Thermal Profiling Systems

Contact Firing System for Solar Cell Manufacture

PhoenixTM Thermal Profiling Systems are built for specific applications within a broad range of industrial processes, and care has to be taken in the design of the system to ensure all the requirements of the process are met. The paint finishing industry, for example, requires the protective thermal barrier to be free of all traces of silicone. In the heat treatment industry, profiling systems must be designed to operate in harsh furnace environments and to resist high rates of heating and cooling with minimum distortion.

All industrial processes requiring thermal profiling call for critical knowledge of both the process itself and how conditions within it can affect the performance of the profiling system components. PhoenixTM personnel have worked with these industries for many years and their experience is translated into the superior design of their thermal profiling systems for all industrial applications.

Contact Firing System

The contact firing process creates the connection between the silver contacts and the silicon cell. If the time/temperature curve is not correct then the resistance at this point will be affected and therefore the overall efficiency of the cell. This is a fast process comprising several critical stages including a burnout phase, a high temperature firing phase and a cooling phase. 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 1 Kg, the PhoenixTM system is less than 75% of the mass of major competitive systems.
PTM Contact Firing System

System Components:
- 6 channel low profile data logger with fast data collection rate
- System mass 910 g, less than 75% mass of major competitive system
- Ultra low profile thermal barrier with magnetic closure system
- Full analysis software package
- Low thermal mass mineral insulated (MI) thermocouples
- Thermocouple clamp to attach the probes to the PV cell

DATA LOGGER
Model Number: PTM2-006
No. of channels: 6
Thermocouple types: K
Measuring range: -150 to 1350°C
Accuracy: ±1.0°C
Resolution: 0.02°C
Memory total: 65,000 data points NVM
Max. operating temp: +85°C
Sampling interval: Adjustable 0.2s to 1 hour
Length: 234 mm
Width: 50 mm
Height: 9.5 mm
Weight: 150 gm

THERMAL BARRIER
Model Number: TS01-019
Suitable Data Logger: PTM2-006
Suitable Heat Sink: N/A
Thermal Duration at:
- 300°C: 5 minutes
- 400°C: 3 minutes
- 600°C: 2 minutes
- 800°C: 1 minute
- 1000°C: 30 seconds
Length: 312 mm
Width: 107 mm
Height: 19 mm
Weight: 760 g

SOFTWARE
Thermal View (basic package): SW05-ENG
Thermal View Plus (full package): SW15-ENG

THERMOCOUPLES
Type K, 0.5 mm mineral insulated thermocouple.
Inconel sheathed, terminating in miniature plug.
300mm long: TC20-030-K, 500mm long: TC20-050-K
Thermocouple clamp: AC40-007

Note: As products are continually improved, specifications may be changed without prior notice.

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