A series of high precision, high temperature linescanner heads
Infrared linescanning and temperature measurement with high accuracy, repeatability and reliability equivalent to the best on-line industrial thermometers.

New Powerful Windows-based Landscan WCA processing software.

A range of signal processors designed to interface with process control computers and for distributed preprocessing of data within the Landscan Control & Analyse (WCA) system.

**LANDSCAN LS SERIES SENSING HEADS**

LANDSCAN LS series linescanners use an optically scanned infrared detector to generate detailed, accurate temperature profile information, with excellent accuracy (typically ±5°C in the hot mill).

The linescan thermometer views the target using a precision balanced, rotating mirror assembly. Built-in processing provides emissivity data, timing signals and converts the raw temperature data into a linear 4 to 20mA output signal equivalent to the target temperature.

**FEATURES**

- Choice of head type for different applications.
- Choice of six standard optical variants for optimum optical resolution of the target surface (other variants available to special order).
- Reliable continuous operation (typical MTBF (scanning motor) > 50 000 hours).
- Linear 4 to 20mA outputs (profile and peak).
- Excellent optical resolution imaging with 60° or 80° scan angles.
- Three adjustable scan rate ranges of 5 to 25, 10 to 50 or 20 to 100 scans/sec.
- Robust, modular construction for hostile measurement locations. Internal temperature monitoring is available as an option.
- Local or remote adjustment of both scan speed and emissivity.
- The industry’s most extensive range of mounting and sighting accessories.

<table>
<thead>
<tr>
<th>Headtype (60° scan angle, 5 to 25Hz scan rate)</th>
<th>Range</th>
<th>Optical resolution (Static to 98% radiance)</th>
<th>Optical resolution (10Hz scanning to 98% radiance)</th>
<th>Optical resolution (10Hz scanning to 90% radiance)</th>
<th>Availability of faster scan rates (Hz) 10 to 50</th>
<th>Availability of faster scan rates (Hz) 20 to 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS1</td>
<td>600 to 1200°C/1100 to 2200°F</td>
<td>300:1</td>
<td>280:1</td>
<td>370:1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS1</td>
<td>700 to 1300°C/1300 to 2400°F</td>
<td>380:1</td>
<td>330:1</td>
<td>420:1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS1</td>
<td>800 to 1400°C/1500 to 2550°F</td>
<td>540:1</td>
<td>440:1</td>
<td>550:1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS2</td>
<td>300 to 900°C/600 to 1650°F</td>
<td>300:1</td>
<td>260:1</td>
<td>350:1</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>LS2</td>
<td>350 to 1000°C/650 to 1800°F</td>
<td>380:1</td>
<td>330:1</td>
<td>420:1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS2</td>
<td>500 to 1100°C/950 to 2000°F</td>
<td>540:1</td>
<td>440:1</td>
<td>550:1</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Examples of Landscan Heads available to special order.

Internal ambient temperature sensor and 80° scan angle options available on all Landscan heads. Other special temperature ranges, focus distances, etc. are often available upon request. Please contact your local LAND dealer for full details.

Note: to convert resolution figure ‘n’:1 to mrad, calculate 1000/‘n’ e.g. 300:1 = 1000/300mrad = 3.3mrad
Each linescanner head type is available in six focal variants, ensuring the best optical resolution in any given application. The linescanner head requirement for a particular application is dependent upon the temperature measurement range, operating waveband and target type.

ACCESSORIES
A wide range of accessories is available:
- Laser alignment unit: accurately defines the scan plane.
- Quick release mounting plates: water-cooled and air purged (blower and compressed air versions) in 60° or 80° format.
- Special versions with embedded sighting windows for gas sealed applications.
- Rugged enclosures: providing superior environmental protection. Choice of standard and enhanced water cooled/gas sealed versions are available to suit the application.

LANDSCAN CONTROL SIGNAL PROCESSORS
The new Landscan Control processors (LSC-B and LSC-R) are 19in rack mount units and Landscan Control Compact (LSC-C) is an economic wall/back-of-panel mount unit, each providing serial and Ethernet outputs of temperature data. These processors can interface to local process control systems or Landscan Configuration Professional and Landscan WCA software.

Refer to the Landscan Processors brochure for further information on the choice of signal processors and options available.

PROCESS CONTROL
The outputs from the linescanner head are transmitted to a Landscan signal processor operating on the new Windows® based Landscan Control and Analyse (WCA) software system which provides an independent control loop element in process control applications.

Refer to the Landscan Software brochure for further information on Landscan Configuration Professional and Landscan WCA software.

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Auxiliary Lens</th>
<th>Focus Distance</th>
<th>Spot Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS101/111/211</td>
<td>AL1</td>
<td>300</td>
<td>1.1, 24.5, 71.2, 133.9, 212, 445</td>
</tr>
<tr>
<td>LS102/112/212</td>
<td>AL2</td>
<td>600</td>
<td>12.2, 21.1, 26.5, 59.3, 100, 222</td>
</tr>
<tr>
<td>LS103/113/213</td>
<td>AL3</td>
<td>1200</td>
<td>17.8, 13.2, 13.2, 41, 218, 43.7, 10</td>
</tr>
<tr>
<td>LS106/116/216</td>
<td>AL6</td>
<td>2000</td>
<td>19.8, 17.5, 12.9, 6.7, 20.8, 63</td>
</tr>
<tr>
<td>LS104/114/214</td>
<td>AL4</td>
<td>3000</td>
<td>21, 19.8, 17.4, 14.2, 10.0, 42.5</td>
</tr>
<tr>
<td>LS105/115/215</td>
<td>AL5</td>
<td>infinity</td>
<td>23, 24, 26, 28.8, 32, 42</td>
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</table>

SIGHTING - FOCUS VARIANTS

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Auxiliary Lens</th>
<th>Focus Distance (in)</th>
<th>Spot Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS101/111/211</td>
<td>AL1</td>
<td>11.8</td>
<td>0.04, 0.96, 2.80, 5.27, 8.34, 17.51</td>
</tr>
<tr>
<td>LS102/112/212</td>
<td>AL2</td>
<td>23.6</td>
<td>0.48, 0.08, 1.04, 2.33, 3.93, 8.74</td>
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<tr>
<td>LS103/113/213</td>
<td>AL3</td>
<td>47.2</td>
<td>0.70, 0.51, 0.16, 0.85, 1.72, 0.39</td>
</tr>
<tr>
<td>LS106/116/216</td>
<td>AL6</td>
<td>78.7</td>
<td>0.77, 0.68, 0.47, 0.26, 0.81, 2.48</td>
</tr>
<tr>
<td>LS104/114/214</td>
<td>AL4</td>
<td>118.1</td>
<td>0.82, 0.77, 0.68, 0.55, 0.39, 1.67</td>
</tr>
<tr>
<td>LS105/115/215</td>
<td>AL5</td>
<td>infinity</td>
<td>0.90, 0.94, 1.02, 1.13, 1.25, 1.65</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Linescanner Type</th>
<th>LS10</th>
<th>LS11</th>
<th>LS21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td></td>
<td>600 to 1200°C/1100 to 2200°F</td>
<td>800 to 1400°C/1500 to 2550°F</td>
<td>300 to 900°C/600 to 1650°F</td>
</tr>
<tr>
<td>Wavelength</td>
<td></td>
<td>1 µm</td>
<td>1.6 µm</td>
<td></td>
</tr>
<tr>
<td>Scan Angle</td>
<td></td>
<td>60° or 80°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emissivity</td>
<td></td>
<td>Adjustable 0.2 to 1.0 (internal switch) or via auxiliary 4 to 20mA (isolated) input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical Resolution</td>
<td></td>
<td>0.19° (300:1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focus Variants</td>
<td></td>
<td>300, 600, 1200, 2000, 3000, infinity (mm)/11.8, 23.6, 47.2, 78.7, 118.1, infinity (in)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Time</td>
<td></td>
<td>6µs exponential time constant</td>
<td>9µs exponential time constant</td>
<td></td>
</tr>
<tr>
<td>Scan Speed</td>
<td></td>
<td>60 to 150 scans/s (1800 to 9000°/s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td></td>
<td>1 - temperature profile; 4 to 20mA linear; 2 - temperature peak; 4 to 20mA linear; 3 - scan valid (synchronisation); TTL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Accuracy</td>
<td></td>
<td>±5°C / ±9°F (practical)</td>
<td></td>
<td></td>
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<tr>
<td>Operating Temperature</td>
<td></td>
<td>0 to 50°C/30 to 120°C</td>
<td>0 to 40°C/30 to 100°F</td>
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</tr>
<tr>
<td>Sealing</td>
<td></td>
<td>Designated to requirements of IP54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td></td>
<td>100 to 240V a.c. 50 to 60Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td>430 x 230 x 165mm/16.9 x 9.0 x 6.5in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>1.5kg/3.4lb (approx.)</td>
<td></td>
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<tr>
<td>EMC/Safety</td>
<td></td>
<td>EMC EN 50-081-1 (emissions) EN 50-082-2 (immunity); Safety EN 1010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For further information please contact the appropriate office or visit our website at: www.landinst.com

Land Instruments International
Infrared Temperature Measurement
Dronfield S18 1DJ, England
Telephone: (01246) 417691
Facsimile: (01246) 410585
Email: infrared.sales@landinst.com
Internet: www.landinst.com

Land Instruments Sarl
Infrared Temperature Measurement
7 Parc des Fontenelles
78870 Bailly, France
Telephone: (1) 34 62 05 45
Telecopie: (1) 30 56 51 12
Email: commercial@landinst.fr
Internet: www.landinst.fr

Land Instruments GmbH
Infrared Temperature Measurement
Fixheider Str. 6
51381 Leverkusen, Germany
Telefon: 02171/7673-0
Telefax: 02171/7673-9
Email: infrarot@landinst.de
Internet: www.landinst.de

Land Instruments Srl
Infrared Temperature Measurement
Via dell'Industria, 2
20037 Paderno Dugnano, Milano, Italy
Telefono: 02/99040423
Telefax: 02/99040418
Email: info@landinst.it
Internet: www.landinst.it

Land Instruments Ltd
Infrared Temperature Measurement
31-27 Toyotsuchou, Suita
Osaka 564-0051, Japan
Telephone: 06 6330 5153
Facsimile: 06 6330 5338
Email: info@landinst.jp
Internet: www.landinst.jp

Land Instruments International
Infrared Temperature Measurement
Av. Horacio 1132 Planta Baja "B"
Col. Polanco
11550 Mexico, D.F.
Telephone: 52 55 5281 1165
Facsimile: 52 55 5281 5364
Email: ventas@landinstruments.net
Internet: www.landinstruments.net

Distributor:

Land Instruments International
Infrared Temperature Measurement
Chile, 10-Edificio Madrid 92
28290 Las Matas, Madrid, Spain
Telephone: 91 630 0791
Facsimile: 91 630 2918
Email: land-infrared@landinst.es

Land Instruments International
Infrared Temperature Measurement
10 Friends Lane
Newtown, PA 18940-1804, USA
Telephone: (215) 504-8000
Facsimile: (215) 504-0879
Email: irsales@landinstruments.net
Internet: www.landinstruments.net

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