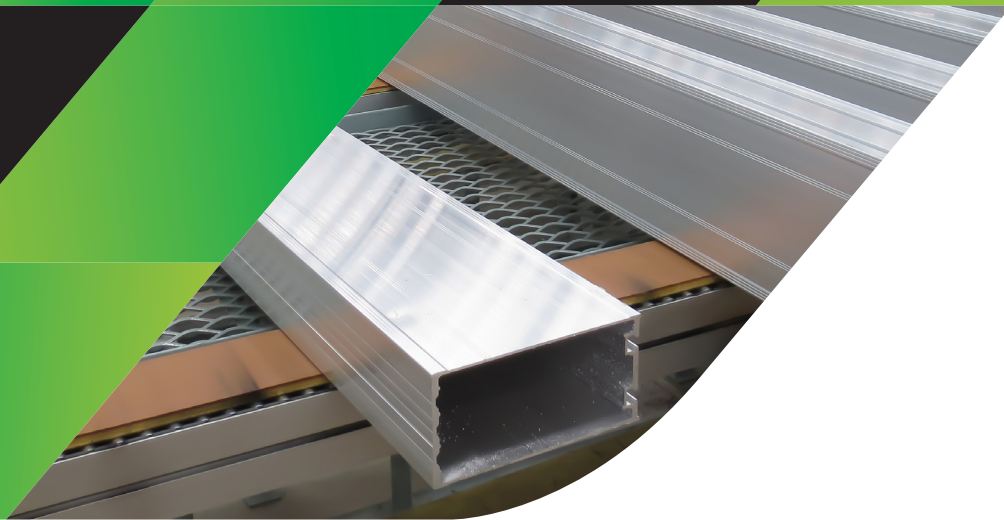


# SPOTAL

ALUMINIUM PRODUCTION AND  
PROCESSING APPLICATION PYROMETER



130 to 800 °C / 266 to 1472 °F



**LAND**  
**AMETEK**<sup>®</sup>  
PROCESS & ANALYTICAL INSTRUMENTS

**OneTemp**<sup>®</sup> pty ltd  
measure | control | record



QUALITY CUSTOMER SOLUTIONS

# SPOTAL

ALUMINIUM PRODUCTION AND PROCESSING  
APPLICATION PYROMETER

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

## THE SPOT AL IS AN ADVANCED NON-CONTACT INFRARED PYROMETER PROVIDING A SINGLE SENSOR SOLUTION FOR ALUMINIUM PRODUCTION AND PROCESSING INDUSTRIES.

A highly accurate and stable digital pyrometer, SPOT AL uses AMETEK Land's cutting-edge SPOT technology and unique, advanced data-processing algorithms to measure aluminium temperature in extrusion (E), quench (Q), strip (S), forming/forging (F), forming/forging of higher magnesium alloys (F Mg) and liquid (L) applications.

Two versions of the SPOT AL are available, the SPOT AL version offers a measurement range of 200 °C (392 °F) to 800 °C (1472 °F) and offers six measurement modes (E, Q, S, F, F Mg and L).

The SPOT AL LT (Low Temp) - 150-700 °C / 302-1292 °F for modes E, Q and S, and 130-700 °C / 266-1292 °F for F and F Mg.

The dedicated pre-set algorithms provide the most accurate digital temperature readings of low and variable emissivity aluminium. This ensures optimised press speed and high-quality products with minimal scrap.

The SPOT AL integrates easily with control systems to enable optimisation of the press or mill with data also made immediately available via the rear display on the instrument or via a web server. A video camera within the pyrometer, the focus distance and other features can be accessed and configured locally or remotely.

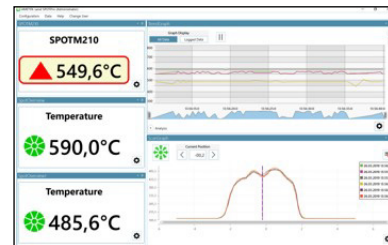
Combining Ethernet, Modbus TCP, video, analogue, and alarm outputs in a single device, the SPOT AL is designed specifically to measure the temperature of aluminium in a range of processing applications.

## CUSTOM-APPLICATION MEASUREMENTS

The dedicated algorithms were developed from extensive trials in real plant environments. Fully focusable high-quality optics and a high speed 15ms response combine to provide measurements on detailed extruded profiles.

## POWERFUL SOFTWARE SUPPORT

SPOTViewer software gives small installations the added benefits of remote monitoring and algorithm tuning; for larger installations we recommend using SPOTPro for configuration, display and data logging of up to 40 pyrometers and actuators plus the ability to customise algorithms for a newly added aluminium grade.



Providing the user with a complete overview of all the SPOT pyrometers and actuators connected to the network, SPOTPro allows you to independently configure data logging for each pyrometer using automatic triggers for data storage. SPOTPro also allows users to compare live and recorded data to historical trends to diagnose process issues.

THE SPOT AL IS AMETEK LAND'S SPECIALIST SOLUTION FOR NON-CONTACT TEMPERATURE MEASUREMENTS IN ALUMINIUM PRODUCTION AND PROCESSING INDUSTRIES.

## SPOT AL MODES ▼

ALGORITHM	MODE DESCRIPTION	EMISSIVITY	SPOT AL	SPOT AL LT
E	Extrusion	Low	✓ 200 -800 °C / 392-1472 °F	✓ 150-700 °C / 302-1292 °F
Q	Quench	Low to Medium	✓ 200 -800 °C / 392-1472 °F	✓ 150-700 °C / 302-1292 °F
S	Strip	Low to Medium	✓ 200 -800 °C / 392-1472 °F	✓ 150-700 °C / 302-1292 °F
F	Forming/Forging	Medium	✓ 200 -800 °C / 392-1472 °F	✓ 130-700 °C / 266-1292 °F
F Mg	High Magnesium Alloy	Medium	✓ 200 -800 °C / 392-1472 °F	✓ 130-700 °C / 266-1292 °F
L	Liquid	Low	✓ 200 -800 °C / 392-1472 °F	✗

# SPECIFICATION & DESIGN



## 1: PRE-SET ALGORITHMS

Multiple dedicated pre-set algorithms for Aluminium Extrusion, Quench, Strip, Forming / Forging, Higher Magnesium Alloys and Liquid Aluminium

## 2: THROUGH-THE-LENS INTEGRATED CAMERA

Easy target alignment and verification in low and high brightness environments

## 3: PATENTED PULSED HIGH BRIGHTNESS LED SIGHTING

Indicates both target size and location using an easily visible pattern; no laser safety requirements

## 4: DUAL PROCESSING

High-speed processing features are integrated into SPOT and Modbus interface

## 5: HIGH-QUALITY OPTICS

Features a durable sapphire protection window and ensures precise targeting and quality measurements

## 6: INTEGRATED WEB SERVER

Allows for remote adjustment and readings via any web browser, and full access through Ethernet/Modbus

## 7: REAR DISPLAY & CONTROLS

Target viewing, temperature reading and set-up through simple menu-driven choices; no need for separate software

## 8: POWER OPTIONS

Power over Ethernet or 24 to 30 V DC at the instrument. Multiple I/O options and digital/analog interfacing

## TYPICAL APPLICATIONS

Extrusion - Billet profile, Extrusion, Quench

Strip Mill - Hot rolling

Forming / Forging - Preheated and reheated billets, slabs, and formed/forged products

Casthouse / Smelter - Liquid metal

Foundry - Aluminium pouring, Liquid aluminium Processing

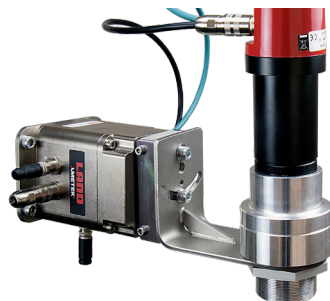
Other - Induction heating/heat treatment, Mounting/shrinking, Preheating for coating, Preheating for bending

## ENHANCED TARGET ALIGNMENT WITH SPOT ACTUATOR

The SPOT Actuator provides remotely controlled target alignment of a SPOT pyrometer for industrial processing applications and is ideal for aluminium applications using the SPOT AL pyrometer.

An intelligent motorised unit providing:

- Automatic or remote manual alignment of the SPOT AL with extruded profiles at the press or quench exit positions following die change.
- Temperature scanning functionality for measurement of billet temperature profile before extrusion or further metal processing.



## FEATURES & BENEFITS

### Specialised aluminium algorithms

- provide accurate digital temperature readings of low and variable emissivity Aluminium allowing optimisation of process speed and quality of the extrusion.

### Single person installation at instrument location

- local display and settings; no need for a second person in the control room.

**Industry-standard 4-20 mA linear temperature output** - multiple I/O options. Analogue and digital inputs and outputs.

**Modbus TCP** - widely used and popular industrial Ethernet protocol.

### Durable sapphire protection window

- resists scratches, solvents and easily cleaned with a soft cloth

### Single sensor solution

- Ideal for use with customer PLCs or DCS systems; no requirement for a separate processor. Easy to implement in small or large organisations, and the same instrument can be used for different processes.

**Software** - SPOTViewer provides remote display and data logging of one SPOT pyrometer; SPOTPro provides for multiple thermometers. Both provide configuration, data logging and algorithm customisation.

## SPECIFICATIONS

	SPOT AL	SPOT AL LT (Low Temp)
<b>Measurement Range - Modes:</b>	200 -800 °C / 392-1472 °F - E, Q, S, F, F Mg, L	130 -700 °C / 266 -1292 °F - F, F Mg 150-700 °C / 302-1292 °F - E, Q, S
<b>Measurement Accuracy:</b>	± 5 °C at 200 °C, ± 2 °C or 0.25% K at 300 °C and above (extrusion and quench) ± 5 °C or ±0.5 %K (lubricated strip, forming/forging and liquid metal)	± 5 °C at 150 °C, ± 2 °C or 0.25% K at 300 °C and above (extrusion and quench) ± 5 °C or ±0.5 %K (lubricated strip, forming/forging)
<b>Repeatability:</b>	±3 °C at 200 °C, ±1 °C at 300 °C and above (extrusion and quench), ± 5 °C (lubricated strip, forming/forging and liquid metal)	±3 °C at 150 °C, ±1 °C at 300 °C and above (extrusion and quench), ± 5 °C (lubricated strip, forming/forging)
<b>Resolution:</b>	0.1 °C	
<b>Noise:</b>	5 °C at 200 °C, <0.5 °C at 300 °C and above	5 °C at 150 °C, <0.5 °C at 300 °C and above
<b>Detector Type:</b>	Application-specific selected range of narrow wavelength bands designed to optimise temperature accuracy measurement of Aluminium	
<b>Sealing:</b>	IP65	
<b>Response Time:</b>	Adjustable 15 ms to 10 s	
<b>Interfaces:</b>	2x 0/4 - 20 mA Output, 4 - 20 mA Input, Digital CMD In and CMD Out, Ethernet (TCP-IP, Modbus TCP, DHCP, http, udp, ICMP)	
<b>Processing Functions:</b>	Peak/Valley Picking, Averager, Modemaster, CMD In sampling or LED control, CMD Out alarms, emissivity output or actuator control	
<b>Power Requirement:</b>	Power over Ethernet or 24 to 30 V DC at the instrument	
<b>Display:</b>	Local display with image streaming	
<b>Software:</b>	Live configuration and temperature display on any web browser. Freely downloadable SPOTViewer software with datalogging, live and historical data trending plus remote image capture; SPOTPro software available for use with multiple SPOT pyrometers	
<b>Languages:</b>	Integrated multiple language selections: English, German, French, Italian, Spanish, Portuguese (Brazilian), Japanese, Chinese (simplified Mandarin), Korean, Russian, Polish	
<b>Field of View:</b>	60 :1 to 90%	30 :1
<b>Mounting:</b>	Full range of mountings and accessories available	
<b>Ambient Temp Range:</b>	5 - 60 °C / 41 - 140 °F specified, 0-70 °C / 32 - 158 °F operating before cooling required	0 - 45 °C / 32 - 113 °F operating before cooling required
<b>Focus Range:</b>	300 mm / 11.8 to infinity, locally or remotely adjusted	Nominal target spot diameter 10mm at 300mm focus; 17mm at 500mm focus; 33mm at 1m focus. Twice nominal target area is recommended.
<b>Sighting:</b>	Integrated video with local display and remote image capture. Patented pulsed Green LED focus pattern confirmation	
<b>Inputs:</b>	4 - 20 mA Input, 24 V DC CMD In, Ethernet, (TCP-IP, Modbus TCP, DHCP, http, udp, ICMP)	
<b>Outputs:</b>	2x 0/4 - 20 mA, CMD Out relay, Ethernet (TCP-IP, Modbus TCP, DHCP, http, udp, ICMP)	
<b>Settings:</b>	Configure locally using the thermometer interface or remotely (using the Webserver, SPOTViewer, or SPOTPro). Emissivity, mode, current output range, alarm logic output and thresholds, network settings, focus and LED, language and user name	
<b>Warranty:</b>	36 months	

\*Measurements within specification over 5-95% of range.