CompostManager

Users' Guide to CompostManager V2

Issue 1.0.1

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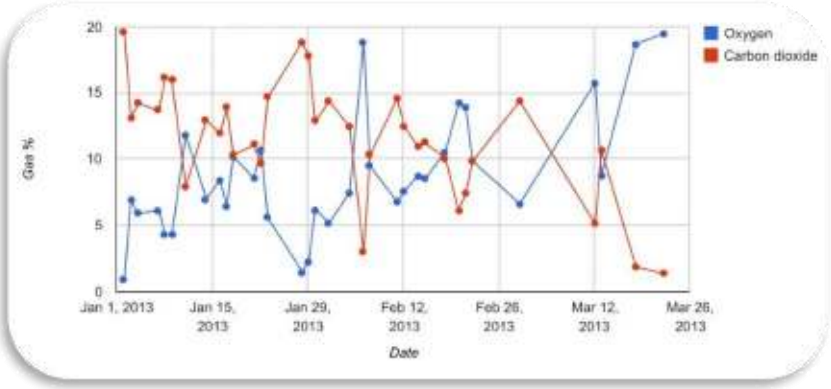
1. Introduction to CompostManager

CompostManager is a unique product designed specifically for use in composting. It allows intelligent and rapid monitoring of the entire composting process from raw materials to finished product. This is achieved by regular and targeted sampling of selected batches using a probe with integrated instrument that simultaneously monitors oxygen, carbon dioxide, moisture, and temperature. By careful monitoring and control of these four parameters, it is possible to significantly improve the composting process. Data from these four readings are uploaded to a web server where they are analysed and stored alongside batch management information.



Barcode	Batch no	Client code	Date formed	Reading date	Oxygen average %	CO_2 average %	Temperature average(°C)	Moisture average %	Instruction	Sanitisation Status
									Please select	
3448	47		08/12/2012	12/03/2013	12.1	8.3	70.5	39.7	Turn	Sanitised
3449	48		22/12/2012	13/03/2013	8.8	10.7	69.8	39.5	Leave Alone	Sanitised
3450	49		21/01/2013	14/03/2013	9.6	10.6	66.0	36.2	Leave Alone	Sanitised
3451	50		12/02/2013	14/03/2013	20.3	0.3	47.2	39.4	Turn	7 Days At 65°C
3452	51		01/03/2013	14/03/2013	20.4	0.6	56.5	34.3	Irrigate	1 More Turn And 7 Days At 65°C

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2. CompostManager at a Glance

2.1. Software overview

The software is web-based which means that you log on to a secure website in order to configure your site and view your results. The results can be viewed from any suitable Internet-connected device, and you can run the software on as many computers as you like.

2.2. Hardware overview

2.2.1. The Instrument

The instrument is the link between the probe and the software. It provides you with simple instructions about where to carry out the monitoring.

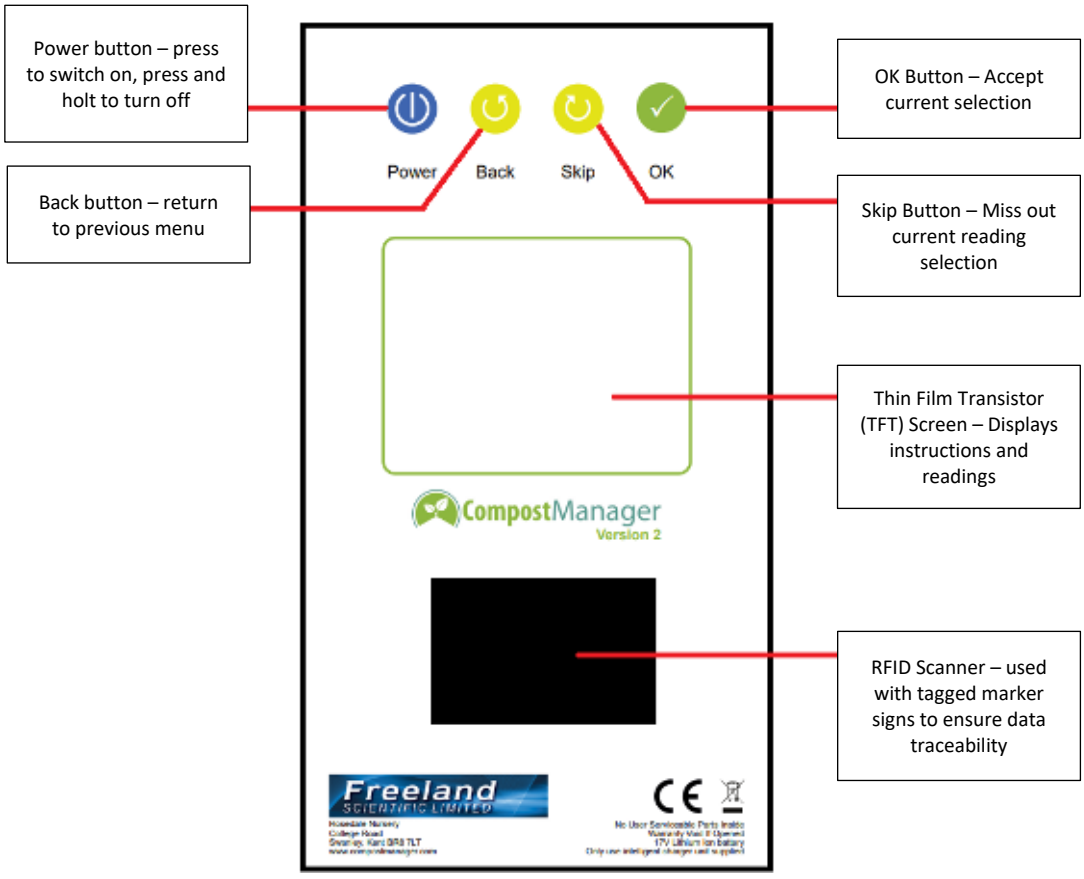

Fig. 1. The front of the instrument

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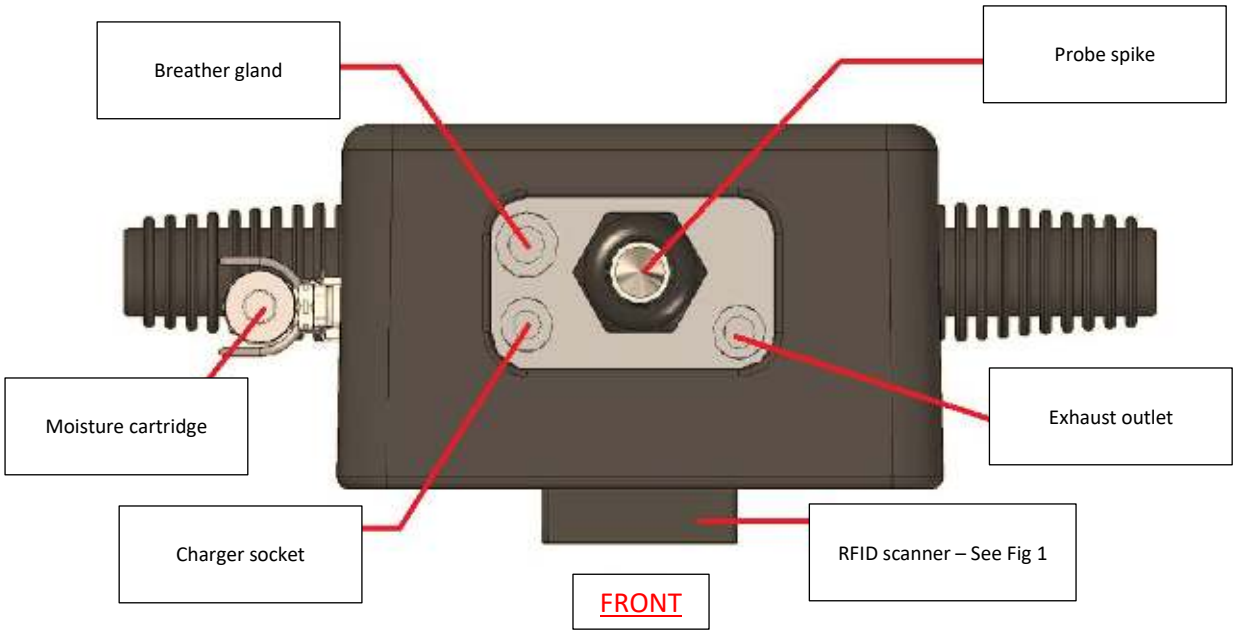

Fig. 2. The bottom of the instrument showing inlet and outlet connections

2.2.2. Accessories

Instrument charger

System hanging hooks, screws, and wall plugs (see page 26)

Spare moisture cartridge(s)

Marker signs with RFID tags

Instruction manual

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3. Safety & Environmental

3.1. Intended use

This system is designed for use in windrow composting operations and related areas. Any use of the system outside of these areas or any modification of the system could be hazardous and will result in loss of warranty. It is assumed that the user/operator has the proper professional skills and experience to operate the system safely in this environment and can assess any dangers or risks. It is the responsibility of the user to ensure that all relevant legislation concerning health and safety is adhered to.

The system can only be operated safely when used in the environment for which it was intended. This includes a wide range of climatic conditions as specified in section 4.3.

The system is designed for sampling and monitoring gasses found within aerobic composting processes only. Exposing the instrument to any other form of gas risks personal injury or damage to the instrument and will invalidate the warranty.

The instrument should never be connected to any other source of gas (eg. landfill gas) particularly if there is a risk that the gas may be flammable or corrosive. Never connect the instrument to a supply of gas above atmospheric pressure (eg. compressed air or gas from a cylinder).

3.2. General safety instructions

Only the charger supplied by the manufacturer should be connected to the instrument. Never attempt to use a different charger or connect any other device to the instrument.

The complete system has been designed, manufactured, and tested in accordance with the relevant guidelines and standards for electronic measurement equipment. It has been supplied in a technically correct and operational condition.

In order to ensure the instrument remains safe, the user must observe the safety precautions outlined in this manual. If there is reason to believe that the instrument cannot be used without a risk, the instrument must be immediately removed from use and returned to the manufacturer or distributor for repair. The safety of the user may be at risk if any part of the system:

- shows visible damage; or
- no longer operates as specified; or

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- has been subjected to conditions outside those specified in section 8.

If in doubt, please contact your supplier and arrange for the instrument to be returned to the manufacturer.

The battery pack used in the main unit may present a fire or chemical burn hazard if it is mistreated. Do not disassemble, heat above 100°C [212°F] or incinerate.

3.3. Electrical storms

Due to the nature of the metal probe, the instrument is not suitable for use during thunderstorms. The operator may be placed at an increased risk from lightning strike if the probe is handled during electrical storms. If such storms are likely, sampling should be stopped immediately and not resumed until it is safe to do so.

3.4. Recycling

Electrical and electronic equipment should not be disposed of with general waste. At the end of the product's lifecycle, you should contact your supplier to arrange collection for recycling and disposal in an environmentally friendly manner.

For the purposes of the EU waste electrical and electronic equipment regulations 2006 (WEEE) the manufacturer of this product is a member of the producer compliance scheme (registration number WEE/DA0482SW). You may need this number in order to recycle the equipment at the end of its life.

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4. Technical Specifications

4.1. Instrument

Protection Rating	IP54
Operating temperature	-10 – 40°C [14 – 104F]
Storage temperature	-20 – 50°C [-4 – 122F]
Battery life	6 hours (typical)
Recharging time	5 hours (typical from flat)
Aspiration rate	500 ml/min [30.5 cu in / min] (typical)
Dimensions	2680 × 154 × 110 mm [106 × 6 × 4.3”]
Weight	5.6 kg [12.3 lb]
Data storage capacity	4000 sampling points
Measurement time	1 minute approx. (< 5°C [9F] difference between sample points)
RFID Scanner operating frequency	13.56 MHz

4.2. Instrument charger

Supplied mains adaptor heads	UK, Euro, US, & AUS
Mains line voltage	100 – 240 VAC
Mains frequency	50 – 60 Hz
Operating temperature	0 – 40 °C [32 – 104F]
Storage temperature	-10 – 85°C [14 – 185F]
Dimensions	124 × 50 × 37 mm [4.9 × 2 × 1.5”]
Weight	220g [7.8oz]
Protection Rating	IP4X (Indoor use only)
Maximum output voltage	20VDC

8.3. O_2 sensor

Operating Principle	galvanic fuel cell
Measuring range	0 – 21% (v/v) O_2
Accuracy	Better than ± 0.5 % (v/v) O_2
Calibration interval	Daily in air, yearly zero
Expected lifespan	1 – 2 years

8.4. Legal & environmental

WEEE producer registration	WEE/DA0482SW
o	This system is CE marked
UL	The mains charger supplied with this unit meet with UL requirements

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4.5. CO_2 sensor

Operating Principle	Non-dispersive infrared (NDIR) dual wavelength detector
Measuring range	0 – 65% (v/v) CO_2
Accuracy	Better than ± 1 % (v/v) CO_2
Calibration interval	Yearly
Expected lifespan	> 5 years

4.6. Moisture sensor

Operating Principle	Proprietary electronic measurement
Measuring range	25 – 65% moisture (w/w) in green waste compost
Accuracy	Better than ± 10% (w/w) moisture
Calibration interval	Yearly
Expected lifespan	Life of probe

4.7. Temperature sensor

Operating Principle	Semiconductor type digital temperature sensor
Measuring range	-5 – 95°C [23 – 203F]
Accuracy	Better than ± 1°C [± 1.8F], over calibrated range
Calibration interval	Yearly
Expected lifespan	Life of probe

4.1. Modem module

Type	2G module with internal antenna
SIM card	Roaming type supplied
Wavelengths	Quad band 850/900/1800/1900MHz
Approvals	R E Directive (2014/53/EU) RoHS Compliant CE / GCF / Vodafone / UCRF / ATEX / Vodafone (Europe) DoC (Russia) FCC / PTCRB / IC / Rogers (North America) Anatel (Brazil) NCC (Taiwan) ICASA (South Africa)
GPRS Multi-slot Class	Class 12, 1~12 configurable
GPRS Mobile Station	Class B
Compliant to GSM Phase 2/2+	Class 4 (2W @ 850/ 900MHz) Class 1 (1W @ 1800/1900MHz)

Exact dimension & temperatures are given in metric units; approximate imperial equivalents are given for information only.

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