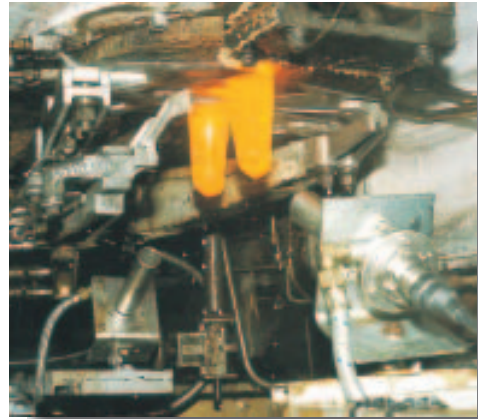


LAND



NON-CONTACT TEMPERATURE MEASUREMENT SOLUTIONS

An **AMETEK**® Company



SYSTEM 4

Radiation Thermometers

A complete family of non-contact temperature monitoring systems



System 4 is a complete family of non contact temperature monitoring systems providing flexibility and choice in both performance and cost to meet most measurement requirements within the range 30 to 4700°F/0 to 2600 °C.

KEY FEATURES

- Fully interchangeable thermometers and processors.
- Wide range of thermometers.
- Choice of digital and analog processors.
- Wide range of highly effective mounting accessories.
- Rugged, flexible, modular design.
- Accurate, reliable, drift-free measurement.
- Industry standard outputs.

LANDMARK® GRAPHIC is a high precision, intelligent digital processor with graphical display. The multiple channel version can be configured with up to four different thermometers.

A complete range of thermometer signal conditioning functions is available, including: peak picker, averager, track and hold, high/low alarms and 0 or 4 to 20mA and 1mV/° outputs from each thermometer channel.

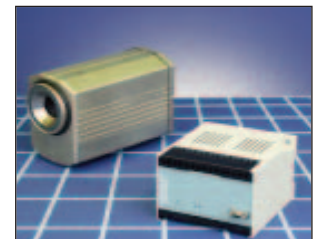
Temperature is displayed as a deviation chart, line chart, numeric or mixed display. Optional serial communications and maths function are available.

LANDMARK CLASSIC

LANDMARK® CLASSIC is a modular, analog signal processor, providing a large digital display of temperature, emissivity/non greyness and alarm settings, and a 4 to 20 mA output. Optional peak picker or averager time function and alarm modules maximize the system capabilities and flexibility.

LANDMARKTECHNIC

LANDMARK®TECHNIC is a high precision, DIN-rail mounted, intelligent digital processor. Features include; adjustable emissivity/non-greyness, peak picker, averager, track and hold, alarm and 4 to 20mA outputs, and RS232C



Landmark Technic

serial communications for set up via a PC.

LANDMARK Profibus

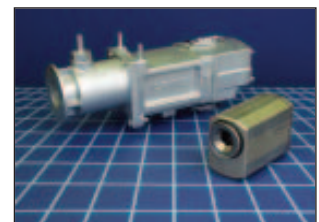
LANDMARK® for Profibus is a high precision, digital, DIN-rail mounted signal processing unit, providing economic integration of any System 4 thermometer within a Profibus network - ideal for both OEM and end user applications.

LANDMARK BASIC

LANDMARK® BASIC is a simple, DIN-rail mounted, analog processor designed for system builders and OEM's. Features include; adjustable emissivity/non-greyness, averager and peak picker. Optional accessories include: a DIN-rail mounted power supply unit and indicator.

SYSTEM 4 THERMOMETERS

A wide range of single wavelength, multi-wavelength and Fibroptic thermometers provides high precision measurement from 30 to 4700°F/0 to 2600 °C. There is a choice of optical systems; focusable, standard and short focus with thru-the-lens sighting or flexible fiber optics. A 6° field of view with a circular graticule defines the measurement spot. A choice of optic head, light guide, and laser targeting option are available with Fibroptic thermometers.





Stand Alone Thermometers for process control applications



UNO stand alone thermometers are designed for OEM's, system builders/integrators and end-users within the temperature range 150 to 4700°F/50 to 2600 °C.

UNO thermometers have adjustable emissivity/non-greyness and a 4 to 20 mA linear output. Peak picker and averager time functions are built-in.

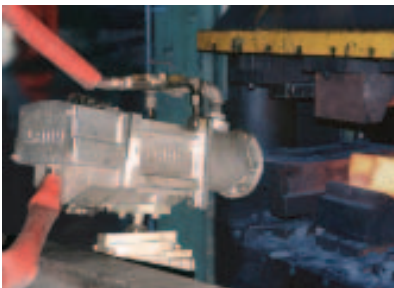
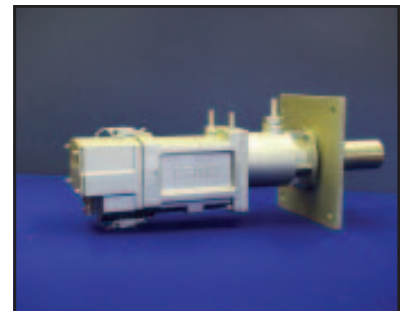
There is a choice of single wavelength, ratio and Fibroptic thermometers, with a selection of measurement spans and operating wavebands to ensure optimum accuracy.

Choice of optical systems include; focusable, standard variable and short focus with through-the-lens sighting, or flexible fiber optics.

The Fibroptic thermometers offer a choice of optic head, light guides and a laser targeting option.

Mountings and Accessories for System 4 & Uno Thermometers

An extensive range of mounting and protection accessories includes: air/water cooled thermometer jacket, sealed end cap with prewired connector, air purge, and a variety of sighting tubes and mounting assemblies.





The new generation of intelligent, high precision digital infrared thermometers



SOLOnet is the world's first compact web browser enabled infrared thermometer system offering the user maximum flexibility and connectivity. With SOLOnet the user can configure the thermometer system to suit his individual measurement and control requirements.

Live temperature data is displayed on a PC or computer system via the web browser, together with related measurement parameters for ease of configuration. The parameters are easily adjusted and saved using drop-down menus or text windows.

Typically, end users will appreciate the convenience of configuring the thermometer via a standard web browser, such as Internet Explorer or Netscape Navigator. Advanced users and OEMs will benefit from a lower-level interface with direct messaging via Ethernet or addressable RS485.

There are four different thermometer types with choice of operating wavelength, optical variants, laser alignment and measurement ranges to suit the chosen application within the operating range 200 to 1750°C/ 392 to 3182°F. The measurement span can be selected within the thermometer range, with the minimum measurement span being 50°C/ 90°F.



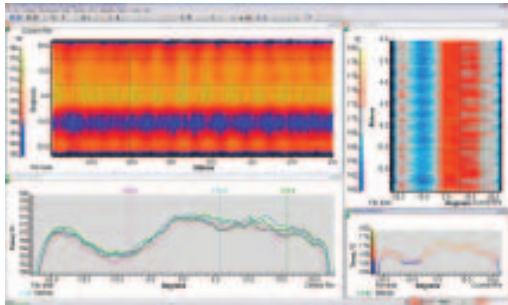
Applications

The SOLOnet series of thermometers are suitable for a wide range of manufacturing and processing industries such as: ferrous and non-ferrous metals, glass, minerals, ceramics, chemicals, electronics and research and development.

Model	Temperature	Typical applications
SN11	550 to 1750°C/ 1022 to 3182°F	Heat treatment, forging, welding, induction heating, soldering, hardening, chain annealing, ceramics, glass gobs, sub surface glass
SN21	250 to 1300°C/ 482 to 2372°F	Heat treatment, preheating, induction heating, welding, hardening, annealing, non ferrous metals moulding, aluminium welding, glass moulds
SN51	200 to 1100°C/ 392 to 2012°F	Toughening/tempering, annealing, automotive glass, architectural/decorative glass, glass containers, forming, stem/base seal, pinch seal, Sealex machine, phosphor coating, curing exit
SNR1	700 to 1750°C/ 1292 to 3182°F	Forging, welding, induction heating, soldering, hardening, chain annealing, heat treating, pipe bending, precious metals melting, automotive components, lamp wire draw and anneal, lamp black glass drop

LANDSCAN

Process thermal images and temperature profiles for continuous process monitoring and quality control



The compact LSP infrared linescanners provide affordable, highly accurate process imaging and temperature measurement in a wide range of applications from 20 to 1400 °C / 68 to 2552 °F.

There is a choice of two LANDSCAN Control processors to provide an interface between the LANDSCAN Head and either a customer process control system or a LAND Data Server running the LANDSCAN Windows Control & Analyse software

APPLICATIONS

- **Hot Spot Detection** - cement (kiln refractory), conveyors, torpedo cars, ladles, non-wovens, coating processes (supercalenders)
- **Product Quality** - float glass, automotive glass, holloware, forming, tempering, annealing, hot strip and plate mills, rod and wire, continuous casting, galvanizing, gavanneal
- **Plastics** - thermoforming, package sealing

KEY FEATURES

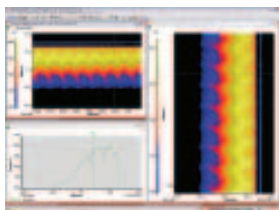
- Temperature measurement from 20 to 1400 °C / 68 to 2552 °F
- Choice of 10 scanner heads for specific applications
- Adjustable scan speed to suit process requirements - 10 up to 100 Hz
- Fast measurement response - less than 10µs in most applications
- Compact size - ideally suited to restricted access locations
- Laser alignment to ensure accurate profiling
- Durable sapphire window on all low temperature models
- Wide scan angle up to 80°
- Variable focus on the LSP10, LSP20 and LSP21 models
- Single cable connection between scanner and processor
- Choice of signal processing units

Designed for Industrial Environments

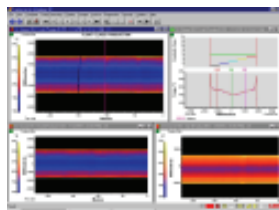
The LSP series head is extremely compact and has a minimized depth and base 'footprint' for installation in restricted spaces. A built-in laser targeting system aids alignment on to the target. A scan speed of 100 Hz can tackle even the fastest moving products; enabling high resolution, temperature profile information to be produced.

Signal Processing and Analysis Software

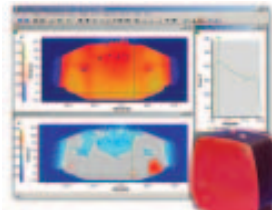
The scanner head connects directly to a processor (choice of 2), via a single cable. Two control processors are available providing both serial and Ethernet outputs of temperature data. These processors can interface directly to a local process control system or a LAND data server running Landscan Windows Control and Analyse (WCA) software. The Landscan Windows Control and Analyse (WCA) software provides detailed temperature measurement information, analysis tools and product storage for further investigation and quality control purposes.



Typical Steel Concast profile



Typical Glass Floatline profile



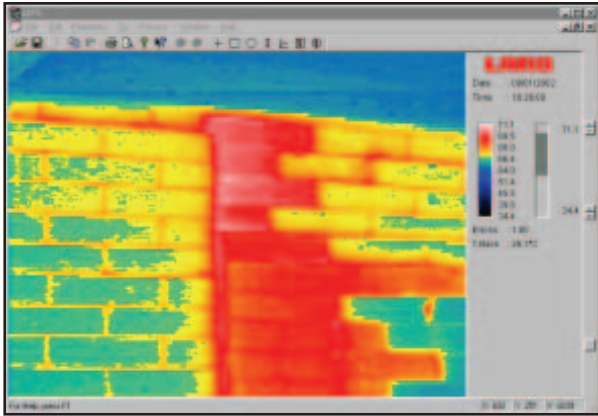
Typical Torpedo car profile



Typical LSP installation

FTI

Fixed, On-Line Thermal Imaging System with thermal image software processing systems - LIPS



On-line and transportable thermal imaging systems are purpose designed for real-time thermal imaging of industrial process, plant, buildings and electrical installations.

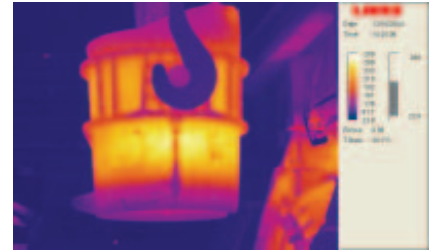
Fixed thermal imaging systems produce accurate, drift-free radiometric imaging and temperature measurement from -5 to 3600°F/-20 to 2000°C.

Fixed thermal imaging systems are ruggedly built, sealed against dust and water; and is available with an extensive range of mounting accessories - pan and tilt, protective housing, air purge, and water cooling jackets to provide protection in the most hostile environments.

They can be remotely controlled through a digital communication link from a PC with **LIPS** thermal imaging software, or by a control keypad. The new fast memory option allows sequences of up to 256 images to be saved in memory.

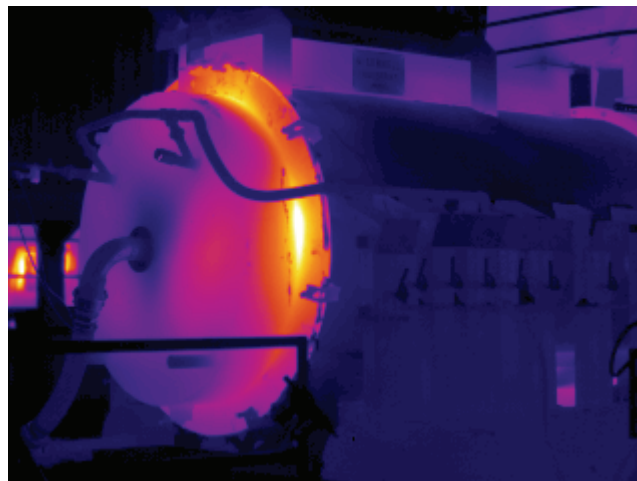
LAND image processing software systems - **LIPS F** (on-line, fixed), **LIPST** (transportable) and the new **LIPS FT** (full version) provide comprehensive temperature analysis and trending on either live or stored images.

LIPS provides extensive image processing - full colour display with choice of five palettes, zoom, and noise filtering, alarms, exchange of data with other Microsoft Windows® applications, and full remote control of several thermal imagers.



APPLICATIONS

- Aluminum/Strip Rolling and Coiling
- Blast Furnace Tapping
- Bulk Materials, Silos & Storage
- Plastic Welding - Quality Sealing
- Auto Glass Heater Grid Inspection
- Insulated Door/window Manufacturing



CYCLOPS

Portable Infrared Thermometers



Cyclops 100 is a general purpose, high precision, portable infrared thermometer, designed for accurate measurement of temperatures in the range 1022 to 5432°F.

Cyclops 055 Meltmaster is a dedicated high precision, portable infrared thermometer, designed for accurate measurement of liquid metal temperatures in the range 1832 to 3632 °F.

The LAND Cyclops family of high precision thermometers measure spot temperatures in the range -50 to 5800 °F/-50 to 3200 °C. Features include: precise view of target spot and display of temperature in the viewfinder and choice of operating modes.

Cyclops are used in industries such as metals, glass, minerals and chemicals, for processing monitoring, quality control, research and development, and preventive maintenance.

DL - 1000 Data Logging System

*compatible with the Cyclops 100, 100B and Meltmaster**

- An HP iPAQ Pocket PC
- Companion Software CD
- Cyclops DL-1000 Data Logging Software
- Thermometer to PocketPC interface cable

** Compatible with all older systems.*



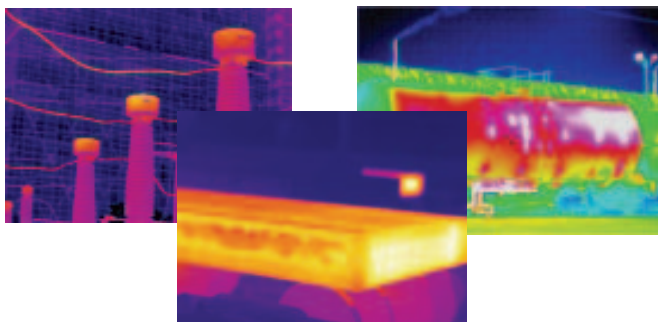
TP8 / M3 / M4 / Ti8 I4

Portable Thermal Imagers

A range of high performance thermal imaging with accurate temperature measurement. Used with image processing and report writing software, it answers the maintenance engineer's needs for affordable thermal imaging.

Advances in optical and electronic techniques have been used to create a high definition thermal image which is displayed on an LCD screen - which can be viewed in the brightest ambient light, including sunlight.

Thermal images are captured, stored and transferred to a PC.



TYPICAL APPLICATIONS

ELECTRICAL

- Detection of faulty connections
- Integrity of insulation
- Operation of high voltage systems

MECHANICAL

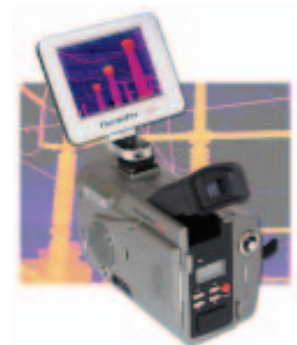
- Bearing performance
- Alignment of couplings

THERMAL

- Insulation
- Blockages in pipes
- Operation of radiation and convection heaters

BUILDINGS

- Roof leaks
- Heating systems



CALIBRATION

LABORATORY

The LAND Instruments International Calibration laboratory is accredited to ISO 17025 and provides quality support and full calibration service to customers.

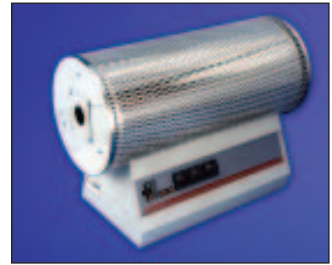
Established in 1970, when it became the first to issue calibration certificates for thermal measurements, it is now one of the leading industrial temperature calibration laboratories in the world.

CERTIFICATION

LAND offer a certification service for industrial temperature sensors including radiation thermometers, radiometers and thermal imagers.

LAND can issue a certificate for a calibrated instrument traceable to the National Institute of Standards and Technology (NIST) in North America.

For the UK and rest of the world LAND can issue a UKAS Calibration Certificate.



A wide range of Primary and Reference Standard calibration sources is available:

Model	Temperature Range	Standard
LANDCAL P80P	-15 to 170°F/-10 to 75°C	Primary
LANDCAL P550P	120 to 1020°F/50 to 550°C	Primary
LANDCAL P1200B	300 to 2000°F/150 to 1100°C	Primary
LANDCAL P1600B	1100 to 2700°F/600 to 1500°C	Primary
LANDCAL R1200P	650 to 2100°F/350 to 1150°C	Reference
LANDCAL R1500T	950 to 2750°F/500 to 1500°C	Reference

APPLICATION DEDICATED THERMOMETER SYSTEMS

Application dedicated systems are designed to solve specific temperature measurement problems, such as:

- VDT and DTT - Communications fiber
- FTS - Furnace temperatures
- FLT5A - Float line temperatures
- AET/AQT/ABT - Aluminum extrusion
- CDA - Waste incinerators
- Model FG and GMT - Container glass
- AST - Hot rolling aluminum strip
- GST - Galvanneal/galvanizing strip
- Roadstone Thermometer - Asphalt temperature
- Understrip Thermometer System - Hot rolling mill



APPLICATIONS

LAND has been solving temperature measurement problems for over fifty years in many different industries, some of which are listed below:

- | | |
|------------------------------|-------------------|
| • Iron and Steel | • Petrochemical |
| • Non-ferrous Metals | • Heat Treatment |
| • Power & Utilities | • Glass |
| • Plastics | • Aerospace |
| • Rubber | • Minerals |
| • Electronics | • Textiles |
| • Paper | • Pharmaceuticals |
| • Medical Device Manufacture | • Food |

For further information or free advice on specific temperature measurement solutions within these or any other industry, contact your nearest Land office.

The Quality Management System of Land Instruments International is approved to BS EN ISO9001:2000 for the design and manufacture, stockholding, in-house repair and site servicing of non contact temperature measuring instrumentation. Associated software designed and developed in accordance with TickIT.

Calibration certificates are available from our UKAS accredited Calibration Laboratory No. 0034. The Land calibration laboratory complies with the requirements of the international standard BS EN ISO/IEC 17025.

LAND

Non-Contact Temperature Measurement Solutions

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