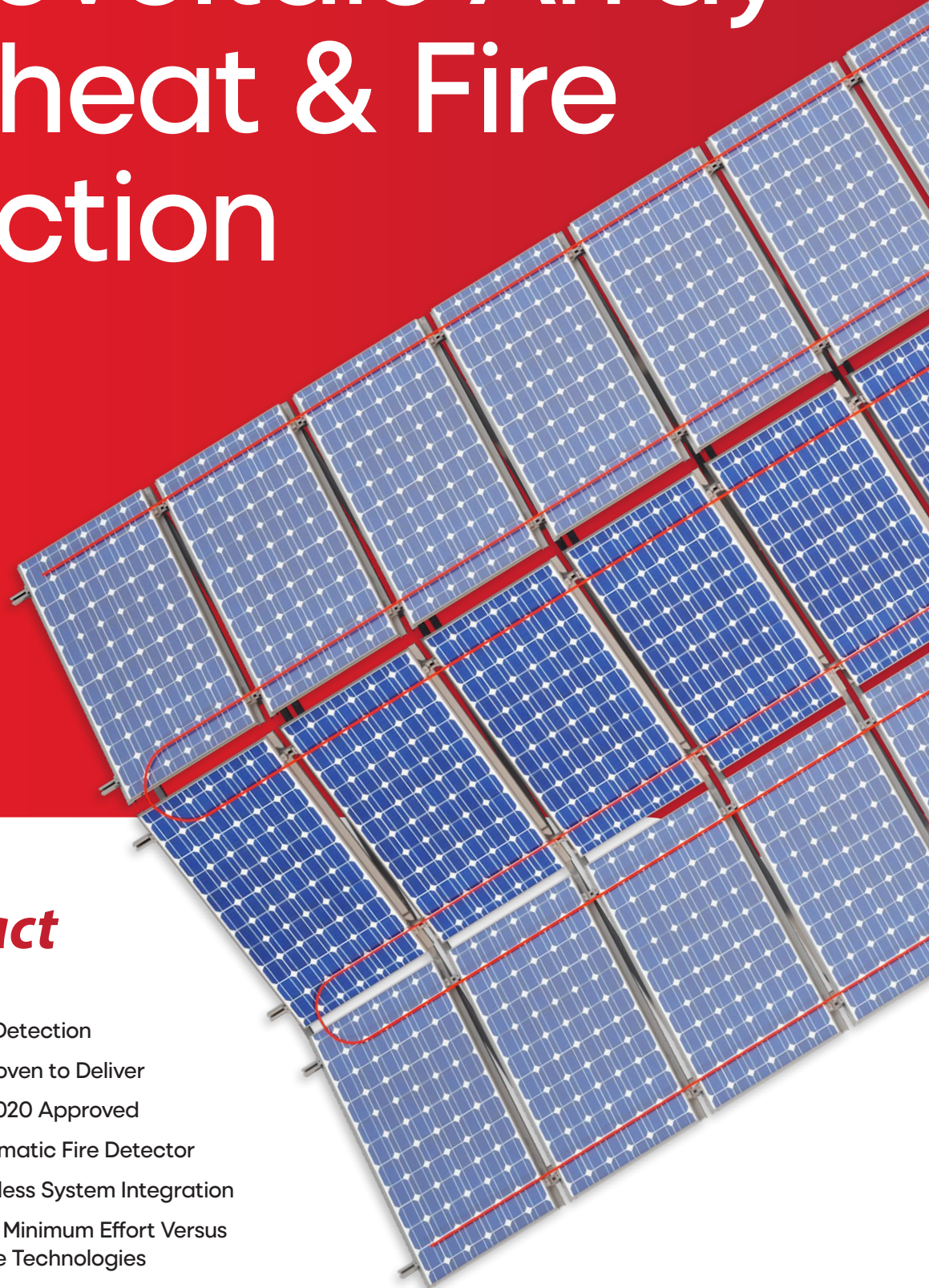


Photovoltaic Array Overheat & Fire Detection



- Early Photovoltaic-Fire Detection
- Designed to Perform, Proven to Deliver
- Fully EN54-28:2015+A1:2020 Approved
- UL 521 Listed Heat-Automatic Fire Detector
- Highly Scalable & Seamless System Integration
- Low Installation Costs & Minimum Effort Versus Conventional Alternative Technologies

The Complete Solution, Designed to Perform, Proven to Deliver

The Photovoltaic Rise: The Need for Safe Growth

Solar energy is rapidly gaining popularity worldwide as a clean, increasingly affordable renewable energy source. Photovoltaic (PV) systems are commonly installed on rooftops, integrated into building structures, or deployed in ground-mounted arrays – particularly across commercial and industrial sites. However, like any electrical system, solar PV installations carry inherent fire risks.

Defective panels, overheated cables, or faulty plugs can lead to system failure, reduced efficiency, or, in severe cases, electrical fires. These risks are especially critical in high-value environments such as data centers, where rooftop fires can damage sensitive equipment and cause major financial losses.

Compounding the danger, rooftop fires present unique challenges for emergency responders – allowing the fire more time to develop.

As the adoption of solar continues to grow, ensuring effective fire detection and risk mitigation is essential to protect both property and people.

Common PV Fire Safety Risks

- **Wiring and Electrical Failures:** Poor installation, damaged cables, or loose connections can lead to arcing, short circuits, and overheating
- **Inverter Malfunctions:** Inverters, responsible for converting DC electricity to AC, can become ignition points if they overheat or operate with faults
- **Battery Storage Systems:** Batteries can experience thermal runaway, electrical shorts, or electrolyte leakage
- **Overheating and Panel Hotspots:** Dust, debris, or shading that disrupts panel performance can cause localised temperature spikes
- **Environmental Factors:** Extreme heat, lightning storms, and vegetation debris can increase the risk of external ignition



The Solution: ProReact Linear Heat Detection

Thermocable's ProReact Temperature Sensing LHD systems are engineered to meet fire detection challenges of solar panel installations, delivering reliable protection across the entire photovoltaic array – including associated cabling, inverters, and battery storage systems.

Its effectiveness has been proven in a pioneering independent study, demonstrating its capability to detect early overheating and fire risks in real-world solar PV applications.

Designed to Perform, Proven To Deliver

Linear Heat Detection (LHD) systems have demonstrated high effectiveness in the early detection of fires in (PV) installations. In a series of tests – accounting for variations in roof slope, ignition type and location, module layout, and detector placement – LHD systems consistently detected fires in under one minute. The fastest response **occurred in just 11 seconds**, underscoring LHD's rapid detection capability.

These findings affirm the reliability of LHD for monitoring beneath and around solar panels, with the globally recognised fire safety research institution concluding that "LHD systems can support early warning detection of a PV-related fire" [ZAG Department for Fire-Safe Sustainable Built Environment, Section for Fire Research and Innovation, About using Linear Heat Detection systems in PV-related fires, Report No. 366/25-560-1-EN, Jul '25.]



Need assistance?

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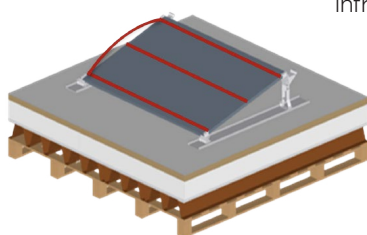
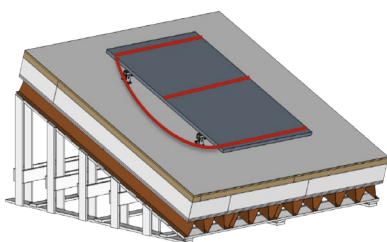
Installation Guidance for Photovoltaic Applications

For photovoltaic (PV) installations, we recommend positioning the Linear Heat Detection (LHD) cable along the longitudinal support bars of the metal framework used to mount and angle the solar panels. These structural elements, typically found beneath the panels, provide ideal locations for securing the detection cable while ensuring optimal fire detection coverage.

When installing a single run, the cable should be mounted along the highest longitudinal support bars. This placement takes advantage of the natural chimney effect, where heat rises and accumulates beneath the pitched panels. By situating the cable above the likely ignition point, it will detect abnormal heat or fire events early and accurately.

For enhanced protection, or added redundancy, a double run configuration is recommended. This involves installing one cable along the highest support bars and a second along the lowest support bars. The dual-level approach offers comprehensive vertical coverage and increases the speed and reliability of fire detection across the entire solar PV installation area.

To secure the cable, we recommend using our P-Clips or J-Clips, which are designed to mount directly onto the support bars, spaced at regular intervals of 0.5 to 1.0 meters to ensure the cable remains firmly in place and maintains consistent proximity to potential heat sources. It is also important not to over-tension the cable during installation. The cable should have a slight amount of give to accommodate thermal movement caused by temperature fluctuations, which helps preserve long-term performance.



Certified and Scalable Photovoltaic Fire Detection

Thermocable offers a range of ProReact Temperature Sensing LHD systems solutions tailored for photovoltaic (PV) installations, designed to perform reliably in the challenging conditions typical of outdoor solar environments. These systems meet a wide array of international safety and performance standards, including **EN54-28**, **VdS**, **CE marking**, **FM Approval**, and **UL 521 certification** – ensuring compliance and dependable performance across global markets.

Coverage & Scalability

Each detection zone can cover up to 3,000 metres, depending on the system type and configuration, offering a highly adaptable solution for both compact and large-scale PV installations. With multi-zone capability, the system allows for tailored protection across multiple sections or strings of solar arrays, ensuring comprehensive coverage even in distributed or remote layouts.

Designed with plug-and-play functionality, the system enables fast, straightforward installation with minimal need for specialist tools or extensive infrastructure changes – reducing both on-site time and disruption during deployment.

Seamless System Integration

Integration is seamless, featuring dry contact signal outputs that can be connected directly to a conventional fire alarm control panel, or interfaced through an independent I/O module to ensure full compatibility with addressable fire detection systems. This flexibility enables straightforward incorporation into both new installations and retrofit projects, allowing for smooth integration with existing fire safety infrastructure.

About us

Founded in 1963 as a manufacturer of heating cables for the refrigeration and electric blanket markets, Thermocable has continued to innovate and develop, becoming the world leading manufacturer of linear detection cable and monitoring systems.

This transformation has been driven by our boundless desire to problem solve, as well as our fundamental company values, enabling us to supply to multi-disciplinary customers on a global scale.

Recognising our commitment to making the world a safer place, Thermocable was acquired by the renowned FTSE 100 plc, Halma,

in February 2023. As a global group of life-saving technology companies, Halma companies strive to grow a safer, cleaner and healthier future for everyone.

Operating within the Apollo Group, we continue to innovate in high quality, certified linear detection products, designed to raise the bar in the industry.

As an ISO 9001:2015 accredited, internationally qualified category solutions provider, Thermocable offers a vertically integrated lean approach through design, development and manufacturing, providing reassurance of a flexible and responsive approach to our customer needs.

Our accreditations

