

# Through Process MONITORING

*Grant Through Process Data Logging Systems are easy to set-up and use. They are suitable for a variety of applications including data logging in hostile environments and monitoring conditions on moving production lines. Benefits include improved efficiency and quality; reduced energy costs and increased yields; production of due diligence reports and a reduction in process set-up time and down time.*

## What is Through Process Monitoring?

### Introduction

If you are using any heat treatment for producing products from bread to bricks, to ensure consistent quality of your product, you need to know it has passed through your manufacturing process at the right temperature for the right amount of time. By passing a Grant OQ610 oven logger through your process a temperature profile can be produced that will show you exactly what is happening to your product and the process.

### Advantages

The advantage of Through Process Monitoring is that you can make measurements at precisely the points you are interested in, even if those points are moving on a conveyor belt or with some other mechanical device, without the worry about trailing wires or complicated connection methods. If the process involves operating in an environment of extreme heat, cold, moisture or steam, then the OQ610 is placed in a protective Thermal Barrier.

## What is a Thermal Barrier?

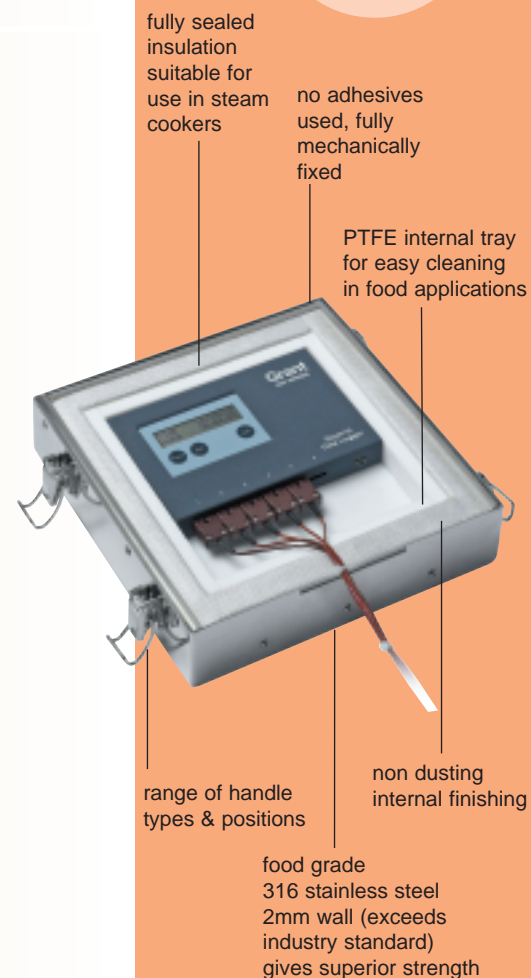
It is like an oven, but the difference being instead of keeping the heat in, you keep it out. This means that you can install an OQ610 inside the Thermal Barrier where it is protected, connect suitable sensors and record your complete process, monitoring both the process and product temperatures.

OQ610's are battery powered precision data acquisition units with internal memory, which allow you to monitor your process and download data to your computer. An extensive range of temperature sensors can be used to suit just about any application. Barriers come in standard sizes, or can be customised to your specific requirements. i.e fully waterproof solutions for autoclaves.

## Benefits for a diverse range of applications:

- Suited to a range of applications; from bread to bricks or any heat treatment
- For use in furnaces, kilns, any form of oven or cooler & conveyor systems
- Improved quality of your product and increased efficiency
- Reduced energy costs
- Provides quality assurance reports for compliance and traceability
- Complete quality control for your process
- A complete package: data logger, protective barrier, computer software and training

Free  
Software  
&  
Technical  
Helpline



## Software

### SquirrelView:

*Easy to use setup and download software*

### SquirrelView Plus:

*SquirrelView with on-line and historical graphing*

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## Thermal Barrier Specification

### Selecting a Squirrel Data Logger

The Grant OQ610 temperature logger is the standard Grant Squirrel to be used with a Thermal Barrier. Please refer to our OQ610 temperature logger datasheet for further details.

However, Thermal Barriers can be made to suit any of the Grant Squirrel range of products.

### Software

SquirrelView is supplied with the OQ610 and enables setup, download and data export to Excel or a CSV file for Windows 98, 2000 and XP.

SquirrelView Plus offers the additional features of on-line or historical graphing of data with manual and automatic scaling of charts. Readings can be listed in tabular format with timestamps and statistics. Please refer to our SquirrelView datasheet for further details.

### Thermal Barrier

The performance of a Thermal Barrier is measured in terms of the exposure time at a particular temperature for a given maximum internal temperature. The performance is closely related to the barrier's insulation thickness.

The table below indicates the allowable exposure time over a range of temperatures for the standard Thermal Barrier models assuming a maximum internal temperature of 70°C.

### Standard Thermal Barrier

| Model   | Process Temperature °C |      |      |      |      |      |
|---------|------------------------|------|------|------|------|------|
|         | 100°                   | 150° | 200° | 250° | 300° | 350° |
| TB50    | 55                     | 35   | 25   | 10   | 7    | 3    |
| TB70    | 75                     | 55   | 35   | 20   | 10   | 5    |
| TB90    | 95                     | 75   | 50   | 35   | 15   | 10   |
| TB110   | 115                    | 95   | 70   | 45   | 25   | 13   |
| TB130   | 135                    | 115  | 85   | 50   | 35   | 15   |
| TB150   | 155                    | 135  | 105  | 55   | 45   | 20   |
| Cl606-Q | 120                    | 90   | 60   | 50   | -    | -    |

Time in Minutes

### Barrier Dimensions

| Model         | Length | Width | Height |
|---------------|--------|-------|--------|
| Standard TB50 | 230    | 230   | 65     |
| TB70          | 230    | 230   | 85     |
| TB90          | 230    | 230   | 105    |
| TB110         | 230    | 230   | 125    |
| TB130         | 230    | 230   | 145    |
| TB150         | 230    | 230   | 165    |
| Cl606-Q       | 230    | 230   | 110    |

Dimensions in mm

### Customised Barriers

Thermal Barriers are available in standard sizes or can be customised to suit your specific requirements.

For customised barriers we require details of your application, oven aperture size and expected worst case temperature profile.

### Probes

The OQ610 logger is suitable for use with our wide range of thermocouple sensors. Thermocouples have a quick response time and are suitable for a wide range of applications from small and delicate to heavy industrial.

Please refer to our Temperature and Humidity Probes datasheet for further details on our full range of probes.



### Through Process Applications

#### Food Manufacturing

Through process can be used for the manufacturing of cakes, bread, confectionery, meat, fish, poultry, beverages, dairy products, pizza, pasta and ready made meals.

All require careful monitoring and control to ensure quality and health standards are met, and minimal energy is used in the process. Temperatures range from 80°C to 300°C for minutes to several hours.

Through process is also suitable for use in chillers, freezers, cold stores, blast freezers, freezing tunnels and refrigerated transport. Application temperatures range from -100°C to +5°C for 5 minutes to several weeks.

#### Surface Coatings

Most powder coating applications require monitoring of process temperatures in order to confirm even temperature distribution, hot and cold spots and burner zone efficiency.

Product surface temperature is monitored to ensure exact temperature for baking of powder coating. Suitable for conveyor and rack ovens where temperatures range from 25°C to 300°C for 30 minutes to 30 hours. Through process is also suitable for stove enamelling and drying applications where conveyor and rack ovens are frequently used.

Temperatures range from 150°C to above 850°C for 20 minutes to two hours. For temperatures above 500°C evaporative style enclosures are required.

#### Kilns and Furnaces

The firing of clay and the sintering of metals requires tight control over the temperature profile. Grant's Thermal Barriers are suitable for use in kilns and furnaces for manufacturing of bricks, ceramics, whiteware and pottery. Also for use in heat treatment of metals and glassware.

Temperatures range from 350°C to 950°C for 20 minutes to 120 hours. In general, for these harsh applications evaporative enclosures with a secondary inner barrier are needed. The Thermal Barrier is usually mounted under the kiln or furnace cart to reduce the temperature exposure.

Due to our policy of continuous improvements, specifications may change without prior notice. Grant believe that all information declared is correct at the time of issue. No liability is accepted for errors and omissions.



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**Warranty:** The Grant OQ610 data acquisition system is warranted against faulty materials or workmanship for one year. For repairs carried out under warranty, no charge is made for labour, materials or return carriage.

**CE mark:** The Grant OQ610 data acquisition system bears a CE mark and meets relevant European directives.

**Quality Statement:** Grant Instruments operates a Quality Management System complying with ISO9001:2000.

It is Grant's policy to supply customers with products which are fit for their intended purpose, safe in use, perform reliably to published specification and are backed by a fast and efficient customer support service.

**Manufactured and designed in Cambridge, England.**