Lonza

Lucetta™ Luminometer Manual

Contents

1.0 Introduction

1.1 Lucetta™ Luminometer Overview

The Lucetta™ Luminometer is a single tube luminometer that has been developed for the detection of bioluminescence and chemiluminescence. It can be used as a portable battery-operated instrument and is suitable for all measurements of glow luminescence. The instrument is not equipped with an injection system for measuring very quick or unstable luminescence reactions.

Highly sensitive luminescence measurement

The Lucetta™ Luminometer is able to detect less than 50 amols ATP or less than 1000 molecule of luciferase in one reporter gene assay. The sample container is positioned beside the photon-counter and the measuring chamber is automatically closed light-tight. Close proximity of the sample container to the highly sensitive photon-counter and the use of a light reflector maximizes light collection efficiency and allows the detection of minimal light intensities.

Mature and reliable construction

The Lucetta™ Luminometer is a lightweight and compact instrument with a swinging door for sample intake. After loading a sample, the door is closed in one movement. Upon closing the door the measurement automatically starts.

Lucetta™ Luminometer as a stand-alone instrument

The Lucetta™ Luminometer can be utilized as a stand-alone instrument without any PC. It owns a built-in microprocessor software using three softkeys as well as the <ENTER> key for operation. The softkeys allow menu choices for the performance of sample measurements (MycoAlert mode or Single Read mode), for data upload, or for configuration of the system parameters.

Two basic measurement modes

The easy to operate instrument-embedded software is tailored around two basic measurement modes:

- MycoAlert® mode: This is a straight-forward implementation of the procedure for running Lonza's MycoAlert® Mycoplasma Detection Assay.
- Single Read mode: This mode will allow the user to simply place sample tubes and obtain unprocessed luminescence readings. This mode can be used e.g. for Lonza's ViaLight® or ToxiLight® Assay.

High data storage capacity and optional data transfer to a PC

- Each completed measurement is stored in the instrument's internal circular memory with a storage capacity of up to 1500 single sample readings. Furthermore sample results may be uploaded to a PC and viewed and analyzed with Microsoft® Excel®.

Broad range of applications

Example applications for the Lucetta™ Luminometer are:

- MycoAlert® Mycoplasma Detection Assay
- ATP assays, e.g. ViaLight® Cell Proliferation and Cytotoxicity Assay
- Adenylate Kinase assays, e.g. ToxiLight® Non-destructive Cytotoxicity Assay
- Luciferase reporter gene analysis

1.2 Light Detection

The photon counter is a photomultiplier tube, which measures light ranging from 300 to 600 nm. The photons emitted by the sample are converted into electrons and amplified by the photomultiplier. The individual impulses are counted digitally and are directly proportional in their linear range to the emitted amount of light.

Units of measurement: RLU/second

Luminescence is noted in Relative Light Units (RLU). Unlike most other luminescence measurement instruments that read out in the totally arbitrary RLU values (with no mention of the time period), the Lucetta™ Luminometer reads out in **RLU per second**. This readout allows the system to be **independent of the measuring time period**.

2.0 General Use Instructions

2.1 Use Restrictions

The Lucetta™ Luminometer is intended for research and investigational use by professionals only. Please note that it is not intended to be used for diagnostic purposes or for testing or treatment in humans.
The Lucetta™ Luminometer may only be used for measurement of glow type bio- and chemiluminescence of samples in tubes.
The instrument may not be used for purposes other than those described above.

2.2 Maintenance

The Lucetta™ Luminometer is practically maintenance-free. It only has to be protected from dirt and may have to be cleaned.

The surface of the instrument is protected by a robust and washable finish. Should it become dirty or dusty, we recommend wiping it with a damp cloth. If necessary a mild detergent (**not an abrasive**) can be used. The machine can be cleaned by wiping with 70% (v/v) Ethanol if required. **Acetone** is **NOT** allowed for cleaning since it damages the instrument's coating!

The sample chamber and especially the measurement window also have to be kept clean and should be wiped off with a damp cloth if dirty.

No free fluid should ever enter the instrument! If this should happen, disconnect the instrument immediately and notify Lonza Scientific Support Team!

2.3 Safety Instructions and Use Precautions

The instruments have been tested by the manufacturer. The instruments have been certified by international safety standards and are safe to use when operated in accordance with this manual.

Please adhere to the following safety instructions and use precautions before and during operation of the system or taking the instrument into service:

- Only use the device once you have read and understood the Lucetta™ Luminometer Manual. The manual should be accessible to all users. Make sure that each potential user reads and understands it.
- The power supply must be connected to a wall outlet complying with local regulations of the country of its installation and providing voltage and current according to the specification of the power supply.
- Do not connect the power cord near fluids to avoid electric shock and burning. The power cord must never become wet!
- All instruments are to be recharged with the provided UL-approved AC power supply/charger unit only. Substitution may create a hazard and may also harm the instrument.
- The instruments contain circuitry with significant levels of electricity. Unauthorized opening, modification, repair, or improper usage of the instrument may result in damage and will void all warranties.
- The instrument may only be used for its intended purpose (please refer to chapter 2.1).

- It is the operator's responsibility to adhere to regulations on the installation and/or operation of sample measuring systems that are required by local legislation of the country of its installation.
- The user must ensure that the instruments are set up and installed in such a way that their function is not impaired. Please refer to the setup instructions (chapter 3.2).
- Only use the device when it is set on top of a safe, plain and stable table or bench.
- Do not expose the device to a humid environment.
- The device shall not be exposed to direct sunlight nor be placed in a hot environment.
- The device is not approved for use in fire or explosion endangered areas, nor for use with inflammable or explosive media.
- Always keep sample door free of dust and contamination. To keep dust out of the door, open only for loading and cleaning.
- Use only specified sample tubes.
- The user must assure that any assays measured and evaluated are validated with the instrument prior to routine use.
- Some biological or chemical components or specimen may pose a hazard or risk of infection. Always refer to the description of the biological or chemical material for adequate safety precautions. Wear appropriate protective equipment like laboratory coats or chemically resistant rubber gloves and act carefully to avoid contamination.
- Any servicing and repair are only to be performed by Lonza authorized personnel.
- The user may perform only those maintenance steps specifically described in this manual (see chapter 2.2).
- The instrument must be decontaminated before repair work or service to avoid contact of the service personnel with potential hazardous materials.
- Do not open the device. The device does not contain user serviceable parts.
- Do not alter the device in any manner.
- Do not enter or place foreign objects in the sample area of the device.
- Avoid spilling liquids on the outer surface and the sample chamber of the instrument. Wipe up all spills immediately and decontaminate the surfaces in cases of biohazard spilling liquids.
- If liquid gets inside the instrument, switch off the instrument immediately. Do not operate the instrument if internal components have been exposed to fluids. The instrument must be cleaned by Lonza authorized personnel.
- If any foreign object has entered the device safety may be compromised.
- If the device has been damaged, ensure that the device is switched off and can not be used by any personnel. Contact Lonza Scientific Support for assistance.
- Handling of device parts that have the possible risk of sample contamination shall always be performed with protective gloves and any disposal of such parts must be according to federal, state or local procedures for clinical waste handling and disposal. Use secure leak proof containers and avoid unprotected handling of such parts.

Lonza Cologne AG and its distributors disclaim all warranties, either expressed or implied, and shall in no event be liable for any kind of damages, including those to third parties, caused by or arising out of improper installation or any operation or use in violation of the above safety and handling instructions.

2.4 Storage Conditions

For shipment or if the instrument is not used for a longer period of time, store it in the original cardboard box in a dry dust-free environment and protected from direct sunlight and significant temperature fluctuations (storage temperature: 0 – 40°C up to 80% humidity at 30°C, non condensing).

2.5 Return Shipment

If the instrument has to be returned to Lonza for servicing or inspection, please prepare the instruments as follows:

- Turn luminometer off and disconnect power supply
- Clean the instrument according to the instructions for cleaning and decontamination listed in the decontamination form. Fill out this decontamination form and the repair order form before return shipment. Lonza Cologne AG will not accept instruments without filled out decontamination form and repair order form.
- Before return please contact your local distributor or Lonza representative for shipping instructions.

2.6 Instrument Disposal

Decontaminate the instrument before disposal! This luminometer contains electronic parts. To prevent environmental pollution please dispose the instrument and the corresponding accessories according to local legislation. Within the EC dispose the instrument and accessories according to the directive 2002/96/EC or contact our local representative.

3.0 Setup Instructions

3.1 Lucetta™ Luminometer Components

The Lucetta™ Luminometer is delivered with the following components:

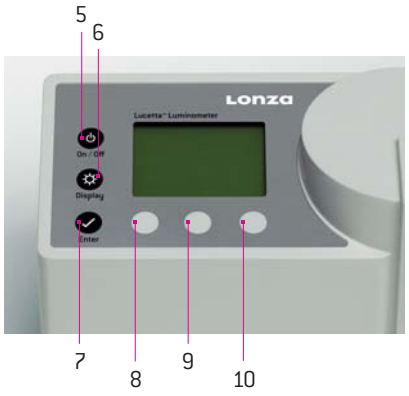
- 1 Lucetta™ Luminometer
- 1 Power supply and country specific mains adaptor to load internal rechargeable battery
- USB data cable
- 1 CD-ROM with User Manual, USB driver and Macro for data import in Microsoft® Excel®
- Quickstart Guide for MycoAlert® Assay
- Quickstart Guide for ViaLight® Assay
- Quickstart Guide for ToxiLight® Assay
- 10 reaction tubes

Figure 1. Front view of the Lucetta™ Luminometer (A) and display view (B).

A

1 Graphic display
2 Door handle
3 Reflector
4 Tube receptacle

B



5 Power button
6 Display light
7 ENTER button
8 Softkey I (multifunctional)
9 Softkey II (multifunctional)
10 Softkey III (multifunctional)

Figure 2. Back view of the Lucetta™ Luminometer

1 Power cord receptacle
2 USB port

3.2 Setup Instructions

- Carefully unpack the instrument and put it on the bench in a dry, dust-free environment, protected from direct sunlight and significant temperature fluctuations.
- Connect the instrument to mains with the power supply delivered with the instrument. Refer to the power requirements in the Technical Data and to the safety information.
- Turn the instrument on by pressing the POWER button. The display illumination will light up.
- Check the status of the re-chargeable battery via the menu point SHOW INFO (see 4.1). If the battery status (see 3.4) is lower than 4.8 V please fully recharge the battery before using the instrument.

3.3 Optimal Operation Temperature

It is strongly recommended to operate luminescence measurements at room temperature (20°C) to achieve the performance characteristics listed in the technical data. The general operating range is 10 – 35°C up to 70% humidity.

3.4 Battery Operation

The Lucetta™ Luminometer is equipped with a rechargeable battery.

— The battery charge status can be checked via the menu point SHOW INFO (see 4.1):

≥ 5.4 V	Battery fully charged
<4.8 V	Low battery Device indicates “low battery” in the start menu and on all submenus. In case the “low battery” status is reached during operation a beep indicates the status change. Please fully recharge the battery to avoid interruption of measurements. To complete measurements for residual samples the instrument can be connected to the mains (see 3.5).
<4.6 V	If the battery voltage level is falling below 4.6 V the instrument will switch off. Fully executed measurements are not lost. A full recharge of the battery is required. As a complete discharge will lead to data loss it is important to recharge the battery in a timely manner. To complete measurements for residual samples the instrument can be connected to the mains (see 3.5).

— A full recharge of the battery requires at least 5 hours of charge time. Prior to the first use, or in case that the instrument was not in use for a longer period of time, check the battery status and charge the battery for at least 5 hours if required.
— Make sure that the instrument is switched off during the charge time.
— The battery lifespan depends on the power-on time of the device, the use of display light and the age of the battery. Furthermore the battery may self-discharge when the device is not used over a longer time.
— To optimize the battery lifespan the device switches off automatically after 10 min if not in use. Furthermore the display light switches off after 3 min. These time points can be changed via the setup menu.

3.5 Mains Operation

When performing measurements on the instrument connected to the mains, ideally the battery is fully charged. If possible, avoid charging of the battery during measurement, as charging causes the instrument warming up. In case of very sensitive measurements or weak luminescence signals, this slight temperature increase may lead to unusual high dark count signal and influence measurement results.

3.6 Consumables

For measurements with the Lucetta™ Luminometer it is recommended to use 4 ml polystyrene tubes of 75 mm length and up to 12 mm diameter (e.g. Sarstedt, Cat. No. 55.478). Other tubes which do not optimally fit into the tube receptacle or are not suited for luminescence measurements may interfere with results.

3.7 Quality Control

It is considered good laboratory practice to run laboratory samples according to instructions and specific recommendations included in the package insert of the reagent kit or the standard laboratory protocol for the test to be conducted. A failure in the performance of Quality Control checks could result in erroneous test data. Samples should be obtained, treated and stored following the instructions and recommendations of the kit insert. It is recommended to run known internal quality standards or samples attendant to the measurement.

3.8 Switching off the instrument

The instrument cannot be turned off when it resides in a submenu. For switching it off, return to main menu and then press ON/OFF.

4.0 Lucetta™ Luminometer Operation

4.1 Menu

On the front face of the Lucetta™ Luminometer is an LCD display showing the menus, the measurement parameters, and the measurement results. For opening a submenu from the main menu (figure 3) drive the gray select bar up and down by using the two softkeys UP and DOWN. Once to the desired position, press ENTER to activate that choice.

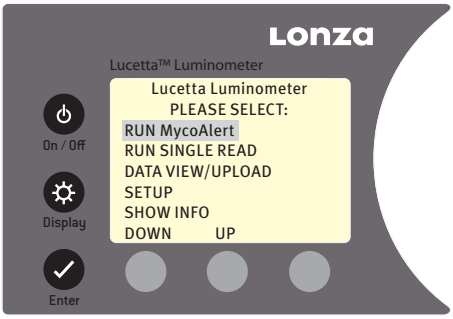


Figure 3. Main menu of the Lucetta™ Luminometer.

"**RUN MycoAlert**" will take you to the program for the MycoAlert® Mycoplasma Detection Assay. From here (in combination with the supplied "MycoAlert® Quick Start Guide") the MycoAlert® Assay can be performed and the contamination status of cells determined.

"**RUN SINGLE READ**" will take you to the single read program. The default parameters are set to a delay of 2 s followed by a 1 s read. This program can be used e.g. in conjunction with the accompanying "Quick Start Guides" to perform the ViaLight® Cell Proliferation and Cytotoxicity Assay or the ToxiLight® Cytotoxicity Assay.

"**DATA VIEW/UPLOAD**" will allow you to view stored data and upload the data from selected runs to your PC via the integral USB port on the rear side (see chapter 5).

"**SETUP**" opens a submenu that allows you to change date/time and adapt Single Read parameters (delay and measuring time). The submenu "Instrument parameters" is only accessible by Lonza personnel.

"**SHOW INFO**" will display the installed software version, utilized data memory (files and data) and the battery charge status.

4.2 MycoAlert Run

The following paragraphs will describe a normal MycoAlert® Run. For a more detailed description including the assay steps please refer to the Quick Start Guide for MycoAlert® Assay or the MycoAlert® Assay Manual.

1. Turn the instrument on by pressing the ON/OFF button.
2. Softkey select to RUN MycoAlert and press ENTER.

Note

Pressing ESC in any of the process related screens will exit the measurement process and bring you back to the start screen. Do NOT press ESC unless you really want to exit the measurement cycle.

3. Select the **number of samples** (1 – 99) by using the left and middle softkey. The instrument will first perform reading A for all samples and then continue with reading B for all samples. For convenient handling of incubation times we recommend a maximum number of five samples in one run. Press ENTER to continue.
4. Follow instructions to add MycoAlert® Reagent to the samples. Press DONE when completed. This will start the automatic count-down for the required incubation time of 5 minutes.
5. Wait for the instrument to beep and then press CONTINUE.

Note

You can abort the automatic count down by pressing SKIP. This will access the next screen and allow you to time the incubation manually

6. Open the door of the Lucetta™ Luminometer and insert the first sample vial. Upon closing the door the measurement automatically starts with reading A after a delay time of 2 seconds. After the delay and measure times have counted down, the measured value in RLU/s will appear on the display.
7. Press CONTINUE to go to the next sample.
8. After reading A is finished for all samples press CONTINUE. Add the MycoAlert® Substrate to all samples and press DONE when completed. Again, this will start the automatic count-down for the required incubation time of 10 minutes.
9. Wait for the instrument to beep and then press CONTINUE.

Note

You can abort the automatic count down by pressing SKIP. This will access the next screen and allow you to time the incubation manually

10. Open the door of the Lucetta™ Luminometer and insert the first sample vial. Upon closing the door the measurement automatically starts with reading B after a delay time of 2 seconds. After the delay and measure times have counted down, the measured value in RLU/s will appear on the display.
11. Press CONTINUE to go to the next sample.
12. After **reading B is finished for all samples**, press CONTINUE. The complete results for all samples will be displayed (starting with sample #1) including the individual RLU readings A and B, the calculated B/A ratio and the contamination status (figure 4).

Ratio B/A	Indicated as
> 1.2	CONTAMINATED
0.9 – 1.2	BORDERLINE
< 0.9	CLEAN

13. Pressing the NEXT and PREV softkey allows you to switch back and forth between the sample results.
14. Press ESC to go back to the main screen. The Lucetta™ Luminometer has now stored a MycoAlert® Data Record with measurement results of all samples in its memory (see chapter 5).

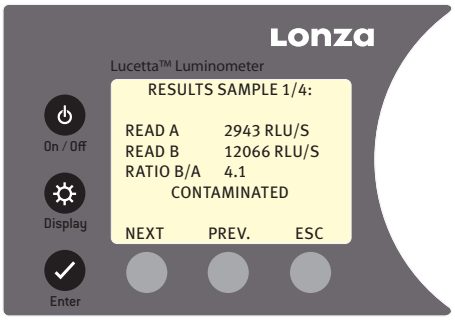


Figure 4. Example of a MycoAlert® Measurement screen. In this case CONTAMINATED would be displayed as the result of the B/A ratio is 4.1.

4.3 Single Read Run

The following paragraphs will describe a normal Single Read RUN, e.g. for a ViaLight® or ToxiLight® Assay. For a more detailed description including the assays steps please refer to the Quick Start Guide for ViaLight® or ToxiLight® Assay or the assay manuals.

1. Turn the instrument on by pressing the ON/OFF button.
2. Softkey down to RUN SINGLE READ and press ENTER.
3. Follow your assay protocol (add reagents, vortex, etc.).

Note

Pressing ESC in any of the process related screens will exit the measurement process and bring you back to the start screen. Do NOT press ESC unless you really want to exit the measurement cycle.

4. Open the door of the Lucetta™ Luminometer and insert the sample vial. Upon closing the door the measurement automatically starts after a delay time of 2 seconds. After the delay and measure times have counted down, the measured value in **RLU/s** will appear on the display (figure 5).

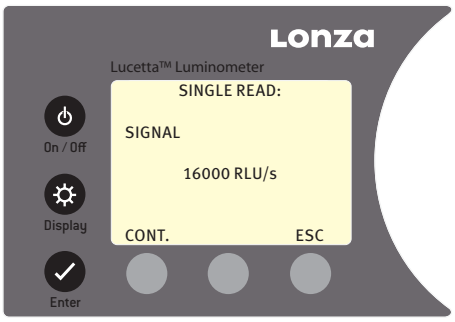


Figure 5. Example of a Single Read measurement screen. The result of the measurement is 16000 RLU/s.

5. Press CONTINUE to go on to the next sample.

Repeat Steps #4 through #5 for as many samples as wanted.

6. Press ESC to go back to the main screen. The Lucetta™ Luminometer has now stored a Single Read data record with measurement results of all samples in its memory (see chapter 5).

5.0 Data Storage and PC Upload

The Lucetta™ Luminometer is designed to assist the user in the automatic documentation of sample results. Each completed measurement is logged in the instruments internal circular memory. When the maximum storage capacity is reached, the oldest data are automatically overwritten. This is the classical first in/first out process. Thus, at any given time, the instrument has in its non-volatile memory the most recent measurements. For long-term data storage or data analysis measurements can be uploaded to a PC via USB connection.

5.1 Maximum Storage Capacity:

Readings with 1 sample: The memory holds up to 1500 single sample readings, i.e. 1500 reading of a Single Run or 1500 readings of a MycoAlert Run (including both readings A and B, as well as the B/A ratio and the contamination status message) or any combination of both run modes.

Readings with more than 1 sample: The memory holds up to 40 data rows of a Single Run or a MycoAlert Run with up to 255 samples or any combination of both.

5.2 Viewing Logged Measurements

Select DATA VIEW/UPLOAD in the main menu to get to the measurement list (figure 6). Measurements are listed by measurement mode (MR = MycoAlert Run; SR = Single Run), date and time in European format (dd-mm-yy hh-mm). Measurements are sorted chronologically starting with the most recent one. To view a measurement select it using the scroll bar and press ENTER. Pressing ESC leads you back to the measurement list.

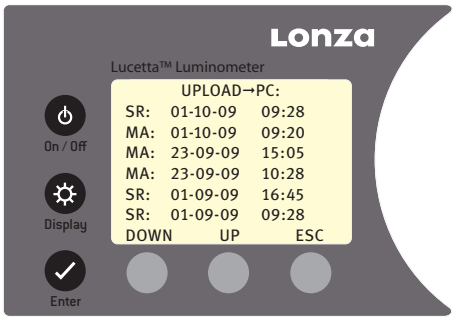


Figure 6: Example for a logged measurements list.

5.3 Upload to a PC

For long-term storage measurement results may be uploaded to a PC and viewed and analyzed with Microsoft® Excel®. Data records can only be uploaded consecutively, a grouping or select all functionality is not available.

Before you start, please install the USB driver and the Micrososft® Excel® Macro "Lucetta_Data_Read.xls" (both provided on the CD that comes with the instrument) on your PC. The Macro converts the ASCII data into an Excel® readable format.

Note

The Macro is only compatible with Microsoft® Windows® XP and Excel® 2003. For a more detailed description about driver installation and Macro handling, or for data upload using different Microsoft® Windows® or Excel® versions, please refer to the most recent information on our website (www.lonza.com/lucetta).

1. Switch on the Lucetta™ Luminometer and connect it to a USB port of your PC using the provided USB cable.
2. From the main menu select the DATA VIEW/UPLOAD sub-menu and press ENTER. This will bring you to the list of measurement data records and allow you to choose the record for uploading to the PC.
3. Open the Excel® Macro and follow the instructions described in the file
4. Repeat for as many data records as you like, but make sure you store the data sets on your PC each time.
5. Press ESC to leave the DATA VIEW/UPLOAD mode and go back to the main screen.

6.0 Setting Instrument Parameters

Via the submenu SETUP (figure 7) the Lucetta™ Luminometer allows the setting of date and time as well as the setting of the delay and acquisition times for the Single Read. All other instrument parameters are password-protected and can only be accessed Lonza service personnel.

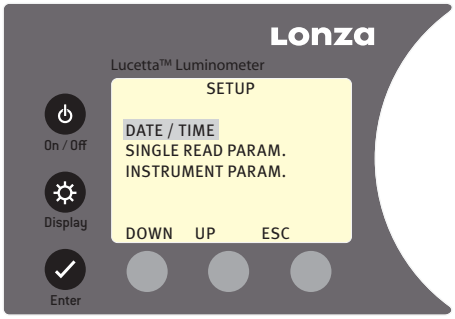


Figure 7: Submenu SETUP

Date & Time: Date and time are set in European format (dd-mm-yy and hh-mm with hours ranging from 0 – 24; figure 8).

1. Softkey down to SETUP and press ENTER.
2. Select DATE / TIME and press ENTER.

Figure 8: Display for setting date and time

3. First set day by pressing softkeys 10 and 1 repeatedly until the correct value is reached. Pressing ENTER confirms your values and moves you to the next two-digit position. Repeat this step for month, year, hours and seconds.
4. Press ESC to leave this submenu.

Single Read Parameters: Delay and measurement can be defined individually. Default values are set 2.0 seconds delay and 1.0 seconds measurement.

1. Softkey down to SETUP and press ENTER.
2. Select SINGLE READ PARAM. and press ENTER.

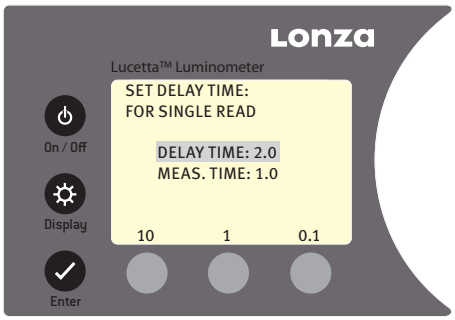


Figure 9: Display for setting Single Read parameters

3. First set delay time by pressing softkeys 10, 1 and 0.1 repeatedly until the correct value (seconds) is reached. Pressing ENTER confirms your values and moves you to the value for measurement time.
4. Set measurement time by pressing softkeys 10, 1 and 0.1 repeatedly until the correct value (seconds) is reached. Press ENTER to confirm your values.
5. To leave this submenu without any changes just confirm existing values by pressing ENTER.

7.0 Troubleshooting

In cases of malfunction or not expected measurement values refer to the troubleshooting list below and/or contact Lonza's Scientific Support Team:

Europe
Phone +49 221 99199 400
Fax +49 221 99199 499
scientific.support.eu@lonza.com

USA
Phone 800 521 0390 (toll free)
Fax +1 301 845 8338
scientific.support@lonza.com

Detected failure	Possible error	Reaction
Background value without sample tube >100 RLU/s (at a delay time of 5s)	Contamination of sample holder or measurement chamber with luminescent material	Clean sample holder and measurement chamber (refer to chapter "Maintenance")
	Contamination with luminescent material inside the instrument	Service required; please contact Lonza.
	Instrument has been set up in a suboptimal environment, e.g. high temperature	Check installation procedure for compliance with operating conditions
	Sample chamber not closed tightly	Make sure that the door is closed properly.
Background or measurement value too low (0 RLU/s)	Detector or electronics damaged, or incorrect instrument settings.	Service required; please contact Lonza.
Unexpected or wrong measurement value	Sample position suboptimal	Check the fit of the sample in the sample holder
Measurement value too high	Contamination of sample holder and measurement chamber with luminescent material	Clean sample holder and measurement chamber (refer to chapter "Maintenance")
	Contamination with luminescent material inside the instrument	Service required; please contact Lonza.
Unexpected "Overload" signal of 30^6 RLU/s	Too much light	Dilute the sample
Software hang-up (unlikely event)		In the unlikely event of a software hang-up, press the reset button that is integrated in the bottom plate of the instrument by using a small pin. This reset resume the ON/OFF functionality. It will not lead to a loss of data or instrument settings.

8.0 Error Codes

Error message	Reaction
Low battery	Battery charge is below 4.8 V. Please fully recharge the battery to avoid interruption of measurements.
Overload	Sample emits too much light. Please dilute the sample.

9.0 Appendix

9.1 Factory settings for Single Read

Error message	Reaction
Delay time	2 seconds
Measuring time	1 second

9.2 Technical Data

Sample and Data Handling	
Sample tube format	Transparent polystyrol tubes Diameter: maximum up to 12 mm; minimum approximately 11.5 mm Length: 75 mm
Detector	Photomultiplier tube with bi-alkali cathode, effective spectral range 300 – 600 nm, operated in photon counting mode
Sensitivity	Better than 50 attomols ATP or better than 1,000 luciferase molecules in one reporter gene assay; but also depending on the reagents used
Background value	Background average <100 RLU/s
Dynamic range	5.5 orders of magnitude
Measurement time	1.0 – 99.9 s
Data format	Data output in RLU/s
Hardware	Microcontroller to control all instrument functions
Microprocessor software	3 softkeys, 1 <ENTER>-key, 1 <POWER> key, 1 <DISPLAY> key Delay and measurement time definition in increments of 0.1 s Measurement of glow luminescence 2 operating modes (one of it pre-tailored for MycoAlert® Mycoplasma Detection Assay)
Hardware and software requirements for data upload (optional)	PC with industrial standard, Microsoft® Windows® 98 (SE), NT, 2000, XP, or Vista; Microsoft® EXCEL®
Interfaces	USB interface for PC connection (data transfer)

Device Specifications	
Dimensions (w x d x h)	175 x 112 x 140 mm (6.89 x 4.41 x 5.51 in)
Weight	approx. 1.35 kg (2.98 lbs)
Power supply	Universal input: 100 – 240 V AC, -/+ 10% 50 – 60 Hz Output: 7.5 V DC / 1.7 A
Power consumption (device)	9 W
Temperature range and humidity	Storage: 0° – 40° C, up to 80% humidity (at 30°C), non condensing Operation: 10° – 35°C, up to 70% humidity
Electrical safety class	IEC/EN 61010 IP50
Certification	This instrument bears the CE mark, based on conformity to current EC legislation: Electromagnetic compatibility EMC 2004/108/EC Low voltage 2006/95/EC
Manufacturing date	The manufacturing year is encoded by the second and third digit of the serial number, e.g. an instrument with aserial number x10xxxxx was manufactured in 2010.

Contact Information

North America

Customer Service: 800 638 8174 (toll free)
Scientific Support: 800 521 0390 (toll free)
scientific.support@lonza.com
Online Ordering: www.lonza.com

Europe

Customer Service: + 32 87 321 611
Scientific Support: + 49 221 99199 400
scientific.support.eu@lonza.com
Online Ordering: www.lonza.com

International

Contact your local Lonza Distributor
Customer Service: + 1 301 898 7025, ext. 2322
Fax: + 1 301 845 8291
scientific.support@lonza.com

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Belgium	+ 32 87 321 611
Brazil	+ 55 11 2069 8800
Denmark	+ 45 43 56 74 00
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Germany	0800 182 52 87 (toll free)
India	+ 91 22 4342 4000
Italy	+ 39 0363 45710
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Poland	+ 48 22 711 05 70
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Manufacturer and distributor information: The Lucetta™ Luminometer is manufactured by Lonza Cologne AG, Nattermannallee 1, 50829 Cologne, Germany and distributed in the U.S. by Lonza Walkersville, Inc. (8830 Biggs Ford Road, Walkersville, MD 21793).

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