



**PhoenixTM**  
Phoenix Temperature Measurement

# Temperature Profiling Systems



*... where experience counts!*



### PhoenixTM Data Loggers

At PhoenixTM we believe that data loggers for thermal profiling must be built to operate in the harshest environments while maintaining accuracy throughout their operating temperature range. All PhoenixTM Data Loggers include these important features:

- PhoenixTM Data Loggers are easy to use and require no complex keypad programming sequences.
- Accurate, logged data is stored securely in non-volatile memory.
- Electronic components are housed in a water resistant, tough, machined aluminum case to protect against moisture ingress. This acts together with the highly effective seals on a TS06 water quench barrier, to double the protection
- PhoenixTM Data Loggers are designed to be maintained at local service centers, and use standard batteries.
- PhoenixTM Data Loggers can operate in both low vacuum and high pressure environments
- PhoenixTM Data Loggers meet and exceed AMS2750 accuracy specification



Standard batteries  
300h duration, widely available



Realtime telemetry available



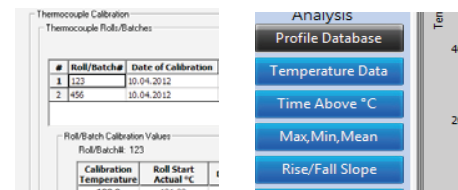
Robust and waterproof case

### Thermal View Plus Software

PhoenixTM has developed a powerful software package to quickly and easily analyze data from your process. Screen layout is clear and using the enhanced control bar makes this a very easy, but powerful package to operate.

All results are saved in a database for easy access which can be organized in a logical manner using the multi column sorting facility. The analysis functions allow you to examine and assess all your critical process parameters in a fast uncomplicated way. Process templates can be constructed so data can be overlaid against a backdrop which represents all physical points within your oven / furnace.

PhoenixTM software has all the essential functions you require to control and optimize your process.

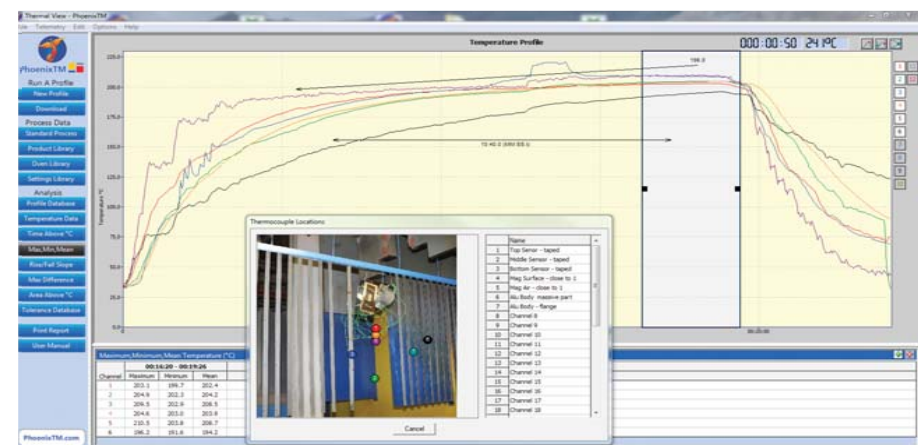


Comprehensive set of analysis tools - including AMS2750 reporting for furnace surveying

Easy and quick to operate - all main functions are located on main window

Profile Date	Standard Process
25.08.2010 11:57:22	CAB process
28.07.2010 16:23:57	
07.07.2010 15:36:09	Finishing process
10.06.2010 15:29:24	Heat Treatment

All data is stored in a database for quick sorting and archiving



### PhoenixTM Thermocouples

PhoenixTM offers thermocouples in many different designs, according to your product and process:



Magnetic probes with replaceable sensors



Clamp probes with replaceable sensors



Open junction



High Temperature mineral insulated

300°C 570°F  
600°C 1110°F  
800°C 1470°F  
1000°C 1830°F  
1350°C 2460°F  
1700°C 3090°F

#### TS04 Range

Specifically designed for the finishing industry, the PhoenixTM TS04 Thermal Barrier range offer ease of handling and high thermal performance in a compact design. They are designed to accept the PhoenixTM 20 channel Data Logger and being built from silicone-free materials they are ideal for use in the automobile industry. PhoenixTM can also design Thermal Barriers longer duration processes or where water spray may be part of the process.

#### TS06 Range

Built for solution treatment and age hardening where high temperature and water quench are part of the process, the PhoenixTM TS06 Thermal Barrier range is designed to offer protection to the Data Logger from these conditions. These Thermal Barriers use the principle of evaporating water to keep the Data Logger cool in the furnace, and can re-fill in the quench to allow it to undergo a further heating period as is normal in aluminum or stainless steel solution treatment.

#### TS01 Range

Developed for processes up to 800°C / 1470°F the PhoenixTM TS01 Thermal Barrier range is perfect for applications in the aluminum, glass and steel industries. Microporous insulation and a 'latent heat accumulator' or heat sink provide protection against the temperatures inside the furnace. Made from high grade stainless steel, with an easy to replace thermocouple wear strip, the TS01 Thermal Barrier range is robust and durable.

#### TS02 Range

Processes such as carburizing at temperatures up to 1000°C / 1830°F, demand a Thermal Barrier which can withstand severe changes in temperature, pressure, and aggressive atmospheres. Strengthened and reinforced at critical points to minimize distortion, PhoenixTM TS02 Thermal Barriers are designed to offer full protection to the Data Logger in demanding conditions.

#### TS07 Range

In processes such as steel slab and billet reheat where temperatures are extreme and process times long; the PhoenixTM TS07 Thermal Barrier is the obvious choice. Manufactured from the highest specification materials and using graded insulation layers and evaporative water technology, these Thermal Barriers are built to withstand repeated use in these harsh environments.

#### TS05 Range

Developed for the ceramic industry, the PhoenixTM TS05 series Thermal Barriers travel beneath the kiln car for a sustained period at moderate to high under car temperatures. Built from high grade stainless steel these Thermal Barriers use evaporative water technology to keep the Data Logger cool and protect against mechanical damage and the dusty environment of a ceramic kiln.

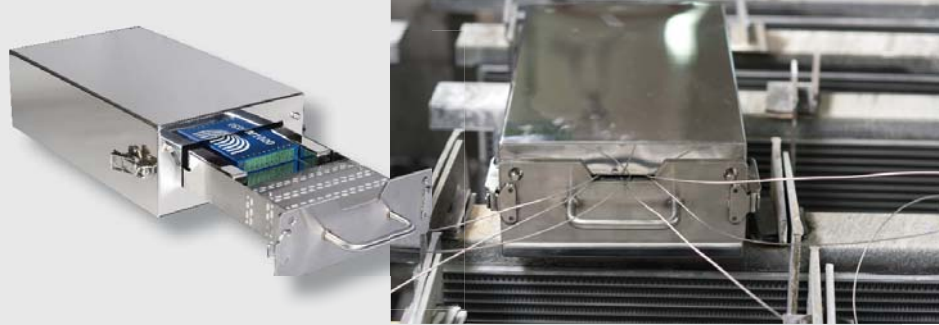


*Where experience counts!*



## TS08 Range

Built for brazing aluminum radiators and condensers for automobile air conditioning and cooling systems, these thermal barriers are designed to protect the data logger against the harsh conditions inside the brazing furnace. They have been designed so oxygen presence within the thermal barrier is reduced by maximising the amount of nitrogen in the insulation material. This minimises the formation of hydrofluoric acid which can damage the barrier insulation, and may be harmful to furnace components or braze quality.



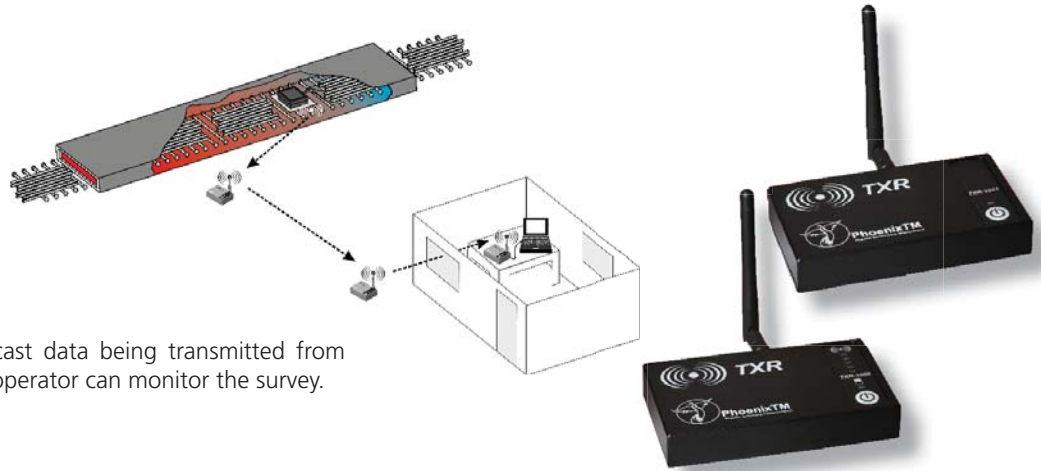
## TS01 - Contact Firing

Monitoring the thermal profile of this process is therefore critical to the quality of the finished product, which is why the profiling system must be accurate, able to collect data at a fast rate, and should have the ability to withstand the repeated heating and cooling cycles when setting up or monitoring furnace performance. At less than 35oz. / 1 Kg, the PhoenixTM system is less than 75% of the mass of major competitive systems.



## Telemetry

The PhoenixTM data logger can be equipped with a transmitter and high temperature antenna that allows it to collect temperature data from the process and store it within the data logger's memory, while simultaneously transmitting it to a receiver out-side the furnace.



A series of routers can pick up and re-broadcast data being transmitted from within a furnace, to a remote office where the operator can monitor the survey.



Temperature profiling products through a heat treatment, finishing, or firing process is achieved by attaching thermocouples to the critical points of the product, connecting these probes to a Data Logger, and by protecting the Data Logger with a Thermal Barrier, the whole system can travel through the heat treatment process together with the product. In this way the true product temperature is monitored and stored for later analysis.

Design of the monitoring system from the thermocouples, through to the Thermal Barrier is critical as this electronic measuring device is required to monitor product temperatures with a high degree of accuracy while resisting extremes of temperature, atmospheres, and pressure.

With over 60 years of combined temperature profiling experience, the senior PhoenixTM personnel have a deep understanding of all aspects of the design of products for these industries, and most importantly, have good knowledge of the processes in which they will be used.

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