SEAWARD
GMC-INSTRUMENTS GROUP

SS:200LR Wireless Irradiance Meter

QUICK START GUIDE

Read the complete manual (available at www.seaward.com).
The Quick Start Guide does not replace the complete manual!

seaward.com

TESTED, TRUSTED... WORLDWIDE.

TABLE OF CONTENTS

1. SAFETY INSTRUCTIONS

Read and follow these instructions carefully and completely in order to ensure safe and proper use.

The instructions must be made available to all persons who use the instrument.

Keep for future reference.

General

- The instrument may only be used by adequately trained and qualified personnel in the commercial trades. It is not a consumer product.
- Observe and comply with all safety regulations which are applicable for your work environment.

Accessories

- Use only the specified accessories (included in the scope of delivery or listed as optional accessories) with the instrument.
- Carefully and completely read and adhere to the product documentation for optional accessories. Retain these documents for future reference.

Handling

- Use the instrument in undamaged condition only. Inspect the instrument before use. Pay particular attention to damage, interrupted insulation or kinked cables.
    - Damaged components must be replaced immediately.
- Use the accessories and all cables in undamaged condition only. Inspect accessories and all cables before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the instrument or its accessories do not function flawlessly, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- If the instrument or accessories are damaged during use, for example if they are dropped, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the instrument or accessories (e.g. loose parts in the housing), permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- The instrument and the accessories may only be used for the tests/measurements described in the documentation for the instrument.

Operating Conditions

- Do not use the instrument and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not expose the instrument to direct sunlight for long periods of time. Overheating may cause damage to the instrument.
- Only use the instrument and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).

Batteries

- Use batteries in undamaged condition only. Risk of explosion and fire in the case of damaged batteries!
- Inspect the batteries before use. Pay particular attention to leaky and damaged batteries.
- When using batteries, the respective test/measuring instrument may only be used with inserted and secured battery compartment lid.

Measurement Cables and Establishing Contact

- Plugging in the temperature lead must not necessitate any undue force.

Calibration

- Comply with national calibration regulations and laws.
- Calibration may only be carried out by authorized service centers.

Data Security

- Always create a backup copy of your measurement/test data.
- The device is equipped with a data memory to which personal and/or sensitive data can be stored. Observe and comply with the applicable national data protection regulations. Use the corresponding functions provided by the test instrument (such as access protection), as well as other appropriate measures to prevent unauthorised access to the data.

Emissions

The SS:200LR Wireless Irradiance Meter includes a 433.375 Mhz (global version*) Long-Range RF Module. Ensure the correct band is used with your country.

*not for USA

2. APPLICATION

Please read this important information!

2.1 Intended Use / Use for Intended Purpose

The instrument is designed for the purpose of performing measurements (irradiance, ambient air and module temperature, roof pitch, roof orientation) of solar photovoltaic and solar thermal systems.

The instrument can be used on its own or in combination with the PV tester PV:1525.

Safety of the operator, as well as that of the instrument, is only assured when it is used for its intended purpose.

2.2 Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in this Quick Start Guide or the manual of the instrument is contrary to use for intended purpose. Use for other than intended purpose may lead to unpredictable damage!

2.3 Repairs and Modifications

Unauthorized modification of the product is prohibited. Only authorized, trained personnel is permitted to perform repairs. Refer to the instrument's manual for information concerning repairs.

2.4 Liability and Guarantee

The warranty provided by Seaward Electronic Ltd, and its liability, are governed by the applicable contractual and mandatory statutory provisions.

Register your instrument now

To activate your 2-year warranty please register your product at seaward.com/register

3. DOCUMENTATION

3.1 Information Concerning these Instructions

Note

When the instrument is used on its own no further manual needs to be read and observed.

The manual only applies when used in combination with the PV tester PV:1525.

The Quick Start Guide does not replace the complete manual!

Read the complete operating instructions (available at www.seaward.com).

Read these instructions attentively and carefully. They contain all necessary information for safe use of the instrument. Comply with these instructions in order to protect yourself and others from injury, and to avoid damaging the instrument.

The latest version of these instructions is available on our website:

https://www.seaward.com/gb/support/

Descriptions of Instrument Variants

This documentation describes several instruments and their variants. As a result, features and functions may be described which do not apply to your instrument. Furthermore, illustrations may differ from your instrument.

Trademark Law

Product designations used in this document may be subject to brand law and patent law. They are of the property of their respective owner.

Copyright

All rights reserved.

Nothing from this edition may be multiplied, or made public in any form or manner, either electronically, mechanically, by photocopying, recording, or in any manner, without prior written consent from Seaward Electronic Ltd. This also applies to accompanying drawings and diagrams.

Due to a policy of continuous development Seaward Electronic Ltd reserves the right to alter the equipment specification and description outlined in this publication without prior notice and no part of this publication shall be deemed to be part of any contract for the equipment unless specifically referred to as an inclusion within such contract.

3.2 Identification of Warnings

Instructions for your safety and for the protection of the instrument and its environment are provided as warnings and notes at certain points within these instructions.

They're laid out as shown below and are graded in terms of the severity of the respective hazard. They also describe the nature and cause of the hazard, the consequences of non-observance and what must be done to avoid it.

DANGER

Death or serious injury is almost certain.

WARNING

Death or serious injury is possible.

CAUTION

Minor or moderate injury possible.

ATTENTION

Damage to the product or the environment.

Note

Important information.

Tip

Useful additional information or application tip.

3.3 Identifiers

The following identifiers are used in this documentation:

Identifier	Meaning
Control Element	Keys, buttons, menus and other controls
✓ Prerequisite	A condition etc. which must be fulfilled before a given action can be taken
1. Procedural step	Steps of a procedure which must be completed in the specified order
↳ Result	Result of a procedural step
· Enumeration · Enumeration	Bullet lists

3.4 Symbols in the Documentation

The following icons are used in this documentation:

Icon	Meaning
	Read and adhere to the product documentation.
	General warning symbol.
	Warning regarding electrical voltage.

4. GETTING STARTED

This chapter gives you an overview of the initial steps with the instrument.

1. Read and adhere to the product documentation. In particular, observe all safety information in the documentation, on the instrument and on the packaging.
   - Safety Instructions on page 4.
   - Application on page 6.
   - Documentation on page 7.
2. Familiarize yourself with the instrument on page 11.
3. Start up the instrument on page 16.
4. Familiarize yourself with the instrument's operation on page 17.
5. Configure the instrument on page 18.
6. Perform measurements/tests on page 22.

5. THE INSTRUMENT

5.1 Scope of Delivery

Please check the scope of delivery for completeness and intactness.

No.	Description	Quantity	Part number
1	SS:200LR Wireless Irradiance Meter (global version)*	1	396A942
2	Solar Survey Temperature Probe	1	
3	USB download cable	1	
4	AA batteries	2	
5	Calibration certificate**	1	
6	Quick Start Guide**	1	396A5505
7	Declaration (CE, UKCA)**	2	

*not for USA

**not pictured

Optional Accessories:

Solar Survey – Quick release panel mounting bracket Part Number: 396A979

5.2 Instrument Overview

Front

1 PV sensor
2 LCD display
3 Function keys

Top

4 USB socket
5 Link socket to other solar products
6 Temperature probe socket

5.3 Symbols on the Instrument and the Included Accessories

Icon	Meaning	Icon	Meaning
	Warning concerning a point of danger (attention, observe documentation!)		The instrument may not be disposed of with household trash. See “Disposal and Environmental Protection” on page 26.
	European conformity marking		UK conformity marking

5.4 Included Features

- Irradiance measurement
- Temperature measurement (ambient air and module temperature)
- Inclinometer (roof pitch)
- Compass bearing (roof orientation)

5.5 Relevant Standards

The instrument has been manufactured and tested in accordance with the following safety regulations

IEC 60529	Degrees of protection provided by enclosures (IP code)
IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
IEC 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements Class B

5.6 Technical Specification

Measurements:

Irradiance

Display range	100 … 1500 W/m² / 30 … 400 BTU/hr-ft²
Measurement range	100 … 1250 W/m² / 30 … 500 BTU/hr-ft²
Resolution	1 W/m² / 1 BTU/hr-ft²

Temperature

Display range	–30 °C … +125 °C
Measurement range	–30 °C … +125 °C
Resolution	1 °

Compass Bearing

Display range	0 °C … 360 °
Measurement range	0 ° … 360 °
Resolution	1 °

Inclinometer

Display range	0° … 90°
Measurement range	0° … 90°
Resolution	1°

General:

Environmental Conditions

Environment	Dry, without moisture condensation indoor or outdoor use
Operating temperatures	+0 °C … +40 °C / +32 °F … +104 °F
Storage	–25 °C … +65 °C / –13 °F … +149 °F; Dry, without moisture condensation; without battery pack
Elevation	Max. 2000 m / 6562 ft.

Mechanical Design

Dimensions	Approx. 14.8 cm × 8.0 cm × 3.3 cm / 5.8“ × 3.2“ × 1.3“
Protective system	Housing: IP40 as per IEC 60529 (Protection against ingress of solid foreign objects: ≥ 1.0 mm / 0.039 ” Ø; protection against ingress of water: not protected)
Weight	Approx. 0.25 kg / 0.6 lb (without batteries)
Display	Custom LCD

Power Supply

Power source	2 × AA Alkaline batteries
Battery life	>20,000 readings
Auto power down	After 30 minutes of no communication with the PV:1525
Onboard memory	5000 datasets

Electrical Safety

Pollution degree	2

Electromagnetic Compatibility (EMC)

Interference emission	IEC 61326-1, class A
Interference immunity	IEC 61326-1

Connectivity

Sample rate	1 … 60 minutes (user-definable)
Connection to PV:1525	Wireless (range c. 200 m – line of sight); Long-Range RF
Frequency band(s)	433.375 MHz
Transmit power range(s)	4.89 dBm ERP
Modulation type(s)	CSS
Channel spacing(s)	125 kHz
Radio spectrum efficiency (Art. 3.2)	ETSI EN 300 220-2 V3.2.1
Antenna type and gain	FPC antenna, 2.8 dBi peak gain

6. START-UP

6.1 Before First Use

Before using your SS:200LR for the first time, insert the batteries included in the delivery.

1. Remove the rubber cover (if present) to access the battery compartment. The battery compartment is located at the back of the instrument, at the top.
2. Slide the battery compartment cover upwards to open it.
3. Insert the included batteries into the compartment. Make sure to match the correct polarity (+/–).
4. Close the battery compartment by sliding the cover back down until it clicks into place.

6.2 Powering on/off

	Press **TEMP** and **ANGLE** simultaneously to turn power on/off. Meter always powers up in **ANGLE** mode. Power will turn off after 30 minutes of no communication with the PV:1525.

7. OPERATION

7.1 Button/Display Functions

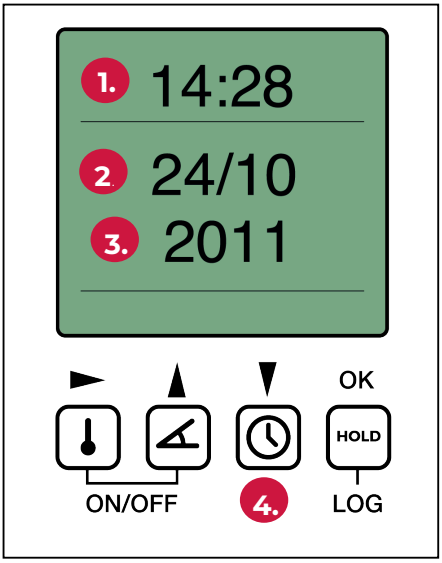
Button	Name	Single press	Press and hold
	**TEMP**	Temperature display	>5 seconds to change display units
	**ANGLE**	Angle display	>5 seconds to adjust angle function
	**CLOCK**	Date/time display	>5 seconds to set time/date
	**HOLD**	OK	>5 seconds for log display

7.2 Navigation Functions

Button	Name
►	**RIGHT**
▲	**UP**
▼	**DOWN**
OK	**OK**
LOG	**LOG**

8. CONFIGURATION

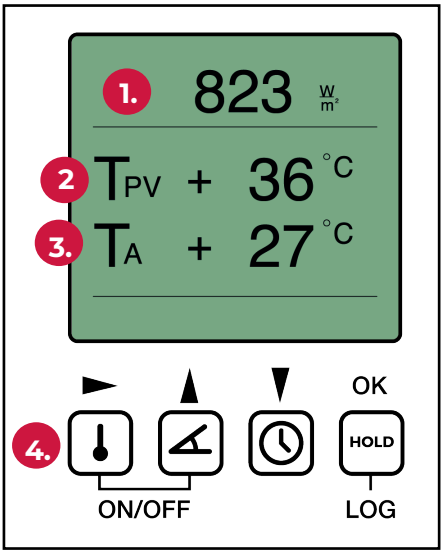
8.1 Set Time and Date



No.	
1	24 hour clock (hh:mm)
2	Date (dd/mm)
3	Year
4	Time/date

1. Press **CLOCK** for >5 s.
   ↳ The display will flash hours value.
2. Use **RIGHT** to select date/time fields (flashing).
3. Use **UP** and **DOWN** to increase/decrease value.
4. Press **OK** to save.

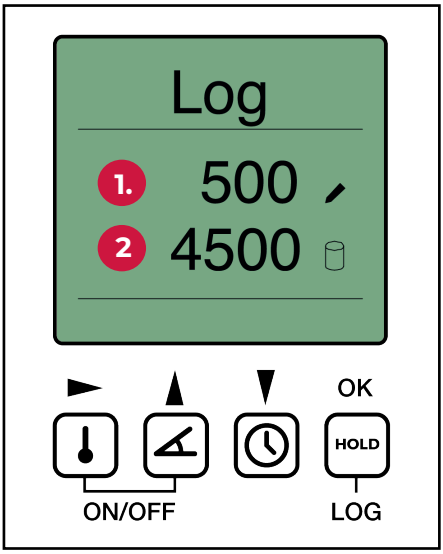
8.2 Toggle Units



No.	
1	Irradiance
2	Panel temperature
3	Ambient temperature
4	Temperature mode

1. Press **TEMP** >5 s.
2. Use **RIGHT** to select temperature or irradiance units (flashing).
3. Use **UP** or **DOWN** to toggle units (C or F), (W/m^2 or $BTU/hr\text{-}ft^2$).
4. Press **OK** to save.

8.3 Data Logging



No.	
1	Memory used
2	Memory left

Log Setup

Press **OK** >5 s to display **LOG** Status.

Press **OK** >5 s to display **LOG** Interval in minutes. Use **UP** & **DOWN** to increase and decrease value.

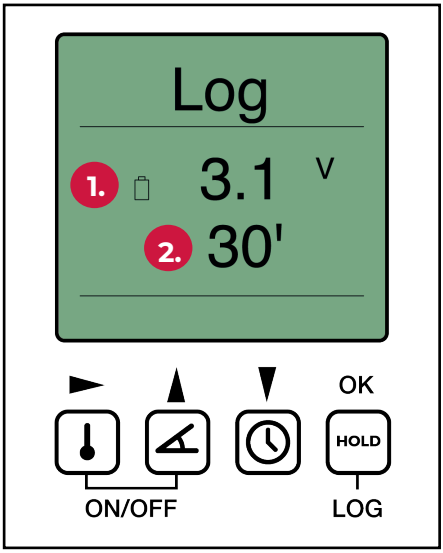
Press **RIGHT** to display Data Store Mode.

Use **UP** & **DOWN** to select **STOP** (when memory full) or, **ROLL** for data to overwrite memory from start.

Press **RIGHT** to display **Delete** option.

Use **UP** & **DOWN** to select **YES** or **NO**.

Press **OK** at anytime to save and exit **LOG** setup.



No.	
1	Battery voltage
2	Log interval

Start Data Logging

1. Press **OK** >5 s to display **LOG** status.
2. Press **LOG**.
3. Press **OK** to confirm **RUN**.

↳ Meter will enter **SLEEP** mode between measurements to conserve battery power.

Check Logging Progress

1. Press any key to display **LOG** Status.

↳ Display automatically blanks after a few seconds.

Stop Data Logging

1. Press any key to display **LOG** status.
2. Press **LOG**.
3. Press **OK** to confirm **STOP**.

↳ Data logging is stopped.

9. MEASURING/TESTING

The device supports two main types of measurements:

- Irradiance with Compass and Angle Measurement on page 22
- Irradiance and Temperature Measurement on page 23

Note

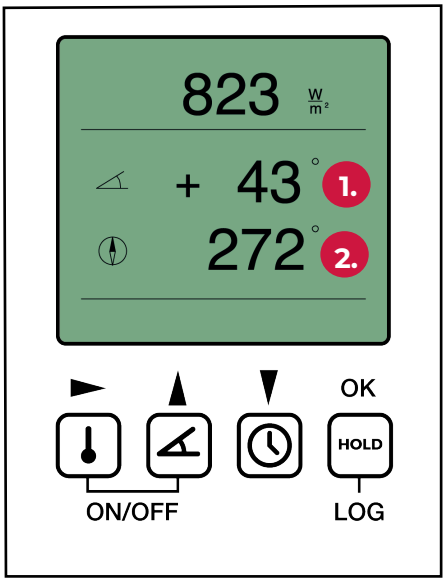
Additional measurements can be performed in combination with the PV:1525. For detailed instructions, please refer to the PV:1525 user manual. The manual is available on our website:

https://www.seaward.com/gb/support/

9.1 Irradiance with Compass and Tilt Measurement

Note

Keep meter away from metallic objects as these can influence reading.



No.	
1	Tilt angle
2	Magnetic bearing/Compass

Tilt Angle

1. Place the meter against the surface to be measured or use optical sights to align with roof slope.

Magnetic bearing

2. Point the meter in the direction required.
3. Press **ANGLE** to select Angle Mode.

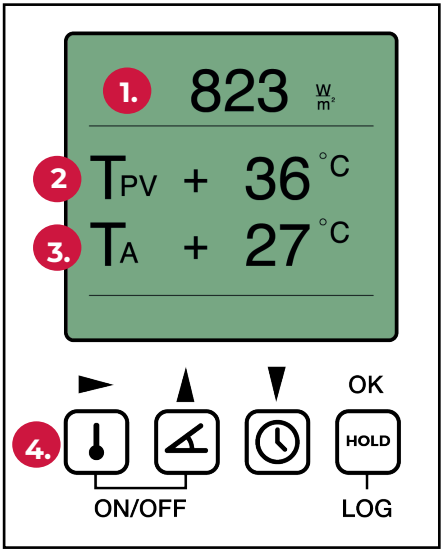
Compass

4. Keep the meter horizontal. Tilting the meter more than +/–20° will blank the bearing display (---).

User Adjustment of ANGLE Function

5. Place meter on a flat surface.
6. Press **ANGLE** >5 s - display will flash 'Z'.
7. Press **ANGLE** to store '+ SET' value.
8. Turn meter through 180°.
9. Press **ANGLE** to store '- SET' value.
   ↳ Meter will display 'Z' to show user zero is enabled.
10. To clear this, press **ANGLE** for >5 s – 'Z' will clear.

9.2 Irradiance and Temperature Measurement



No.	
1	Irradiance
2	Panel temperature
3	Ambient temperature
4	Temperature mode

1. Connect the temperature probe to the meter.
2. Press **TEMP** to select temperature mode.
3. If needed, press **TEMP** >5 s to toggle units, see "8.2 Toggle Units" on page 19.
4. Place the surface probe on the surface to be measured.
5. Read the temperature values directly on the instrument's display in real time.

10. SERVICE AND CONTACT

GERMANY:

GMC-I Service GmbH

Beuthener Straße 41
90471 Nürnberg
Deutschland

+49 911 817718-0
service@gossenmetrawatt.com

For information on service or calibration visit:
gmci-service.com/en

REST OF WORLD:

Calibrationhouse (UK)

11 Bracken Hill,
South West Industrial Estate
Peterlee, County Durham
SR8 2LS

+44 (0) 191 587 8737
service@calibrationhouse.com

For information on service or calibration visit:
calibrationhouse.com

11. CERTIFICATIONS

11.1 CE Declaration

The instrument fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark.

A printed version of the CE declaration is included in the scope of delivery.

11.2 UKCA Declaration

The instrument fulfills all requirements of applicable UK directives and national regulations. We confirm this with the UKCA mark.

A printed version of the UKCA declaration is included in the scope of delivery.

11.3 Calibration Statement and Certificate

The instrument is fully calibrated and found to be within the specified performance and accuracy at the time of production. The Seaward Group provides its products through a variety of channels; therefore it may be possible that the calibration date on the provided certificate may not represent the actual date of first use.

Experience has indicated that the calibration of this instrument is not affected by storage prior to receipt by the user. We therefore recommend that the recalibration period be based on a 12-month interval from the first date the unit is placed in to service.

Please contact us for calibration services, see “10. Service and Contact” on page 24.

12. DISPOSAL AND ENVIRONMENTAL PROTECTION

Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.

ATTENTION

Environmental Damage

Improper disposal results in environmental damage.

- Observe the information in this section.

12.1 Disposal of Old Devices, Batteries and Rechargeable Batteries

Old devices and (rechargeable) batteries contain valuable raw materials that can be recycled, as well as hazardous substances which can cause serious harm to human health and the environment, and they must be recycled and disposed of correctly.

The symbol depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end-user not to dispose of old devices and batteries or rechargeable batteries with unsorted municipal waste (“household trash”). The (rechargeable) batteries must be removed from the old device (where possible) without destroying them and the old device and the (rechargeable) batteries must be disposed of separately. The type and chemical composition of the (rechargeable) battery are indicated on the battery’s labelling. If the abbreviations “Pb” for lead, “Cd” for cadmium or “Hg” for mercury are included, the (rechargeable) battery exceeds the limit value for the respective metal.

You are obliged to comply with respective local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or the local distributor.

Please also observe the owner’s or end user’s responsibility with regard to deleting personal data, as well as any other sensitive data, from old devices before disposal.

12.2 Disposal of Packaging Materials

Packaging and its parts must be correctly disposed of separately from unsorted municipal waste (“household trash”).

You are obliged to comply with respective local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or the local distributor.

We recommend retaining the original packaging materials in case you might require servicing or calibration in the future.

WARNING

Danger of Asphyxiation Resulting from Foils and Other Packaging Materials

Children and other vulnerable persons may suffocate if they wrap themselves in packaging materials, or their components or foils, or if they pull them over their heads or swallow them.

- Keep packaging materials, as well as their components and foils, out of the reach of babies, children and other vulnerable persons.

12.3 Regulations for the Federal Republic of Germany

The following comments refer specifically to the legal situation in the Federal Republic of Germany.

Old devices, electrical or electronic accessories and batteries or rechargeable batteries

Old devices, electrical or electronic accessories, batteries and rechargeable batteries used in Germany can be returned free of charge to Gossen Metrawatt GmbH or the service provider responsible for their disposal in compliance with applicable regulations, in particular laws concerning packaging and hazardous goods. Batteries and rechargeable batteries must be returned in the discharged state or with appropriate precautions against short circuiting. Further information regarding returns can be found on our website.

Packaging Materials

Packaging which is not subject to so-called system participation is returned to the appointed service provider. Further information regarding returns can be found on our website.

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