

LSP-HD

A FAMILY OF HIGH SPEED,
HIGH RESOLUTION NON-CONTACT
INFRARED LINESCANNERS



i 20 to 1700 °C / 68 to 3092 °F



LAND
AMETEK[®]
PROCESS & ANALYTICAL INSTRUMENTS

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QUALITY CUSTOMER SOLUTIONS

LSP-HD

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AMETEK LAND HAS BEEN MANUFACTURING PRECISION MEASURING EQUIPMENT SINCE 1947.

WE ARE SPECIALISTS IN NON-CONTACT TEMPERATURE MEASUREMENT
AND COMBUSTION MONITORING WITH APPLICATIONS ACROSS DIVERSE
INDUSTRIES SUCH AS STEEL AND GLASS MAKING, POWER GENERATION
AND CEMENT MANUFACTURE.

As part of AMETEK Process & Analytical Instruments Division since 2006,
our customers benefit from the worldwide AMETEK sales and service team.

A compact and sophisticated high accuracy infrared linescanner, LSP-HD offers highly accurate temperature measurements by producing advanced thermal images of moving processes and is available in a range of application-specific models.

Offering industry-leading scanning performance of 1000 samples even at scan speeds as high as 150 scans per second, LSP-HD sets a benchmark for process imaging definition, detecting even the smallest temperature differences for improved process control and consistent product quality.

Integration is simple: a single Ethernet data connection straight from the sensor head removes the requirement for a separate processor, while the adoption of Power over Ethernet technology (PoE) means all electrical connections are made using just one Ethernet cable. As the scanner requires just one cable installation costs are significantly reduced.

Backwards compatible with pre-existing AMETEK Land Infrared Linescanner installations, LSP-HD is available in a number of models, each optimised for a specific range of industrial applications in the glass, industrial processing and steel industries.

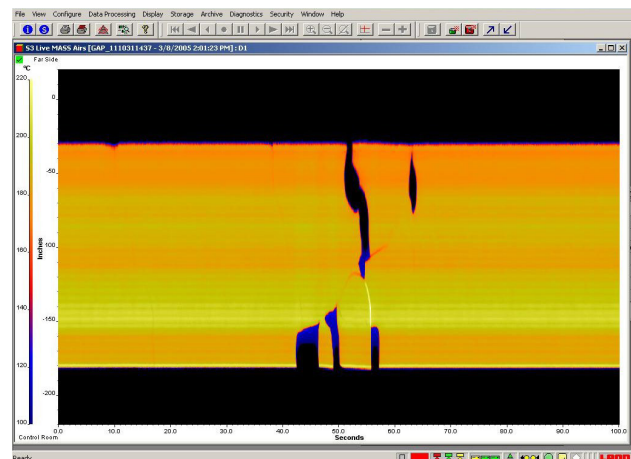
INDUSTRY LEADING 150 Hz SCAN SPEED, 1000 SAMPLES AT ALL SCAN FREQUENCIES

SCANNER BENEFITS

- High pixel resolution of 1000 samples per line.
- Complete coverage of the measure surface with overlapping pixels.
- Up to 150 Hz (lines per second) – creates a high homogeneous thermal image.
- With the one detector scanner technology, the repeatability of temperature reading of each pixel is $<0,5K$ – the differences measured are real temperature differences.

Especially in applications in which the relative temperature distribution of the measurement object has only very small tolerances, e. g. to reduce internal stress or thickness variations, it is of fundamental importance to ensure a highly homogeneous temperature profile detection in these processes.

THERMAL MAP OF GLASS RIBBON



Thermal map of the ribbon right after the Lehr at the Mass Airs location, showing the outstanding homogeneity of the scan profile.



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LSP-HD 10, 11 & 12

10: 600 to 1400 °C / 1112 to 2552 °F
11: 700 to 1500 °C / 1292 to 2732 °F
12: 800 to 1700 °C / 1472 to 3092 °F

Key Applications Continuous Caster, Reheat Furnace - Exit, Hot Strip Mill, Hot Plate Mill, Hot Beam Mill



LSP-HD 20, 21, 22 & 23

20: 200 to 850 °C / 392 to 1562 °F
21: 300 to 1000 °C / 572 to 1832 °F
22: 400 to 1200 °C / 752 to 2192 °F
23: 250 to 1000 °C / 482 to 1832 °F

Key Applications Continuous Annealing Lines, Annealing Furnaces, Galvanising and Galvanneal Lines, Hot Strip Mill, Hot Plate Mill



LSP-HD 5FL, 50, 51 & 52

5FL: 150 to 750 °C / 302 to 1382 °F
50: 150 to 750 °C / 302 to 1382 °F
51: 250 to 850 °C / 482 to 1562 °F
52: 500 to 1100 °C / 932 to 2012 °F

Key Applications Float Glass Lines, Lehr and Lehr Exit, Glass Toughening/Tempering, Glass Forming/Bending, Glass Coating and Solar Panels



LSP-HD 60, 61, 62 & 63

60: 20 to 250 °C / 68 to 482 °F
61: 50 to 400 °C / 122 to 752 °F
62: 100 to 600 °C / 212 to 1112 °F
63: 50 to 850 °C / 122 to 1562 °F

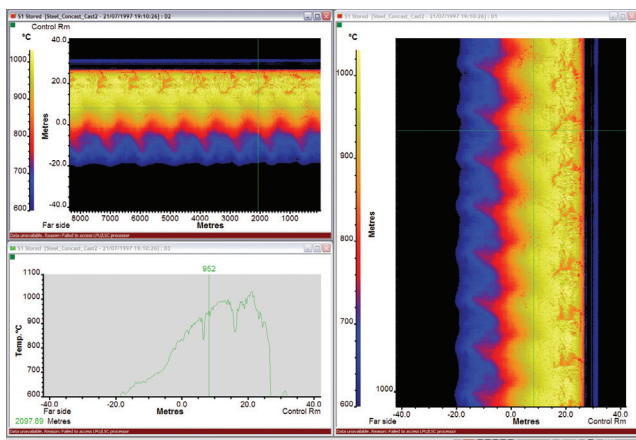
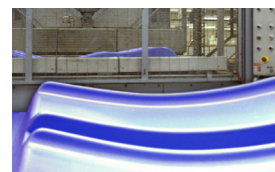
Key Applications Paper Rolls, Webs, Conveyors, Rotary Kilns, Dryers, Torpedo Cars, Thermoforming, Plastic Extruders, Galvanizing lines



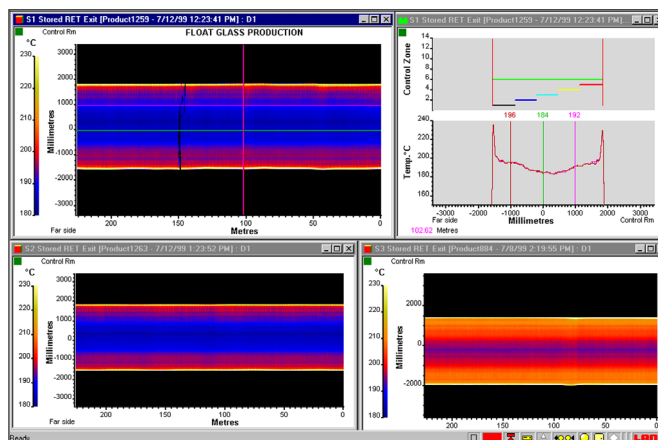
LSP-HD 71

71: 50 to 350 °C / 122 to 662 °F

Key Applications Polymers, Thin Plastics, Thermoforming, Steel Paint Coating Lines

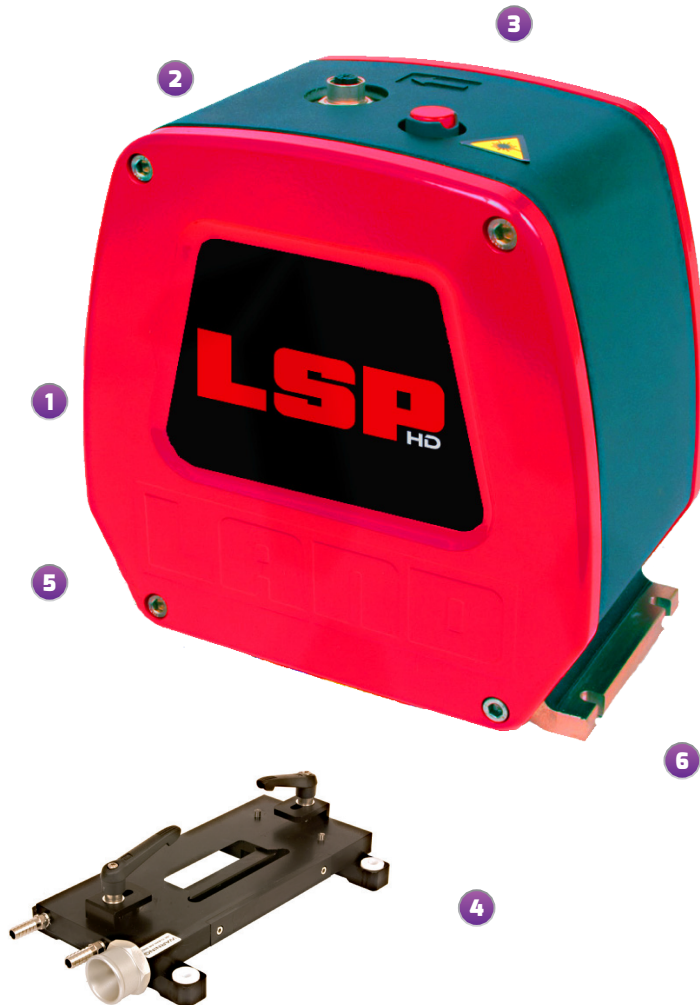


Steel Concast Profile



Glass Floatline Profile

SPECIFICATION & DESIGN



1: HIGH QUALITY OPTICS

Produce high-definition thermal images at unrivalled scan speeds for outstanding process control. High temperature models feature industry leading fully focusable optics with 300 or 500:1 distance to spot size.

2: SAPPHIRE PROTECTION WINDOW

Resists scratches, acids and solvents. Integrated laser alignment verification is standard.

3: SIMPLE LOW COST INSTALLATION

Plug and Play installation utilises a single cable Power over Ethernet (PoE) connection to reduce complexity and cost. Ethernet infrastructure uses industry standard cabling and connectivity.

4: TOOL-FREE QUICK RELEASE

Cooled and purged mountings with tool-free quick release mechanisms simplify and speed up scanner removal and re-installation without requiring a plumber to disconnect any fittings.

5: SCAN SPEED

150 Hz scan speed with 1000 samples at all scan frequencies

6: IP65 HOUSING

Rugged housing for harsh environments sealed to IP65 (NEMA4) ratings.

FEATURES & BENEFITS

High resolution user focusable optical system - allowing detection of small temperature differences across the width of the product, providing optimum product quality through improved process control. All models feature rugged Sapphire protection windows that resist scratches, acids and solvents. Integrated laser alignment verification is standard.

Plug and play installation via single Ethernet cable connection - reducing installation time, costs and complexity. Identical form to its predecessor means there's no need to change existing mounting hardware.

Industry leading measurements - high-quality optics produce high-definition thermal images at unrivalled scan speeds for outstanding process control. High temperature models feature industry leading fully focusable optics with 300 or 500:1 distance to spot size.

Designed for operation in harsh industrial environments - for target temperatures ranging from 20 to 1700 °C (68 - 3092 °F), sealed to IP65 (NEMA4), where the ambient temperature is up to 100 °C (212 °F), ensuring maximum measurement availability and longer instrument life.

Latest software technology - Landscan LSP-HD can be used together with the advanced WCA display and analysis software or used independently to communicate digitally to other systems. Signal processing capabilities are integrated directly into the scanner so a separate PC is not required.

Industrial Ethernet and Analogue I/O - easy connection to the process control system.

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LANDSCAN WCA SOFTWARE

A flexible PC control interface for the LSP-HD linescanner range, LANDSCAN Windows Control and Analyse (WCA) software enables viewing and analysing of multiple live and historical temperature data streams.

LANDSCAN WCA offers display and analysis of data from multiple LANDSCAN Head and Saved data file combinations, offering versatile data processing options adaptable to your application needs. With fully scalable input/output capabilities to meet your precise application requirements, the tagging and linking of multiple live data streams enables Production Process databases to be created with ease.

LANDSCAN WCA brings advanced, high-resolution thermal imaging data to applications across the glass, hydrocarbon processing, industrial processing and steel industries.

SIMULTANEOUS DISPLAY AND PROCESSING

A Combined Data Source facility extends product coverage using multiple LANDSCAN Heads, while optional interfacing to external process sensors can be made via the optional LANDSCAN I/O interface.

FLEXIBLE COMMUNICATIONS

LANDSCAN WCA provides access to temperature measurements and processed data via a range of standard industrial interfaces including cross-platform TCP/IP protocol, OPC, analogue signals and alarm outputs.

MULTIPLE WORKSTATIONS SUPPORT

Live and historical data can be accessed at several LANDSCAN WCA client workstations by linking them to the LANDSCAN WCA data server workstation.

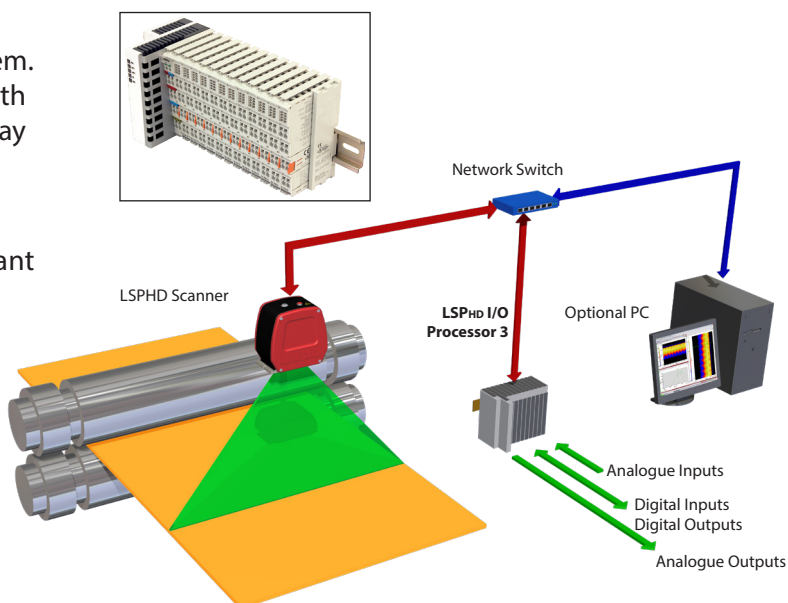
I/O PROCESSOR

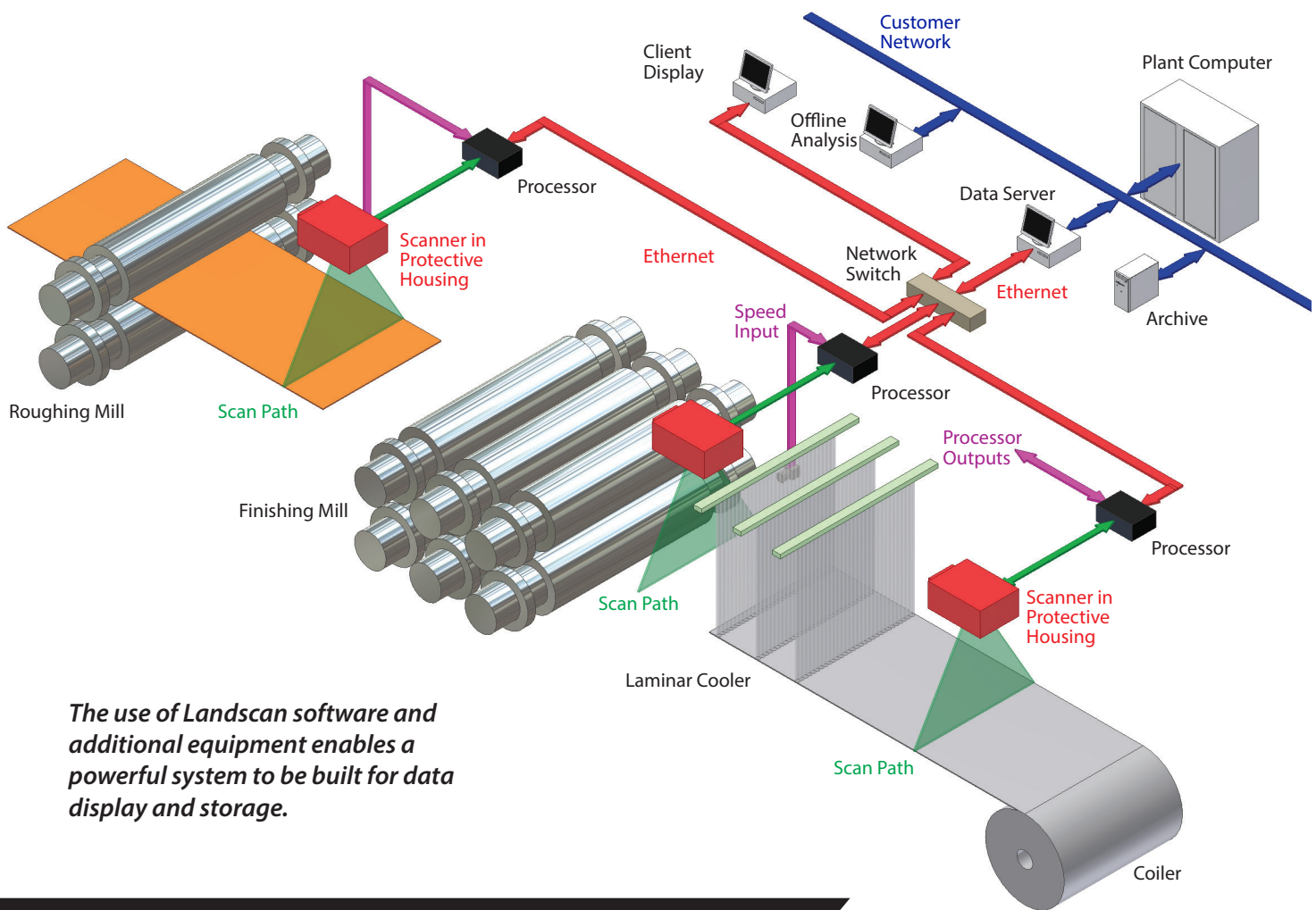
The LSP-HD I/O Processor is a configurable system to provide access to processed data in the LSP-HD system. Its compact DIN rail mounted footprint combined with a standard ethernet interface allows it to be located away from the harsh measurement environment and mounted discretely in existing equipment cabinets.

FLEXIBLE CONFIGURATION to meet individual plant requirements - a single processor can be interfaced with up to 8 LSP-HD heads.

INDEPENDENT OPERATION - the processed data is supplied directly from the LSP-HD head ensuring data availability independent of PC operation.

EXPANSION CAPABILITIES - additional modules can easily be added in the field as the need for additional processed data arises.





The use of Landscan software and additional equipment enables a powerful system to be built for data display and storage.

WORLDWIDE SERVICE

AMETEK CARE[®]

PERFORMANCE SERVICES

AMETEK Land's AMECare Performance Services ensure peak performance and maximum return on investment over the life of your equipment.

We will deliver this by:

- Proactively maintaining your equipment to maximize availability.
- Optimizing solutions to meet your unique applications.
- Enhancing user skills by providing access to product and application experts.

AMETEK Land's global service network provides unparalleled after-sales services to ensure you get the best performance and value from your AMETEK Land products. Our dedicated service centre teams and on-site engineers are trained to deliver the highest standard of commissioning, maintenance and after-sales support.



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SPECIFICATIONS

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Measurement Range:	10: 600 to 1400 °C / 1112 to 2552 °F 11: 700 to 1500 °C / 1292 to 2732 °F 12: 800 to 1700°C / 1472 to 3092 °F	20: 200 to 850 °C / 392 to 1562 °F 21: 300 to 1000 °C / 572 to 1832 °F 22: 400 to 1200 °C / 752 to 2192 °F 23: 250 to 1000°C / 482 to 1832 °F	5FL: 150 to 750 °C / 302 to 1382 °F 50: 150 to 750 °C / 302 to 1382 °F 51: 250 to 850°C / 482 to 1562 °F 52: 500 to 1100 °C / 932 to 2012 °F	60: 20 to 250 °C / 68 to 482 °F 61: 50 to 400 °C / 122 to 752 °F 62: 100 to 600 °C / 212 to 1112 °F 63: 50 to 850°C / 122 to 1562 °F	50 to 350 °C / 122 to 662 °F
Wavelength:	1 µm	20: 2.2 µm, 21: 1.9 µm, 22: 1.9 µm, 23: 2.2 µm	5 µm nominal	60: 3 to 5 µm, 61: 3 to 5 µm, 62: 3 to 4.2 µm, 63: 3 to 5 µm	3.4 µm nominal
Measurement Accuracy ¹ :	±2 °C / ±3.6 °F		5FL, 50 & 51: ±2 °C / ±3.6 °F 52: ±3 °C / ±6.4 °F	±2 °C / ±3.6 °F	
Repeatability:	<0.5 °C / <0.9 °F				
Temp. Resolution Typical:	<1 °C / <1.8 °F		5FL, 50 & 51: < 1 °C / < 1.8 °F 52: ≤ 2.5 °C / ≤ 4.5 °F	60 & 63: < 2 °C / < 3.6 °F 61: < 1 °C / < 1.8 °F 62: < 1 °C / < 1.8 °F	≤ 2 °C / ≤ 3.6 °F
Drift with ambient temp:	≤ 1° indicated / 10° ambient		5FL, 50 & 51: ≤ 2° indicated / 10° ambient 52: ≤ 3° indicated / 10° ambient	≤ 1° indicated / 10° ambient	
Emissivity:	0.20 to 1.00		0.10 to 1.00	0.20 to 1.00	
Speed of Response:	≤ 1 µs	20: ≤ 1.5 µs, 21: ≤ 1 µs, 22: ≤ 1 µs, 23: ≤ 1.5 µs	≤ 5 µs	60: ≤ 10 µs, 61: ≤ 5 µs, 62: ≤ 5 µs 63: ≤ 10 µs	≤ 10 µs
Scan angle:	80° (software adjustable to 40° in 1° steps)				
Scan Speed:	10 to 150 Hz (User adjustable in 10 Hz steps)				
Samples/scan:	1000				
Field of View:	500:1 with user focusable optics (smallest spot size Ø 2 mm / 0.08 in) static to 95 % radiance 1118:1 with user focusable optics (smallest spot size Ø 2 mm / 0.08 in) static to 50 % radiance	20 & 23: 300:1 with user focusable optics (smallest spot size Ø 2 mm / 0.08 in) static to 95 % radiance 1034:1 with user focusable optics (smallest spot size Ø 2 mm / 0.08 in) static to 50 % radiance 21 & 22: 500:1 with user focusable optics (smallest spot size Ø 2mm / 0.08 in) static to 95 % radiance 1118:1 with user focusable optics (smallest spot size Ø 2mm / 0.08 in) static to 50 % radiance	12 mm / 0.5 in for target distance less than 1200 mm / 47.2 in 100:1 for target distance greater than 1200 mm / 47.2 in static to 95 % radiance 300:1 for target distance greater than 1200 mm / 47.2 in static to 50 % radiance	12 mm / 0.5 in for target distance less than 1200 mm / 47.2 in 100:1 for target distance greater than 1200 mm / 47.2 in static to 95 % radiance 300:1 for target distance greater than 1200 mm / 47.2 in static to 50 % radiance	12 mm / 0.5 in for target distance less than 1200 mm / 47.2 in 100:1 for target distance greater than 1200mm / 47.2 in static to 95 % radiance 300:1 for target distance greater than 1200mm / 47.2 in static to 50 % radiance
Focus Distance:	1m / 39.7 in to infinity (continuously adjustable by the user)	1m / 39.7 in to infinity (continuously adjustable by the user)	Fixed Focus at 1200 mm / 47.2 in		
Connection (signal power):	Industrial Ethernet via M12 Connector / Power over Ethernet				
Signal Processing:	Up to 14 user configurable zones with min. / max. / average / quantile / average threshold				
Inputs/Outputs:	PoE (IEEE 802.3at) enabled TCP/IP Industrial Ethernet				
Ambient Temp:	5 to 60°C / 41 to 140°F (specified) 5 to 70°C / 41 to 158°F (operating)				
Dimensions (w x h x d):	206 x 209 x 100 mm / 8.1 x 8.2 x 3.9 in				
Alignment Laser:	Class 2, maximum output 1.0 mW at 635 nm, IEC60825-1:2001 / Indicating scan plane & extent				
Environmental Sealing:	IP65				
EMC:	EN 61326 Class A ; Low Voltage Directive EN61010-1				

(1) Applies 5 to 95% of range

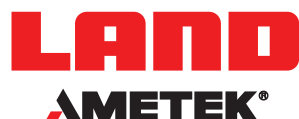
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& ACCESSORIES

DISCOVER HOW OUR BROAD RANGE
OF NON-CONTACT TEMPERATURE
MEASUREMENT AND COMBUSTION
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SOLUTION FOR YOUR PROCESS

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