

# NIR BORESCOPE

THERMAL IMAGING SOLUTIONS



① 600 to 1800 °C / 1112 to 3272 °F



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



QUALITY CUSTOMER SOLUTIONS

# NIR BORESCOPE

THERMAL IMAGING SOLUTIONS

AMETEK LAND HAS BEEN BUILDING PRECISION MEASURING EQUIPMENT SINCE 1947.

We are specialists in non-contact temperature measurement and combustion monitoring with our products finding applications across diverse industries such as steel and glass making, power generation and cement manufacture.

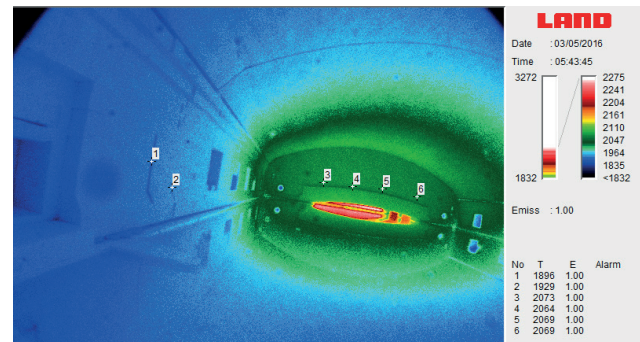
As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

The NIR borescope (NIR-B) is a short wavelength radiometric infrared borescope imaging camera, designed to produce high definition (656 x 494 pixel) thermal images, along with providing accurate temperature measurements from any selected points in the image. The camera can measure temperatures in the range 600 to 1800°C (1112 to 3272°F) and is suitable for a wide range of furnace interior applications.

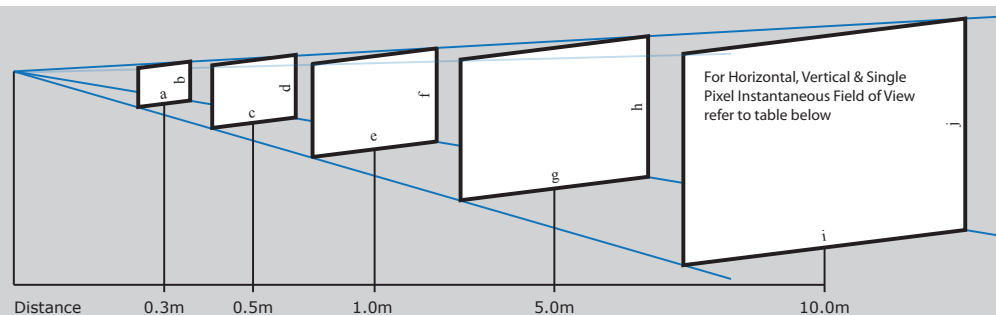
Building on more than twenty years of thermal imaging experience, AMETEK Land has continued to widen its range of temperature measurement solutions by launching the NIR borescope. With the NIR borescope it is possible to use the proven technology of NIR Thermal Imager to accurately profile the temperature of the entire furnace with only a small opening in the wall. Thermal imaging inside refractory lined furnaces, boilers and glass melt tanks normally requires the plant operator to cut large openings in the refractory to enable viewing of the critical area. This can cause significant wasted energy from heatloss and can be difficult to keep the opening

free from debris. The NIR-B has a 44° or 90° viewing angle, through a narrow opening to overcome this.

The NIR borescope offers significant advantages over the traditional methods of furnace monitoring. The NIR-B offers continuous, labor free monitoring whereas manual visual inspection can take hours to complete and is not continuous. A visual camera does not provide a temperature reading like the NIR borescope. The tip thermometer allows for the NIR-B to alarm when the temperature rises above safe levels

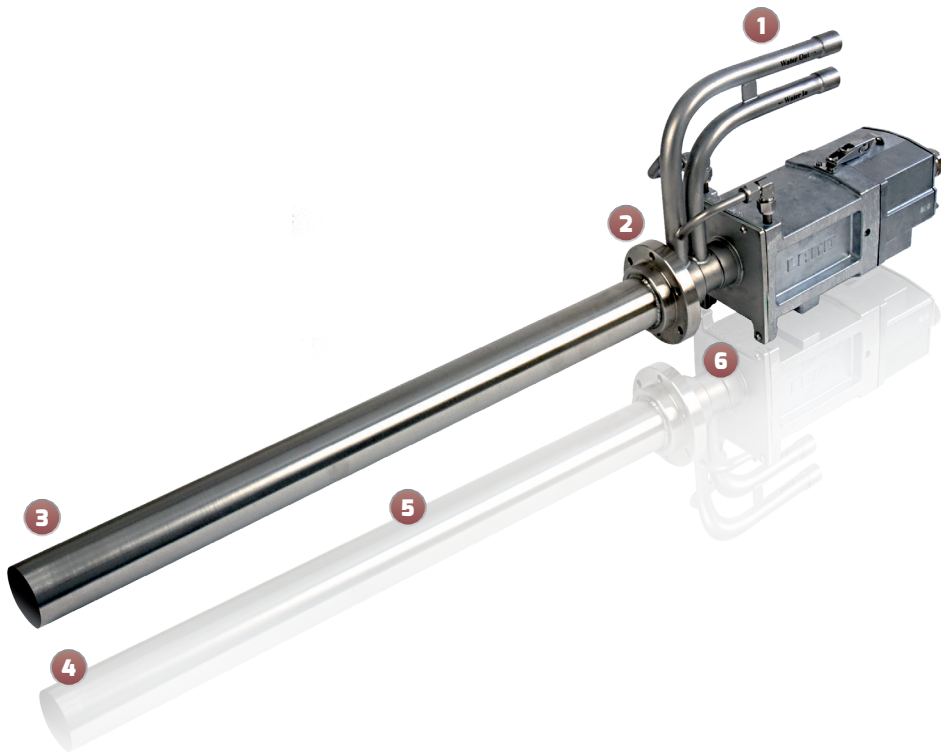


## FIELD OF VIEW LENS OPTION



	0.3m			0.5m			1.0m			5.0m			10.0m		
	a	b	IFOV	c	d	IFOV	e	f	IFOV	g	h	IFOV	i	j	IFOV
44°	0.25m	0.19m	0.35mm	0.4m	0.3m	0.59mm	0.81m	0.61m	1.17mm	4.0m	3.0m	5.85mm	8.1m	6.0m	11.7mm
90°	0.60m	0.45m	0.72mm	1.0m	0.75m	1.2mm	2.00m	1.50m	2.4mm	10.0m	7.5m	12.0mm	20.0m	15.0m	23.9mm

# SPECIFICATION & DESIGN



## 1: HIGH PERFORMANCE WATER COOLING SYSTEM

The low water flow requirements for our cooling systems, even in the highest temperature furnaces equal low running costs

## 2: RANGE OF MOUNTING OPTIONS

The most common mounting options available to ensure simple installation

## 3: THERMOCOUPLE AT NIR-B TIP

Giving the operator an alarm for removing the instrument preventing damage if maximum temperatures are exceeded

## 4: VIEWING ANGLE

44° or 90° angle provides full furnace or tank internal thermal view. 656 x 494 resolution gives 324,000 data points

## 5: PROBE LENGTHS

The range of the probe lengths create the best fit for every installation

## 6: INTEGRATED AIR PURGE

Our air purge design maintains a dust-free optical system while consuming minimal instrument air

## TYPICAL APPLICATIONS

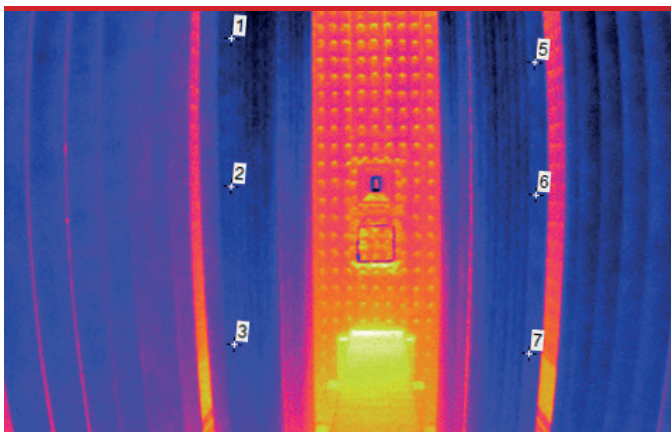
Reheat Furnace

Glass Melt Tanks

Reformer Tube Furnaces

Cement Kilns

## VIEW OF REFORMER TUBES WITH DATAPOINTS



## FEATURES & BENEFITS

### High temperature measurement accuracy

- enables optimum process control using high definition temperature maps

### Simple installation and ease of use

- minimizes cost and complexity

### Short wavelength sensor

- low sensitivity to emissivity changes; can be used through glass or quartz view ports

### Dedicated software

- data points, areas of interest, automated alarms and long term data trending

### 24 Hour, 7 Day Monitoring

- Shutterless operation guarantees accurate, reliable data with no blind time

### Export License Free-

rapid, hassle-free shipping

### 2 Year Warranty -

guarantee of reliability

# NIR BORESCOPE

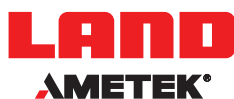
THERMAL IMAGING SOLUTIONS

## SPECIFICATIONS

<b>Measurement Range:</b>	600 - 1000 °C / 1112 - 1832 °F 800 - 1400 °C / 1472 - 2552 °F 1000 - 1800 °C / 1832 - 3632 °F
<b>Spectral Response:</b>	0.78 to 1.1 µm
<b>Frame Rate:</b>	30 fps (Gigabit Ethernet)
<b>Image Pixels:</b>	656 x 494
<b>Accuracy:</b>	1%
<b>Sealing:</b>	IP 65 / NEMA 4
<b>Repeatability:</b>	1 °C
<b>Data Out:</b>	Digital data over Gigabit Ethernet
<b>Software:</b>	Complete Land Image Processing Software (LIPS) package for Windows
<b>Standard Accessories:</b>	Power supply, cables, software, close up lenses, water cooled/purged mounting and tube
<b>Field of View (Horizontal x Vertical):</b>	44° x 33° or 90° x 67.5°
<b>Instantaneous Field of View:</b>	1.2 mrad (44°) / 2.4 mrad (90°)
<b>Focus Range:</b>	1000mm to infinity
<b>Probe Length:</b>	305, 610 or 915 mm (12", 24" or 36")
<b>Probe Diameter:</b>	61 mm (2.4")
<b>Mountings:</b>	Choice of 3" ANSI 150 RF Flange & Gasket or PN16 DN80 Flange & Gasket with a 12" standpipe
<b>Dimensions:</b>	254 x 560 x 810 mm* (* or 1120 or 1420 mm) 10" x 22" x 32" ** (** or 44" or 56")
<b>Power Rating:</b>	24 V dc, 3 watts
<b>Weight:</b>	15kg (for 24" variant)

DISCOVER HOW OUR BROAD RANGE OF NON-CONTACT TEMPERATURE MEASUREMENT AND COMBUSTION & EMISSIONS PRODUCTS OFFER A SOLUTION FOR YOUR PROCESS

WWW.LANDINST.COM | WWW.AMETEK.COM



**Land Instruments International**  
Stubley Lane, Dronfield  
S18 1DJ  
United Kingdom

Tel: +44 (0) 1246 417691  
Email: land.enquiry@ametek.com  
[www.landinst.com](http://www.landinst.com)

**AMETEK Land - Americas**  
150 Freepoint Road,  
Pittsburgh, Pennsylvania, 15238  
United States of America

Tel: +1 (412) 826 4444  
Email: land.enquiry@ametek.com  
[www.landinst.com](http://www.landinst.com)

**AMETEK Land China Service**  
Part A1 & A4, 2nd Floor Bldg. 1  
No. 526 Fute 3rd Road East,  
Pilot Free Trade Zone 200131  
Shanghai, China

Tel: +86 21 5868 5111 ext 122  
Email: land.enquiry@ametek.com  
[www.landinst.com](http://www.landinst.com)

**AMETEK Land India Service**  
Divyasree N R Enclave, Block A,  
4th Floor, Site No 1, EPIP Industrial Area  
Whitefield, Bangalore- 560066  
Karnataka, India

Tel: +91 - 80 67823240  
Email: land.enquiry@ametek.com  
[www.landinst.com](http://www.landinst.com)