

Kiln Tracker® Clay Block System USER GUIDE



DATAPAQ® Kiln Tracker systems provide a thermally shielded data logger which travels through the kiln to monitor the temperatures experienced by the product. Data downloaded from the logger can then be analyzed using the supplied Insight software to ensure continued high-quality product from the kiln. The Clay Block system is tailored to suit the relatively short firing cycles (24–36 hours) typical of clay-block manufacturing. The logger is mounted under the kiln car, with thermocouples running to the blocks above.



A typical Clay Block System with TB3049A thermal barrier (center).

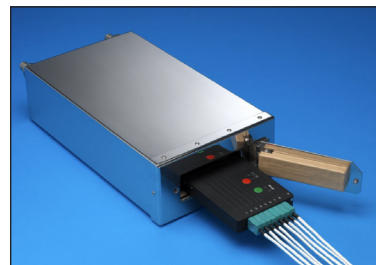
The dedicated manual supplied with the data logger should be read in conjunction with this manual. It provides information on operating the logger, including:

- Installing Insight and establishing communication between logger and PC.
- Resetting the logger with new data-collection parameters.
- Downloading the collected data to the PC.
- Troubleshooting logger problems.

For full details on use of the Insight software, refer to the online Help system available when the software is installed.

Selecting the Thermal Barrier

This involves establishing the average temperature under the kiln car, and the duration of the kiln process. A barrier that meets these requirements can then be selected.



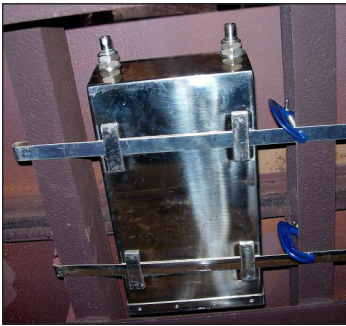
Tpaq21 logger, with thermocouples attached, being inserted into TB3049A thermal barrier.

Temperature under the car is best measured with Datapaq's single-use aluminum monitoring plate, which bears temperature-sensitive strips. Using wire, suspend the plate at the barrier's chosen location under the kiln car and run the car through the kiln process. After the run, the maximum temperature is shown by the dark segments of the temperature-sensitive strips. Experience shows that the average temperature under the car during the process is two-thirds of the maximum temperature. Thermal barrier TB3049A is suitable for most clay-block applications.

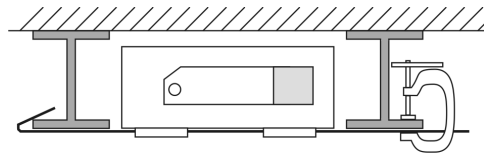
This is an important procedure. Contact Datapaq if there is any doubt about carrying it out or interpreting the results.

Fixing Thermal Barrier Under the Kiln Car

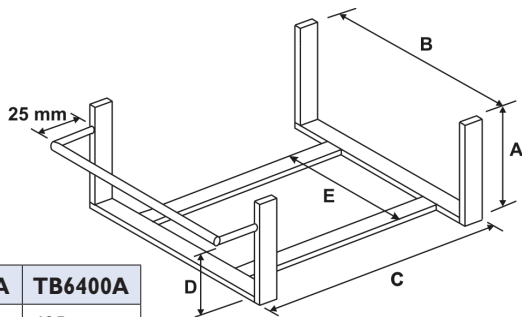
Temporary and permanent arrangements are possible, as shown below.



Temporary fixing for thermal barrier under kiln car: held on two steel supports, each hooked over I-beam at one end and fixed by G-clamp at the other. Drawing shows vertical section, facing end of thermal barrier, with bent steel strip hooked over I-beam. Note G-clamp has its longest arm uppermost, to maximize clearance below.



Permanent support cage, with dimensions for different thermal barriers. To be constructed from mild-steel strip (25 × 6 mm / 1 × 0.25 in.) and rods (6 mm / 0.25 in.), and welded to underside of kiln car.



	TB3049A	TB6100A	TB6200A	TB6400A
A	115 mm	200 mm	175 mm	135 mm
B	210 mm	375 mm	305 mm	220 mm
C	260 mm	325 mm	275 mm	240 mm
D	50 mm	105 mm	105 mm	80 mm
E	180 mm	275 mm	205 mm	50 mm

Dimensions A and B are measured on the inside of the cage framework.

It is important to check that there is sufficient clearance below the car through the whole length of the kiln – particularly as unknown dams or other obstructions may be present. Thus, before installing the thermal barrier beneath the car, it is essential to send the car through the kiln with either just a G-clamp or the support cage in place. If there is no fouling, the thermal barrier can then be installed.

Running a Temperature Profile

- 1 Position thermocouples within the clay blocks as required, and route them to the position of the thermal barrier – through a gap in the seal at the front of the car (for a temporary barrier fixing) or through a hole in the refractory base of the car (for a permanent fixing).
- 2 With the thermal barrier horizontal, attach a hose to one filler pipe and fill it until water flows out of its other pipe.



Thermocouples feeding through refractory bricks on the base of the kiln car to the thermal barrier below.

WARNING

Forgetting to fill the thermal barrier's water jacket will cause destruction of the logger.

- 3 Reset the logger using the Insight software: see your dedicated logger manual or Insight's Help system (on Insight's menu bar, select Help > Contents). Ensure the sample interval you set allows enough total data-recording time for the process, but is not short enough to risk exhausting the batteries: a rule of thumb is to set sample interval at 1 minute per day of operation, e.g. use 1.5-minute interval for a 36-hour process.
- 4 Attach thermocouples to the logger, install the logger in the barrier, secure the barrier's opening, and place the barrier under the kiln car as shown above.
- 5 Remove the thermal barrier from the kiln car as soon as the run is over. Open the barrier and remove the logger.

WARNING

*The thermal barrier – and the logger – will be **hot**. Use protective gloves. Failure to remove the logger from the hot thermal barrier could damage the logger. The barrier may contain very hot water; if necessary flush its outer jacket with cold water to ensure it has cooled fully.*

- 6 Download the data from the logger to the PC as detailed in your dedicated logger manual or in Insight's Help system.

The barrier and logger can be re-used immediately for another profile run.

SPECIFICATIONS

Thermal Barriers

	TB3049A	TB6100A	TB6200A	TB6400A
Duration	45 hrs at 150°C/302°F 30 hrs at 200°C/392°F 18 hrs at 250°C/482°F	250 hrs at 150°C/302°F 115 hrs at 200°C/392°F 75 hrs at 250°C/482°F 60 hrs at 300°C/572°F 35 hrs at 400°C/752°F	150 hrs at 150°C/302°F 78 hrs at 200°C/392°F 56 hrs at 250°C/482°F 40 hrs at 300°C/572°F 25 hrs at 400°C/752°F	98 hrs at 150°C/302°F 48 hrs at 200°C/392°F 30 hrs at 250°C/482°F 20 hrs at 300°C/572°F 12 hrs at 400°C/752°F
Dimensions				
Height	100 mm/3.9 in.	180 mm/7.1 in.	155 mm/6.1 in.	120 mm/4.7 in.
Width	204 mm/8.0 in.	350 mm/13.8 in.	280 mm/11.0 in.	200 mm/7.9 in.
Length	415 mm/16.3 in.	480 mm/18.9 in.	430 mm/16.9 in.	370 mm/14.6 in.
Weight				
Empty	7.2 kg/16 lb	20 kg/44 lb	13.5 kg/30 lb	7.3 kg/16 lb
Water-filled	10 kg/22 lb	27.3 kg/60 lb	18.5 kg/41 lb	9.8 kg/21.5 lb

Part Numbers

- PA037xA** Nextel-insulated thermocouple, 3–6 m/10–20 ft
PA071x 1.6-mm-diameter mineral-insulated thermocouple, 3–6 m/10–20 ft
SW522xA Insight Lite software

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