

# Squirrel Data Logger

**OQ610**

*Quick Start*



# 1. Hardware Checklist



- Ⓐ OQ610 Logger
- Ⓑ CD containing software
- Ⓒ OQ610 series Quick Start manual (this booklet)
- Ⓓ USB - PC cable (LC80)
- Ⓔ Batteries, 2 x AA

## ***Options available***

USB - Printer cable (LC81)

HP450Ci/HP5740 printer (for direct printing)

Probes - K/T type thermocouples

OQ610 thermal barrier

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<b>1. Hardware Checklist.....</b>	<b>2</b>
<b>2. General Information.....</b>	<b>4</b>
<b>3. Connecting the Probes.....</b>	<b>5</b>
<b>4. Logger Menu and Navigation.....</b>	<b>6</b>
<b>5. Getting Started with the Software.....</b>	<b>10</b>
<b>6. OQ610 Thermal Barrier.....</b>	<b>14</b>
<b>7. Direct Printing.....</b>	<b>16</b>
<b>8. Specification.....</b>	<b>17</b>
<b>9. Declaration of Conformity.....</b>	<b>19</b>



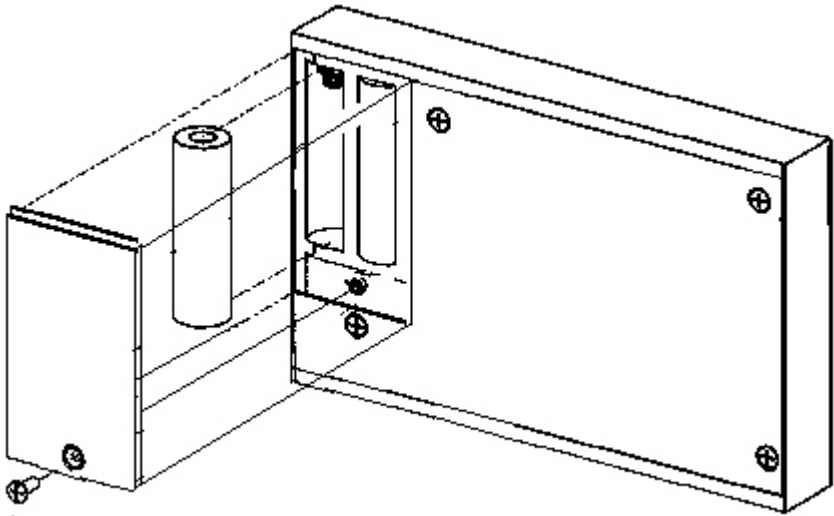
After reading this Quick Start, please refer to the Help content (press F1) within the software for further details on your logger and how to use it with the software.

## 2. General Information

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The Squirrel uses 2 x AA\* size batteries located under its removable battery cover. To change the batteries:

1. Remove battery cover fixing screws
2. Remove battery cover
3. Fit new batteries noting correct orientation
4. Refit and secure the battery cover



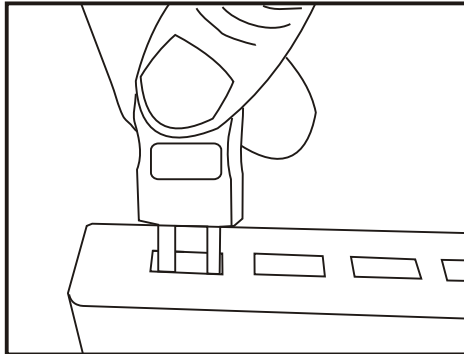
*\*Maximum operating temperature for AA alkaline batteries supplied is 50°C*

### 3. Connecting the probes

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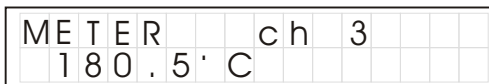
The OQ610 is fitted with six thermocouple connector sockets which support K and T type thermocouples. Connect each probe to an input socket, as shown below. The logger will recognise which channels are being used. If no probes are connected, the Squirrel will not start logging.

**Note:** T type thermocouples are software controlled and only available when used with SquirrelView software.



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

To confirm which probes are connected, press the **Func** button on the logger until the METER function is displayed:-



Repeatedly press the **Set** button to view each probe in turn.

# 4. Logger Menu and Navigation

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## 4.1 Introduction

The OQ610 comes pre-programmed with a default setup providing a basic setup without the need to use any software. Default settings are as follows:-

- K-Type -200 to 1300°C
- Logging interval every two seconds
- Record up to eight runs before overwriting the oldest.

Logging results may be evaluated immediately by directly connecting to a printer (see section 7). In addition, the logger can be set up with 'Cure parameters' for a percentage cure readout (see software Help content for more details)

## 4.2 Overview of the operating buttons

The operating buttons allow the set up of all of the major functions of the logger.



selects the function



chooses the channel  
or sub-function



changes any  
of the settings

### Important Notes:

- Setup changes are not allowed whilst logging.
- When using the software, the Set button 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 Start logging

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

L	O	G																	
	n	o		r	u	n	s												

Now press and hold **Set** to start logging:

L	O	G																	
	H	o	l	d		t	o		s	t	a	r	t						

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

### 4.4 Stop logging

Manually stopping the logger will override any preprogrammed automatic 'stop trigger'. When logging has completed, the screen will indicate whether the latest run has met its Cure Specifications (if programmed). For more graphical analysis, either print the results to a portable printer or download the run into software for detailed analysis.

Press **Func** to wake logger display

L	O	G																	
	l	o	g	g	i	n	g												

Hold **Set** to stop logging:

L	O	G																	
	H	o	l	d		t	o		s	t	o	p							

When the logger has stopped "run complete" will be displayed on the logger as shown.

L	O	G																	
	r	u	n		c	o	m	p	l	e	t	e							

### 4.5 PRINT

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

Press **Func** until PRINT is displayed then press **Set** if necessary to select colour or black printing.

P	R	I	N	T															
	o	f																	


P	R	I	N	T															
	o	f																	

Now connect the logger directly to the printer via the USB cable (LC81) then press and hold the **Set** button to start printing:

P	R	I	N	T															
	H	o	l	d		t	o		s	t	a	r	t						

#### 4.6 METER

Here you can view each channel in Real Time, readings will be updated every 1 - 2 seconds/

Press the  button to view each probe in turn.

M	E	T	E	R				c	h	3									
1	8	0	.	5	.	C													

#### 4.7 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 the software will dramatically reduce battery life, e.g. online metering. At -20°C (-22°F), the battery life can be decreased to 10% of normal.

B	A	T	T	E	R														
						9	5	%											

#### 4.8 SET range/date format/language/Mains rejection

This allows you to set up the Logger by changing the configuration of the Thermocouple temperature range, the date format, the loggers display language and Mains rejection

Press the  button to move to the desired menu option then  to change it.

S	E	T						r	a	n	g	e							
K	0	/	3	0	0	.	C												

S	E	T						f	o	r	m	a	t						
D	D	/	M	M	/	Y	Y												

S	E	T						l	a	n	g	u	a	g	e				
E	n	g	l	i	s	h													

S	E	T						M	a	i	n	s							
5	0	H	z																

#### 4.9 INTERVAL

How often the logger will log is displayed here, this can be from 0.125s (8 readings per/s) to 2Hrs.

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

I	N	T	E	R	V	A	L												
	0	:	0	0	:	0	0	:	1	2	5								

#### 4.10 TIME and date

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

Press and hold the **Set** key to Change if required.

T	I	M	E					1	5	:	4	3	:	1	7				
d	a	t	e					2	5	:	1	1	:	0	5				

If using the software to setup the logger, it will automatically inform you if the logger needs updating,

#### 4.11 TOOLS

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

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

T	O	O	L	S																v	e	r	s	i	o	n	
																					V	9	.	0			

T	O	O	L	S																							c	l	e	a	r
---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	---	---	---	---

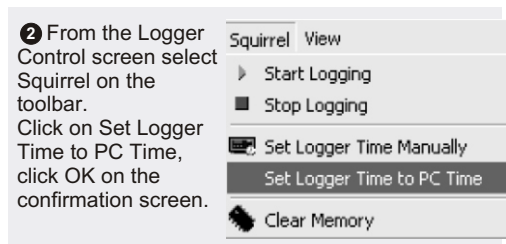
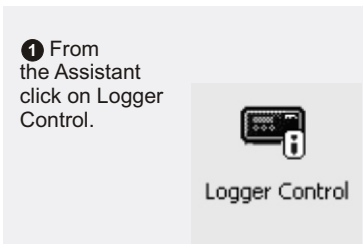
**Note:** Only use the reset function On recommendation from technical support

T	O	O	L	S																													r	e	s	e	t
---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	---	---	---	---

# 5. Getting Started with the Software

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- 5.1 **Installing the software**  
Install the software by following the instructions on the installation Guide.  
Connect the OQ610 logger to the PC via USB connection then press the Set button to wake the logger for communication, "connecting" should appear on the display, the PC will request the USB drivers (it is assumed that PaintView/SquirrelView is installed into the default directory. If this is not the case then modify the path accordingly), select C:\ProgramFiles\PaintView\drivers\6xx USB, then click OK to complete the installation. Please ignore the Hardware Installation warning that refers to Windows Logo testing.
  
  - 5.2 **Startup software and select Logger Type**  
Click on the shortcut icon on your desktop to launch the software or select it from your start menu - Program group menu within Windows. When the Assistant has opened, 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.
  
  - 5.3 **Synchronise Logger & PC**  
It is advisable to start by synchronising the Logger clock with the PC clock. See step 1 and 2 below:

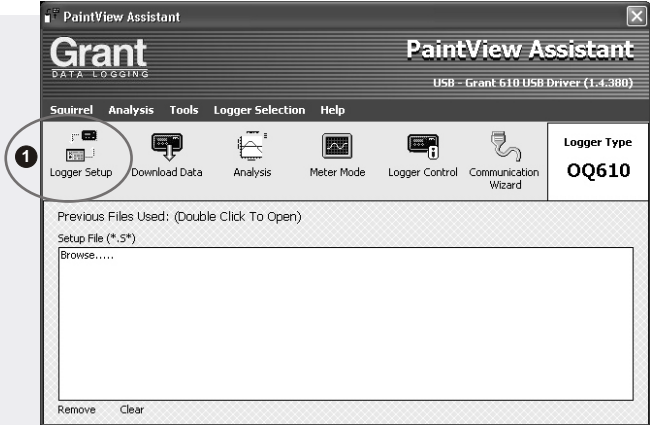
## Synchronise clocks:



## 5.4 Running Quick Start Demo

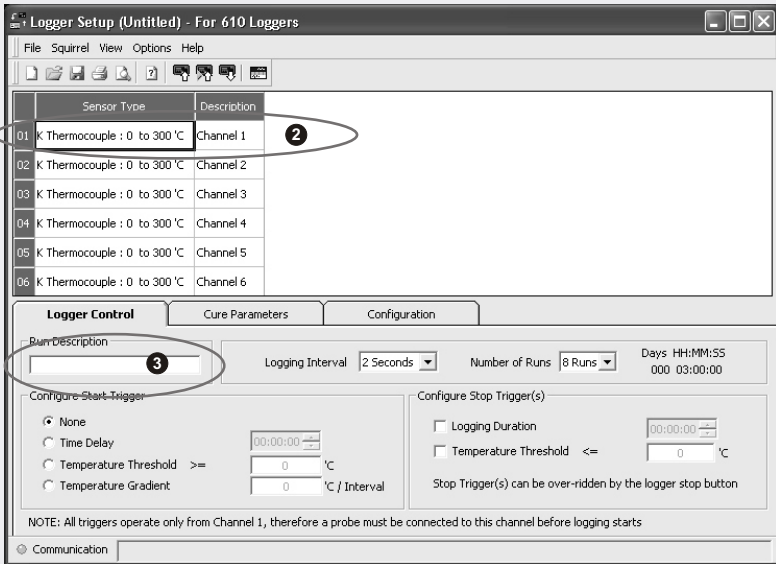
Note: Screen shots are for example purposes only and may not represent the actual screen displayed.

1 In the Assistant, click on **Logger setup** as shown.




2 The Logger Setup screen is now visible, from here you will be able to set up your sensor type and range required. Click on get Setup from logger if you wish to view an example Setup.

3 The Run/Job Description can be used to describe your setup.



**Note:** You must have a probe connected before you start logging.


**4** Click to send setup to logger and start logging. Let the unit log for a few minutes.



**5** Click for **PaintView/SquirrelView Assistant**.



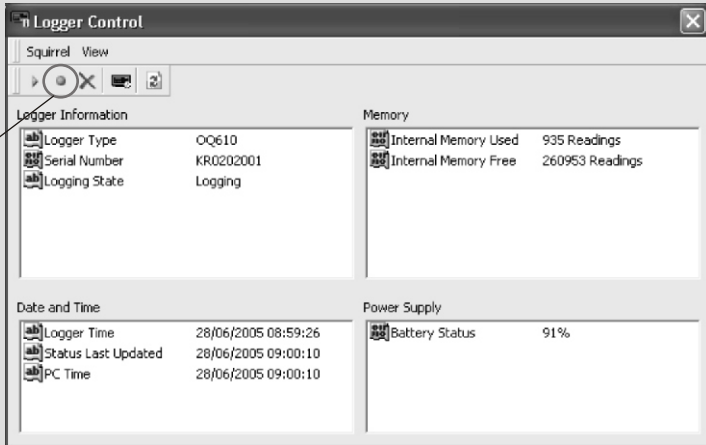
**6** If you wish to meter the input in Real Time click this icon.




**7** To stop the logging process click the **Logger Control** icon.

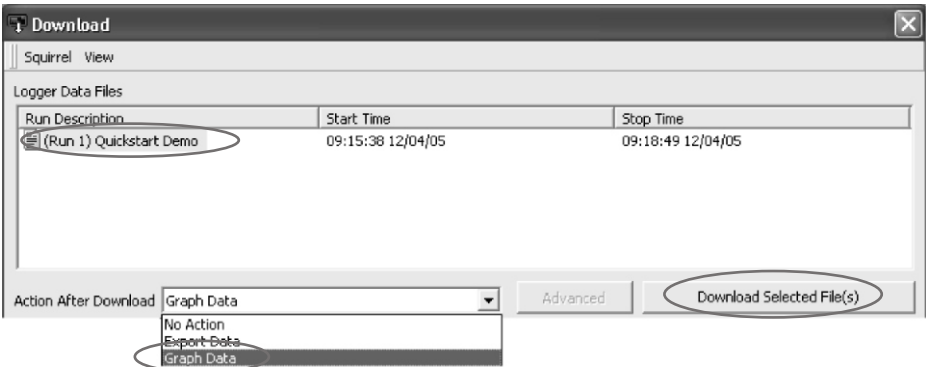


**8** In the Logger Control window you can view relevant information on the state of the logger. To stop logging click on the stop button.



**9** To Download the logger click on the Download Data icon from the Assistant.



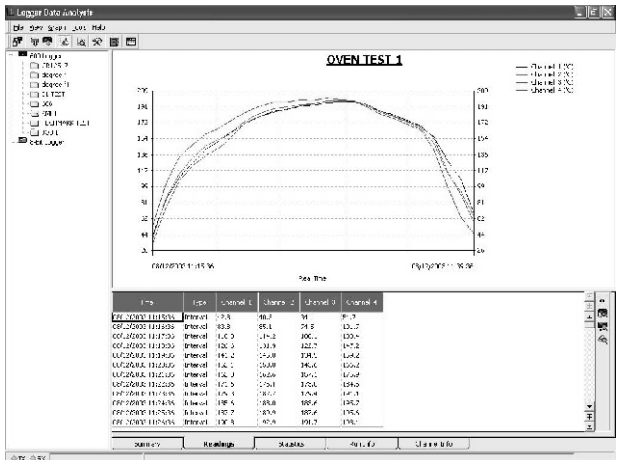


10 In this screen you can now download the Data file and invoke either the Export Wizard or download the Datafile via Analysis to view data.

**Note for SquirrelView user only:** Analysis is only available with SquirrelView plus edition.

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. Once you have done this then the data will be converted for viewing.

11 Once the decoding has terminated place the Analysis File will open and a window will be presented.



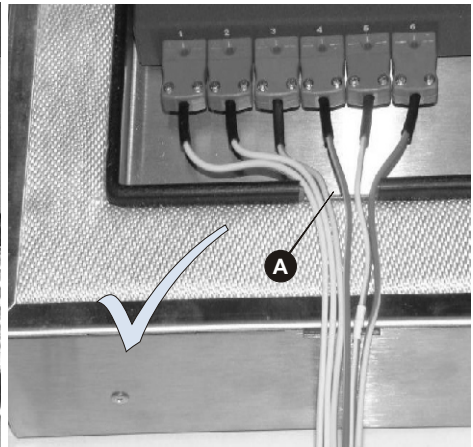
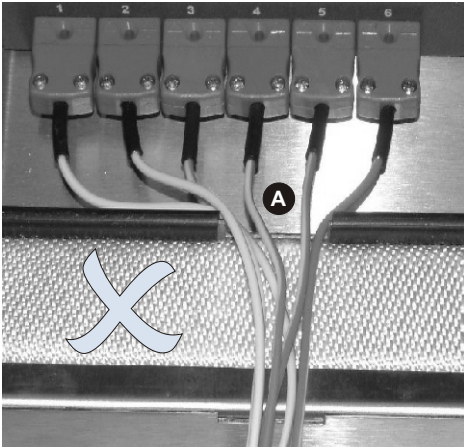
# 6. OQ610 Thermal Barrier

## 6.1 Thermal barrier

The thermal barrier enables the use of the OQ610 at elevated temperatures. Place the OQ610 in the insulating box, ensuring that the probe leads are not twisted or trapped but are passed through the barriers cable guide **A** (see picture below for correct cable Layout)

Model number..... CI606-Q  
Dimensions..... (l x w x h) 230 x 230 x 110mm  
Weight..... 4kg  
Thermal characteristics..... 250°C (482°F) for 45 minutes

**Other time/temperature combination boxes are available on request. Please call us to discuss your requirements.**



**WARNING:** To ensure that the logger does not exceed its maximum operating temperature when appropriate it should always be placed inside its protective thermal barrier before being placed into oven. Always take the logger out of the barrier straight after passing through the oven.



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

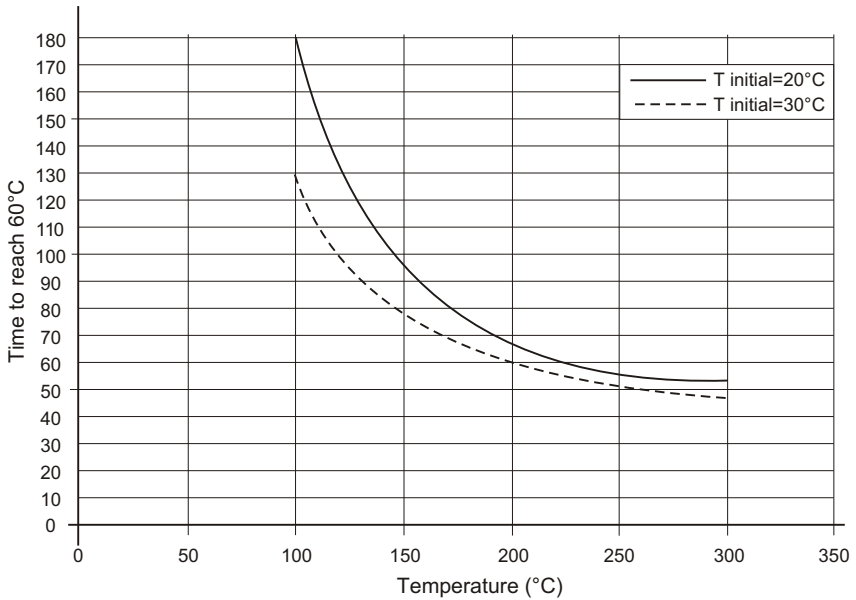
## 6.2 CI606-Q Thermal Barrier Performance

Table of Results:

T initial =20°C	
T oven (°C)	Time to reach 60°C
100	180 minutes
150	95 minutes
200	68 minutes
250	58 minutes
300	52 minutes

T initial=30°C	
T oven (°C)	Time to reach 60°C
100	130 minutes
150	77 minutes
200	60 minutes
250	51 minutes
300	46 minutes

Note: T initial is the initial temperature of the thermal barrier before placing it in the oven.



# 7. Direct Printing

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The OQ610 can print reports directly to Hewlett Packard printers that support PCL3 and USB, allowing users to view results quickly without the need for a computer

Simply connect the USB cable directly to the logger as shown below and use the PRINT option from the logger menu (see page 7 for more details).

Recommended printers included the HP450CI potable printer (shown below) and the HP5740 desktop printer. Please contact Grant Instruments for further details.



# 8. Specifications

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## ANALOGUE INPUTS

Basic accuracy: (0-500°C) ..... ± 0.5°C (0.9°F)  
>500°C..... ± 1.0°C (1.8°F)  
Common mode rejection: .....100dB  
Input impedance: ..... > 1MOHM  
Linearity: .....0.015%  
Series mode line rejection:.....50/60Hz

100dB

## ANALOGUE-DIGITAL CONVERSION

Type: .....Sigma-Delta  
Resolution: .....24bit  
Sampling rate: .....Up to 8 readings per second

SENSORS SUPPORTED.....Thermocouple K & T type

**Note:** *Thermocouples are K type as default and T type is only available with SquirrelView software.*

TIME AND DATE.....In built clock in 3 formats

MEMORY.....Internal: 260K readings

RESOLUTION.....Up to 6 significant digits

PROGRAMMING/LOGGER SET-UP.....PaintView/SquirrelView

FRONT PANEL SET-UP.....Change interval/Date/Time/Date format/Language/Mains rejection

COMMUNICATION.....USB 1.1 and 2.0

External options: .....Direct printing to HP printers supporting PCL3 and USB

**POWER SUPPLY**

Internal: .....2\* x AA Alkaline batteries



\* Maximum operating temperature for AA alkaline batteries is 50°C

**POWER CONSUMPTION @ 3V**

Logging: .....>200Hrs

**DIMENSIONS AND WEIGHT**

**QQ610 Logger**

Dimensions: .....W153 x D21 x H102 mm

Weight: .....0.415Kg

Enclosure material: .....Mild steel stove enamelled finish

**DISPLAY AND KEYPAD**

2 line x 16 character LCD display

**OPERATING ENVIRONMENT** .....-20°C to +65°C

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*Grant believe that all information declared is correct at the time of issue.*

*No liability is accepted for errors and omissions.*

## 9. Declaration of Conformity

# Declaration of Conformity

<b>Manufacturer:-</b>	GRANT INSTRUMENTS (CAMBRIDGE) LTD, Shepreth, Cambridgeshire SG8 6GB
<b>Equipment Name/Type Number:-</b>	OQ610
<b>Description of Equipment:-</b>	Squirrel OQ610 Data Logger
<b>Directives:-</b>	EMC Directive 89/336/EEC
<b>Including Accessories:-</b>	LC80          USB - PC cable

This product complies with the requirements of the above Directive(s) when used with sensor leads up to 3m long, compliance may be affected by using longer leads.

<b>Applied Standards:-</b>	<u>EN 61326:1997(+A1/A2)</u>
<b>Harmonized Standards:-</b>	Electrical Equipment for measurement, control and laboratory use - EMC requirements

### USA

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.

### AUSTRALIA & NEW ZEALAND



ANC  
006 134 863

This product complies with the requirements of the European EMC standards indicated above which meet the requirements for C-Tick marking.



# Grant

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