

Process Profiling

dataTaker

... keeping an eye on reality



Through Process Data Logging

- Easy to Set-Up and Use
- Data Logging in Hostile Environments
- Monitor Conditions on Moving Production Lines
- Improve Efficiency and Quality
- Reduce Energy Costs and Increase Yields
- Provide Due Diligence Reports
- Reduce Process Set-Up Time and Down Time

Specifications

What is Through Process Monitoring?

Through Process Monitoring is the technique whereby a *dataTaker* is subjected to a particular manufacturing process of a product, such that a profile of the process against time can then be determined. Profiles are widely used in industry to trim various process conditions in order to improve quality and efficiency.

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 needing to 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 *dataTaker* is placed in a protective thermal barrier.

What's a Thermal Barrier?

It's like an oven, but the difference being instead of keeping the heat in, you keep it out. This means that you can install a *dataTaker* inside the thermal barrier where it's protected, connect suitable sensors and record your complete process, monitoring both the process and product temperatures.

DataTakers 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 sensors can be used to measure just about any parameter. Barriers come in standard sizes, or can be customized to your specific requirements.

Diverse Applications

If you use a furnace, kiln or any form of oven or cooler, particularly where a conveyor system is utilized, you can use Through Process Monitoring to improve the quality of your product and to increase efficiency. This can enable you to reduce energy costs and provide quality assurance reports for compliance and traceability.

If you are producing circuit boards, powder coatings, steel, or even dough, you know what happens to your products if the temperature of the process isn't right! Ensuring process temperature is correct is the key to a quality product. *DataTaker* Through Process Monitoring is the answer. We can provide you with a complete package, including data logger, protective barrier (if required), computer software and training, so that you can get your process right every time.

For your unique application contact your nearest *dataTaker* office or local dealer.



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Inside Story

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 following table indicates the allowable exposure time over a range of temperatures for the standard thermal barrier models assuming a maximum internal temperature of 70°C.

Thermal Barrier Performance

Model	Process Temperature °C					
	100°	150°	200°	250°	300°	350°
MiniTB50	25	20	15	10	5	3
MiniTB70	40	30	20	15	10	5
MiniTB90	55	40	25	20	15	8
TB50	60	45	30	15	10	5
TB70	90	65	45	30	15	7
TB90	120	90	60	40	20	10
TB110	150	105	75	50	30	13
TB130	170	120	90	60	40	15
Time in Minutes						

Thermal barriers are available in three distinct sizes - Mini, Standard and Customized for your specific requirements, refer to the table below.

Standard Barrier Dimensions (mm)

Model	Length	Width	Height
Mini			
MiniTB50	190	150	50
MiniTB70	190	150	70
MiniTB90	190	150	90
Standard			
TB50	310	190	50
TB70	310	190	70
TB90	310	190	90
TB110	310	190	110
TB130	310	190	130
Custom			
Example	450	310	250
Dimensions in mm			

Customized barriers are specified by indicating the model of dataTaker to be enclosed, the maximum internal temperature allowed (90°C or less for most dataTakers), and the expected worst case temperature profile.

Through Process Applications:

Food Manufacturing

• Through process can be used for the manufacturing of cakes, bread, confectionery, meat, fish, poultry, beverages, dairy products and pizza. 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 2 minutes to several hours.

• Through process is also suitable for use in chillers, freezers, cold stores, blast freezers, spiral freezers, freezing tunnels and refrigerated transport. Application temperatures range from -100°C to 5°C for five 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 enameling and drying applications where conveyor and rack ovens are frequently used. Temperatures range from 150°C to 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. dataTaker's thermal barriers are suitable for use in kilns and furnaces for manufacturing of bricks, ceramics, white ware and pottery.

• Also, for use in the 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 is a requirement. The thermal barrier is usually mounted under the kiln or furnace cart to reduce the temperature exposure.

Soldering of Circuit Boards

• PCB assemblers can use through process monitoring to profile surface mount reflow ovens and wave soldering machines. The correct profiles for this equipment is essential for the reliable soldering of components onto printed circuit boards. Temperatures range from around 170°C to 350°C.

DataTaker Systems

Over 30,000 dataTakers systems have been sold in more than 55 countries. dataTaker's extensive product range has been distributed throughout a well established dealer network, and with offices located in Australia, China, United Kingdom and United States. dataTaker's international success has been attributed to its powerful, reliable, yet user friendly hardware and software. dataTaker products are recognized for their flexibility and versatility, and have been used extensively in a host of industries.

Selecting a dataTaker

Any dataTaker may be used with an appropriately sized thermal barrier. The dataTaker range includes:

- DT50 low cost general purpose 5 – 10 universal channel system
 - DT500 general purpose 10 – 30 universal channel system
 - DT505 general purpose 10 – 30 universal channel system with relay multiplexer
 - DT800 high speed 42 channel advanced data acquisition system
 - DT1000 – DT4000 Series of sensor specific 1 – 4 channel data loggers
- Other models are available.

Warranty

The dataTaker range is covered by a 1 year warranty on workmanship and parts. For further information on the dataTaker range, or for useful downloads, visit the dataTaker web site at www.dataTaker.com or contact your nearest dataTaker office or dealer.



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dataTaker

Certified to ISO9002

TOTAL QUALITY COMMITMENT