User Guide

Elcometer 130 SSP

Soluble Salt Profiler

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CONTENTS

Android™

Made for
iPod   iPhone   iPad

For the avoidance of doubt, please refer to the original English language version.

Gauge Dimensions: 250 x 145 x 50mm (9.8 x 5.7 x 1.9")

Gauge Weight: 780g (1.72lb) - including batteries

Applicable Patents: Patent applied for

1 GAUGE OVERVIEW

1   USB Data Output Socket (below cover)
2   On/Off Key
3   Softkeys
4   LCD Display
5   Shoulder Strap Connection
6   Magnetic Safety Catch
7   Pressure Plate
8   Measurement Electrode

2 BOX CONTENTS

- Elcometer 130 SSP Soluble Salt Profiler
- High Purity Test Papers; Box of 100
- Magnetic Paper Positioning Discs; x3
- Bottle of Pure Water; 250ml (8.5fl oz)
- Syringes, 3ml (0.1fl oz); x3
- Sensor Wipes; Box of 72
- Tweezers; x2
- Disposable Vinyl Gloves; Box of 20
- Self Seal Polythene Bags; Box of 20
- Shoulder Strap
- Screen Protector
- Transit Case
- AA Batteries; x4
- ElcoMaster® Software & USB Cable
- Test Certificate
- Calibration Certificate (if ordered)
- User Guide

3 USING THE GAUGE
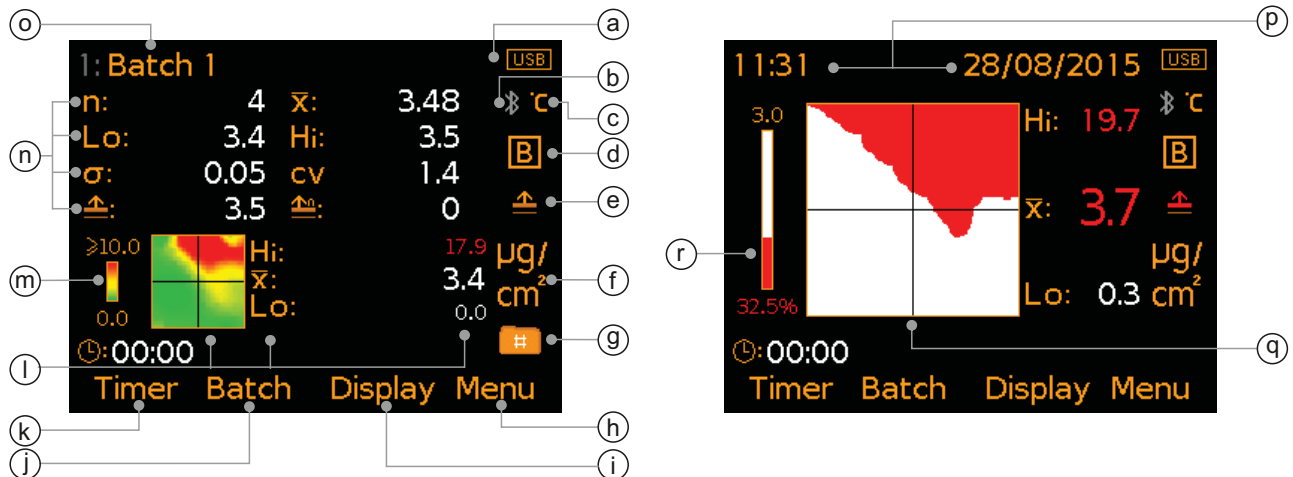
a   Power: Batteries or USB - including battery life indicator

b   Bluetooth On - Grey: not connected; Orange: connected

c   Automatic Temperature Compensation On

d   Measurement Mode - 'B': Cleanliness, Bresle Method Equivalency;
     'E': Cleanliness, Elcometer 130 Equivalency; 'C': Conductivity

e   Limit Set & Enabled - Red: Limit exceeded

f   Measurement Units - Cleanliness: µg/cm^2, mg/m^2;
     Conductivity: µS/cm, mS/cm, ppm, % Salinity

g   Batching On

h   Menu softkey

i   Display Softkey

j   Batch Softkey

k   Timer Softkey - Start, Stop, Reset; displayed when enabled via Menu/Setup/Timer

l   Salt Density Map & Readings - Highest, lowest and average reading

m   Salt Density Map Scaling

n   User Selectable Statistics - Maximum of 8

o   Batch Name - when in batching

p   Date & Time - when enabled and not in batching

q   Pass/Fail Map

r   Pass/Fail Percentage Indicator

4 GETTING STARTED

4.1 ENSURING YOUR GAUGE HAS THE LATEST FIRMWARE & UPGRADING YOUR GAUGE

To ensure that your gauge has the most up-to-date gauge firmware, allowing you to benefit from the latest features and functionality, we recommend that the gauge is connected to ElcoMaster® on a regular basis and before first use.

Simply connect the gauge via USB to an internet connected computer running ElcoMaster® using the 'Connect Gauge' feature. If a later version of the gauge firmware is available, 'Update Gauge' will be displayed to the right of the gauge details. Click 'Update Gauge' to install the latest firmware.

4.2 FITTING THE BATTERIES

Each gauge is supplied with 4 x AA alkaline batteries.

To insert or replace the batteries:
1   Remove the battery cover by rotating the retaining screw anti-clockwise.
2   Insert 4 batteries taking care to ensure correct polarity.
3   Refit the cover and rotate the retaining screw clockwise to secure.

The battery condition is indicated by a symbol in the top right of the display (⊏▬▬):
  ‣ Full symbol (orange) = batteries at full capacity
  ‣ Empty symbol (red, flashing) = batteries at lowest sustainable level

4.3 SELECTING YOUR LANGUAGE
1   Press and hold the ON/OFF button until the Elcometer logo is displayed.
2   Press Menu/Setup/Language and select your language using the ↑↓ softkeys.
3   Follow the on screen menus.

To access the language menu when in a foreign language:
1   Switch the gauge OFF.
2   Press and hold the left softkey and switch the gauge ON.
3   Select your language using the ↑↓ softkeys.

4 GETTING STARTED (continued)

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4.4   SCREEN SETTINGS

A number of screen settings can be defined by the user via Menu/Setup/Screen Settings including:

- **Screen Brightness;** This can be set to 'Manual' or 'Auto' - the brightness is adjusted automatically using the gauge's ambient light sensor.
- **Screen Timeout;** The display will dim if inactive for more than 15 seconds and will go 'black' if inactive for the period defined. The gauge can also be set to switch off automatically after a user defined period of inactivity via Menu/Setup/Gauge Auto Off. The default setting is 5 minutes.

4.5   SETTING UP THE READING DISPLAY

The colour display is split into two halves; Top Display and Bottom Display. The user can define what information is displayed in each half including: Readings, Selected Statistics, Graphs and Maps.

To setup the display:
1   Press Display/Setup Display/Top Display (or Bottom Display as required).
2   Use the ↑↓ softkeys to highlight the required option and press 'Select'.

If 'None' is selected for one half and 'Selected Statistics' or 'Bar Graph' for the other half, the data will be shown in the top or bottom display as specified. If 'None' is selected for one half with any other option, the selected view will fill the whole screen.

Fig. 1: Readings x1

- **None;** No information is displayed.
- **Readings x1** (Fig. 1); The reading value is displayed for the whole sample.
- **Readings x4** (Fig. 2)**;** The measurement area is split into four Bresle Patch size quadrants and four Bresle Patch or Elcometer 130 equivalent readings are displayed simultaneously.
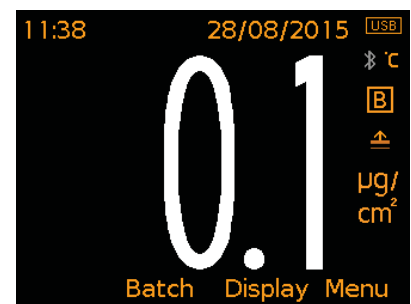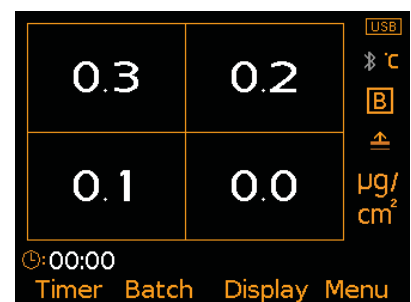

Fig. 2: Readings x4

- **Selected Statistics** (Fig. 3); Up to 8 statistical values can be displayed, as defined by the user, via Display/Statistics/ Select Statistics. Select from:

  Number of Readings, Mean, Lowest Reading, Highest Reading, Range, Standard Deviation, Coefficient of Variation, Limit Value, Number Above Limit

- **Run Chart** (Fig. 4); A line trend graph of the last 20 measurements which is updated automatically after each reading.

- **Bar Graph** (Fig. 5); An analogue representation of the current measurement value together with the highest (Hi), lowest (Lo) and average ($\bar{x}$) reading. The graph is updated automatically when each reading is taken.

- **Distribution Graph** (Fig. 6); Gives a visual representation of the spread of a salt contamination profile reading in relation to the mean contamination level and the limit if one is set.

- **Pass/Fail Map**[a] (Fig. 7); Provides a visual indication of salt contamination. Areas where soluble salts levels are above the limit set are shaded red, areas below the limit are white. The measurement bar to the left of the pass/fail map displays the limit (above the bar) and the percentage test area above the defined limit (below the bar). The bar is also a visual indication of the pass/fail percentage. The highest (Hi), lowest (Lo) and average ($\bar{x}$) reading for the current measurement are displayed to the right.
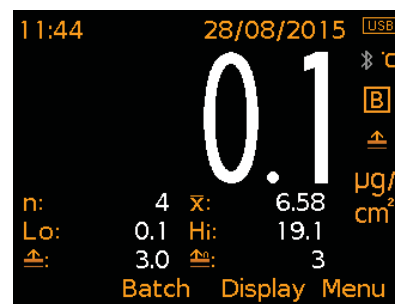

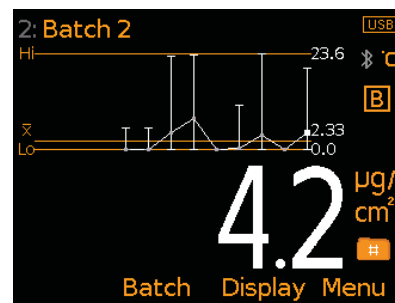Fig. 3: Readings x1 & Selected Statistics
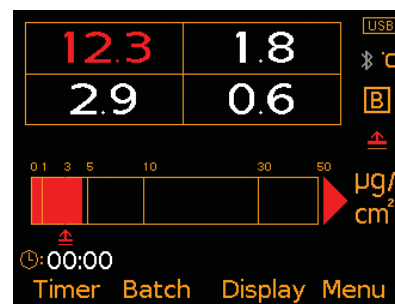

Fig. 4: Run Chart & Readings x1
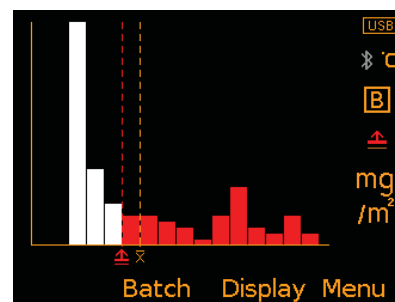

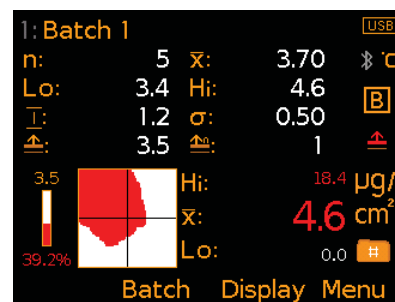Fig. 5: Readings x4 & Bar Graph

Fig. 6: Distribution Graph

Fig. 7: Statistics & Pass/Fail Map

[a] Not available in 'Conductivity Mode' - see Section 4.6 'Selecting the Measurement Mode' on page 7.

4 GETTING STARTED (continued)

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- **Salt Density Map**[a] (Fig. 8)**;** Provides a visual indication of the density of salt contamination over the test area. Levels of soluble salts are illustrated using a green and red contour system; green for very low salt concentration or uncontaminated areas; yellow for areas with mid salt concentration; and red for areas with levels of salt contamination exceeding the defined map scale range.
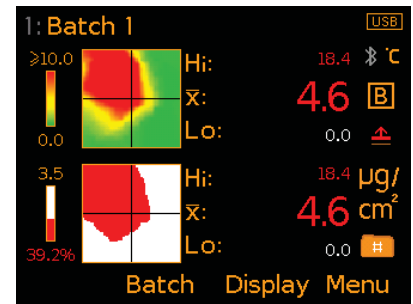
Fig. 8: Salt Density Map & Pass/Fail Map

The salt density map scale range can be set and adjusted by the user to provide a clearer image depending on the level of salt contamination. The default setting is $10\mu g/cm^2$.

To set the salt density map scale:
1   Press Display/Setup Display/Map Scaling followed by 'Select'.
2   Use the ↑↓ softkeys to set the required value and press 'Ok'.

In the examples shown, Fig. 9 & 10, the average salt contamination over the test area is $0.7\mu g/cm^2$.

Fig. 9: Scaling $8\mu g/cm^2$

The map scaling in Fig. 9 has been set at $8\mu g/cm^2$, as displayed above the bar to the left of the map, this assumes $8\mu g/cm^2$ is the highest level of contamination therefore, areas where salt is present at levels around $0.7\mu g/cm^2$ are highlighted yellow.
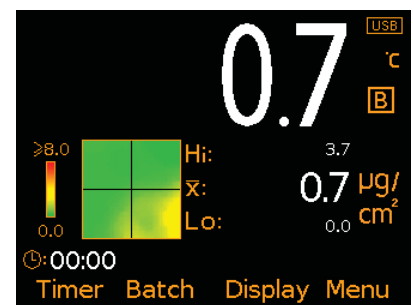
Adjusting the map scaling to $2\mu g/cm^2$, see Fig. 10, changes the colouring as $2\mu g/cm^2$ is now set as the highest level of salt contamination, providing a clearer indication of the salt density.
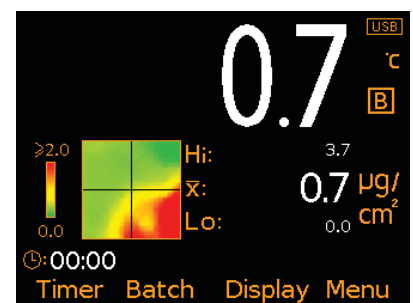
Fig. 10: Scaling $2\mu g/cm^2$

4.6   SELECTING THE MEASUREMENT MODE

The Elcometer 130 SSP can be used to measure soluble salts (cleanliness) or conductivity. To select the measurement mode, press Menu/Setup/Measurement Mode.

[a] Not available in 'Conductivity Mode' - see Section 4.6 'Selecting the Measurement Mode' on page 7.

4 GETTING STARTED (continued)

4.7   BRESLE METHOD & ELCOMETER 130 READING EQUIVALENCY[b]

When measuring soluble salts - 'Cleanliness' measurement mode - the user has two measurement options; 'Bresle Method' and 'Elcometer 130' reading equivalency.

When either of these options is selected, the reading is automatically adjusted by the gauge to be equivalent to the reading which would have been achieved if testing in accordance with the Bresle Method or using an Elcometer 130 gauge.

When 'Bresle Method' is selected, the user is also required to select the appropriate surface profile range.

To select 'Bresle Method', 'Elcometer 130' reading equivalency or to change profiles for the Bresle method, press Menu/Setup/Measurement Mode/Cleanliness/Bresle Method or Elcometer 130.

4.8   SELECTING THE MEASUREMENT UNITS

A choice of measurement units is available, depending on the measurement mode selected:

Cleanliness: $\mu g/cm^2$, mg/m^2
Conductivity: $\mu S/cm$, mS/cm, ppm, % Salinity

To select the measurement units, press Menu/Setup/Units.

4.9   TWO MINUTE TIMER

The wetted paper should be left on the surface under test for two minutes. The Elcometer 130 SSP has a built-in, optional timer for this purpose.

To enable the timer, press Menu/Setup/Timer. When enabled, the left softkey is labelled 'Timer'. This softkey is used to start, stop and reset the timer as required.

4.10 AUTOMATIC TEMPERATURE COMPENSATION

The gauge has been calibrated at 25°C. To provide an accurate measurement of soluble salt levels, the reading is automatically adjusted to take into consideration any temperature variance during test.

The gauge measures the temperature of the wet filter paper when placed on the measurement electrode and using this value, automatically adjusts the reading accordingly.

[b] For full documentation regarding Bresle equivalency, follow the link on the Elcometer 130 SSP product page on www.elcometer.com.

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5 SETTING LIMITS

An upper limit can be set allowing the user to compare readings to a pre-defined value.

A limit can be set for individual readings (when not in Batching) or for each batch (when in Batching).

To set an upper limit for individual readings:
1   Press Menu/Set Limits/Set Limit.
2   Use the ↑↓ softkeys to set the required value and press 'Ok' to set or 'Escape' to cancel.
3   To activate the set limit, press Menu/Set Limits/Enable Limits.

To set an upper limit for a batch:
1   Press Batch/New Batch/Batch Limits/Set Limit.
2   Use the ↑↓ softkeys to set the required value and press 'Ok' to set or 'Escape' to cancel.
3   To activate the set limit, press Batch/Batch Limits/Enable Limits.
   ‣ Batch limits can be viewed at any time via Batch/Review Batch/ Batch Information.

Readings below the set and enabled limit are displayed in white; readings above the limit are displayed in red with the limit icon to the right of the reading.

Due to the nature of the sample and averaging of the test area, it may be possible that whilst the overall reading is below the limit set (displayed in white), a measurement quadrant or upper reading may exceed the limit concentration and will be displayed in red.

For example, in Fig. 11 the limit has been set at 2µg/cm^2, the average of the first and second quadrants and the overall measurement are below the set limit but the third and fourth quadrants are above the set limit.

Fig. 11: Readings x4

Whilst the assessment of the whole area indicates acceptance below the limit, there are areas which exceed the limit which are equivalent to a single Bresle Patch test area. The significance of this result must be determined by the user.
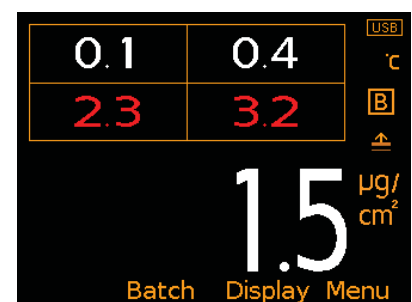
5 SETTING LIMITS (continued)

In the Salt Density Map and Pass/Fail Map examples shown, Fig. 12 & 13, the limit has been set at 2µg/cm^2, the overall measurement ($\overline{x}$:) is below the set limit but the highest, individual reading (Hi:) across the measurement area is above the set limit.
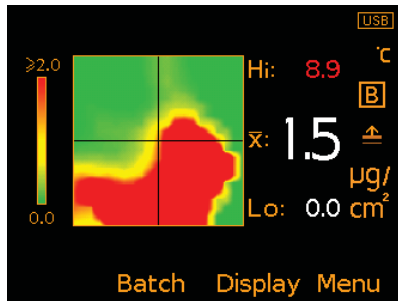
Fig. 12: Salt Density Map
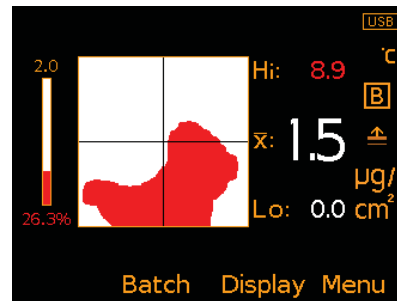
Fig. 13: Pass/Fail Map

6 VERIFYING THE GAUGE CALIBRATION

The gauge is factory calibrated. Whilst the calibration can not be adjusted by the user, the user can verify the accuracy of the gauge calibration in the field using the optional Calibration Verification Tile, part number T13027115.

To verify the calibration, press Menu/Calibration/Calibration Verification and follow the on screen instructions.

Should the gauge / tile readings be outside the stated accuracy of the gauge, re-calibration is recommended - contact Elcometer or your local supplier for further information.

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7.1 BEFORE YOU START

1 Press the On/Off button to switch the gauge on.
2 Set up the reading display - see Section 4.5 on page 5.
3 Select the measurement mode via Menu/Measurement Mode/Cleanliness/Bresle Method or Elcometer 130
4 Select the measurement units - see Section 4.8 on page 8.
5 Set any required limit - see Section 5 on page 9.
6 If using a new box of filter papers or new bottle of water, perform a calibration offset - see Section 7.2.

7.2 CALIBRATION OFFSET

When a new box of filter papers is opened or a new bottle of water is used, to ensure accurate and repeatable readings, a filter paper and water offset needs to be set on the gauge.

Soluble salts should be measured using high purity water however, non-pure water, with a maximum conductivity of 237.5µS/cm[‡] (equivalent to 2µg/cm^{2}[‡] or 119 ppm[‡]), may be used. If using non-pure water, follow the same procedure outlined below.

To set the calibration offset
1 Clean the measurement electrodes with pure water and the sensor wipes supplied.
2 Using tweezers, remove a filter paper from the pack and place it on the measurement electrodes.
3 Fill a syringe completely with pure water and discard it. Perform this rinsing procedure 3 times.
4 Fill the syringe with precisely 1.6ml of pure water (or non-pure water, if using non-pure water for testing purposes).
5 Eject the water from the syringe, evenly across the whole of the filter paper, starting in the middle and working out to the edge using multiple drops. The paper should be uniformly wetted with no dry areas or trapped air between the paper and the measurement electrodes.
6 Press Menu/Calibration/Setup Offset and follow the on-screen instructions to set the offset value.

[‡] Nominal values

7 MEASURING SOLUBLE SALTS (continued)

7   When the calibration offset procedure is complete, 'Offset Adjusted' is displayed on screen, press 'Ok' to return to the measurement screen.

8   With the filter paper still on the measurement electrodes, close the lid to take a reading. The reading should be no more than $0.1 – 0.2$ µg/cm^2. If the reading is outside this range, contact Elcometer or your local Elcometer supplier.

7.3   TAKING A READING

1   Put on a pair of clean disposable gloves.
2   Fill a syringe with precisely 1.6ml of high purity water[c].

3   Using tweezers, remove a filter paper from the pack and place it on the magnetic paper positioning disc (unlabelled side).

1.6ml

4   Eject the water from the syringe, evenly across the whole of the filter paper, starting in the middle and working out to the edge using multiple drops. Tilt the magnetic disc as necessary until the water is evenly spread across the filter paper. The paper should be uniformly wetted with no dry areas or trapped air between the paper and the disc.

1.6ml

5   Place the magnetic disc, with wetted paper face down on to the area under test, pressing firmly into any contours or irregularities and start the 2 minute timer.

▸ The magnetic disc ensures even positioning of the wetted paper on horizontal and vertical surfaces, minimises any loss of solution through evaporation during the test and allows easier removal of the filter paper from the surface for measuring.

2 mins

▸ The gauge has a built-in timer, which is enabled via Menu/Setup/Timer.

▸ Additional samples can be prepared whilst waiting for the 2 minute test time to elapse.

Sample 1

Sample 2...
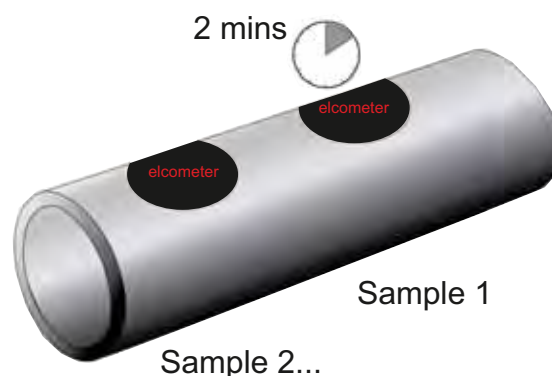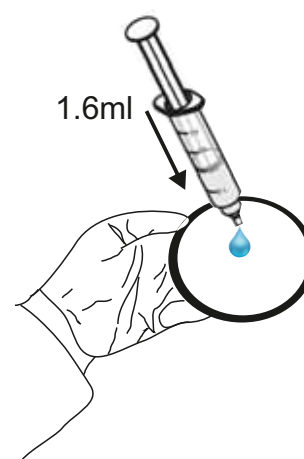
[c] Non-pure water with a maximum conductivity of 237.5µS/cm (equivalent to 2µg/cm^2 or 119 ppm) can be offset using the Calibration Offset feature - see Section 7.2 'Calibration Offset' on page 11.

7 MEASURING SOLUBLE SALTS (continued)

6   After two minutes, carefully remove the filter paper and magnetic disc from the test surface and place on to the measurement electrodes.

7   Close the lid, ensuring that the magnetic catch is fully engaged, the gauge will begin measuring.

8   The reading is displayed on screen in the format selected via Display/Setup Display. To review the last reading in detail - see Section 7.4.

   ‣ The reading is automatically adjusted by the gauge to be equivalent to the 'Bresle Method' or 'Elcometer 130' as selected via Menu/Setup/ Measurement Mode/Cleanliness - see Section 4.7 'Bresle Method or Elcometer 130 Reading Equivalency' on page 8.

9   Lift the lid and remove the magnetic disc and filter paper.

10   Place the filter paper in a resealable bag (supplied), if required for further analysis.

11   Clean the magnetic disc and measurement electrodes between tests using pure water and a sensor wipe (supplied).

   ‣ Failure to thoroughly clean the magnetic disc and measurement electrodes between tests may contaminate subsequent tests and result in inaccurate readings.

Note: The measurement electrodes are gold plated to prevent corrosion and oxidisation, prolonging the life and accuracy of the gauge. They should be cleaned using pure water and the sensor wipes supplied. DO NOT use abrasive materials as this will damage the electrodes.

7.4   REVIEWING THE LAST READING

When a reading has been taken, the user can review the result in different formats via Display/Last Reading in Detail.

Press the ← and → softkeys to scroll through the different views; Readings x1, Readings x4, Salt Density Map, 3D Salt Density Map, Pass/Fail Map and Distribution Graph. For an explanation of each view, see Section 4.5 - 'Setting Up the Reading Display' on page 5. Press 'Back' to return to the 'Display' Menu.
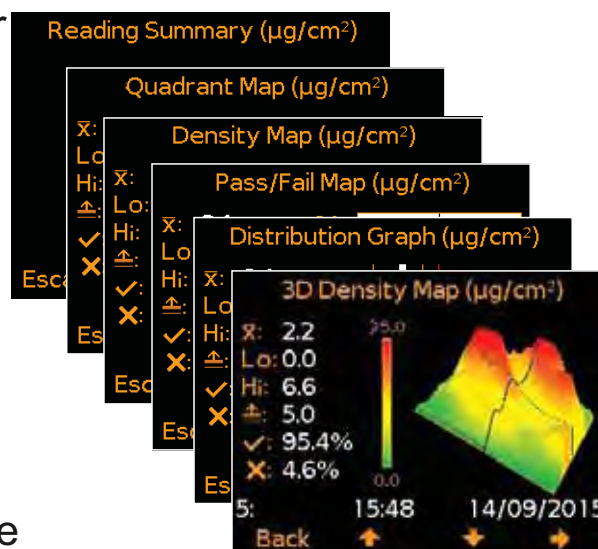
8 MEASURING CONDUCTIVITY

8.1 BEFORE YOU START
1 Press the On/Off button to switch the gauge on.
2 Set up the reading display - see Section 4.5 on page 5.
3 Select the measurement mode, Menu/Measurement Mode/Conductivity.
4 Select the measurement units - see Section 4.8 on page 8.
5 Set any required limit - see Section 5 on page 9.
6 If using a new box of filter papers, perform a calibration offset using pure water - see Section 7.2 on page 11.

8.2 TAKING A READING
1 Put on a pair of clean disposable gloves.
2 Using tweezers, remove a filter paper from the pack and place on to the measurement electrodes.
3 Fill a syringe with precisely 1.6ml of the contaminated liquid / liquid under test.
4 Eject the test liquid from the syringe on to the filter paper, ensuring even distribution across the whole of the filter paper, starting in the middle and working out to the edge using multiple drops. The paper should be uniformly wetted with no dry areas or trapped air.
5 Close the lid, ensuring that the magnetic catch is fully engaged, the gauge will begin measuring.
6 The reading is displayed on screen.
7 Lift the lid and remove the filter paper.
8 Place the filter paper in a resealable bag (supplied), if required for further analysis.
9 Clean the measurement electrodes between tests using pure water and a sensor wipe (supplied).
   ‣ Failure to thoroughly clean the measurement electrodes between tests may contaminate subsequent tests and result in inaccurate readings.
10 Clean the syringe between tests using pure water or alternatively, discard and use a new syringe for each test
   ‣ Failure to thoroughly clean the syringe between tests may contaminate subsequent tests and result in inaccurate readings.

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9 BATCHING

The Elcometer 130 SSP can store 3,500 individual reading sets which include Salt Density Map, Pass/Fail Map and Distribution Graph, in up to 1,000 batches. The following batch functions are available:

- **Batch/New Batch;** Creates a batch.
- **Batch/New Batch/Fixed Batch Size;** Pre-define the number of readings which are stored in a batch. The gauge will notify the user when a batch is complete and ask if another batch is to be opened. These batches are then linked when transferred to ElcoMaster®.
- **Batch/Open Existing Batch;** Open an existing batch.
- **Batch/Review Batch;** Review the readings, statistics, batch information, calibration and limit information and a graph of all readings - see Section 10 'Reviewing Batch Data'.
- **Batch/Copy Batch;** Copy a batch including the batch header information, calibration and limit information.
- **Batch/Edit Batch/Rename Batch**; Rename an existing batch.
- **Batch/Edit Batch/Clear Batch**; Clear all readings within a batch - but leaving all batch header information.
- **Batch/Edit Batch/Delete Batch**; Delete a single batch or all batches entirely from the gauge.
- **Batch/Deleted Reading/Delete Without Tag**; Delete the last reading entirely.
- **Batch/Deleted Reading/Delete With Tag**; Delete the last reading but mark it as deleted in the batch memory.

10 REVIEWING BATCH DATA

10.1 BATCH READINGS
(Batch/Review Batch/Readings)

Displays the reading value together with date and time stamp for each individual reading in the batch.

Press the ↑↓ softkeys to scroll through the readings and ➔ to move to the next information screen.

Readings above the set and enabled limit for the batch are displayed in red with the limit icon to the left of the reading.

10 REVIEWING BATCH DATA (continued)

When a new box of filter papers is opened or a new bottle of water is used, to ensure accurate and repeatable readings, a filter paper and water offset needs to be set on the gauge - see Section 7.2 on page 11.

Each time a calibration offset is performed, this is recorded in the Batch Readings review screen (Fig. 14). Full details of the last calibration offset can be viewed via Batch/Review Batch/Calibration Information - see Section 10.3 on page 17.
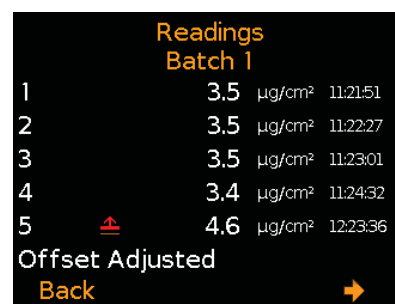
10.2 BATCH READINGS IN DETAIL
(Batch/Review Batch/Readings In Detail)

Displays the date and time stamp for each individual reading set together with:
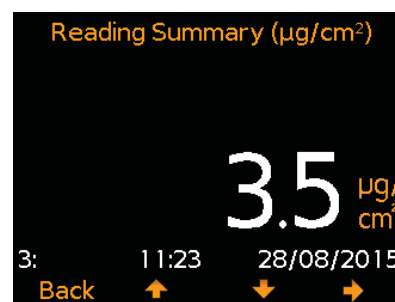
1)   Readings x1 (Fig. 15)
2)   Readings x4 (Fig. 16)
3)   Salt Density Map (Fig. 17)
4)   Pass/Fail Map (Fig. 18)
5)   Distribution Graph (Fig. 19)
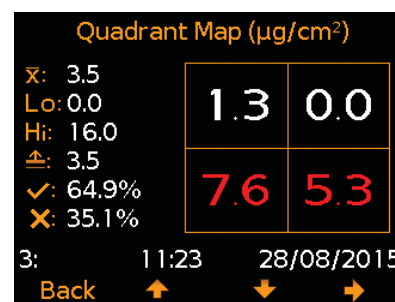
For an explanation of each view, see Section 4.5 - 'Setting Up the Reading Display' on page 5.

For views 2-5 (Fig. 16 to 19), the following statistical data is also displayed:
*   Average reading over the test area ($\overline{x}$);
*   Lowest reading over the test area (Lo);
*   Highest reading over the test area (Hi);
*   Limit value[d] ($\triangle$);
*   Percentage of the test area with soluble salt levels below the limit[d] ($\checkmark$)
*   Percentage of the test area with soluble salt levels above the limit[d] (x)

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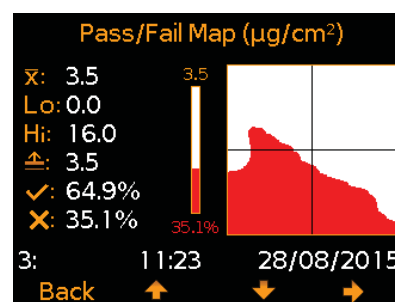
[d] When an upper limit is set and enabled.

Fig. 14: Review Batch Readings

Fig. 15: Readings x1

Fig. 16: Readings x4

Fig. 17: Salt Density Map

Fig. 18: Pass/Fail Map

10 REVIEWING BATCH DATA (continued)

Press ➜ to move to the next information screen and the ↑↓ softkeys to scroll through the readings.

Readings above the set and enabled limit for the batch are displayed in red.
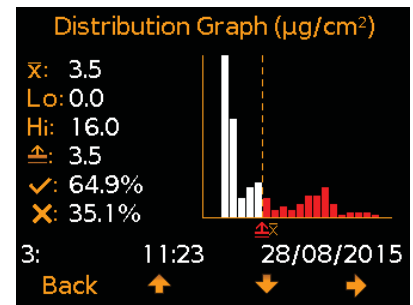
Fig. 19: Distribution Graph

10.3 BATCH CALIBRATION INFORMATION
   (Batch/Review Batch/Calibration Information)
Displays the calibration information for the batch including:

*   Date and time of the last calibration offset - see Section 7.2 on page 11.
*   Salt Type
*   Calibration Temperature
*   Temperature Coefficient
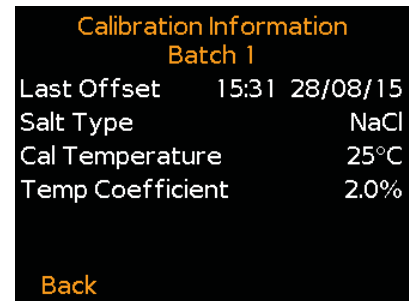
10.4 BATCH STATISTICS
   (Batch/Review Batch/Statistics)
Displays statistical information for the batch including:

*   Number of readings in the batch (n)
*   Average reading for the batch ($\overline{x}$)
*   Lowest reading in the batch (Lo)
*   Highest reading in the batch (Hi)
*   Range ($\underline{\mathrm{I}}$); the difference between the highest and lowest reading in the batch
*   Standard Deviation (σ)
*   Coefficient of Variation (cv%)
*   High limit value (⬆) - if set - and the number of readings above the high limit (⬆)
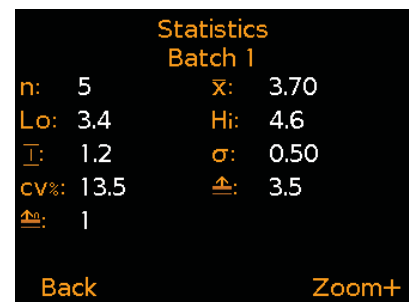
10 REVIEWING BATCH DATA (continued)

10.5 BATCH GRAPH (Batch/Review Batch/Batch Graph)

Allows the user to view the readings within the batch as a column bar graph. Up to four horizontal axes are displayed representing different values / statistics as follows:

- Highest reading in the batch[e] (Hi)
- Lowest reading in the batch[e] (Lo)
- Average reading for the batch[e] ($\overline{x}$)
- High Limit (⬆); *when set and enabled*

If a limit was not set and enabled, the readings are displayed as white vertical bars. If a limit was set and enabled, readings are displayed as white bars if within the set limit or red; if outside the set limit.

If there are more readings in the batch than can be displayed on a single screen, multiple readings will be combined into one bar. Should a single reading within the 'combined bar' be outside the set limit, the whole bar will be red.

Pressing the 'Zoom+' softkey, allows each individual reading to be displayed, thereby showing the individual readings outside the set limit.
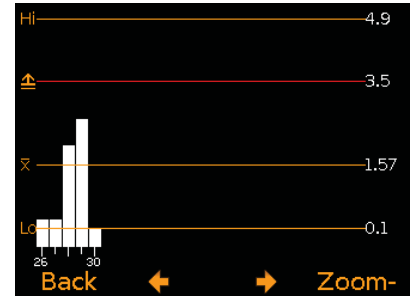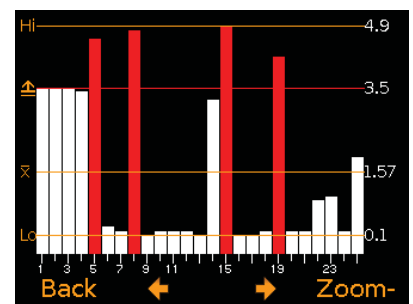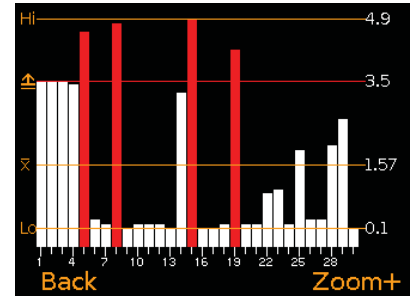
When zoomed in, the graph will always display the first 25 readings. Pressing the ← softkey will display the last 25 readings in the batch.

Subsequent presses of the ← softkey will scroll backwards, pressing the ➜ softkey will scroll forwards through the readings, 25 readings at a time.

Pressing the 'Zoom-' softkey returns to the original overview graph of all readings in the batch.

Pressing the 'Back' softkey returns the gauge to the Batch/Review Batch menu.

[e] For batches of more than one reading.

Menu
- Delete Last Reading
- Measurement Mode
- Setup
- Calibration
- Set Limits
- Bluetooth
- About
- Reset
- Emergency Light

Measurement Mode
- Cleanliness
- Conductivity

Reading Equivalency
- Elcometer 130
- Bresle Method

Setup
- Timer
- Units
- Language
- Time and Date
- Beep Volume
- Screen Settings
- Gauge Auto Off
- Map Scaling

Units
- µg/cm²
- mg/m²
- µS/cm
- mS/cm
- ppm
- % Salinity

Time and Date
- Set Time
- Set Date
- Set Format
- Display Time and Date

Screen Settings
- Screen Brightness
- Screen Timeout
- Opening Screen

Calibration
- Calibration Verification
- Factory Calibration
- Setup Offset

Set Limits
- Enable Limits
- Set Limit

Bluetooth
- Enable Bluetooth
- Bluetooth ID   xxxxxx-xxx
- Bluetooth Code   xxxxx

About
- Gauge Information
- Contact
- Legal

Legal
- Patents
- Legal Notices
- Regulatory

Regulatory
- QDID   xxxxx
              xxxxx
              xxxxx
              xxxxx
- FC CE

Display
- Last Reading in Detail
- Setup Display
- Batch Graph
- Statistics
- Clear Statistics

Batch
- Memory Free   xx.x%
- New Batch
- Open Existing Batch
- Exit Batching
- Edit Batch
- Copy Batch
- Review Batch
- Deleted Reading

New Batch n
- Open Batch n
- Rename Batch
- Measurement Mode
- Batch Limits
- Fixed Batch Size

Measurement Mode
- Cleanliness
- Conductivity

Reading Equivalency
- Elcometer 130
- Bresle Method

Batch Limits
- Enable Limits
- Set Limit

Edit Batch
- Rename Batch
- Clear Batch
- Delete Batch

Review Batch
- Statistics
- Batch Information
- Calibration Information
- Readings
- Readings In Detail
- Batch Graph

Deleted Reading
- Delete With Tag
- Delete Without Tag

Setup Display
- Top Display
- Bottom Display
- Map Scaling

Statistics
- Clear Statistics
- View Selected
- View All
- Select Statistics

Top Display
- None
- Selected Statistics
- Readings
- Graph
- Map

Map
- Salt Density Map
- Pass/Fail Map

Graph
- Run Chart
- Bar Graph
- Distribution Graph

Readings
- 1x
- 4x

Bottom Display
- None
- Selected Statistics
- Readings
- Graph
- Map

Map
- Salt Density Map
- Pass/Fail Map

Graph
- Run Chart
- Bar Graph
- Distribution Graph

Readings
- 1x
- 4x

Select Statistics
- Number of Readings
- Mean
- Lowest Reading
- Highest Reading
- Range
- Standard Deviation
- Coefficient of Variation
- Limit Value
- Number Above Limit

12 DOWNLOADING DATA

12.1 USING ELCOMASTER® ON A PC

Using ElcoMaster® - supplied with each gauge and available as a free download at elcometer.com - gauges can transmit readings to a PC for archiving and report generation. Data can be transferred via USB or Bluetooth®. For more information on ElcoMaster® visit www.elcometer.com

12.2 USING ELCOMASTER® MOBILE APPS

Ideal when out in the field or on-site, using the ElcoMaster® Android™ or iOS Mobile App users can:

•   Store live readings directly on to a mobile device and save them into batches together with GPS coordinates.
•   Add photographs of the test surface.
•   Map readings on to a map, photograph or diagram.
•   Inspection data can be transferred from mobile to PC for further analysis and reporting.

For more information on ElcoMaster® Mobile Apps visit www.elcometer.com
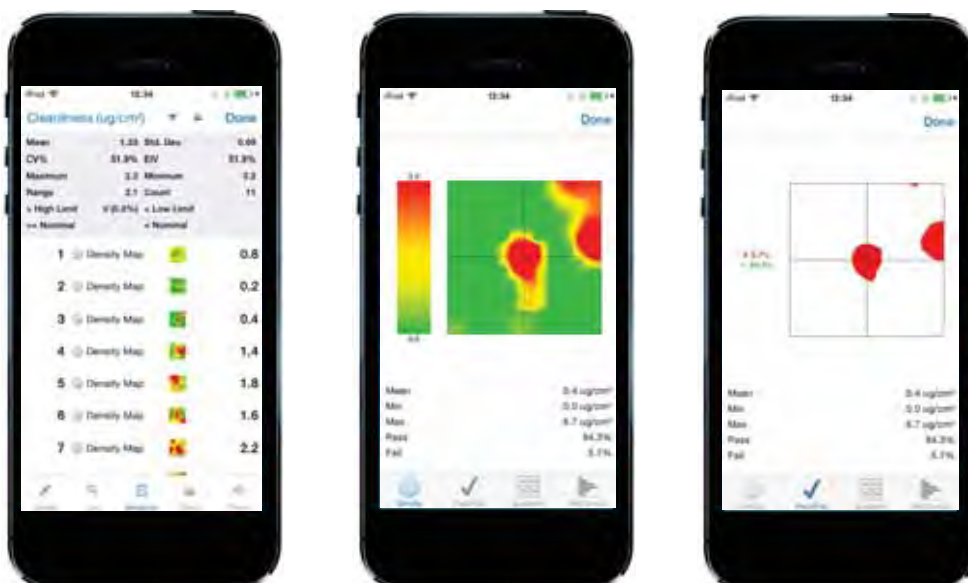
12 DOWNLOADING DATA (continued)

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ANDROID APP ON
▶ Google play

Compatible with smart phones and tablets running Android 2.1 or above. To install, download via www.elcometer.com or using the Google Play™ Store app, and follow the on screen instructions.

Available on the
App Store

Made for iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, iPhone 4s, iPad Air 2, iPad mini 3, iPad Air, iPad mini 2, iPad (3rd and 4th generation), iPad mini, iPad 2, and iPod touch (5th generation). To install, download via www.elcometer.com or the App Store, and follow the on screen instructions.

13 UPGRADING YOUR GAUGE

Gauge firmware can be upgraded to the latest version by the user via ElcoMaster®, as it becomes available. ElcoMaster® will inform the user of any updates when the gauge is connected to the PC with an internet connection.

14 SPARES & ACCESSORIES

The following spare parts and accessories are available from your local Elcometer supplier or direct from Elcometer:

Description	Part Number
Calibration Verification Tile	T13027115
Magnetic Paper Positioning Discs, x3	T13025964
High Purity Test Papers, Box of 100[f]	T13024094
Bottle of Pure Water, 250ml / 8.5fl oz	T99911344
Syringe 3ml / 0.1fl oz, x3	T13024091
Sensor Wipes, Box of 72	T13024087
Disposable Vinyl Gloves, Box of 20	T13024092
Tweezers, x2	T13024098
Self Seal Polythene Bags, Box of 20	T13024093

[f] We recommend that the Elcometer 130 SSP is used with the filter papers supplied by Elcometer as alternative papers may result in variances in the measurement results.

15 WARRANTY STATEMENT

The Elcometer 130 SSP is supplied with a 12 month warranty against manufacturing defects, excluding contamination and wear. The warranty can be extended to two years within 60 days of purchase via www.elcometer.com.

16 TECHNICAL SPECIFICATION

Measurement Range	Cleanliness	Bresle Method:	0 - 15µg/cm²; 0 - 150mg/m²
		Elcometer 130:	0 - 50µg/cm²; 0 - 500mg/m²
	Conductivity	0 - 6000µS/cm; 0 - 6mS/cm 0 - 3000ppm; 0 - 0.3% Salinity	
Accuracy	±1% of the reading plus ±1 digit (0.1µg/cm² or equivalent in other units)		
Resolution	Cleanliness	0.1µg/cm², 1mg/m²	
	Conductivity	1µS/cm, 0.001mS/cm 1ppm, 0.0001% Salinity	
Sample Size & Time	110mm (4.3") diameter circle; 2 minutes (maximum 3 minutes)		
Gauge Memory	3,500 reading sets in up to 1,000 batches (each with Salt Density Map, Pass/Fail Map & Distribution Graph)		
Operating Temperature	5 to 40°C (41 to 104°F)		
Power Supply	4 x AA batteries		
Battery Life[g]	Alkaline: Approximately 30 hours Lithium: Approximately 45 hours		
Gauge Weight (including batteries)	780g (1.72lb)		
Gauge Dimensions	250 x 145 x 50mm (9.8 x 5.7 x 1.9")		
Can be used in accordance with: SSPC Guide 15			

[g] Rechargeable batteries may differ.

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17 LEGAL NOTICES & REGULATORY INFORMATION

The Elcometer 130 SSP meets the Radio and Telecommunications Terminal Equipment Directive.

The USB is for data transfer only and is not to be connected to the mains via a USB mains adapter.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Giteki mark, its ordinance number, ACMA compliance mark, the FCC ID, IC certification number and Bluetooth SIG QDID can be accessed via: Menu/About/Legal/Regulatory

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

-- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Modifications not expressly approved by Elcometer Limited could void the user's authority to operate the equipment under FCC rules.

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This Class B digital apparatus complies with Canadian ICES-003.

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Bluetooth®   are trademarks owned by Bluetooth SIG Inc and licensed to Elcometer Limited.

Made for iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, iPhone 4s, iPad Air 2, iPad mini 3, iPad Air, iPad mini 2, iPad (3rd and 4th generation), iPad mini, iPad 2, and iPod touch (5th generation).

"Made for iPod," "Made for iPhone," and "Made for iPad" mean that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

iPad, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries.

App Store is a trademark of Apple Inc., registered in the U.S. and other countries.

Google Play is a trademark of Google Inc.

All other trademarks acknowledged.