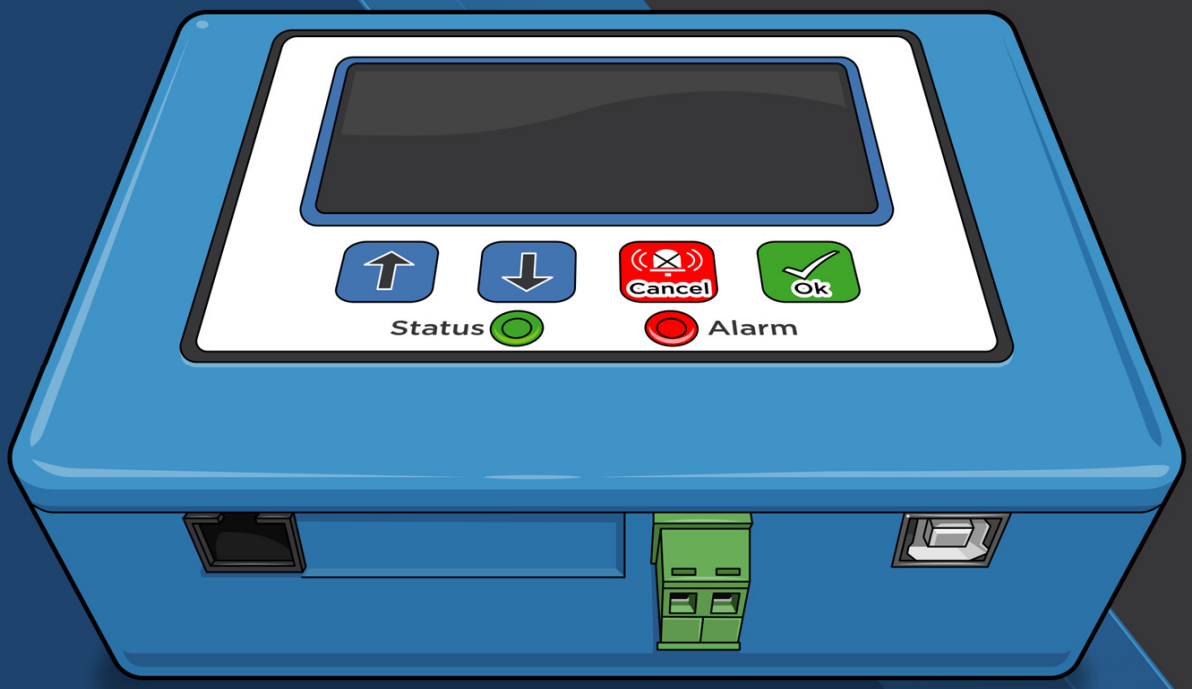
VM 1000
Vaccine Monitor



user **MANUAL**

Thank you for purchasing our product which adopts excellent workmanship and exceptional reliability. We suggest that you take a few minutes to read through this instruction manual to familiarize yourself with all the features of the product before you proceed to install the system.

Intended Users

This manual needs to be made available to all persons who are required to install or configure equipment described herein, or any other associated operation.

The information provided is intended to highlight safety issues, and to enable the user to obtain maximum benefit from the equipment.

Hazards

Warning! Failure to observe the following will constitute damage to the Unit/Device.

- This equipment contains electrostatic discharge (ESD) sensitive parts. Observe static control precautions when handling and installing this product.
- This product contains Lithium-ion batteries:
  - Ensure correct polarity when connecting to the board.
  - Please take care to safely dispose of used batteries as per your local laws and by-laws.
- Dangers involved in case of fire:
  - Danger of dust particle explosions
  - Decomposition through fire or heat under development of toxic and cauterizing gases
  - Combustion gasses which strongly irritate eyes and respiratory organs
- Instruction for fire extinguishing:
  - Extinguish with water and if possible, cover battery completely in water.
  - Extinguishing with water will produce fluoride, phosphate, fluoride-oxide and carbon-oxide.
  - Alternatively extinguish with a CO2 extinguisher
- Do not place this product on unstable surfaces. The product may fall, resulting in serious damage to the product.
- Take care when plugging the adaptor into an AC mains power source
  - Do not overload wall outlets and extension cords as this can result in fire or electric shock.

Equipment Inspection

- Check for signs of transit damage
- Check that the product code on the rating conforms to your requirement

If the unit is not being installed immediately, store unit in a well-ventilated place away from high temperature, humidity, dust, or metal particles.

Foreword

- This manual contains text and explanations which will guide the reader with the correct installation and operation of the VM1000. It should be read and understood before attempting to install or use the unit.
- If in doubt about the operation of the device please consult the nearest **Ikhaya Automation Systems** reseller.
- This manual is subject to change without notice.

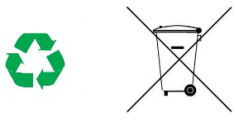


Table of Contents

1. Introduction

Ikhaya Automation Systems provide equipment and services to manage controlled-temperature environments for Perishables, Pharmaceutical and Health care sectors, our climate monitoring technologies satisfies the demanding rugged conditions experienced in the refrigerated and transport refrigeration industry.

Our solution allows you to monitor multiple temperatures from anywhere in the world via the internet. Instant notification via sms or email alerts the user of any deviations from set point. System generated graphical reports sent to email serve as quality control and proof in case of legal obligations.

2. What is in the Box

The standard unit comprises of:

- 1 x VM 1000
- 1 x Digital Probe
- 1 x On Board Temperature & Humidity Sensor
- 1 x Door Sensor
- 1 x 100 -240Vac Power Adaptor with 12vdc output @ 1 Amp (Type C Adaptor)
- 1 x Lithium-ion Battery
- 2 x Velcro Tape for mounting on metal surfaces

3. Mounting Arrangements

The installation of the unit has been designed to be safe and easy (plug and play). The VM1000 is supplied in a suitable ABS IP 54 enclosure and may be installed as-is via 6mm wall plugs or Velcro tape on any metal surface.

Caution

- Units should not be installed in areas subject to the following conditions: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration.
- Ensure that the unit is mounted in an area that has sufficient GSM signal strength
- Ensure the unit is mounted at a safe position where it will not be damaged or knocked down by passing traffic
- Always ensure that mounted unit is kept as far away as possible from high-voltage cables, high-voltage equipment and high-voltage power equipment.
- Do not lay signal cables near high-voltage power cabling or cabinet housing along the same trunking duct. Effects of noise or surge induction may occur. Keep signal cables more than 100mm (3.94") away from these power cables.
- Disconnect the power jack before installation or performing wiring work to avoid electrical shock. Incorrect operation can lead to serious damage to the product.
- When using an incorrect power source or performing incorrect operation, serious damage will occur regardless of the level of the voltage and frequency.
- During transportation avoid any impact as the VM1000 is a precision instrument. It maybe necessary to check the operation of the VM1000 after transportation, in case of any impact damage.
- When storing the VM1000, conform to the environmental conditions specified in the technical specification sheet Annexure A.
- The VM1000 contains Lithium-ion battery technology; please refer to the Hazards section on Page 2.

4. Standard Solution

Wiring for the VM1000 has been designed to be safe and easy. If the user is concerned about the correct installation, please contact your nearest Ikhaya Automation Systems Reseller.

- Mount the VM1000 using the 6mm wall plugs or Velcro tape on any metal surface.
- Install the probe into the controlled environment you wish to monitor then connect the probe to the VM1000
- If door monitoring is a requirement install the Door Sensor onto the door and connect the wires into the VM1000
- Plug the adapter into a power source (100 -240Vac), then connect the DC jack and turn the switch to the **ON** position.

See **Annexure A** for Technical Specification of the VM1000

5. Main Screen Functionality

1. **GSM Signal Strength.** A single bar represents a weak signal and four bars a strong signal**.** Should no bars be displayed, signal is too weak or a GSM error has occurred.
2. **Network Name.**
3. **Current time.**
4. **Door status.** Should the lock symbol appear open then the door is open and vice versa.
5. **Alarm Status.** The symbol will appear when an alarm is present.
6. **GPS availability.** Should the unit achieve GPS lock the icon will appear else it will not be shown.
7. **Power Status.** 0 to 4 bars indicate the voltage level. If the battery is currently being charged the bar furthest to the right will blink. If no battery is found a faded-out icon will be shown. The symbol illustrates that the device contains a battery and charging status.
8. **Sensor Name.**
9. **Current Temperature.** Last temperature measurement taken.
10. **Alarm.** The symbol will appear indicating an alarm on the sensor**.**

The main screen displays information about the VM1000 device and measurements pertaining to probes connected. The screen will scroll between all sensors.

6. Navigation Buttons

The 4 buttons, Up, Down, Cancel and Ok are used to navigate the menu and edit values as required.

The Cancel button primary function is to reverse navigate menus and to cancel any active alarm. When an alarm is active, a screen displaying the offending alarm will be presented which will be shown for a period of time before switching back to normal cycling. The alarm is cancelled by the "cancel" button or by other selected means of alarm termination.

The OK button is used to navigate between menus and for menu selection. The up and down arrows allow for menu item selection and the editing of parameters.

7. Let's get started…

Switch on the unit by ensuring:

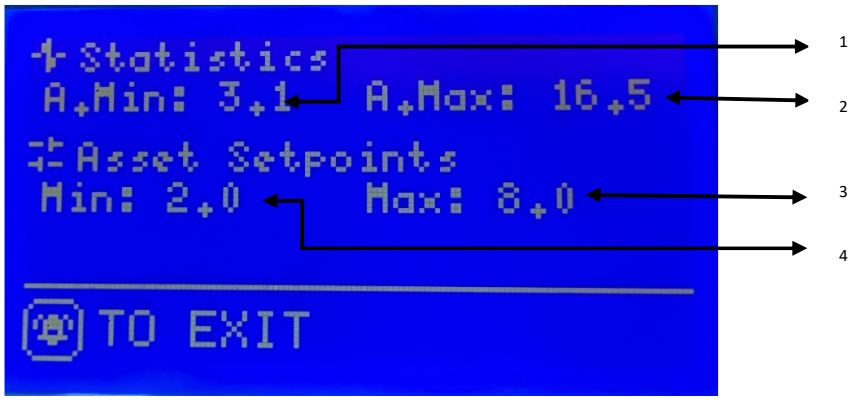
- the power adaptor is plugged into an operational 220Vac plug socket.
- the DC jack is connected to the unit.
- the switch is in the **ON** position.

Once powered on and after unit initiation the Main screen is displayed.

From the Main screen, you could either navigate to the Alert screen if an alarm is present or the Statistic screen.

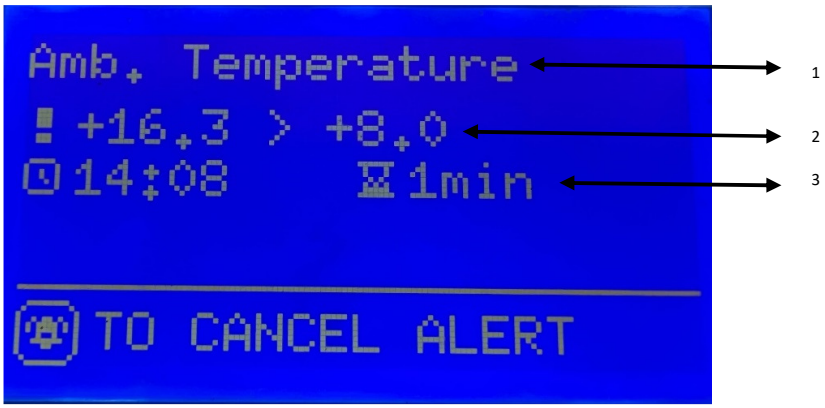
8. Statistic Screen

Press the down arrow to access this screen, which is read only.



1. **ABS MIN.** Absolute low temperature reading over 24-hour period.
2. **ABS MAX.** Absolute high temperature reading over 24-hour period.
3. **MIN.** Minimum Setpoint.
4. **Max.** Maximum Setpoint.
5. **LL.** Low Low Setpoint *(only if setup on the portal)*.
6. **HH.** High High *Setpoint (only if setup on the portal)*.

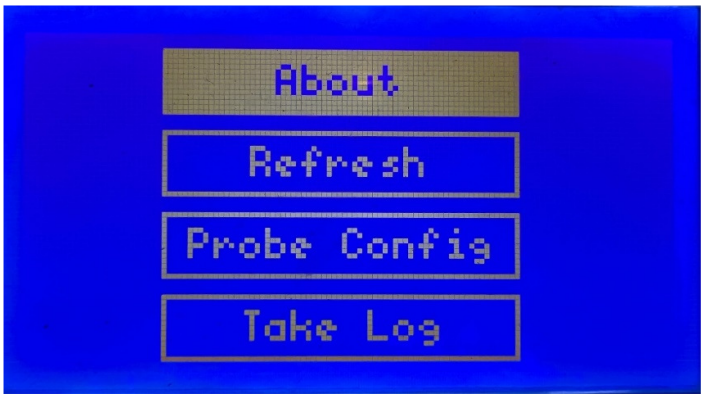
9. Alarm Screen



1. **Sensor Name.**
2. **Temperature Excursion.** Details the current temperature above or below the setpoint.
3. **Date Excursion.** Details the time when excursion occurred and time period of the excursion.

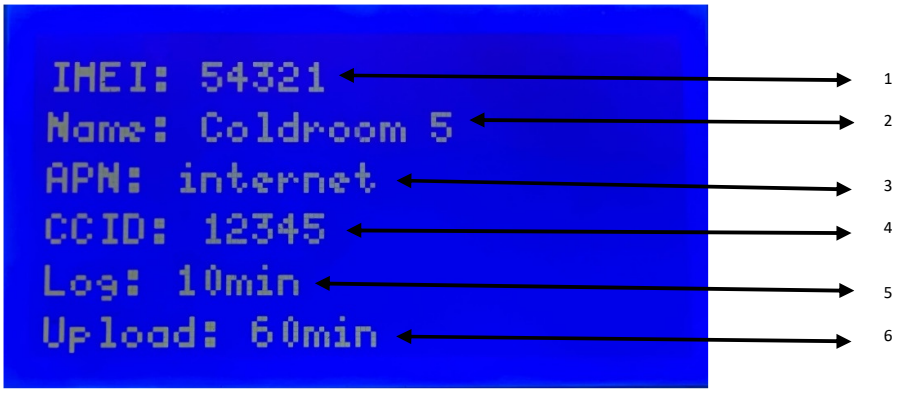
10. Menu

By selecting the OK button you would be directed to the Menu.



11. About

Details specific information about the unit which is setup on the web portal.



1. **IMEI:** The unique number of every VM1000 device.
2. **Name:** The name given to the VM1000 device.
3. **APN:** Name of path used for the sim card to communicate over.

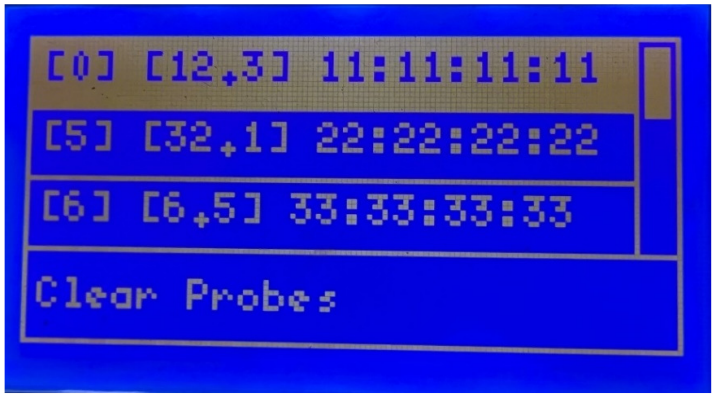
4. **Log:** Duration (in minutes) between measurement samples.
5. **Upload Period:** Duration(in minutes) between server uploads/downloads.

12. Refresh

Synchronise settings between the Portal and the VM1000.

13. Probe Config

Allows for the deletion of probes as new probes are scanned for every 5 seconds.



14. Take Log

Provides the user with an up-to-date Temperature measurement.

General	
Model	VM 1000
Dimensions	135x100x50
Weight	0.45kg
Mounting method	Velcro/Mounting Screws
Mode of Communication	LTE/GPRS - GPS
Mode of operation	Electronic
ICASA Approval	TA-2018/2266
WHO Approval	PQS Code: E006/061
Environmental Specifications	
Operating Temperature	5°C to 60°C
IP Rating	IP 50
Storage Temperature	5°C to 50°C
Electrical Specifications (Option 1)	
Input Supply	100 – 220Vac Adaptor with 12vdc output, 1 Amp (centre pin positive)
Standalone Battery Backup	Yes (Lithium-Ion rechargeable)
Current Consumption @ 12V	Active Mode (GSM Transmission active): 150mA (typical) average Instantaneous peak current: 0.6 - 1 Amp
	Standby Mode: 55mA, Display ON Standby Mode (Adapter): 15mA (Power Down - LCD Off) Standby Mode (Battery): <40uA
Battery Type	Lithium-Ion, Type -18650
Battery operating life	3 Years (LCD Display off, Power Save mode active)
Electrical Specifications (Option 2)	
Input Supply	Lithium-Ion, Type - 18650, 3.6Vdc, 2600mAh
Current Consumption @ 3.6Vdc	Active Mode (Transmission): 150mA
	Standby Mode: 40uA (Display off)
Battery Type	Lithium-Ion, Type - 18650
Battery operating life	3 Years
Number of Batteries	1
Logging	
Logging Interval	Default: 10 Minutes Minimum: 1 Minute Maximum: 1440 Minutes (Configurable in 1 minute step duration)
Standard Upload Frequency	Once per day or on alarm when in battery mode; Configurable when connected to mains power
Memory capability	14 000 logs internal Flash
SD card	Optional
Alarms	
On-board	LCD
	Internal Buzzer
Remote	SMS, Email, Web
User interface	
Viewing and Programming	WEB
	Membrane & LCD
Quality	
Standard	ISO 9001-2015
Inputs	
Digital Inputs	One (Door Sensor)
Temperature Sensor	
Digital Probes	4 ports up to 4 wired sensors in parallel Max of 80 meters cable
Sensor Temperature Range	-30°C to +55°C
Sensor Temperature Accuracy	±0.5°C (-20°C to +55°)

Sensor Resolution	0.0625°C steps
Internal Temperature Humidity Sensor	
Digital Probes	1
Sensor Temperature Range	-30°C to +60°C
Sensor Temperature Accuracy	±0.3°C
Sensor Humidity Range	0 to 100%
Sensor Humidity Accuracy	±2%
Interface	
Membrane	Control Buttons
Display	
Type	Graphic, LCD, LED Backlit
Resolution	128 x 64 Pixels
Colour	Blue
Display Length / Width	65mm x 33mm

CONTACT INFORMATION

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