English

Elcometer 215

Oven Data Logger

Getting Started Manual

elcometer

English

CE This logger meets the Electromagnetic Compatibility Directive when used with sensor leads up to 3 m long; compliance may be affected by using longer leads.

This logger is Class B, Group 1 ISM equipment according to CISPR 11.

Group 1 ISM product: A product in which there is intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class B products are suitable for use in domestic establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

A copy of this Instruction Manual is available for download on our Website via www.elcometer.com

Doc. No:TMA-0454 Issue 04
Part No: 21242

CONTENTS

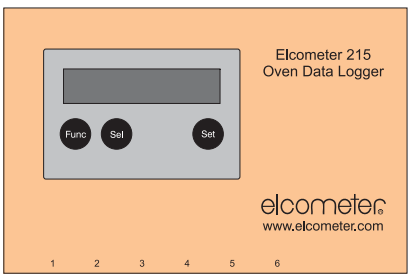
Thank you for your purchase of this Elcometer 215 Oven Data Logger. Welcome to Elcometer.

Elcometer are world leaders in the design, manufacture and supply of inspection equipment for coatings and concrete. Our products cover all aspects of coating inspection, from development through application to post application inspection.

The Elcometer 215 Oven Data Logger is a world beating product. With the purchase of this logger you now have access to the worldwide service and support network of Elcometer. For more information visit our website at www.elcometer.com

1 ABOUT YOUR LOGGER

The Elcometer 215 Oven Data Logger system is an intelligent temperature data logging system typically used to monitor curing processes in the coating industry - improving production quality control and helping to reduce operating costs.



The logger measures temperatures and stores them for a specified amount of time. The instrument measures continuously but takes and saves readings at time intervals set by the user. The maximum recording period depends on the number of sensors being used and the specified recording interval.

The Elcometer 215 Oven Data Logger kit is available in two versions, Standard and Top:

- Standard - can measure for up to 50 minutes in an oven at 250°C (482°F)
- Top - can measure for up to 100 minutes in an oven at 250°C (482°F).

This manual describes the operation of both versions of the logger kit; any differences between the function of the two versions are highlighted in the text as [T] or [S].

To maximise the benefits of your new logger, please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.

1.1 FEATURES

- Quick and easy to program via three push buttons and display, or via PC
- Start and stop logging at specific times or at certain temperature levels
- Automatically detects when sensors are present - easy set-up of up to 6 channels
- Print user-configurable reports to simplify record keeping and provide ISO9000 quality records.

1.2 WHAT THE BOX CONTAINS

- Elcometer 215 Oven Data Logger
- Thermal barrier
- Heat sink [T]
- CD containing PaintView software
- Logger-to-PC USB connection cable
- Batteries, 2x AA
- Carry case
- Operating instructions

The logger is packed in a cardboard package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

2 POWER SUPPLY & LANGUAGE

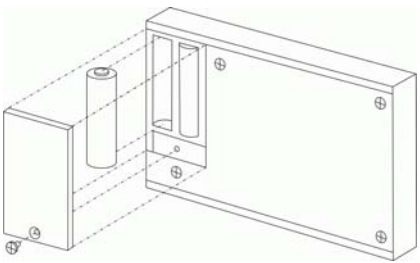
2.1 POWER SUPPLY

The Elcometer 215 Oven Data Logger is powered by dry cell batteries only.

Note: *The maximum operating temperature for the batteries supplied with your logger is 50°C. Prolonged use of the logger in excess of this temperature may require the use of alternative batteries.*

FITTING BATTERIES

The batteries are located under the cover at the rear of the logger. To replace the batteries, remove the retaining screw and the cover and fit high quality alkaline dry batteries (2x AA/LR6) taking care to ensure correct battery polarity. Refit the cover and tighten the retaining screw when finished.



Remove the batteries from the logger if it is to remain unused for a long period of time. This will prevent damage to the logger in the event of malfunction of the batteries.

Note: *Batteries must be disposed of carefully to avoid environmental contamination. Please consult your local Environmental Authority for information on disposal in your region.*

Do not dispose of any batteries in fire.

2.2 TO CHANGE THE LANGUAGE

Note: *Before changing the language, any runs stored in the logger must be deleted using TOOLS clear, see page 10, Section 4.12 TOOLS.*

Press **Func** until SET is displayed

Press **Sel** until SET language is displayed

Press **Sel** and hold for 5 seconds

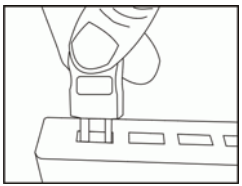
“Hold to change” is displayed.

Press **Set** to select required language.

3 CONNECTING THE PROBES

The Elcometer 215 Oven Data Logger is fitted with six input sockets for K type thermocouple probes.

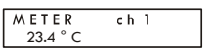
Connect each probe to an input socket, as shown, starting with 1.



Note: *Each plug has a wide terminal and a narrow terminal; ensure that the plug is orientated correctly before making the connection.*

The logger will recognise which channels are being used. If no probes are connected, the logger will not start logging.

To confirm which probes are connected, press the **Func** key on the logger until the METER function is displayed.



To view each probe in turn, repeatedly press the **Sel** key.

A set of metal probe-tags is available which can be used to help match each probe with its assigned channel - see *Probe Identification Kit* in “Spare parts and accessories” on page 25.

4 LOGGER MENU AND NAVIGATION

4.1 INTRODUCTION

The factory default settings of your Elcometer 215 Oven Data Logger provide a basic setup without the need to use any software. The factory default settings are:

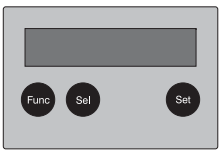
- K-Type -200°C to 1300°C
- Logging interval every two seconds

- Record up to eight runs before overwriting the oldest run.

The logger can be set up with 'Cure parameters' for a percentage cure read-out (see PaintView software Help content for more details).

4.2 OVERVIEW OF THE OPERATING KEYS

The keys on the front of the logger allow the setup of all the major functions of the logger.



Func: Selects the function

Sel: Chooses the channel or sub-function

Set: Changes any of the settings

IMPORTANT NOTES

- Setup changes are not allowed whilst logging.
- When using PaintView software, the **Set** key also wakes the logger for communication when instructed/required.
- The logger memory is divided up into a number of runs. When all the runs are completed, start logging will automatically overwrite the oldest. It is not necessary to clear any runs in the memory unless specifically required.
- Only use the reset function on recommendation from technical support.

4.3 TO CHANGE FROM °C TO °F

Note: *Before changing units, any runs stored in the logger must be deleted using TOOLS clear, see page 9, Section 4.12 TOOLS.*

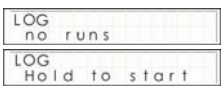
Press **Func** until SET is displayed.

Press **Sel** until SET range is displayed.

Press **Set** and hold to change °C to °F and vice versa.

4.4 START LOGGING

Press **Func** until the following is displayed.



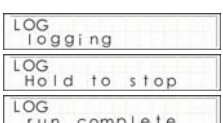
Now press **Set** to start logging.

Note: *The logger will display 'Logging' if no Triggers have been set up from PaintView software (see PaintView software Help Content for more details on Triggers).*

4.5 STOP LOGGING

Stopping the logger manually will override any pre-programmed automatic 'stop trigger'. When logging has completed, the screen will indicate whether the latest run has met its Cure Specifications (if programmed see page 15, Section 5.5). For a graphical analysis, either print the results to a portable printer or download the run into PaintView software.

Press **Func** to wake the logger.



Hold **Set** to stop the logger.

When the logger has stopped, 'run complete' is displayed.

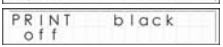
4.6 PRINT

Note: *Printing the results requires the use of a suitable printer and logger-to-printer USB connection cable. The logger requires a printer with PCL3 emulation capability and a USB connection. A number of HP Deskjet and Officejet printers support this function. Please contact your HP Reseller or Elcometer Limited for possible choices. See "Spare parts and accessories" on page 25 for cable ordering information.*

When logging has completed, graphical results can be printed directly to a printer.

Press **Func** until PRINT is displayed.

Optional: Press **Sel** to toggle between colour or black printing.



Now connect the logger to the printer via the logger-to-printer USB connection cable and press and hold **Set** to start printing.

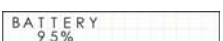
4.7 METER

Press the **Sel** key to view each probe in turn.

Note: *A reading of 'open' indicates that the probe is not connected.*

4.8 BATTERY

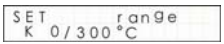
This displays the approximate percentage of remaining capacity.



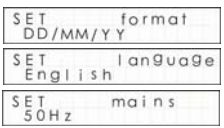
Two AA cells should give 200 hours operation using the logger default settings. However, excessive use of communications via PaintView software will dramatically reduce battery life, e.g. online metering. At -20°C (-22°F), the battery life can decrease to 10% of normal.

4.9 SET RANGE/DATE FORMAT/LANGUAGE/MAINS REJECTION

This allows you to set the logger up by changing the configuration of the thermocouple temperature range, the date format, the display language and mains filter.



Press the **Sel** key to move to the desired menu option then press **Set** to change it.



4.10 INTERVAL

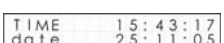
How often the logger will log is displayed here. This can be from 0.125 s (8 readings per second) to 2 hours.

To change, press and hold the **Set** key then use the **Sel** and **Set** keys as required.

4.11 TIME AND DATE

This displays the real time and date on two lines. The time is in 24 hour format (HH:MM:SS).

To change, press and hold the **Set** key then use the **Sel** and **Set** keys as required.

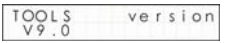


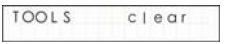
If using PaintView software to set the logger up, it will automatically inform you if the logger time is different to the PC time.

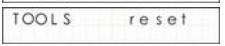
4.12 TOOLS

The tools menu contains maintenance functions such as displaying the firmware version of the logger, clearing all runs from the memory or resetting the logger to factory defaults.

Note: *As the logger will record up to 8 runs then overwrite the oldest, it is not necessary to clear the memory unless specifically required.*







Note: *It is recommended that you only use the reset function if instructed to do so by a member of technical support.*

5 GETTING STARTED WITH PAINTVIEW SOFTWARE

Note: *The screens shown here are for example purposes only an may not represent the actual screen displayed.*

5.1 WHAT CAN PAINTVIEW DO?

- Configure your logger for all oven applications
- Create a paint cure data library (by manufacturer and / or paint type)
- Set optimised cure temperature curves with upper and lower limits
- Create graphical and statistical data reports via the Report Wizard, incorporating company logos and JPEG photographs.

For further information and complete operating instructions, run PaintView, select Help or press F1.

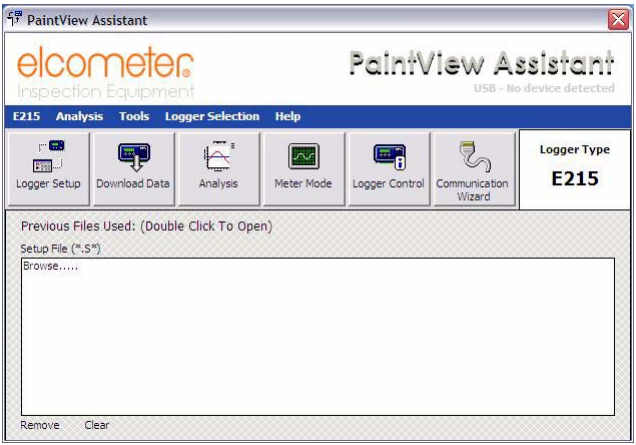
5.2 INSTALLING PAINTVIEW

After installing PaintView familiarise yourself with the logger by using the example Setfile within the PaintView installation directory. It will log the temperature of a probe connected to channel 1 of the logger.

5.3 STARTUP PAINTVIEW AND SELECT LOGGER TYPE

Click the short-cut icon on your desktop to launch PaintView, or select it from your start menu. When the PaintView Assistant is loaded, ensure the correct logger type and communication method is selected. This

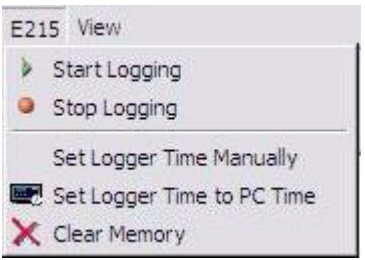
can be viewed in the top right corner of the screen. If you need to make any changes select Logger Selection from the Assistant toolbar or run the Communication Wizard.



5.4 SYNCHRONISE LOGGER CLOCK WITH PC CLOCK

It is advisable to start by synchronising the logger clock with the PC clock:

1. From PaintView Assistant click **Logger Control**.
2. Click **E215** > **Set Logger Time to PC Time**.

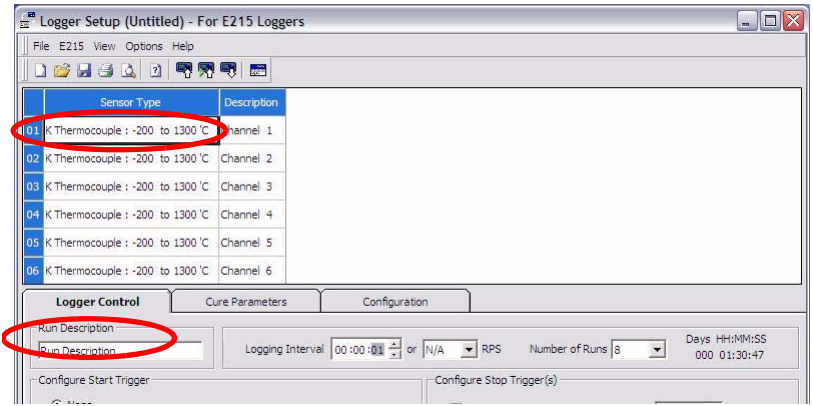


3. Click **OK** on the confirmation screen.

5.5 RUNNING THE QUICK START DEMO

1. From PaintView Assistant click **Logger Setup**.

   The Logger Setup screen is displayed. From here you will be able to setup your sensor type (K or T), range (°C/°F) required and channel description.



2. To view an example setup, click **E215** > **Get Setup from E215**.
3. The **Run/Job Description** can be used to describe your setup.
4. Click **Cure Parameters**, select **Universal Cure Index** and enter details of the powder coating (temperature, time).

5. Click  to send setup to logger and start logging. Leave the unit to log for a few minutes.

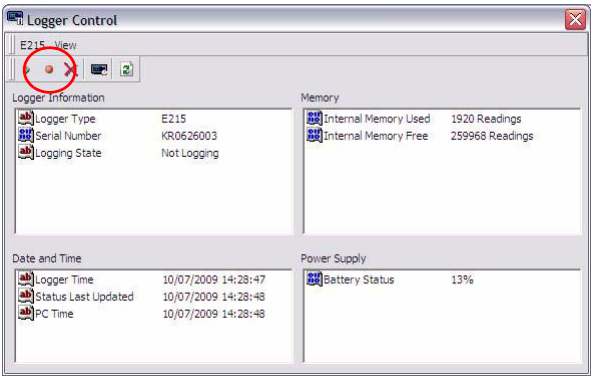
Note: *You must have at least one probe connected before you can start logging.*

6. Click  for PaintView Assistant.

7. Click  if you wish to meter the input in Real Time.

8. Click **Logger Control**  to pause or stop the logging process.

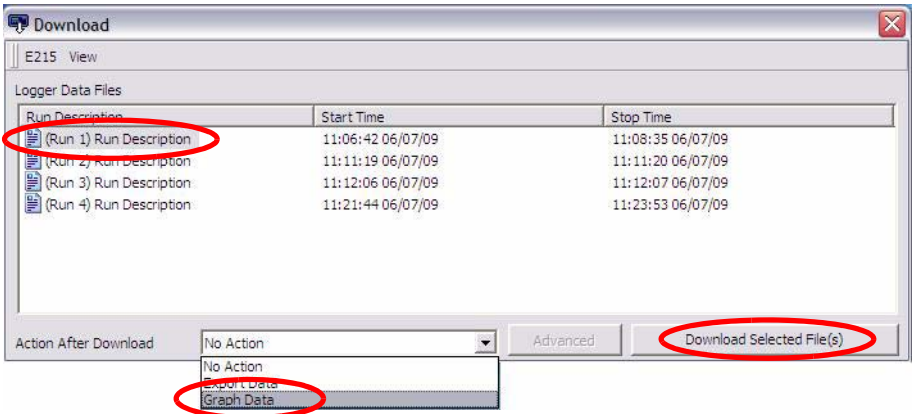
9. In the Logger Control window you can view relevant information on the state of the logger. To stop logging click **Stop**.



10. To download the data from your logger click **Download Data** 

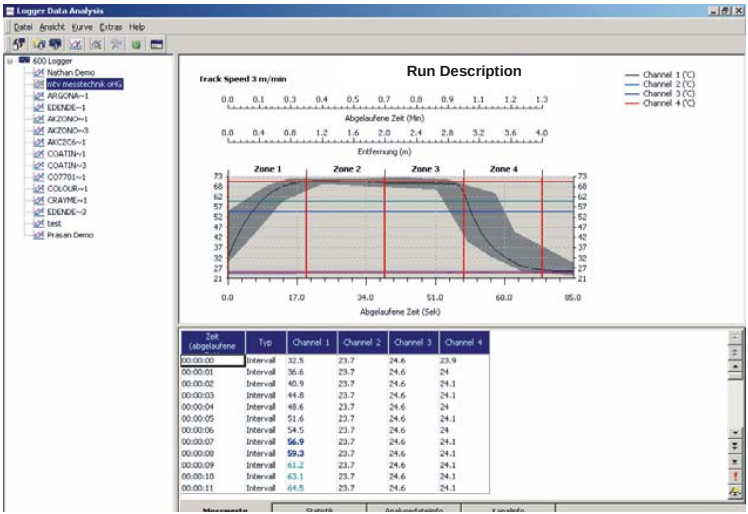
from the PaintView Assistant.

11. In this screen you can now download the Data File and start the Export Wizard.



In this example you will download and view the Data in the Analysis window. Start by selecting the Data File and Graph Data action, then click Download Selected File(s). You will be prompted to save the Data file, then the data will be converted for viewing.

12. Once the decoding has taken place the Analysis File Description window will be presented, click OK to view your Data.



6 THE THERMAL BARRIER

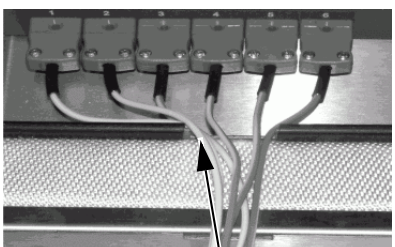
6.1 USING THE THERMAL BARRIER

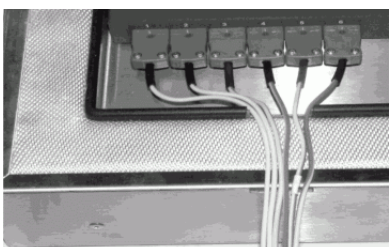
The thermal barrier enables use of the Elcometer 215 Oven Data Logger at elevated temperatures.

To ensure that the logger does not exceed its maximum operating temperature, place the logger inside its protective thermal barrier before putting it into an oven. Always take the logger out of the barrier immediately after passing through the oven.

Do not touch surfaces which become hot during high temperature operation.

Place the Elcometer 215 Oven Data Logger in the insulating box, ensuring that the probe leads are not twisted or trapped but are passed through the barrier's cable guide (see below for correct cable layout).



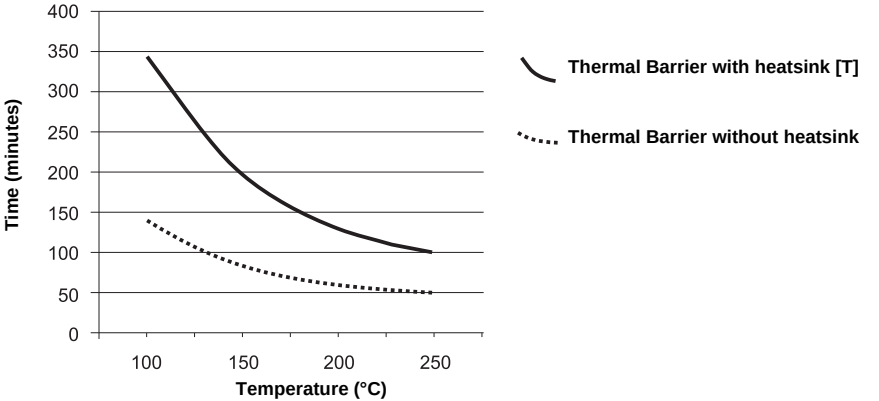


6.2 SPECIFICATIONS

		Elcometer 215 Top	Elcometer 215 Standard
Dimensions - Logger in thermal barrier (l x w x h)		245 mm x 245 mm x 115 mm (9.65 x 9.65 x 4.5”)	245 mm x 245 mm x 115 mm (9.65 x 9.65 x 4.5”)
Weight - Logger in thermal barrier		6 kg (13.2 lb)	4 kg (8.8 lb)
Thermal characteristics		250°C (482°F) for 100 minutes	250°C (482°F) for 50 minutes
Time to reach 60°C from an initial thermal barrier temperature of 25°C	Oven temp 100°C	340 minutes	140 minutes
	Oven temp 150°C	195 minutes	80 minutes
	Oven temp 200°C	130 minutes	60 minutes
	Oven temp 250°C	100 minutes	50 minutes

Other time/temperature combination boxes are available on request. Please contact Elcometer or your local supplier to discuss your requirements.

6.3 TEMPERATURE PERFORMANCE



6.4 THE HEATSINK [T]

Attention: *Do not use the heatsink if the heatsink material is in liquid form.*

The heatsink material absorbs large amounts of heat energy and consequently it has a relatively low melting point. The material changes phase from a solid to a liquid when the temperature of the heatsink is above 32°C. The heatsink should therefore be kept cool before use in order to maximise the protection it provides the logger.

Ideally the heatsink should be at 20°C to 22°C before use. In warm ambient temperatures i.e. above 25°C it is recommended that the heatsink be cooled/chilled prior to use. A possible solution is a refrigerator at 7°C. Re-crystallisation (change from liquid to solid) will start between 24°C and 26°C; cooling in a freezer or ice bath/cool water bath will speed up this process.

HAZARDOUS INFORMATION:

Hazard identification of heatsink material: None

FIRST AID MEASURES:

General information: No particular measures are required.

After skin contact: Wash immediately with plenty of water.

After eye contact: Rinse immediately under running water for several minutes with eyelids held open and seek medical advice.

If swallowed: Seek medical advice.

7 TECHNICAL DATA

Probe Temperature Range:	-200°C to 1300°C; -328°F to 2372°F
Basic accuracy:	5°C to 500°C: ± 0.5°C; 41°F to 932°F: ± 1.0°F >500°C: ±1.0°C; >932°F: ±2.0°F
Common mode rejection:	100 dB
Input impedance:	1 MOhm
Linearity:	0.015%
Series mode line rejection:	50/60 Hz 100 dB
EM field and Conducted RF effect:	< 1%
Sampling rate:	Up to 8 readings per second
Sensor type supported:	Thermocouple K type
Memory:	260 000 readings
Programming/logger set-up:	Via PaintView software
Interface (internal):	USB 1.1/2.0
Power supply:	2 x AA Alkaline batteries
Power consumption @ 3 V:	>200 hours logging
Dimensions (logger):	W153 mm x D23 mm x H101 mm
Weight (logger):	0.415 kg
Enclosure material:	Mild steel with a stove enamelled finish
Operating temperature (logger):	-20°C to +65°C -20°C to +50°C (using batteries supplied with the logger)

8 SPARE PARTS AND ACCESSORIES

The following spare parts and optional items are available from Elcometer, or your local supplier:

Air probe, with clamp, 1.5 m PTFE coated, triple insulated cable	T21521275
Air probe, with clamp, 3 m PTFE coated, triple insulated cable	T21521276
Air probe, with clamp, 6 m PTFE coated, triple insulated cable	T21521277
Air probe, magnetic, 1.5 m PTFE coated, triple insulated cable	T21521287
Air probe, magnetic, 3 m PTFE coated, triple insulated cable	T21521288
Air probe, magnetic, 6 m PTFE coated, triple insulated cable	T21521569
Surface probe, with clamp, 1.5 m PTFE coated, triple insulated cable	T21521278
Surface probe, with clamp, 3 m PTFE coated, triple insulated cable	T21521279
Surface probe, with clamp, 6 m PTFE coated, triple insulated cable	T21521280
Surface probe, magnetic, 1.5 m PTFE coated, triple insulated cable	T21521281
Surface probe, magnetic, 3 m PTFE coated, triple insulated cable	T21521282
Surface probe, magnetic, 6 m PTFE coated, triple insulated cable	T21521283
Combination probe, Air clamped, Surface clamped, Surface magnetic, 1.5 m PTFE coated, triple insulated cable	T21521284

Combination probe, Air clamped, Surface clamped, Surface magnetic, 3 m PTFE coated, triple insulated cable	T21521285
Combination probe, Air clamped, Surface clamped, Surface magnetic, 6 m PTFE coated, triple insulated cable	T21521286
Data Logger to HP Printer USB connection cable	T21521221
Probe Identification Kit (6 brass tags, stamped 1 to 6, diameter 27 mm, with a nickel plated steel chain 100 mm long)	T21521241
Data Logger to PC USB Cable	T21521220
Thermal Barrier for Elcometer 215 Top Kit (heat sink block not included)	T21521217
Heat Sink Block for Elcometer 215 Top Kit	T21521219
Thermal Barrier for Elcometer 215 Standard Kit	T21521222

9 MAINTENANCE

The Elcometer 215 Oven Data Logger is designed to give many years reliable service under normal operating and storage conditions.

Regular calibration checks over the life of the logger are a requirement of quality management procedures, e.g. ISO 9000, and other similar standards. For checks and certification contact Elcometer or your Elcometer supplier.

Your logger does not contain any user-serviceable components. In the unlikely event of a fault, the logger should be returned to your Elcometer supplier or directly to Elcometer. The warranty will be invalidated if the logger has been opened.

10 RELATED EQUIPMENT

In addition to the Elcometer 215 Oven Data Logger, Elcometer produces a wide range of other equipment for testing and measuring the characteristics of coatings. Users of the Elcometer 215 Oven Data Logger may also benefit from the following Elcometer products:

- Elcometer 107 Cross Hatch Adhesion Tester
- Elcometer 214 Non-contact Infrared Thermometer
- Elcometer 214L Non-contact Infrared Thermometer with Laser Sighting
- Elcometer 406L Statistical Mini Glossmeter
- Elcometer 407 Statistical Glossmeter, Triple Angle.

For further information contact Elcometer, your local supplier or visit www.elcometer.com or www.elcoship.com