



DI 20 Portable Incubator

Table of Contents

Declaration of Conformity:	4
Safety:	5
General Information.....	5
Safety Notifications.....	6
Guide to Symbols	6
Maintenance and Service.....	6
Introduction:	7
Connectivity:	8
USB	8
Power:	8
Powered from Mains	8
Power from Battery.....	8
Power from Mains and Battery - Battery Charging.....	9
Petri Dish Holder	9
Resuscitation Cycle	10
Settings:	10
Keypad.....	10

Inserting the prepared Petri Dishes	11
Setting Incubation Time	11
Setting Incubation Temperature.....	12
Heating / Cooling to Incubation Temperature.....	12
Incubation Process	13
Power Status – when in incubation cycle	13
LED Status Identification table	14
Error messages	16
Technical Information.....	19
Accessories and Spare Parts	20
Sales Offices	21

PLEASE KEEP THIS MANUAL SAFE FOR LATER USE

Declaration of Conformity:

Declaration of Conformity



<p>The Tintometer Ltd declares that the stated product(s) below conform to the following directives / standards:</p>
<p>DIRECTIVES</p> <p>2014/30/EU 2014/53/EU</p>
<p>STANDARDS TO WHICH CONFORMITY IS DECLARED</p> <p>EN 61326-2-1, EN 61000-4-3, EN 61000-4-2, EN 61000-3-2, EN 61000-3-3, EN 61000-4-11, EN 61000-4-6, EN 61000-4-4, EN 61000-4-5 FCC CFR 47 Parts 15.107 & 15.109, ICES Issue 6, ANSI C63.4 BS EN 61010-1</p>
<p>TYPE OF EQUIPMENT</p> <p>Thermo-Reactor</p>
<p>MODEL(S)</p> <p>WM - 030 - 1001</p>

Signed On Behalf Of The Tintometer Ltd By:		
<p>Name: N Barnes Title: Technical Manager</p>	<p>Signature: <i>N. Barnes</i></p>	<p>Date: 19/8/2017</p>



Registered Office:
The Tintometer Ltd
Lockwood House
30A West Street
Amenbury, UK
SN7 2GS

Registered in England No: 41024
Tel: +44 (0) 1535 464400
Fax: +44 (0) 1535 464410
E-Mail: sales@tintometer.com | Website: www.tintometer.com
L606068 is a UK Trademark and registered trademark of The Tintometer Group

Issue: Rev 1

Safety:

General Information



DANGER

A hazard exists that will result in death or severe injury if not avoided.



WARNING

A hazard exists that will result in death or severe injury if not avoided.



CAUTION

A hazard exists that may result in minor or moderate injury.

NOTICE

Important information or specific instructions need to be strictly followed.

NOTICE





The manufacturer is not liable for damages from defects or omissions in the descriptions or instructions provided by this document. The right to make changes to the literature and the products described herein can be made without notice or obligation at the discretion of the manufacturer.

Safety Notifications

Do not begin operation or installation of this equipment before reading and understanding the risks associated with this equipment. Damage to the equipment and/or severe injury or death may occur in disregard of the information and hazard statements presented in this document.

Guide to Symbols

Labels attached to the instrument should be strictly observed to avoid personal injury or damage to the instrument. Refer to this document 'Guide to Symbols' for information regarding the nature of the danger or risk before taking any action where such label is present.

	<p>ATTENTION! – Indicated that important information or specific instructions need to be strictly followed; (Information or instructions that can be found in the manual).</p> 
	<p>To Preserve, Protect and Improve the quality of the Environment Disposal of Electrical Equipment in the European Union Because of the European Directive 2002/96/EC your electrical instrument must not be disposed of with normal household waste!</p> <p>The Tintometer Ltd will dispose of your electrical instrument in a professional and environmentally responsible manner. This service, excluding the cost of transportation is free of charge. This service only applies to electrical instruments purchased after 13th August 2005. Send your electrical Tintometer Ltd instrument for disposal freight prepaid to your supplier.</p>
	<p>DANGER! – A risk of severe injury or death from ELECTRICAL shock.</p>

Maintenance and Service

Please visit; <http://www.lovibondcolour.com/ServiceCenter> to find your local service centre.

Introduction:

This incubator is designed to be used with aluminium microbiological petri dishes of 50 mm diameter in conjunction with 47mm membrane filters for microbiological analysis. The incubator has heating and cooling capabilities to ensure that the petri dishes remain at a constant temperature throughout the whole incubation period with a temperature accuracy of 0.5°C no matter the local ambient conditions; however, it is recommended that it be used out of direct sunlight for maximum efficiency.

This Incubator is designed for use in the Field or in a Laboratory, powered via mains power or battery power where the power supply is limited.

Connectivity:

USB

USB connectivity is available for firmware updates. The USB socket is located at the back of the instrument. Instructions on performing a firmware update will be provided with the update file.

Power:

Powered from Mains

Connect the required Power Lead to the Power Pack; Insert the connector into the back of the Incubator as shown, plug into the mains power.

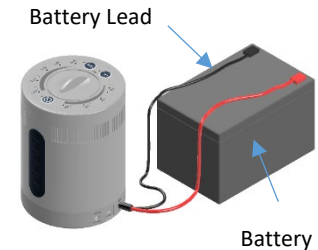
⚠ CAUTION Only use the power supply supplied with the Incubator.

Power from Battery

Using the Battery Lead, connect the red connector to the red terminal on the battery then connect the black connector to the black terminal on the battery; Insert the connector into the back of the Incubator as shown.

⚠ CAUTION Only use the Power supply and Battery supplied with the Incubator.

⚠ WARNING DO NOT touch the bare connectors on the battery.



Power from Mains and Battery - Battery Charging

When both the mains and the external battery are connected, the incubator will power itself from the mains and charge the external battery.

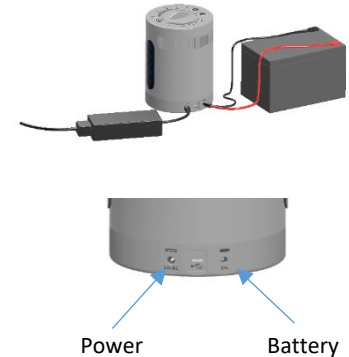
Using the Battery Lead, connect the Red connector to the red terminal on the battery then connect the black connector to the black terminal on the battery; Insert the connector into the back of the Incubator as shown. Connect the Required Power Lead to the Power Pack; Insert the connector into the back of the Incubator as shown.

⚠ CAUTION Only use the Power supply and Battery supplied with the Incubator.

⚠ WARNING DO NOT touch the bare connectors on the battery.

Petri Dish Holder

The Petri Dish Holder should always be filled with 20 Petri Dishes to ensure the incubator works at its maximum efficiency. Please use empty Petri Dishes to make up to a quantity of 20 if using less than 20 for microbiological testing.



Resuscitation Cycle

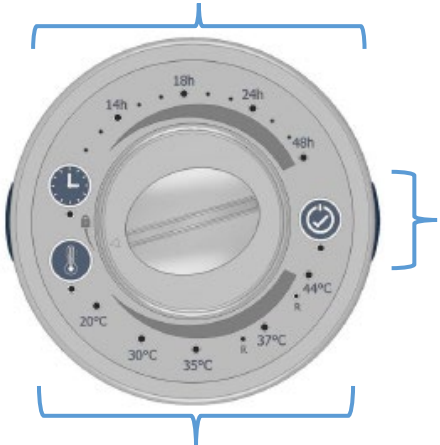
A resuscitation period may be required to re activate or recover bacteria that has been damaged environmentally, by temperature or other factors, or through disinfectant The Resuscitation Cycle sets the incubator to run a 4 hour 30°C cycle before the required incubation cycle.

Once resuscitation is complete the instrument will warm to temperature and the required incubation setting will start.



Settings:

Keypad

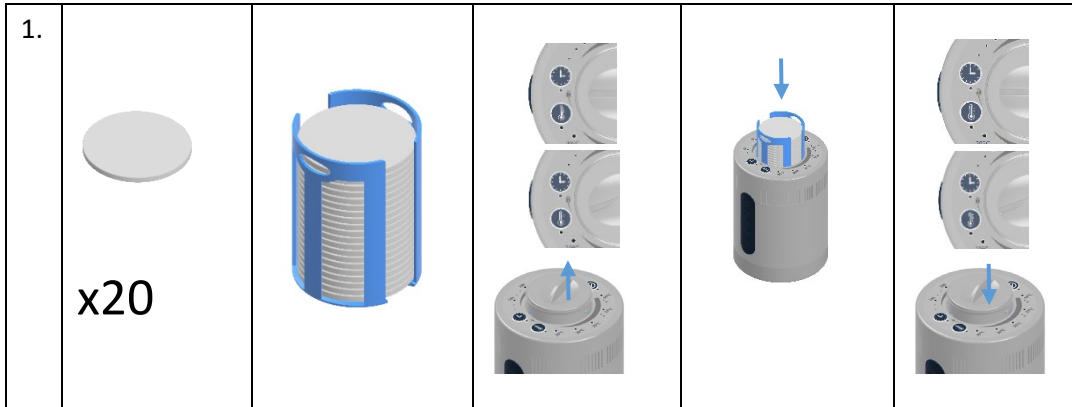


Incubation Time Settings & Indication LEDs

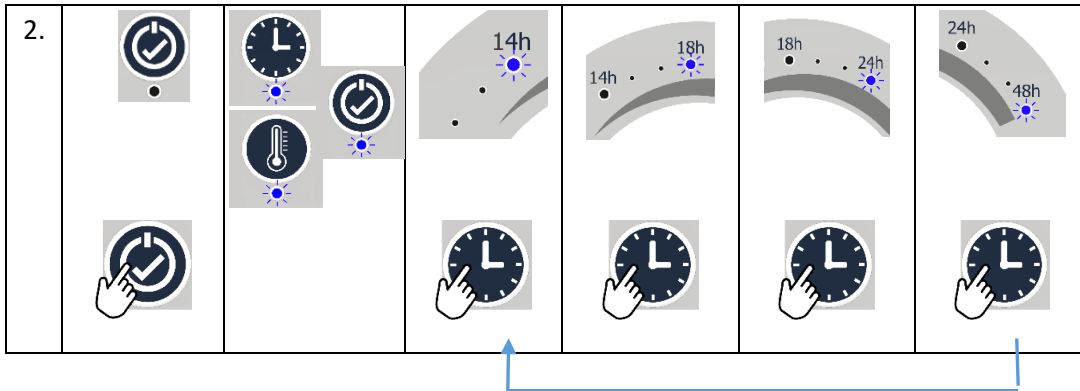
Power On / OFF
& Prompt Key
Power Indication LED

Temperature Settings & Indication LEDs

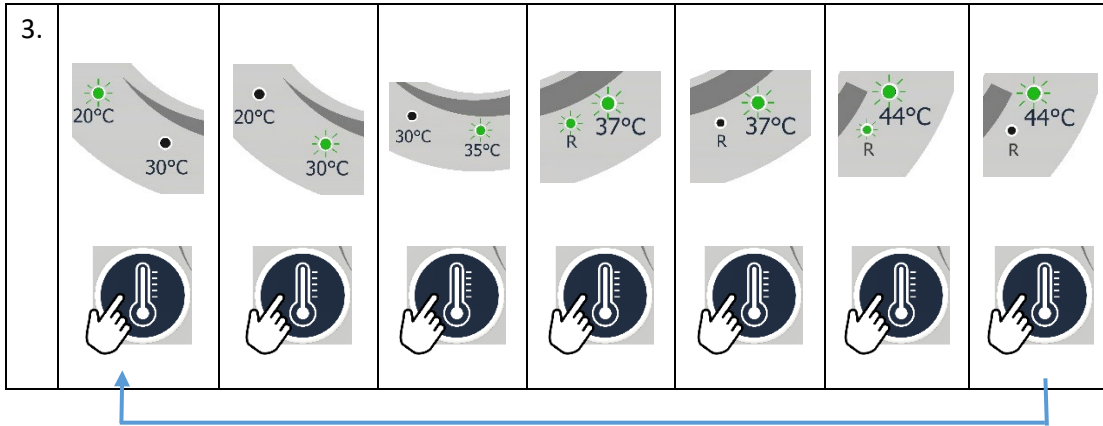
Inserting the prepared Petri Dishes



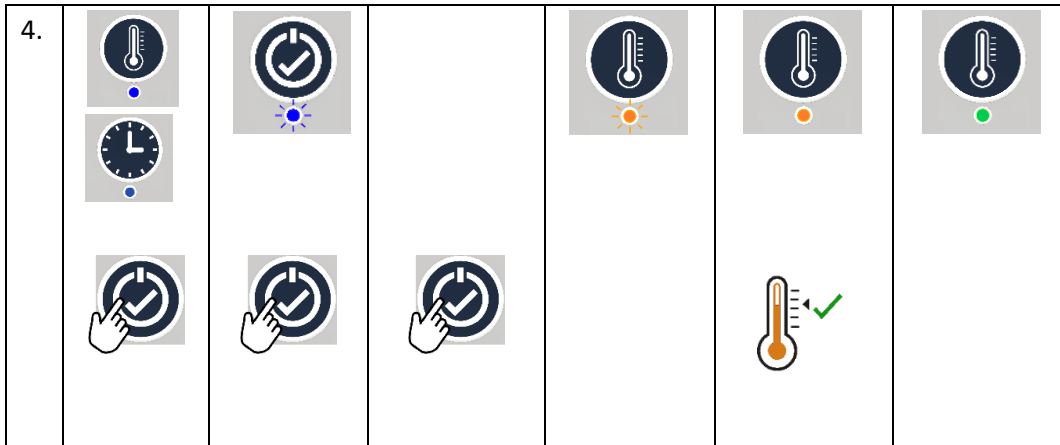
Setting Incubation Time



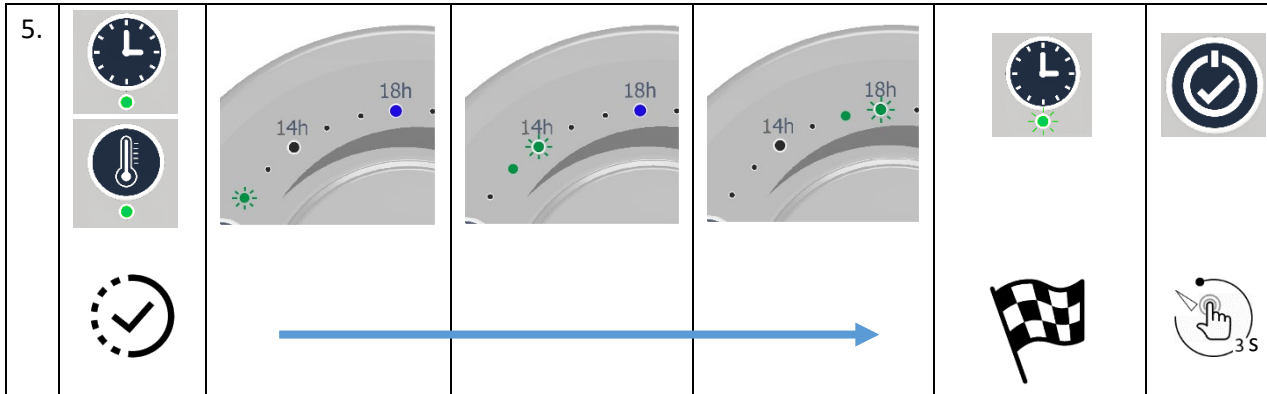
Setting Incubation Temperature



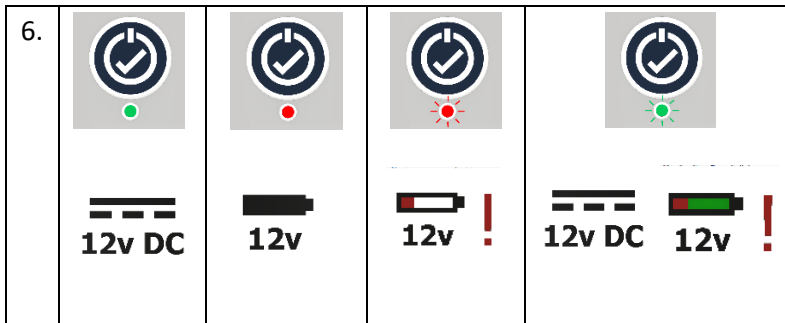
Heating / Cooling to Incubation Temperature

















Incubation Process



























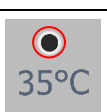
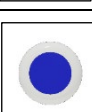
Power Status – when in incubation cycle



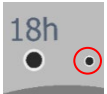



LED Status Identification table

LED	Status	Comment
		Needs setting
		Powered from Mains
		Powered from Battery
		Battery Charging
		Low Battery
		Needs Selecting
		Selected

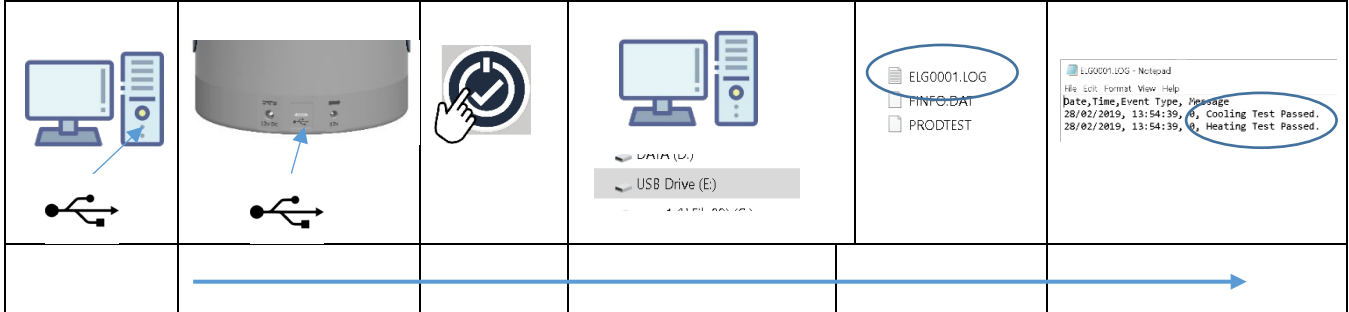
LED	Status	Comment
		Heating / cooling during adjustment
		Heating during cycle
		Cooling during cycle
		At temperature during cycle
		Needs Selecting
		Selected
		Running

LED	Status	Comment
		Completed
		Selected
		At this point in the cycle
		Completed this point in the cycle
		Error in the cycle at this point
		Selected

LED	Status	Comment
		Error in the cycle at this point
		Completed this point in the cycle

Error messages

Please note that a red LED in not automatically referencing to an error message, please check the LED status identification table first for clarity



Error in log

Error detected during Incubation Cycle.
Temperature detected varied from selected temperature by 2.5 Degrees Celsius for 2 minutes

Cause and Action

Info - A large variation has been detected in the temperature of the chamber, this usually caused by opening the lid, changing the petri dishes or a change in the environment (Air Conditioning, exposure to sun or window). Please ensure the chamber lid is closed during the cycle. If the error remains, please return the instrument for service.

Error detected during Incubation Cycle.
Temperature detected varied from selected
temperature by 1 Degrees Celsius for 5 minutes

Info - A minor variation has been detected in the
temperature of the chamber, this usually caused by
opening the lid, changing the petri dishes or a change in
the environment (Air Conditioning, exposure to sun or
window). Please ensure the chamber lid is closed during
the cycle. If the error remains, please return the
instrument for service.

Error detected with Incubator Thermistor 1.
Thermistor 2 used instead

Error - The accuracy of the temperature logging may be
degraded during heat up. Please send for a service.

Error detected with Incubator Thermistor 2.
Thermistor 1 used instead

Error - The accuracy of the temperature logging may be
degraded during heat up. Please send for a service.

No Mains Power

Info - Instrument has switched to battery power as the
mains power supply was interrupted. When mains power
is restored, battery will recharge and maintain the cycle.

Battery Charging Error

Warning - Ensure the battery and mains are connected
correctly. If the error continues, please send for a service.

Battery Charge Low – Instrument will shut down
soon

Info - The battery and mains need to be connected to
charge the battery.

Both thermistors are showing an error.
Incubator will not initiate for safety reasons

Error – An error has been detected on both thermistors;
the instrument will not operate for safety reasons. Please
send for a service.

Technical Information

Power Supply	12V DC Mains or 12V Lead Acid Rechargeable Battery
Battery Power Heating	Five full cycles of 18 hours with an ambient temperature of 15 - 44°C Three full cycles of 18 hours with an ambient temperature < 15°C
Battery Power Cooling	One full cycle of 18 hours when cooling 5°C
Dimensions	164.5 mm x 116 mm diameter
Weight	0.6kg
Incubation Time	14 – 48 hours
Time to reach Heating Temperature	60-90 minutes
Operation Temperature Range	5°C- 50°C
Incubation Temperatures	20°C, 30°C, 35°C, 37°C and 44°C
Temperature Resolution	0.1°C
Temperature Accuracy	+/- 0.5°C

Accessories and Spare Parts

Description	Part Number
Petri Dish Holder	197139
Petri Dishes – Pack of 10	400855
Power Pack	19803550
Power Lead (Pack of three)	136300
USB Lead	190630
Lead Acid Battery	192345
Battery Lead	19803555

Visit www.lovibond.com for our latest information

Lovibond® and Tintometer® are registered trademarks of the Tintometer® Group. All translations and transliterations of Lovibond® and Tintometer® are asserted as trademarks of the Tintometer® Group.

Sales Offices

Germany

Tintometer GmbH
Lovibond® Water Testing
Schleefstraße 8-12
44287 Dortmund
Germany

Tel: +49 (0)231/94510-0
Fax: +49 (0)231/94510-20
Email: sales@tintometer.de

South East Asia

Tintometer South East Asia
Unit B-3-12-BBT One Boulevard,
Lebuh Baku Nilam 2, Bandar Bukit
Tinggi, Klang, 41200, Selangor D.E
MALAYSIA.

Tel: +60 (0) 3 3325 2285/6
Fax: +60 (0) 3 3325 2287
Email: lovibond.asia@tintometer.com

India

Tintometer India Pvt. Ltd.
B-91, A.P.I.E. Sanath Nagar,
Hyderabad
500018
India

Tel: +91 (0) 40 4647 9911, Toll Free: 1 800 102 3891
Email: indiaoffice@tintometer.com

United Kingdom

The Tintometer Ltd
Lovibond House
Sun Rise Way
Solstice Park
Amesbury SP4 7GR

Tel: +44(0)1980 664800
Fax: +44(0) 1980 625412
Email: sales@tintometer.com

Switzerland

Tintometer AG
Hauptstraße 2
5212 Hausen AG
Switzerland

Tel: +41 (0)56/4422829
Fax: +41 (0)56/4424121
Email: info@tintometer.ch

North America

Tintometer Inc
6456 Parkland Drive
Sarasota
Florida 34243
USA

Tel: +1 941 756 6410
Fax: +1 941 727 9654
Email: sales@tintometer.us

China

Tintometer China
Room 1001, China Life Tower,
16 Chaoyangmenwai Avenue
Beijing 100020
China

Tel: +89 10 85251111 ext.330
Fax: +86 10 85251001
Email: chinaoffice@tintometer.com

