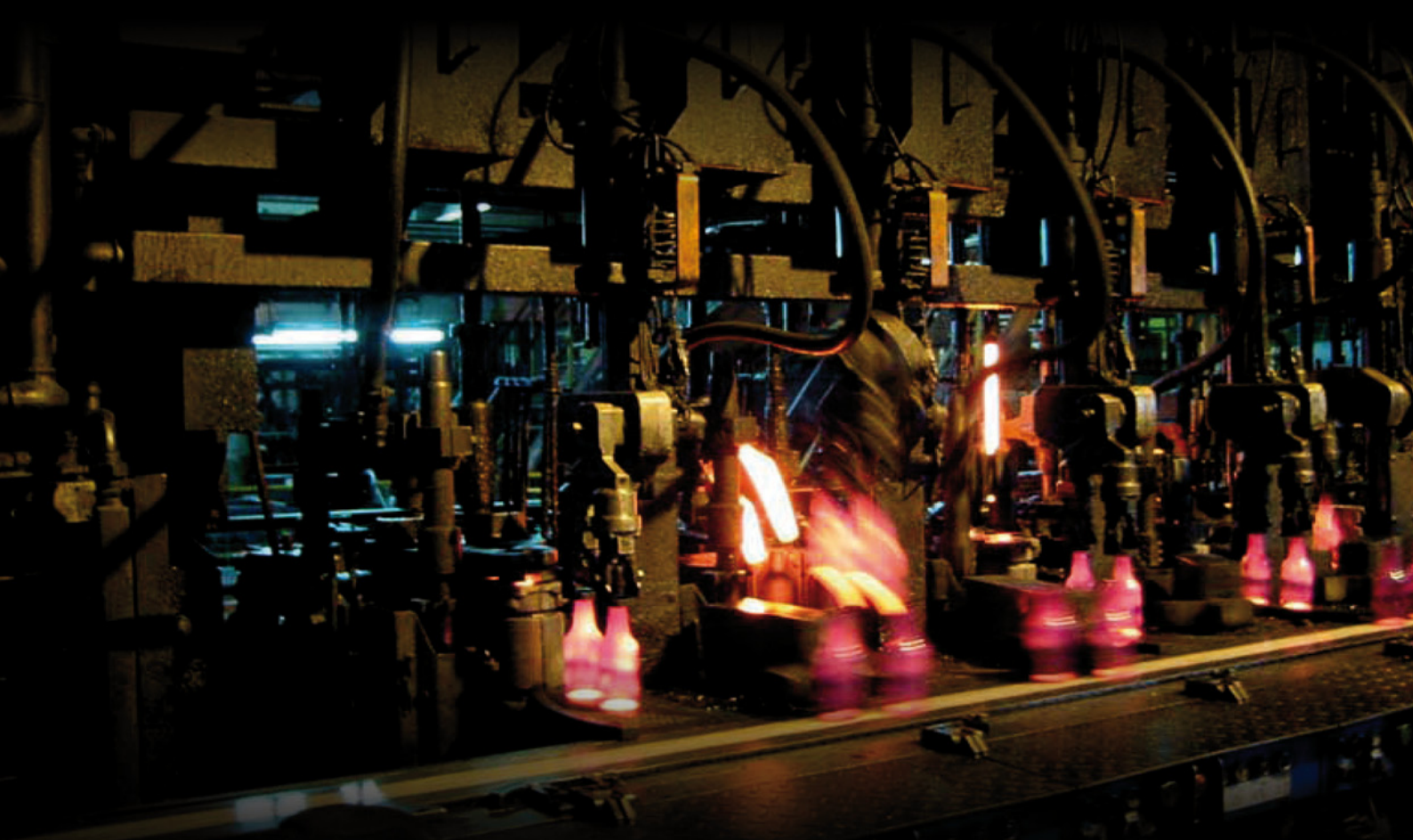


# GLASS Applications

## ■ Pyrometers and infrared cameras for the glass industry

Non-contact temperature measurement from  
-40 °C to 3000 °C

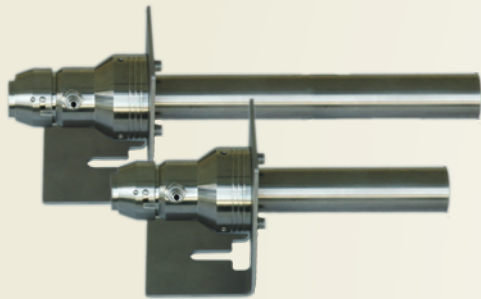


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## Pyrometers PYROSPOT: non-contact temperature measurement for the glass industry



PYROSPOT Series 30/34



Mounting angle with air purge unit and inconel tube

The digital pyrometers PYROSPOT DSF 30NG and DSF 34NG are especially designed for applications in glass industry. Temperature measurement from 600 °C to 1800 °C in glass tank, working end, forehearth and feeder is easily realisable.

The solid construction in robust cast housing with special mono fibre optics cable (up to 30 m) allows usage even under rough environmental conditions and ambient temperatures of up to 250 °C.

Several air purge units with inconel tubes of different lengths are available for the special optical head and can be mounted together. The lens can be easily cleaned or replaced.

In addition to the analog output, the devices are equipped with a galvanically isolated interface (DSF 30NG: USB, DSF 34NG: RS485). Due to direct PC connection, parameters like emissivity, sub range and response time can be easily adjusted by using the comfortable parameterizing and evaluation software PYROSOFT Spot.

Typical applications of the pyrometers are:

- Glass temperature measurement
  - in forehearth
  - in feeder
  - in glass tank
- Temperature measurement of brickworks
  - tank side wall
  - in regenerator
  - tank roof

The digital pyrometers **PYROSPOT DT 40G and DT 44G** are suitable for measuring temperatures of 100 °C to 2500 °C especially of glass surfaces, flat glass and liquid glass in the glass industry.

The devices in a compact stainless steel case have a standard temperature-linear output signal from 4 to 20 mA or 0/4 to 20 mA. A digital interface (USB or RS485) is also available. Setting times from 10 ms can be realized.

The **PYROSPOT Series 10** devices are characterized by robust design, excellent accuracy, fast setting times of 1.5 ms and excellent reliability. Pyrometers include display and keyboard, vario optics, analog RS485 interface and different sight options up to an optional visual camera.

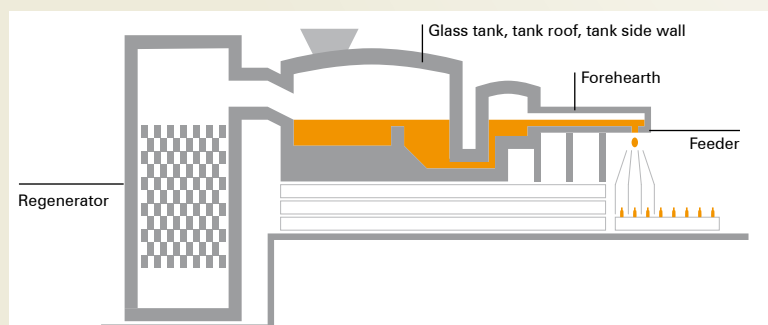


PYROSPOT Series 40/44



PYROSPOT Series 10

## Applications



# made in Germany.

## Infrared cameras PYROLINE and PYROVIEW: measurement of temperature distributions for glass applications

The infrared cameras **PYROLINE** and **PYROVIEW** offer you the opportunity to measure temperature distributions with high thermal and spatial resolutions.

With different temperature measurement ranges between 200 °C and 1250 °C in the spectral range from 4.8 microns to 5.2 microns, the cameras are ideally suited for measurements in glass production.

A robust industrial housing (IP 65 protection level), with optional water cooling and air purge, ensuring the reliable operation under industrial conditions.

The fast data transfer over the Ethernet interface or fiber optic cables and the optional Profibus interface allows easy connection to existing process control. Digital inputs and outputs allow triggered measurements and the transmission of alarm signals when limits are exceeded.

Infrared line cameras **PYROLINE** are particularly well suited for thermal imaging when the object is in continuous motion. The line-like scanning with line frequencies up to 512 Hz can be achieved by triggering adapt to variable line speeds. By joining together of a continuous measurement line thermal image is produced.



PYROLINE compact, PYROVIEW compact



PYROINC 640N



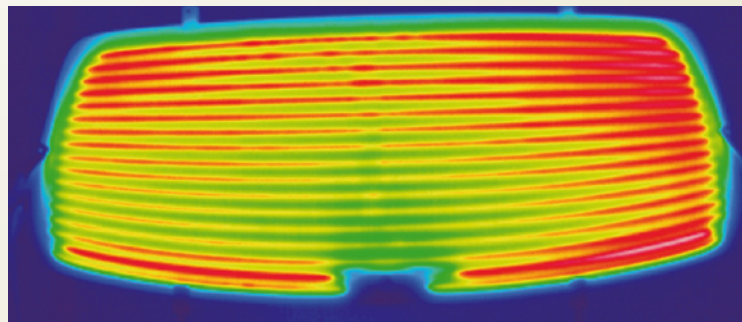
Industrial housing IP65

The process temperature monitoring for the flat glass, glass tempering and the forms and the gluing of laminated glass are examples of the successful use of infrared line cameras. Cracks, bulges, thin spots or blisters appear as significant temperature differences in cooling and heating.

The high-resolution imaging infrared cameras **PYROVIEW** are then used when it is stationary objects or discontinuous movements. An example is the form of temperature control in the manufacture of glass containers.

To measure the temperature distribution in the furnace are also offered special cameras with cooled **PYROINC** furnace probe available.

## Applications

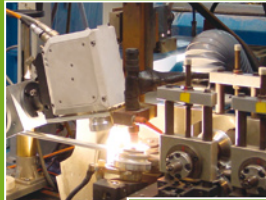


## Your manufacturer and partner for industrial infrared systems

- R & D, manufacturing, sales, and service from one source
- German quality and reliability
- Two years warranty
- Certified to ISO 9001 for many years

Our product range includes:

- Pyrometers
- Infrared line cameras
- Thermal imaging cameras
- Infrared detectors
- Measurement and calibration equipment
- System solutions



Our dedicated experts are able to offer you the benefits of 25 years of practical and technical experience in infrared technology.

For any questions contact us!

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certificated after  
ISO 9001:2008

Technical details are subject to change.  
June 2010.

## Selected technical data

### Pyrometer PYROSPOT Series 40/44

#### Universal 2-wire-pyrometers with USB-interface

DT 40L	-40 °C to 1000 °C	Wavelength from 8 µm to 14 µm
DT 40G	100 °C to 2500 °C	Wavelength about 5.14 µm
DT 40F	300 °C to 2500 °C	Wavelength about 3.9 µm

#### Universal bus-compatible pyrometers with RS485-interface

DT 44L	-40 °C to 1000 °C	Wavelength from 8 µm bis 14 µm
DT 44G	100 °C to 2500 °C	Wavelength about 5.14 µm
DT 44F	300 °C to 2500 °C	Wavelength about 3.9 µm

### Pyrometer PYROSPOT Series 30/34

#### Fibre optics pyrometers with high-quality mono-fibre cable

DSF 30NG	600 °C to 1800 °C	Wavelength from 0.8 µm to 1.1 µm, USB
DSF 34NG	600 °C to 1800 °C	Wavelength from 0.8 µm to 1.1 µm, RS485

### Pyrometer PYROSPOT Series 10

#### Pyrometers for R&D and industrial applications

DPE 10MF	50 °C to 2500 °C	Wavelength about 3.9 µm
DT 10G	100 °C to 2500 °C	Wavelength about 5.14 µm
DS 10N	600 °C to 3000 °C	Wavelength from 0.8 µm to 1.1 µm
DSR 10N	600 °C to 3000 °C	Ratio pyrometer

### Line cameras PYROLINE with spectral range from 4.8 µm to 5.2 µm

	Pixels	Measurement range <sup>1</sup>	NETD <sup>2,3</sup>
PYROLINE 128G/256 Hz	128 × 1	450 °C to 1250 °C	< 1 K/3 K
PYROLINE 256G/256 Hz	256 × 1		
PYROLINE 128GS/256 Hz	128 × 1	250 °C to 800 °C	

### Infrared 2D-camera PYROVIEW 380 with 384 × 288 pixels

	Spectral range <sup>1</sup>	Measurement range <sup>1</sup>	NETD <sup>2</sup>
PYROVIEW 380L	8 µm to 14 µm	Range 1: -20 °C to 120 °C Range 2: 0 °C to 500 °C	< 0.08 K (30 °C, 50 Hz)
PYROVIEW 380M	3 µm to 5 µm	Range 1: 100 °C to 300 °C Range 2: 200 °C to 500 °C	< 0.5 K (200 °C, 50 Hz)
PYROVIEW 380G	4.8 µm to 5.2 µm	Range 1: 200 °C to 500 °C Range 2: 400 °C to 1250 °C	< 1 K (300 °C, 50 Hz)
PYROVIEW 380F	3.9 µm	600 °C to 1250 °C	< 1 K (600 °C, 50 Hz)

### Infrared 2D-camera PYROVIEW 640 with 640 × 480 pixels

	Spectral Range <sup>1</sup>	Measurement Range <sup>1</sup>	NETD <sup>2</sup>
PYROVIEW 640L	8 µm to 14 µm	Range 1: -20 °C to 120 °C Range 2: 0 °C to 500 °C	< 0.08 K (30 °C, 50 Hz)
PYROVIEW 640N	0.8 µm to 1.1 µm	600 °C to 1500 °C optional to 2500 °C	< 2 K (600 °C, 25 Hz)

<sup>1</sup> Others available.

<sup>2</sup> Specification for black body reference and ambient temperature 25 °C.

<sup>3</sup> NETD at 32 Hz and maximum measurement frequency.