

DATAPAQ® SolarPaq

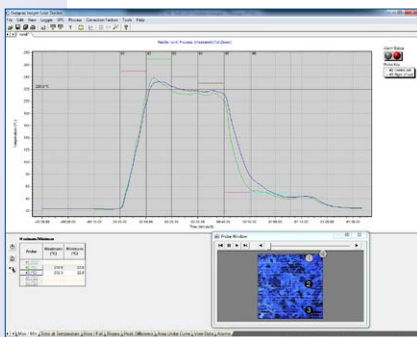
One Profiling System for Both Contact Drying and Firing Processes

The DATAPAQ SolarPaq is the most widely used profiling system in the solar photovoltaic (PV) manufacturing industry and is accepted as the standard in the contact firing process. Building on this experience, we designed a logger only 9mm (0.35in) high that can be used to measure temperature profiles from within the smallest of drying ovens. The same logger can now be combined with an ultra-low height thermal barrier and used to profile the contact firing process.

Obtaining optimum performance from a silicon PV cell depends critically on the contact drying and firing processes. Incorrect time/temperature profiles will affect contact resistance, as well as fill factor, and directly reduce production yields. These processes are conducted in ovens optimized for low energy use that have low entrance and exit heights. This means that only the smallest profiling system will pass through and record the full temperature profile.



SolarPaq system



Solar Insight software

A COMPLETE SOLUTION

This unique system extends the comprehensive SolarPaq product range so that all thermal processes in a typical PV production line can be profiled using DATAPAQ systems – from anti-reflective coating through paste drying, contact firing and finally, module lamination. DATAPAQ Insight™ software has many process-specific analysis tools that quickly present the data in such a way, that a full picture of the process is built up in seconds, saving time in process setup, process optimizing and day-to-day checking.

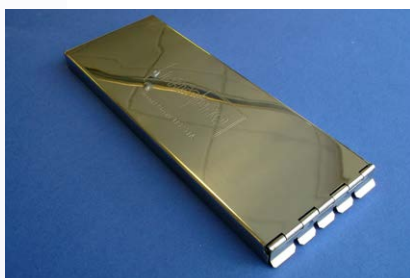
BENEFITS

- Ensure maximum process throughput without compromising quality
- Optimize final product efficiency through correct drying and firing of every cell
- Quickly plot changes in oven performance, enabling rapid problem resolution and minimum downtime

SOLAR INSIGHT™ SOFTWARE

This all new software has been designed specifically for use within the PV solar industry and contains many process-specific analysis displays. Wizards guide the users step-by-step to quickly obtain the data and analysis of the required results. This ensures that both experienced and novice users can obtain maximum benefit in the shortest possible time.

TECHNICAL SPECIFICATIONS



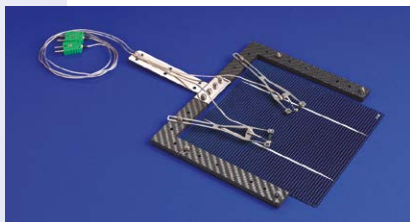
Thermal barrier TB7237



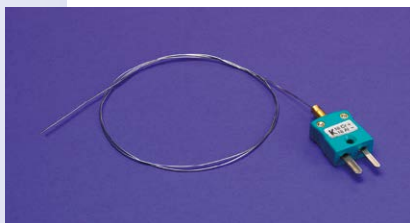
Data logger Q18



Thermocouple PA0061



Probe clamp PA2100



Thermocouple PA1571

THERMAL BARRIER

| | | | |
|-------------------------|---|------------------|------------------|
| Model number | TB7237 | | |
| Dimensions HxWxL | 16 × 91 × 250 mm (0.63 × 3.58 × 9.84 in) | | |
| Weight | 500g | | |
| Thermal duration | 400 °C (752 °F) | 600 °C (1112 °F) | 800 °C (1472 °F) |
| Duration (min) | 4.0 | 1.0 | 0.75 |
| Material | All stainless steel construction with polished outer surface and textured inner surface to maximize thermal protection in a small package | | |

DATA LOGGER

The Q18 features rugged, reliable and accurate data acquisition circuits, clear status indicators and an intelligent battery management system.

The DQ1840 is housed in a rugged, machined stainless steel case. It is designed to reflect heat energy from IR heaters and any energy that is absorbed slowly heats up the high mass case that protects the electronics from the environment. The status indicators and buttons are all recessed to protect them from direct heating and minimize heat entry to the logger circuits. The logger can be used in processes of 2 to 3 minutes and up to 300 °C (572 °F) without the need for additional thermal protection. It is ideally suited to meet the needs of the drying process used in many PV manufacturing lines. To profile the contact firing process, the DQ1840 must be housed within the extra protection offered by the TB7237 thermal barrier.

| | |
|---|---|
| Model number | DQ1840 |
| Number of channels | 4 |
| Sampling interval | 0.05 seconds to 10 minutes |
| Accuracy | ±0.5 °C (±1 °F) |
| Resolution | 0.1 °C (0.2 °F) |
| Maximum internal operating temperature | 85 °C (185 °F) |
| Temperature range | -150 °C to 1370 °C (-238 °F to 2498 °F) |
| Memory | 32,000 readings per channel (4 channels active) |
| Data collection start | Start/stop buttons, time or temperature trigger |
| Battery | NiMH rechargeable with fast recharge |
| Thermocouples | Type K |

PROBE CLAMPS

The probe clamp securely holds the cell, so the associated custom-designed probes can easily be slid into position.

PA2100 is for use with 156 mm (6.1 in) or 125 mm (4.9 in) cells on flat belts or those with standoffs. PA2110 has an outer width of 156 mm (6.1 in) and is designed for use specifically in furnaces with edge cell supports, ensuring the system rides at the correct height.

RECOMMENDED THERMOCOUPLES

| Model | Length | Description |
|---------------|-------------------|--|
| PA0061 | 1000 mm (3.25 ft) | PTFE insulated cable 0 to 265°C (32°F to 509°F) Max. fast response. These probes comply with ANSI MC96.1 special limits of error. |
| PA1570 | 300 mm (1 ft) | Ultra fine, mineral insulated type K thermocouples, diameter 0.5 mm (0.02 in). These thermocouples comply with BSEN 60584.2 Class 1. |
| PA1571 | 600 mm (2 ft) | |
| PA1144 | 500 mm (1.6 ft) | |
| PA1145 | 1000 mm (3.25 ft) | Fine wire type K thermocouples with flexible binder free fiber insulation. Hot junction flattened for improved thermal contact with the cell. Complies with ANSI MC96.1 Special Limits of Error. |

Fluke Process Instruments

EMEA

Cambridge, UK
Tel: +44 1223 652 400
sales@flukeprocessinstruments.co.uk

Americas

Derry, NH USA
Tel: +1 603 837 2680
sales@flukeprocessinstruments.com

China

Beijing, China
Tel: +86 10 6438 4691
sales@flukeprocessinstruments.com.cn

Asia East and South

India Tel: +91 22 2920 7691
Singapore Tel: +65 6799 5596
sales.asia@flukeprocessinstruments.com

Worldwide Service

Fluke Process Instruments offers services, including repair and calibration. For more information, contact your local office.

www.flukeprocessinstruments.com

© 2016 Fluke Process Instruments
Specifications subject to change without notice.
9/2016 DS_SolarPac one system, Rev. A

