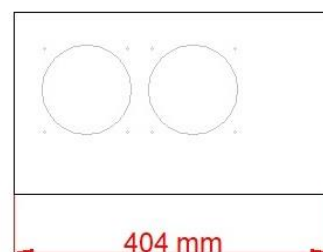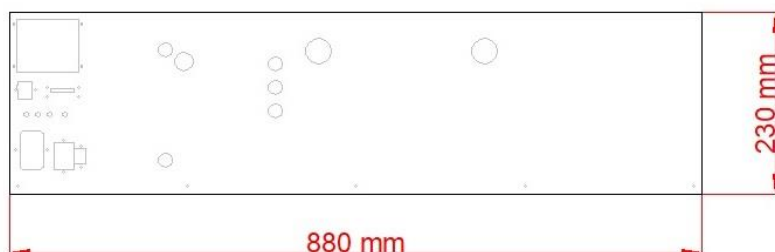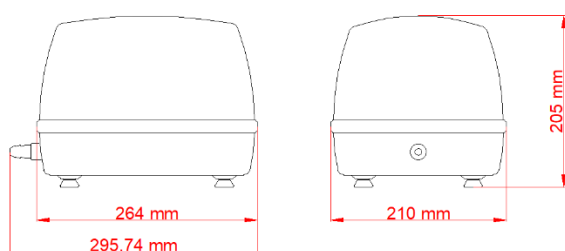## Table of Contents

INSTALLATION
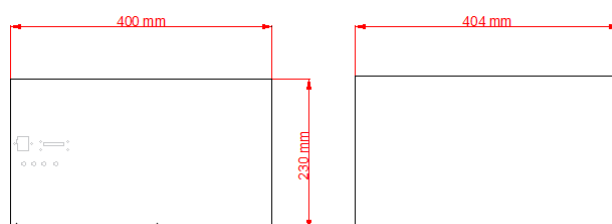
Please carefully read all the information in this manual to ensure proper operation of the Mini One humidity generator.

MAIN UNIT

AIR PUMP   WATER RESERVOIR

PACKING LIST

Standard package consists of:

Mini One XL unit (1 pc)		Air pump with silicone hose (1, 2 or 3 pcs) as per order	
Up to 100 meters hose. 6,8,10 or 14 mm diameter. As per order		air connector Quantity as per order.	
RH/T sensor (1 pc) with up to 125 meters cable. As per order		Water reservoir or automatic filling set. Automatic filling set includes RO system.	
Power cord (1 pc)		WiFi Antenna	

Optional parts (need to be ordered as additional parts)

- Alarm cables with LED
- Additional Air connectors for multiple case installation
- Additional hose
- Additional air pump(s)
- SD Card for data logger
- Extension cord for WiFi antenna

GENERAL DESCRIPTION

The system consists of a humidity control unit capable of generating a steady flow of conditioned air at a stable required humidity of 30% to 90% RH at normal indoor temperatures, at pressures suitable for distribution to museum display cases or archives storage rooms.
The basic operating principles of the unit are as follows:

Ambient room air is drawn by means of a diaphragm high pressure pump and pressured through a humidity control module contained in an insulated water tank. The water in the tank is held at a precise temperature by means of a refrigerant coil and a electric heater, to suit the required relative humidity output of the delivery air. The cleaned and humidified air is sent from the unit to a distribution system to one or more museum display cases. Air is distributed to the cases by small diameter hoses. Hoses can be 6, 8, 10- and 14-mm diameter and should be chosen accordingly to the size of the case, distance and number of cases. A digital RHT sensor is located in one of the cases.

INSTALLATION GUIDE

An improper installation can severely compromise the operation of the unit. A level operating surface, adequate ventilation, and good access are imperative.

OPTIONS FOR INSTALLATION:
Depends on the chosen version, system can be installed with:
-    Automatic filling system (needs access to a tap water source) or
-    External water reservoir which holds up to 20 liters of water.

Machine can be run with 1, 2 or 3 air pumps. Please note that with 3 pumps connected, target RH below 40% can be hard to achieve. Machine is delivering constant RH air in volume:
-    ~7m3 /h with one pump
-    ~13 m3/h with 2 pumps
-    ~19 m3/h with 3 pumps

With moderately sealed cases, system with 3 pumps should be good for total volume of cases ~100m3 (or more if cases are well sealed).

LOCALISATION:
Machine should be located in a machine room or other well-ventilated technical area. Up to 9 hoses can be connected from the machine to controlled showcases. If needed hose splitter may be used in order to connect to additional cases.

POWER SUPPLY:
A reliable 110/230/V, 50/60 Hz AC power supply with ground, capable of supplying approximately 400 Watts must be provided. We recommend a dedicated power supply with surge protection for all units.

*WARNING: POWER OUTLET MUST BE PROPERLY GROUNDED.*

WATER FEED AND DRAIN:

If automatic filling was chosen, a tap water feed should be equipped with a shut off valve and terminated with a ¼" male tread for the solenoid valve installation (supplied by Preservatech)
Water valve is supplied with a push in type compression fitting for a 6mm Ø hose which is connected to a reverse osmosis system (supplied by Preservatech) and further with the "Water Fill" fitting on the front of the machine.

If automatic filling is in use, for safety reasons we strongly recommend connecting "Overflow" fitting on the machine front with a drain. Drain should be located near the machine and should be a minimum of 100 mm below "Overflow" fitting.

Valve electrical cable must be connected to the jack labelled "EP" on the front panel of the machine.
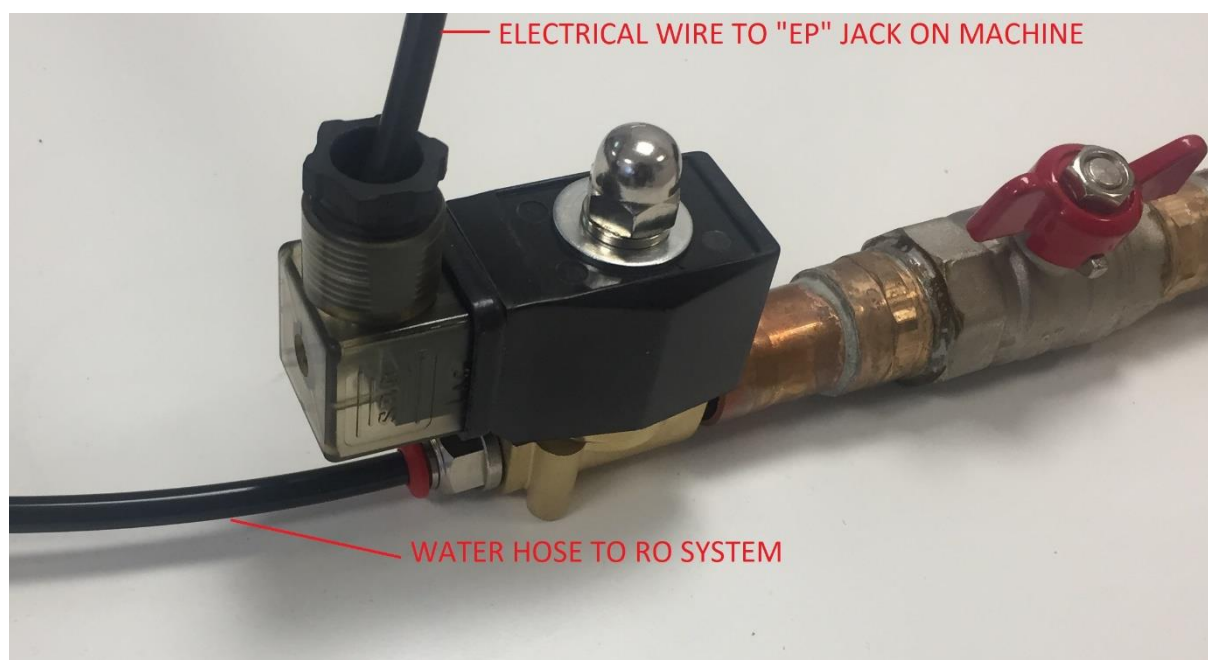
WATER RESERVOIR:

If automatic filling is not possible, machine needs to be connected to the water reservoir. Water reservoir can be located below, above or next to the machine.
- "EP" jack on machine panel, must be connected with "M1" jack on water reservoir panel.
- "Water Fill" fitting on machine panel, must be connected to the "M1" fitting on the water reservoir front panel.

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AIR PUMPS:

Machine is supplied with up to 3 air pumps which are sent with 3 meters hose each. The pump's hoses need to be connected to the fitting(s) "AIR-P1", "AIR-P2"," AIR-P3" on the machine panel and electrical cords to appropriate connector on the machine panel.

- Air Pump can be located on the same level as the machine or above the machine. It CANNOT be located below the machine level.
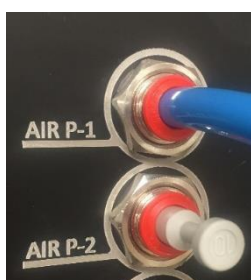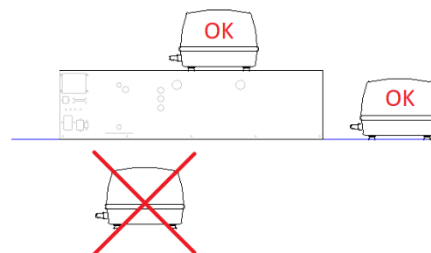
If less than 3 Pumps are in use, remaining pump outlets on the front panel must be blocked by supplied plugs

CONNECTION OF AIR HOSES TO THE CASE.

The Mini One XL is a positive pressure device which is connected to the case(s) by a single or multiple hoses. Depending on the size and distance of the cases, Ø6, Ø8, Ø10 and Ø14 mm hoses may be used with a maximum length up to 100 meters. Machine as a standard has a two outputs Ø 14 mm but depending on the users needs, a adapter can be used with up to 9 outputs with varying Ø. Also as an option rotameters can be added.

Preservatech also supplies brass air connectors for easy connection of hoses to the case.
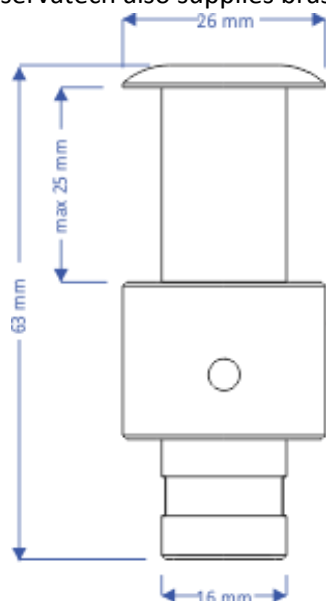
For installing our brass fittings, a hole of 16 to 20 mm in diameter must be drilled in the case wall with a maximum wall thickness 1" - 26mm.

THE AIR FROM THE MINI ONE XL SHOULD ENTER DIRECTLY INTO THE VITRINE FOR OPTIMAL PERFORMANCE. AIR DIRECTED INTO THE SUB FLOOR MAY LIMIT THE PERFORMANCE OF THE MINI ONE, ESPECIALLY IN LARGE OR LEAKY ENCLOSURES.

The output adapter can have up to 9 outputs of different diameters. Number and sizes of connectors must be specified at time of order.
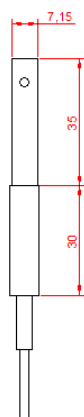
If necessary, adapter can include rotameters for controlling volume of delivered air on each output.
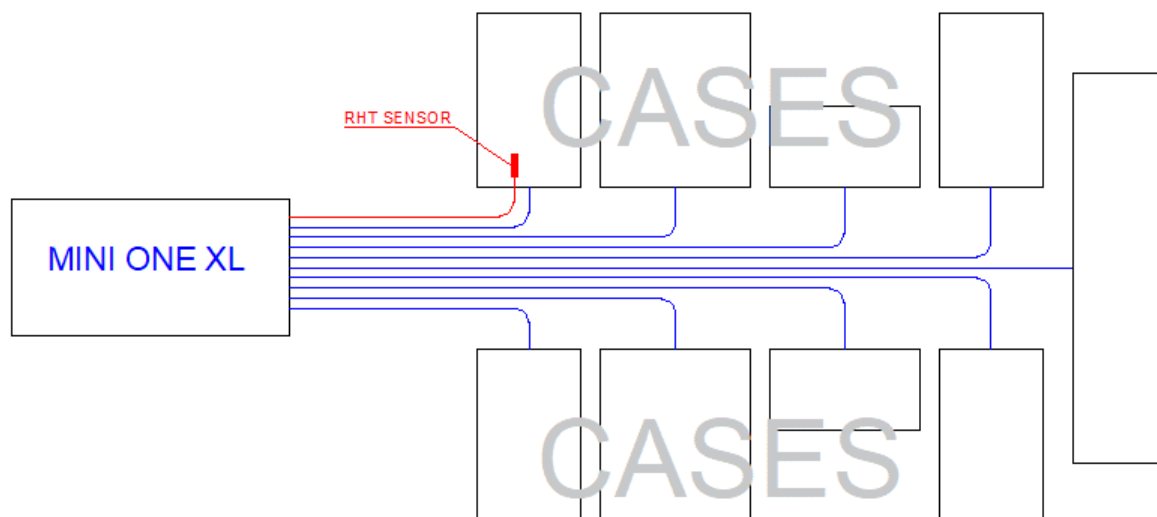
Each case has a one hose running directly to the Machine. Hose splitters can be used if more outputs are needed.

SENSOR CONNECTION

Digital RHT sensor supplied with Mini One XL is built inside brass housing Ø 9/32". Cable can be up to 120 meters long. Preservatech supplies a standard 10 meter long sensor unless otherwise specified by client.

If for any reason client wants to use their own cable it must be a shielded, 4 twisted pairs CAT 5 communication cable.

If possible the sensor should be located in the case closest to the machine this will ensure the humidity deviations are minimal. In this configuration the machine reacts faster for changes in ambient conditions therefore humidity inside the cases is balanced.

VENTILATION

If the unit is enclosed, be sure that there is adequate air available for cooling. For the most effective operation, do not allow ambient temperatures around the unit to rise above 75 F / 24 C. Warm temperatures may reduce the ability of the unit to provide lower humidity's.

Should the unit be mounted in an enclosure (e.g. beneath the showcase), provide at least TWO ventilation holes. A flexible exhaust hose must be attached to the four inch / ten centimetre mounting on the front of the unit, and directed out of the enclosure through one of the ventilation holes.

Adequate fresh air for cooling must be provided, through a hole(s) totalling at least 16 square inches / 100 sq. cm. All ventilation holes' must be unimpeded (do not cover with any cloth, mesh, or perforated metal).

Avoid re-circulating exhaust air by separating the holes as far from each other as possible. For example, provide an upper hole for connection to the exhaust hose and a lower hole for fresh air intake. Be aware of walls or obstructions which might trap and re-circulate exhaust air into the fresh air intake.

NOTE: Although all Mini One XL machines are ready to connect a 4" (100 mm) exhaust hose and hose termination, they are not included in the standard shipment and must be ordered separately.

WiFi ANTENNA

WiFi Antenna needs to be installed only if monitoring service is in use. If the machine is located inside a metal enclosure (eg. Under a case made of steel) it is highly possible that the WiFi connection will be poor or non-existent. In this situation, the antenna needs to be installed outside of the metal enclosure. Wifi antenna extension cord can be supplied by Preservatech. (Antenna is included in a standard order; extension cord is an additional option)

EXTERNAL CONNECTION

The Mini One XL is equipped with external connectors:

RH - The "OUT OF RANGE" alarm is a 12 VDC connector to power up an LED or other 12VDC device. This alarm is activated when the RH at the sensor is lower or higher then SET VALUE ± "Rh error offset" parameter (see Programming)

LW - The "LOW WATER" alarm is a 12 VDC connector to power up an LED or other 12VDC device. This alarm is activated when the water level inside machine falls below the lowest acceptable level. Water must be added to the machine when this alarm is activated.

ER - The "EXTERNAL RESERVOIR" jack is used for connecting a automatic filling system or with water reservoir.

NOTE: Although all Mini One XL machines are equipped with external connectors, cables and LED's are not included in the standard shipment. They must be ordered separately.

Please contact info@preservatech.com if you require assistance.

OVERFLOW PORT

As the unit removes moisture from the air, the water vapor condensed will be deposited in the treatment tank reservoir. Humidity that is removed from the vitrine when the Mini One XL is in dehumidifying mode may drip from the unit at the overflow port.
You may connect the overflow port to the drain, collect condensate in a container, or simply allow it to evaporate from a shallow tray.
When a automatic filling system is in use, connection to drain is necessary.

OPERATION MANUAL

AUTOMATIC FILLING SYSTEM

If automatic filling system is in use, just open the shut off valve on water feed pipe. Machine will draw water automatically after starting. Please note that a empty machine can takes up to 2 hours to start.

Please refer to "Water and drain" chapter for more information.

WATER RESERVOIR

Before filling the water reservoir, it must be connected to a power outlet and the machine must be turned ON. When filling the machine keep an eye on the water level indicator on the controller until it displays "Water Full"

Distilled water must be used

Please refer to "Water reservoir" chapter in Installation chapter.

STARTING MACHINE

Before starting please check if the installation is done correctly:

- Power cable is connected to the proper outlet. (link)
- Water and drain are properly connected. (link)
- Air Pump(s) are connected. (link)
- Air hoses are properly connected to the machine and cases. (link)
- RHT sensor is installed. (link)

Machine can be turned ON. Please note it take up to 2 hours on empty machine to fully start operation.
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TOUCH SCREEN DISPLAY
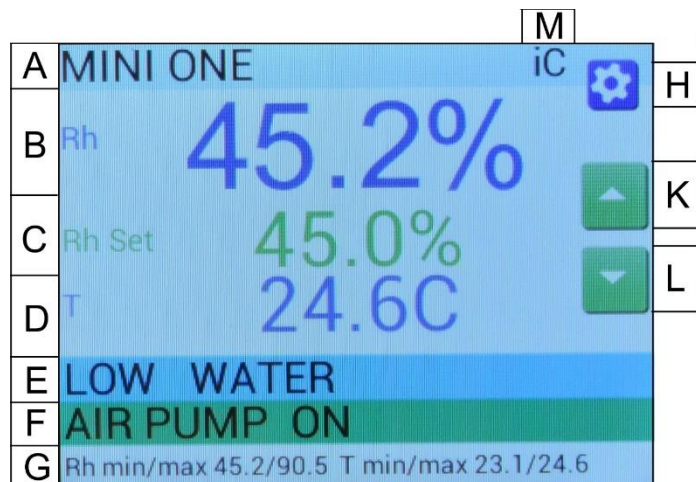
Touch screen is divided into a few areas with different purposes. Below is an explanation of all the display areas.

Display will turn off after 10 minutes of being idle. Lightly tap the display to turn it back on.

A	Humidity generator model (M)
B	Relative humidity measured by machine's sensor (inside the display case) Under normal conditions, the digits are blue, when measured RH is out of range, digits become RED and start BLINKING. OUT OF RANGE STATUS IS DETERMINED BY PARAMETER "RH error offset" (see "Programming Chapter")
C	Target RH. Can be adjusted by arrows on the right (K and L)
D	Temperature measured by the machine's sensor (inside the display case)
E	Water level inside the machine. Under normal condition, black letters. If water level drops below minimum, letters become RED and start BLINKING.
F	Status of the air pump.
G	Displays the minimum and maximum values for RH and T in last 24 hours.
H	Button for programming mode. See chapter: Programming.
K & L	Arrows to change target RH value. Use K to raise target RH, L to lower target RH.
M	Shows status of WiFi connection. i = Wi-Fi initialized C = Connected to server

PROGRAMMING

After pushing "Programming Button" (H) display will change to programming mode.

Display will show a list of parameters enabling the user to change certain ones. Use the slider on the right side of the display to go to the next parameter.

Parameters which can be changed have a small icon on the right side of the value. After pressing it, display allows to change this parameter.

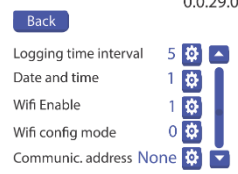|	
External T	Temperature measured by sensor. Read only.
External RH	Relative humidity measured by sensor. Read only.
Rh preset	Target value of RH.
Rh error offset.	Controls RH alarm. RH alarm is activated when measured RH is larger then the "rh preset" + "Rh error offset" or is lower then the "rh preset" - "Rh error offset". Factory default=10
Internal T	Temperature inside the treatment box. Read only. (Used by controller)
Air pump control.	Default value:1. Periodically the machine will turn off the air pump which is part of normal operations. This setting must be set to 1 in order for the pump to shut off in case of a malfunction. If this parameter is changed to 0, the air pump will be always ON. Under normal circumstances, it should always be set to 1.
Temper. error level	Parameter to control machine. Do not change without consulting with Preservatech staff.
Temper. Error delay	Parameter to control machine. Do not change without consulting with Preservatech staff.
Rh zero offset	Allows to offset measured RH value. Client can use it if value on the machine display is different then on third party measuring device. Eg. If difference between measurements is 2%, setting this parameter to 2 will change display by 2.
PID (P,I,D)	Controls PID parameters. Do not change without consulting with Preservatech staff.
Logging time interval	Time span between logging data. In minutes.

	Date and time	Setting current time and date.
Back 0.0.29.0 Logging time interval 5 Date and time 1 Wifi Enable 1 Wifi config mode 0 Communic. address None	Wifi Enable	Enable WiFi service. 1=ON, 0=OFF
	Wifi config mode	Configures Wi-Fi network. See chapter Network Configuration.
	Communication address	Factory default:0 . It can be changed to allow communication between machines in master-slave mode. See chapter Master-Slave Configuration for more detailed information.
Back 0.0.29.0 Communic. address None TR Slave Mode Off TR Slave address 1 None TR Slave address 2 None TR Slave address 3 None	TR Slave Mode	For setting a machine as a Slave. See chapter Master-Slave Configuration for more datailed explanation.
	TR Slave address	If a machine is set as a master, this parameter must correpond with the slave machine(s). Must be different then master machine communication address. See chapter Master-Slave Configuration for a more in depth explanation.
Back 0.0.29.0 TR Slave address 3 None TR Slave address 4 None TR Slave address 5 None Language English Config 0	Language	Choice between English and Chinese.
	Config	For Preservatech staff usage only. Access secured with password.

NETWORK CONFIGURATION

To use the rhmonitoring.com service, machine must be set to work with the local Wi-Fi network. Two parameters must be known before setting up: Wi-Fi SSID (name of local WIFI network) and access password for this network. Setting can be done with any Wi-Fi enabled smartphone.

Wifi config mode	
Back Hub_11291479 Wifi SSID: "PRESERVATECH _EUROPE" Wifi Pass: "12345678" Server 1 IP: 0.0.0.0 Server 2 Name: "pws.iq.direct" Server 3 Name: ""	1. To enter Wi-Fi configuration mode, in normal display mode push configuration button. 2. Using slider, find "Wifi config mode" and push configuration button located on the right. Wifi config mode 0 ⚙ 3. After entering this mode, display shows among others Hub id, WiFi SSID (network name) and WiFi Pass. For proper operation SSID and Pass must be set to access local WiFi network. 4. Using your smartphone choose connection with Hubxxxxx . (Machine must be in Wifi config mode) 5. Within a few seconds after login a new page with the machine data will pop up. 6. Enter proper SSID (Name of local WiFi network) and a password. 7. Save data by pressing "Save to Hub" button. **Save to Hub** 8. Display should show actual parameters with the new data. 9. Shut down the machine and after 30 sec. turn it on again. 10. Assuming rhmonitoring.com account is ordered and setup, machine will be visible in the monitoring service.

USING DATA LOGGER

The Mini One is equipped with a built-in data logger which logs RH levels measured by the machine inside the controlled display case.

Time intervals can be changed between 1 and 60 minutes in 1 minute increments, please see "Programming" chapter.

Data written on the SD card, can be read in our free software or in any other software able to read CSV files (e.g.. Excel)

IMPORTANT: SD Card used in our data loggers must be formatted as **FAT32** file systems. Other file systems are not compatible with data loggers.
For the proper operation of the data logger, Date and Time as well as time interval, must be set accordingly.
Please see "Programming" chapter for instructions how to set Time and Date.

SHIPPING AND STORAGE

The Mini One XL should be stored in a clean area with temperature between 5°C – 30°C and relative humidity below 80%. All cables, hoses and attachments must be disconnected and machine should be placed within a clear plastic bag once properly dried.

If shipping is necessary, original packing is the best solution. Otherwise, machine must be shipped in a box properly cushioned with bubble foil, styrofoam chips or other packing material preventing physical damage to the machine case.

LIMITED MICROCLIMATE GENERATOR WARRANTY

This quality product is warranted to be free from manufacturer's defects in material and workmanship, provided that the unit is used under the normal operating conditions intended by the manufacturer, and in accordance with the Requirements for Proper Operation as outlined in this Installation and Operating Manual. This warranty is available only to the client to whom the unit was originally sold by authorized distributor of Preservatech Inc or Preservatech Europe sp z o.o.., and is non-transferable.

TERMS OF WARRANTY
During the first two years, any electrical parts of this product found to be defective, including any sealed system units, will be repaired or replaced, at warrantor's option, at no charge to the ORIGINAL purchaser. To obtain service, contact Preservatech at the address below, who will provide you with instructions. Service must be performed by a qualified service technician, or with the express permission of Preservatech If service is performed on the units by anyone other than an authorized service depot or agent, all obligations of Preservatech under this warranty shall be at an end.
EXCLUSIONS
Save as herein provided by Preservatech, there are no other warranties, conditions, representations or guarantees, express or implied, made or intended by Preservatech or its authorized distributors and all other warranties, conditions, representations or guarantees, including any warranties, conditions, representations or guarantees under any Sale of Goods Act or like legislation or statue is hereby expressly
excluded. Save as herein provided, Preservatech shall not be responsible for any damages to persons or property, including the unit itself, howsoever caused or any consequential damages arising from the malfunction of the unit and by the purchase of the unit, the purchaser does hereby agree to indemnify and save harmless
Preservatech from any claim for damages to persons or property caused by the unit.
GENERAL PROVISIONS
No warranty or insurance herein contained or set out shall apply when damage or repair is caused by any of the following:
1) Damage in transit or when moving the appliance.
2) Improper power supply such as low voltage, power surges, defective wiring or inadequate fuses.
4) Accident, alteration, abuse or misuse of the appliance such as an inadequate supply of cooling air, or abnormal operating conditions.
5) Use of a unit that has been optimized for a particular application in another application that has not been approved by Preservatech
6) Fire, water damage, theft, war, riot, hostility, acts of God such as hurricanes, floods etc,
7) Service calls resulting in customer education.
WARRANTY SERVICE
Proof of purchase date will be required for warranty claims; so, please retain bills of sale. In the event warranty service is required, present a
facsimile of the cover of this document to our AUTHORIZED SERVICE DEPOT. Please contact our head office for service instructions.

info@preservatech.com

DECLARATION OF CONFORMITY

C E **DECLARATION OF CONFORMITY**

Product: Mini One XL Humidity Generator

Description: Constant humidity generator designed for controlling relative humidity inside a museum display cases.

Manufacturer: Preservatech Europe sp z o.o.
Rowna 1, 85-846 Bydgoszcz

Country of origin: Poland

The above-mentioned product complies with following regulation:

EU Low Voltage Directive 2006/95/EC
EU Electromagnetic Compatibility Directive 2004/108/EC
Harmonised Standards: EN 60335-2-98:2003 + A2:2008, EN 61000-6-3:2007 + A1: 2011, EN 61000-6-1: 2007

Signed DEC 11, 2018 in Bydgoszcz

Jan Maternicki
president