

CellaTemp® PZ Pyrometer Series

for non-contact temperature measurement from 0 °C to 3000 °C



Whatever your application – whether you require laser targeting, fibre optics or through-the-lens sighting; whether performing spectral or two-colour measurements – the PZ Series offers just the right pyrometer to meet your needs.



KELLER H.C.W.
A keyria COMPANY

Good reasons to choose the CellaTemp® PZ Pyrometer Series

General information

- Modular design
- For temperatures from 0 °C to 3000 °C
- With either through-the-lens sighting, laser spot light or fibre optics
- Available either as a spectral or two-colour pyrometer

Optics

- Focusable, interchangeable optics for correct measuring distance
- Broadband, antireflection coated lenses
- Through-the-lens sighting
- Smallest target diameter 0.3 mm
- Very large field of view
- Polarisation filter provides eye protection

Mechanical design

- Robust aluminium housing
- Rated IP 65
- Optional pressure-tight encapsulated housing permits use in explosive atmospheres
- Comprehensive range of protective accessories and mounting hardware



CellaTemp® PZ with through-the-lens sighting and target marker

Electronics

- Digital signal processor for high accuracy
- Bright, easily readable LED display (except pyrometers with a fieldbus interface)
- Pushbuttons for setting parameters
- Very fast response time
- Wide temperature ranges
- Based on light sensor technology; instrument contains no mechanical moving parts
- Non-wearing; requires no maintenance
- Immune to electromagnetic interference

Interfaces

- Analogue output 0 (4) – 20 mA, linearised, switchable
- Digital interfaces
RS 232
RS 422 for transmission distances up to 300 m
- Fieldbus interfaces
DIN measuring bus (according to DIN 66348)
PROFIBUS DP (according to EN 50170)

PC communication

- Integrated software for sensor configuration and data transmission
- Simple communication using Windows Hyperterminal
- Online parameter adjustment facilitates adaption to changing conditions
- CellaMevis® data recording and visualisation software with graphic user interface
- Two-colour pyrometer models simultaneously transmit the temperatures at two separate wavebands as well as the ratio of these signals.

Display panel/ measurement configuration

- 4-digit rear panel LED display has bright 8 mm high digits for excellent readability, even at greater distances. Parameters such as emissivity, temperature range, output, smoothing constant, hold time or degree of permitted window-soiling can be set either directly at the instrument using the membrane buttons or remotely from a PC via interface. The green READY LED (F1) indicates the current status as ready for operation. The yellow LED (F2) will light up when the instrument is in configuration mode.



Functions

- Min/max memory
- Double maximum memory
- Smoothing
- Automatic internal temperature monitoring with alarm to prevent overheating
- Feasibility check based on user-defined signal quality (for two-colour instruments)
- System function check with READY output signal
- Electronic dirty window detection (for two-colour instruments)
- Current and temperature simulation to check downstream signal processing.

Through-the-lens or laser sighting

The parallax-free through-the-lens sighting with target marker and wide field of view makes it easy to align the pyrometer to the target. The target mark image in the viewfinder indicates the exact location and actual size of the measured spot.

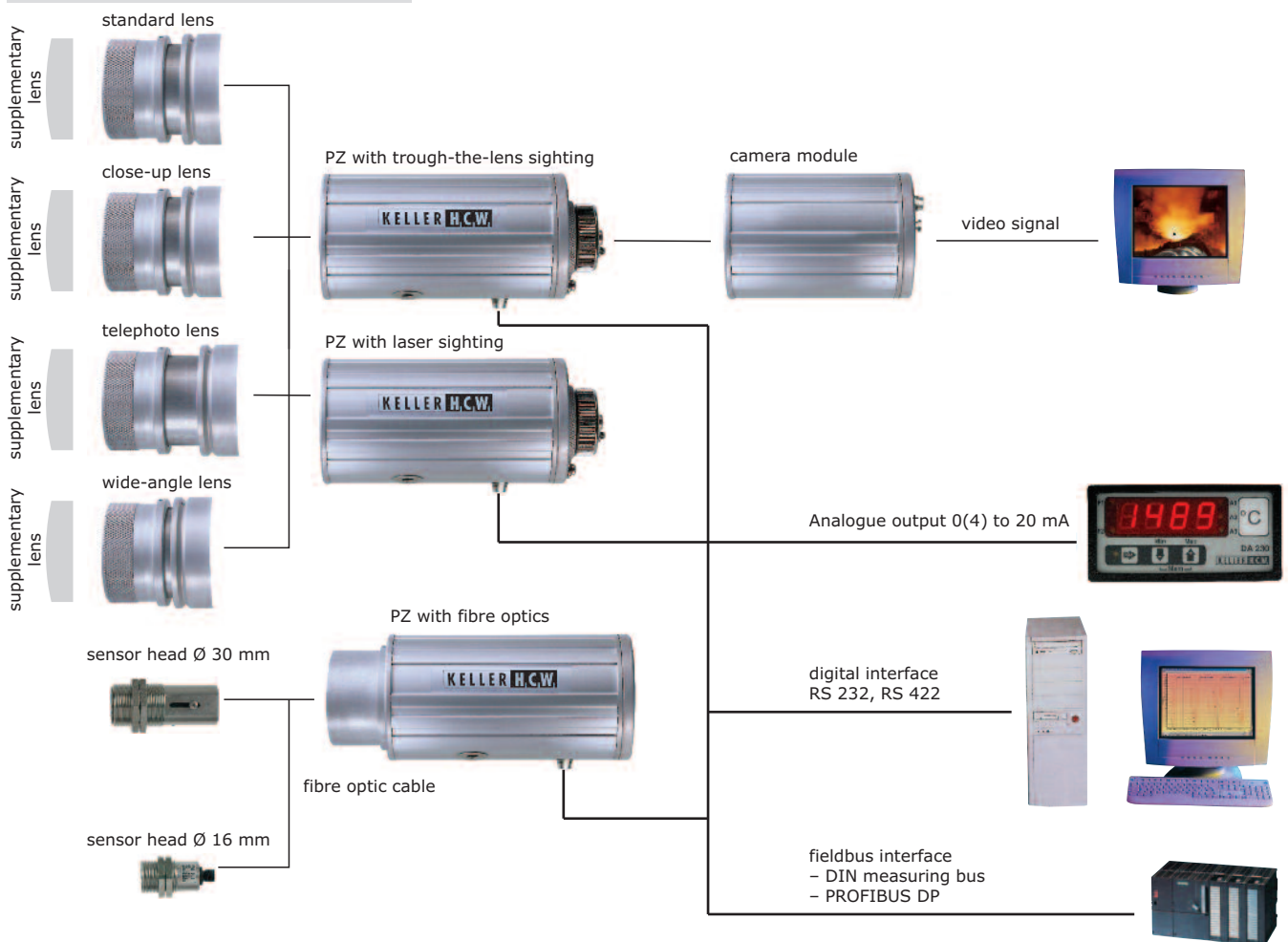
Broadband antireflection-coated lenses provide an identical image in both the visible and infrared spectral ranges.

The focussing ability facilitates precise adjustment of the required distance between sensor and target. The interchangeable optics (close-up, standard, telephoto and wide-angles lenses) can be mounted at the pyro-

meter's M42x1 screw thread. The additional use of supplementary lenses yields more than 50 combination options, offering a high degree of application versatility. Thus, one basic unit can accommodate both very small and large target objects from a wide variety of distances.

Alternatively, the pyrometer is available with laser sighting.

Modular instrument assembly



Fibre optics

For pyrometers with fibre optics, the electronics are housed separately from the fibre optic sensor head. A fibre optic cable conducts the infrared radiation to the electronics assembly. The optical sensor head can withstand ambient temperatures up to 250 °C without cooling. Due to their

compact size (Ø 30 mm or 16 mm) these sensor heads can be installed in cramped, hard-to-access locations. The fibre optic cable can be unscrewed on both sides for easy detachment. The sensor heads are focusable. A laser spot light shows the true size of the measured spot and indicates correct focussing. An assortment of precision lenses is available for this model to accommodate target sizes as small as 0.66 mm.



CellaTemp® PZ with fibre optic head Ø 30 mm

PROFIBUS Interface

PROFIBUS is a multivendor compatible field bus standard for a broad range of applications within the fields of measurement engineering and automation. Due to EN 50170 standardisation, PROFIBUS enables flawless data communication between a wide variety of networked devices, regardless of manufacture. The CellaTemp® PZ Series pyrometers support the PROFIBUS DP and have been approved by the PROFIBUS User Organisation.



CellaTemp® PZ with Profibus

With RS 485 connection, data is transmitted at speeds of up to 12 MBit/s. Up to 32 PROFIBUS DP stations can be interconnected within a network segment. The use of RS 485 repeaters enables the connection of up to 127 stations, including masters.

A connection box with screw terminals, mounted to the back side of the CellaTemp® PZ, serves to connect the power supply line and the fieldbus cable. The termination resistor is provided in the connection box, therefore, removing a pyrometer from the bus system during running operations will not interrupt the bus line.

Spectral or two-colour pyrometer

The pyrometers of the CellaTemp® PZ Series are available both as spectral and as two-colour pyrometers. Whereas spectral pyrometers detect thermal radiation at one single wave-

length, two-colour or ratio pyrometers pick up the infrared radiation at two different wavelength channels. The ratio of these two intensities is a function of target temperature. When the radiation detected is equally reduced at both wavelengths e.g. due to vapour or dust in the field of view, a fogged or dirty lens, or changing surface characteristics of the target, the ratio signal will remain unchanged and the two-colour instrument will continue to provide a stable measurement.

The two-colour CellaTemp® PZ also features an integrated contamination detection function. The pyrometer detects when the lenses of the optical system become too dirty or the sighting tube is impaired. If signal attenuation exceeds a user-defined threshold, an alarm will trigger.

Coding scheme

The pyrometers are designated according to a coding scheme, comprised of the following:

PZ x AF yz /D /L

PZ: refers to the series in general

x: serves as a placeholder denoting the sensor/model

AF: indicates the specific make

y: Type of interface

„When not specified“

analogue output and RS 232

„1“ DIN measuring bus

„2“ Analogue output and RS 422

„3“ Profibus with plug connector

„4“ Profibus with connector hood

z: optical system

/D: integrated display and membrane buttons

/L: integrated laser spot light

CellaCast® for pour stream measurement

CellaCast® records the temperature at continuous and noncontinuous pour processes in foundries. The system consists of a two-colour pyro-

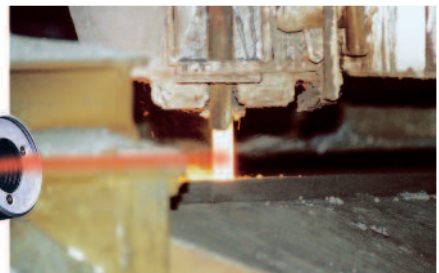


meter and a specially programmed digital display unit. A casting temperature is recorded for each pour. The pyrometer's feasibility check as well as the display's innovative program ensure that disturbances such as steam, dust, flame formation or molten drip are ignored.

A large display in the production hall can concurrently show the temperature values. The collected data can be transmitted to a central data acquisition system. Alternatively, Keller's CellaMevis® PC software enables temperature profiles to be viewed in real-time and saved to memory. The CellaCast® system is rounded off by a special mounting assembly which serves to protect the pyrometer against excessive ambient heat and soiling.

Laser Measurement

The CellaTemp® PZ 27 model was designed for laser heat treating applications employing diode lasers or Nd:YAG lasers. A purpose-built blocking filter prevents the laser beam radiation from affecting the pyrometer signal. With its high-resolution, precision lenses, the PZ 27 achieves the tiny measuring spot which the application calls for.



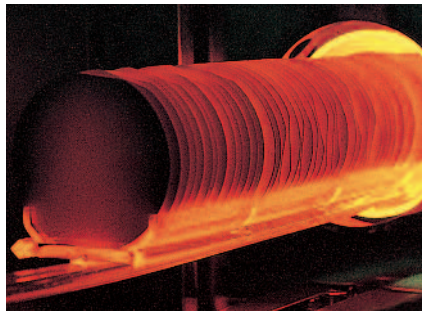
Temperature measurement of a pour stream

Application Examples



Filaments

Pyrometers specially calibrated for tungsten with high-resolution optics detect the temperature of incandescent filaments in light bulb manufacturing.



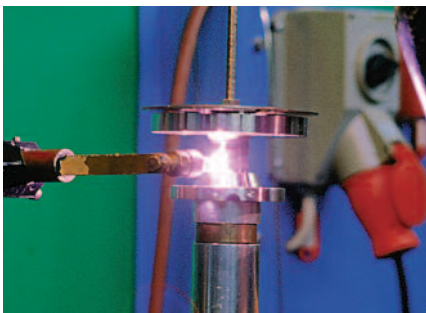
Crystal growing

Accurate temperature control during crystal growing is crucial to achieving high quality in the subsequent wafer production.



Combustion furnaces, Coking plants

Because of the extremely harsh ambient conditions, these applications call for two-colour pyrometers.



Induction hardening, Laser welding

Quick and reliable temperature detection of ultra small targets in cramped conditions.



Blast furnace Forging, hardening, tempering

In the metalworking industry, the success of many heat treatment and finishing processes is very much dependent on precise control of process temperatures.



Rolling mills Hot dip galvanising lines

For billet rolling and metal strip processing, quick and accurate temperature detection is crucial toward achieving a non-varying quality of the finished product.



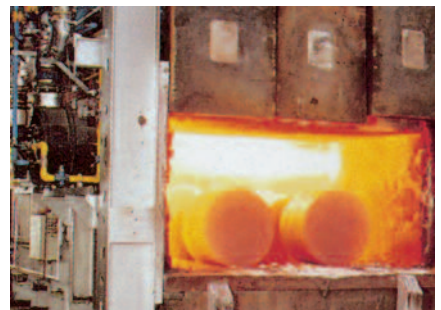
Glassmaking

Pyrometers measure temperatures in melting tanks, port arches, at moulds, in cooling zones and at the gob.



Rotary kilns

Clinker temperatures at the kiln entrance and exit are checked. Shell temperatures are monitored regularly to detect possible refractory damage.



Annealing furnaces

Pyrometers, as a accurate, non-wearing measuring system with long-term reliability, are ideal for quick temperature checks in order to maintain process control.

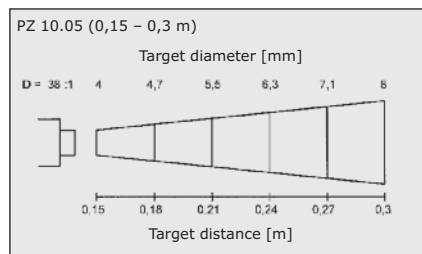
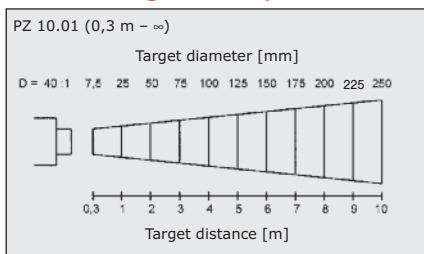
Technical Data

Pyrometer models with laser or through-the-lens sighting

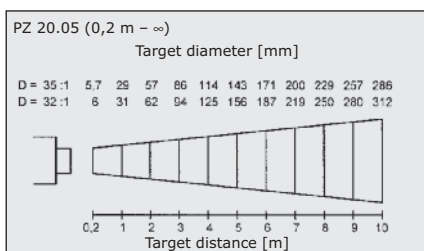
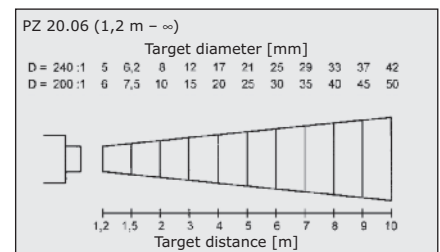
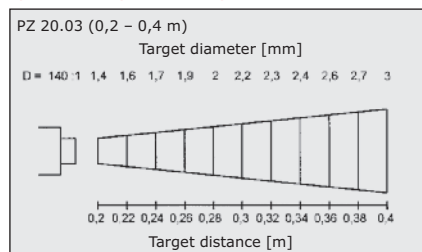
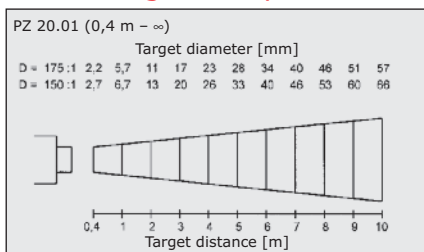
Version		Spectral Pyrometers					
Series		PZ 10 AF...	PZ 20 AF...		PZ 30 AF...		PZ 35 AF...
Temperature range (variably adjustable)		0 °C to 1000 °C	250 °C to 2000 °C from 210 °C at $\epsilon > 0,5$	350 °C to 2500 °C from 290 °C at $\epsilon > 0,5$	500 °C to 2500 °C	800 °C to 3000 °C from 750 °C at $\epsilon > 0,5$	600 °C to 2500 °C
Interchangeable Lenses							
Standard lens	pyrometer model optics distance ratio	PZ 10 AF 1 PZ 10.01 40:1	PZ 20 AF 1 PZ 20.01 150:1	PZ 20 AF 5 PZ 20.01 150:1	PZ 30 AF 1 PZ 20.01 175:1	PZ 30 AF 5 PZ 20.01 175:1	PZ 35 AF 1 PZ 20.01 175:1
Close-up lens	pyrometer model optics distance ratio	PZ 10 AF 2 PZ 10.05 38:1	PZ 20 AF 2 PZ 20.03 140:1	PZ 20 AF 6 PZ 20.03 140:1	PZ 30 AF 2 PZ 20.03 140:1	PZ 30 AF 6 PZ 20.03 140:1	PZ 35 AF 2 PZ 20.03 140:1
Telephoto lens	pyrometer model optics distance ratio		PZ 20 AF 3 PZ 20.06 200:1	PZ 20 AF 7 PZ 20.06 200:1	PZ 30 AF 3 PZ 20.06 240:1	PZ 30 AF 7 PZ 20.06 240:1	PZ 35 AF 3 PZ 20.06 240:1
Wide-angle lens	pyrometer model optics distance ratio		PZ 20 AF 4 PZ 20.05 32:1	PZ 20 AF 8 PZ 20.05 32:1	PZ 30 AF 4 PZ 20.05 35:1	PZ 30 AF 8 PZ 20.05 35:1	PZ 35 AF 4 PZ 20.05 35:1
Sensor		Thermopile	Photodiode				
Spectral range		8–14 μm	1.1–1.7 μm		0.8–1.1 μm		0.85–0.91 μm
Uncertainty (at $\epsilon=1$ and $T_a=23$ °C)		1 % of temp. reading (at least) 2 K	0.75 % of temperature reading				0.5 % of temp. reading
Repeatability		1 K					
Response time t_{98}		$t_{90} \leq 100$ ms	≤ 2 ms at $T > 750$ °C		≤ 2 ms at $T \geq 1000$ °C		
Resolution		≤ 0.5 K	≤ 1 K				

Field of view diagrams¹⁾

Interchangeable optics for PZ 10



Interchangeable optics for PZ 20, PZ 27, PZ 30, PZ 35



¹⁾ allowing for optical tolerances at 95 %
(90 % for PZ 10) of the maximum detectable energy

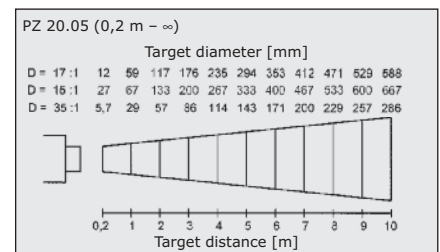
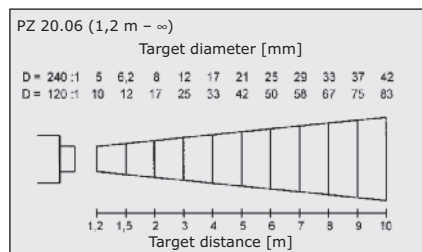
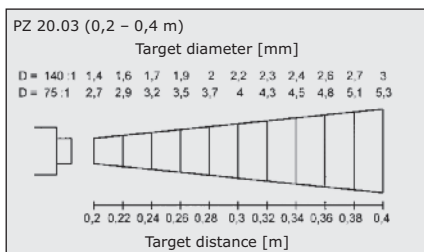
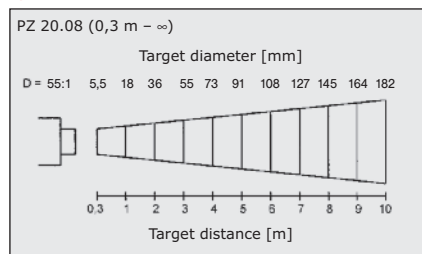
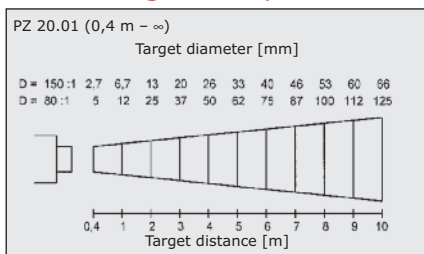
Technical Data

Pyrometer models with laser or through-the-lens sighting

Version		Two-colour pyrometer				
Series		PZ 40 AF...			PZ 50 AF...	
Temperature range (variably adjustable)		500 °C to 1400 °C	700 °C to 1600 °C from 650 °C at $\epsilon > 0,5$	900 °C to 2400 °C from 800 °C at $\epsilon > 0,5$	1000 °C to 3000 °C from 900 °C at $\epsilon > 0,5$	500 °C to 1400 °C from 450 °C at $\epsilon > 0,5$
Interchangeable Lenses						
Standard lens	pyrometer model optics distance ratio	PZ 40 AF 20 PZ 20.08 55:1	PZ 40 AF 1 PZ 20.01 80:1	PZ 40 AF 4 PZ 20.01 150:1	PZ 40 AF 7 PZ 20.01 150:1	PZ 50 AF 1 PZ 20.01 80:1
Close-up lens	pyrometer model optics distance ratio		PZ 40 AF 2 PZ 20.03 75:1	PZ 40 AF 5 PZ 20.03 140:1	PZ 40 AF 8 PZ 20.03 140:1	PZ 50 AF 2 PZ 20.03 75:1
Telephoto lens	pyrometer model optics distance ratio		PZ 40 AF 3 PZ 20.06 120:1	PZ 40 AF 6 PZ 20.06 240:1	PZ 40 AF 9 PZ 20.06 240:1	PZ 50 AF 3 PZ 20.06 120:1
Wide-angle lens	pyrometer model optics distance ratio		PZ 40 AF 10 PZ 20.05 17:1	PZ 40 AF 11 PZ 20.05 35:1	PZ 40 AF 12 PZ 20.05 35:1	PZ 50 AF 4 PZ 20.05 15:1
Sensor		double photodiode				
Spectral range		0.95 μm /1.05 μm			0.95 μm /1.55 μm	
Uncertainty (at $\epsilon=1$ and $T_a=23$ °C)		1 % of temperature reading				
Repeatability		2 K				
Response time t_{98}		≤ 10 ms at $T > 600$ °C	≤ 10 ms at $T > 750$ °C	≤ 10 ms at $T > 950$ °C	≤ 10 ms at $T > 1050$ °C	≤ 16 ms at $T > 600$ °C
Resolution		≤ 1.5 K				

Field of view diagrams¹⁾

Interchangeable optics for PZ 40, PZ 50



¹⁾ allowing for optical tolerances at 95 % of the maximum detectable energy

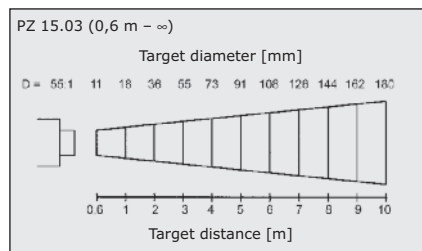
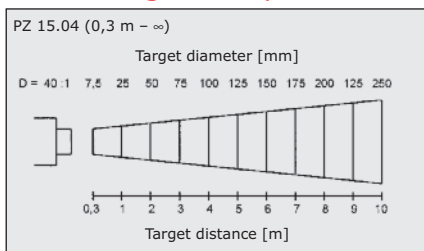
Technical Data

Pyrometer models with laser or through-the-lens sighting

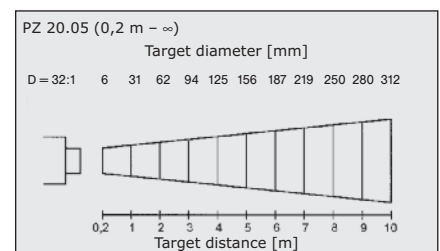
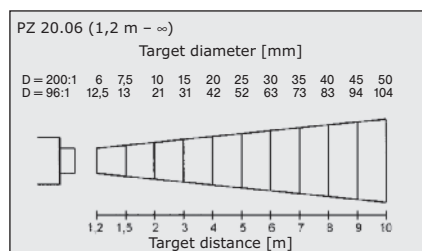
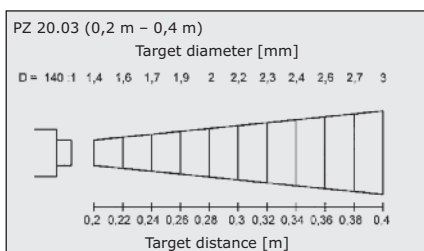
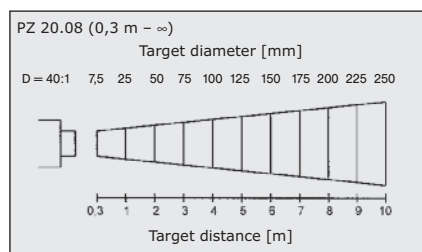
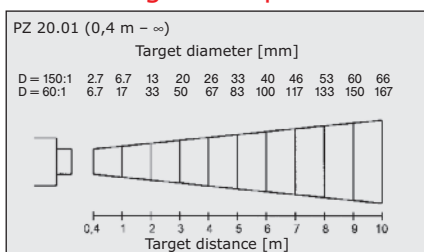
Version	Pyrometer for special applications					
	for glass surfaces			for laser heat treatment		
Series	PZ 15 AF...			PZ 27 AF...		
Temperature range (variably adjustable)	300 °C to 1300 °C	1000 °C to 2500 °C	150 °C to 800 °C from 100 °C at $\epsilon=1,0$	180 °C to 1200 °C from 150 °C at $\epsilon>0,5$	250 °C to 2000 °C from 200 °C at $\epsilon>0,5$	
Interchangeable Lenses						
Standard lens	pyrometer model optics distance ratio	PZ 15 AF 2 PZ 15.04 40:1	PZ 15 AF 1 PZ 15.03 55:1	PZ 27 AF 10 PZ 20.08 40:1	PZ 27 AF 21 PZ 20.01 60:1	PZ 27 AF 1 PZ 20.01 150:1
Close-up lens	pyrometer model optics distance ratio					PZ 27 AF 2 PZ 20.03 140:1
Telephoto lens	pyrometer model optics distance ratio				PZ 27 AF 23 PZ 20.06 96:1	PZ 27 AF 3 PZ 20.06 200:1
Wide-angle lens	pyrometer model optics distance ratio					PZ 27 AF 4 PZ 20.05 32:1
Sensor	Thermopile			Photodiode		
Spectral range	4.46 – 4.82 μm			1.8 – 2.2 μm		
Uncertainty (at $\epsilon=1$ and $T_a=23$ °C)	1 % of temperature reading (at least) 2 K			5 K or 0.75 % of temp. reading		
Repeatability	3 K			2 K	1 K	
Response time t_{98}	$t_{90} \leq 100$ ms			≤ 2 ms at $T>250$ °C	≤ 2 ms at $T>600$ °C	≤ 2 ms at $T>750$ °C
Resolution	≤ 1.5 K			≤ 1 K		

Field of view diagrams¹⁾

Interchangeable optics for PZ 15



Interchangeable optics for PZ 27



¹⁾ allowing for optical tolerances at 95 %
(90 % for PZ 15, PZ 27 AF 10/AF 2x) of the maximum detectable energy

Technical Data

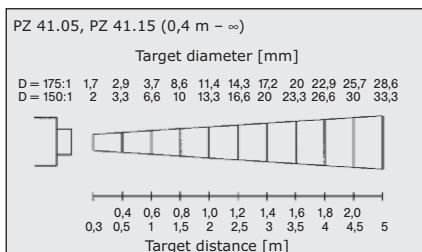
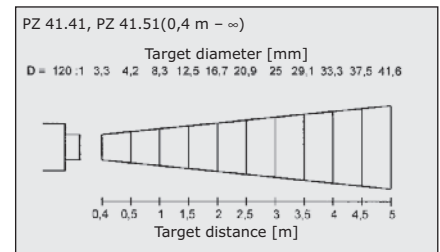
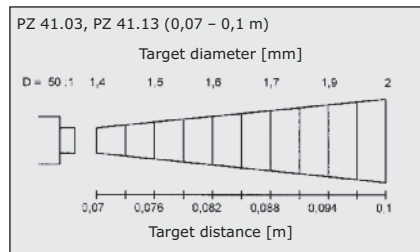
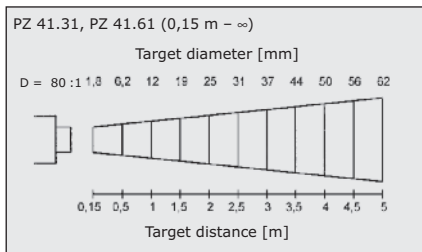
Pyrometer with fibre optics and laser spot light

Version		Spectral pyrometer		Two-colour pyrometer		
Series		PZ 21 AF...	PZ 31 AF...	PZ 41 AF...		
Temperature range (variably adjustable)		350 °C to 2000 °C from 300 °C at $\epsilon > 0,5$	700 °C to 2500 °C from 650 °C at $\epsilon > 0,5$	900 °C to 2400 °C from 800 °C at $\epsilon > 0,5$	1000 °C to 3000 °C from 900 °C at $\epsilon > 0,5$	
Sensor heads						
Sensor head Ø 30 mm	Standard optics	pyrometer model optics distance ratio	PZ 21 AF 1 PZ 41.31 80:1	PZ 31 AF 1 PZ 41.31 80:1	PZ 41 AF 1 PZ 41.31 80:1	PZ 41 AF 4 PZ 41.61 80:1
	Close-up optics	pyrometer model optics distance ratio	PZ 21 AF 90 PZ 41.03 50:1	PZ 31 AF 90 PZ 41.03 50:1	PZ 41 AF 90 PZ 41.03 50:1	PZ 41 AF 91 PZ 41.13 50:1
	Telephoto optics I	pyrometer model optics distance ratio	PZ 21 AF 2 PZ 41.41 120:1	PZ 31 AF 2 PZ 41.41 120:1	PZ 41 AF 2 PZ 41.41 120:1	PZ 41 AF 3 PZ 41.51 120:1
	Telephoto optics II	pyrometer model optics distance ratio	PZ 21 AF 92 PZ 41.05 150:1	PZ 31 AF 92 PZ 41.05 175:1	PZ 41 AF 98 PZ 41.05 175:1	PZ 41 AF 92 PZ 41.15 175:1
Sensor head Ø 16 mm	Standard optics	pyrometer model optics distance ratio	PZ 21 AF 21 PZ 41.28 50:1	PZ 31 AF 21 PZ 41.28 50:1	PZ 41 AF 21 PZ 41.28 50:1	PZ 41 AF 23 PZ 41.29 50:1
	Close-up optics	pyrometer model optics distance ratio	PZ 21 AF 22 PZ 41.18 50:1	PZ 31 AF 22 PZ 41.18 50:1	PZ 41 AF 22 PZ 41.18 50:1	PZ 41 AF 24 PZ 41.19 50:1
Sensor		photodiode		double photodiode		
Spectral range		1.1–1.7 μm	0.78–1.06 μm	0.95 μm /1.05 μm		
Uncertainty (at $\epsilon=1$ and $T_a=23$ °C)		1 % of temperature reading		1.5 % temperature reading		
Repeatability 2 K		2 K		3 K		
Response time t_{98}		≤ 2 ms at $T > 1000$ °C	≤ 2 ms at $T > 1200$ °C	≤ 20 ms at $T > 950$ °C	≤ 20 ms at $T > 1050$ °C	
Resolution		≤ 1 K		≤ 2 K		

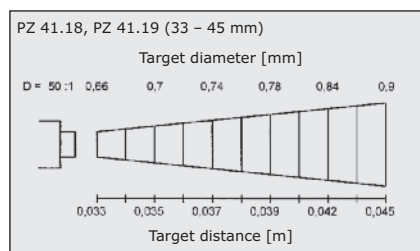
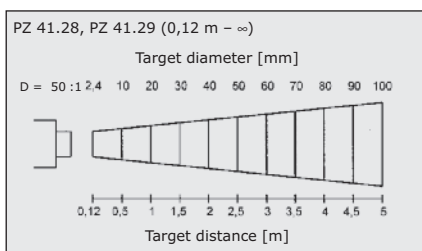
Selectable for any of the above models: either Kevlar (<85 °C) or metal-sheathed (<250 °C) fibre optic cable

Field of view diagrams¹⁾

Sensor head Ø 30 mm



Sensor head Ø 16 mm

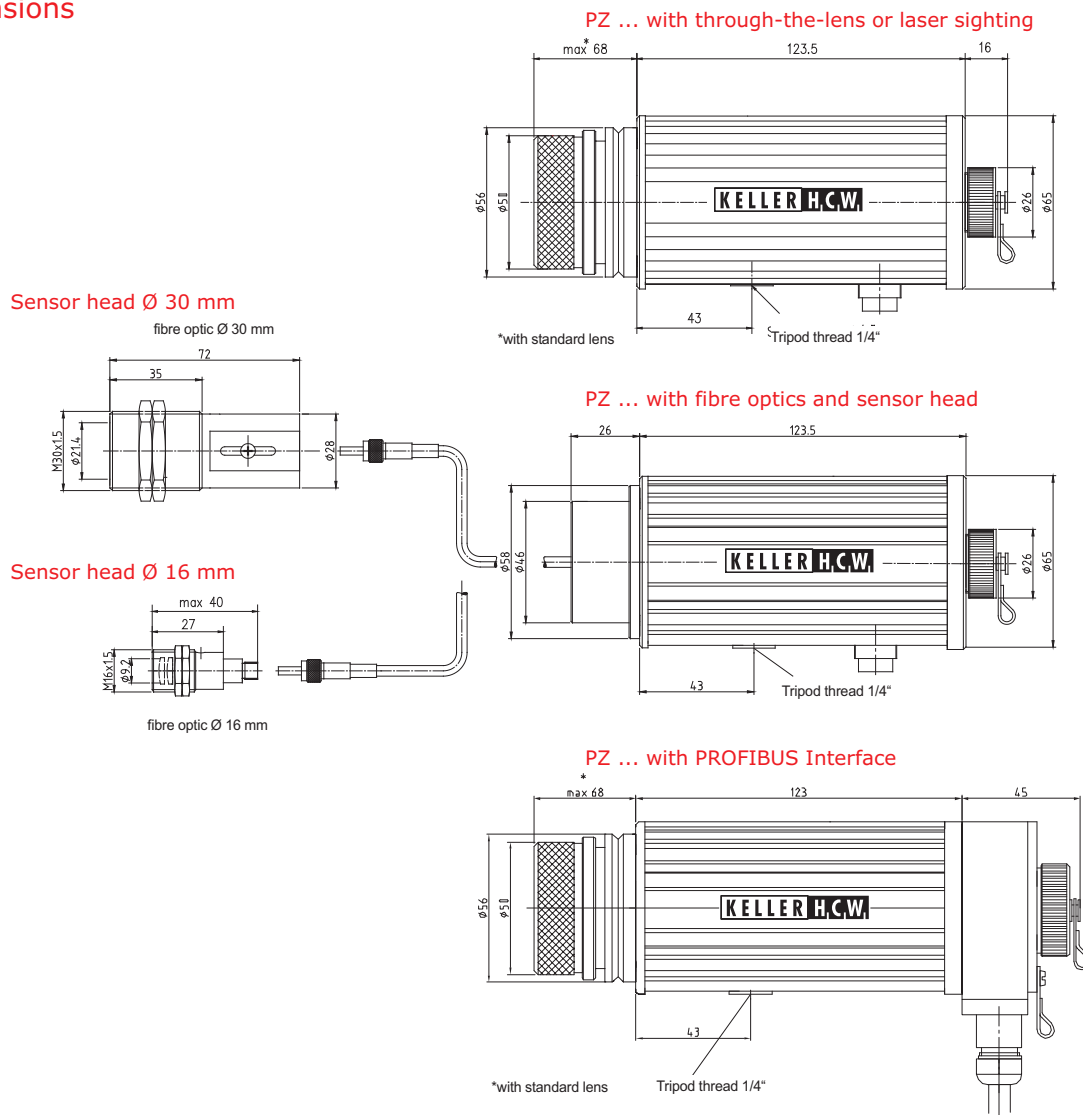


¹⁾ allowing for optical tolerances at 95 % of the maximum detectable energy

Common Specifications

Analogue output	0 (4) bis 20 mA linear, switchable
Load	max. 500 Ohm
Serial communications	<ul style="list-style-type: none"> ■ Point-to-point connection RS 232 or RS 422 with integrated communications software for remote configuration, monitoring and data acquisition ■ Fieldbus interface DIN measuring bus (according to DIN 66348, Part 2), PROFIBUS DP (according to EN 50170) up to 12 MBit/sec
Emissivity Emissivity slope	10 to 100 %, increments of 1 % (0.1 % at PZ 10, PZ 15) 74.4 to 125.5 increments of 0,1
Smoothing function	0 to 16 sec.
Signal processing options	Peak/valley hold, double peak hold with adjustable hold time
Linearisation	Digital via microcontroller
Temperature coefficient (deviation to 23 °C)	0.25 K/K (at T<+500 °C) (0.1 K/K at PZ 10, PZ 15) 0.05 %/K (at T≥+500 °C)
Electromagnetic compatibility	according to EN 50081-1; EN 50081-2, EN 50082-1, EN 50082-2
Power supply	22 bis 27 VDC/<60 mA (<150 mA with laser sighting)
Storage temperature	-20 to +70 °C
Ambient temperature	Electronics: 0 to 60 °C Fibre optic models: Sensor head -20 to +250 °C Cables: Kevlar -20 to +85 °C, Metal-sheathed -20 to +250 °C
Housing material	Aluminium
Weight	approx. 0.8 kg
Protection rating	IP 65

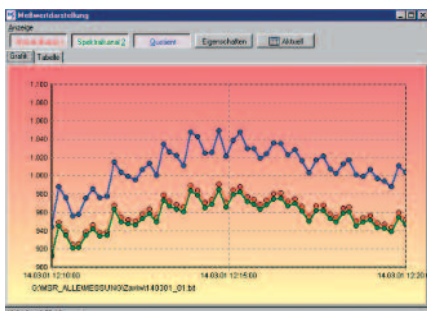
Dimensions



CellaMevis[®] Software

Features

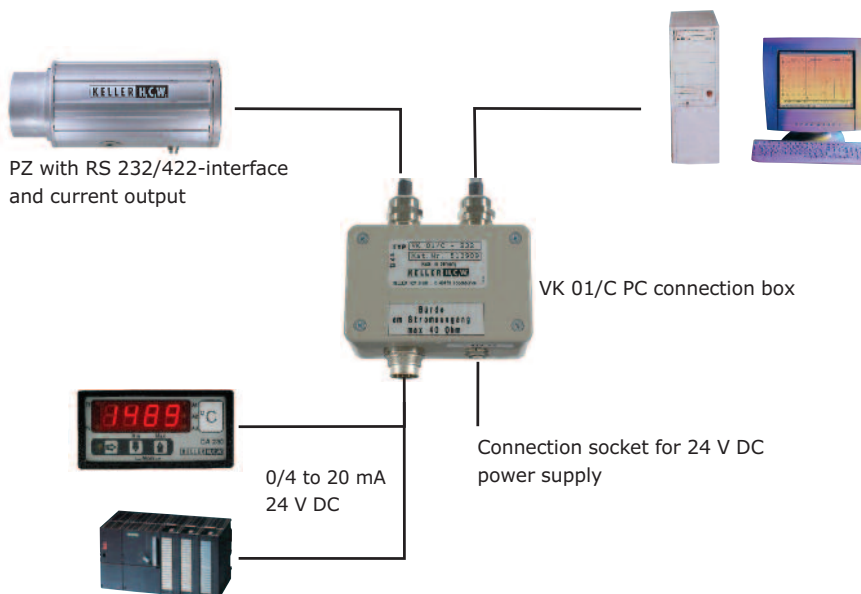
- Graphical user interface based on Windows[®]
- Full-screen temperature/time graph can be displayed in real time
- Enables analysis of min/max temperatures
- Record data and save to disk for future reference and analysis
- Zoom function magnifies parts of the screen for detailed view
- Spectral and two-colour temperature readings displayed concurrently
- Temperature trend indicator
- Save data either manually or automatically
- Remote pyrometer configuration from a PC terminal



Temperature/time chart

CellaMevis[®] is Keller's Windows[®]-based industrial software system for data capture and visualisation. It supports the CellaTemp[®] PZ pyrometer for real-time monitoring, analysis and archiving of recorded temperatures. The use of an RS 232 or USB interface enables communication to a PC and allows the temperature data to be saved in ASCII file format. Measurements can be instantly displayed as a table or plotted online as a time/temperature curve. Data can also be exported into MS-Excel[®] or other spreadsheet program for further analysis.

PC Communication



The VK 01/C PC connection box can be easily inserted into the pyrometer's connection cable during initial installation or field service. The simple plug connector enables on-site connection in a matter of seconds without interrupting operations.

To check if peripheral equipment such as the signal conditioner or analogue scaling is functioning properly, an output signal can be simulated.

With CellaMevis[®], remote configuration at a PC during running operations is an alternative to setting parameters directly at the instrument via control buttons. Parameter changes are effective immediately. Measurement data is not only displayed at the pyrometer, but transmitted and recorded at a PC.

The connection box is especially convenient when performing on-site test measurements because it enables connection to a PC in a matter of seconds. To provide the pyrometer with an electrical current, the power supply is simply connected to the box, thus creating a mains-independent data acquisition system.

CellaCap® Video Monitoring System

Features

- Independent video system which can be mounted to all pyrometers of the PZ series with through-the-lens sighting (except PROFIBUS models)
- Continuous monitoring of the measurement area from the control room to check if pyrometer is correctly aimed at the target
- Indication of the measurement location and the exact target spot
- Remote monitoring of the production process or of the combustion chamber
- Easy to pinpoint exact measurement location even in difficult to access places or on small targets
- Optional remote-controlled swivelling/tilting device to adjust the pyrometer from the control room
- Very small design (Ø 65 x 235 mm incl. pyrometer)
- Very high sensitivity (from 0.4 lux)
- Easy integration into available video and/or computer systems
- Robust and industrial-proof design
- Video signal transmittable up to 100 m without additional booster

Function

The CellaCap® video monitoring system provides remote target monitoring and pyrometer adjustment from the control room.

The basis of the modular system is a CCD video camera. The camera module is screwed onto the rear of the pyrometer and views the target through the pyrometer's sighting. The optical paths for measuring and sighting are on the same axis. The measuring environment as well as the exact target spot become visible in the video image on the monitor as a ring-shaped marker. The system enables continuous monitoring of the target area as well as an alignment check in order to detect disturbances as soon as they occur. The swivelling/tilting device allows the operator to adjust the pyrometer from the control room. This greatly facilitates pyrometer alignment in cramped or difficult to access locations.

The camera module can be mounted on all pyrometers of the PZ series with through-the-lens sighting. Even already installed pyrometers can be easily retrofitted.

The camera is equipped with an automatic gain control (AGC) so that it automatically adapts to the brightness of the measurement environment. The aperture can be adjusted manually in order to optimise the image qualities.

The modular camera system can be linked up to the pyrometer as an autonomous video unit or as a complete measuring and visualization system operating in connection with a PC.

CellaCap® Technical specifications

Display:

black/white | colour

Number of pixel:

(horizontal x vertical)

512 x 582 | 537 x 597

Resolution:

380 lines

Light sensitivity:

0.4 lux | 0.5 lux

Lens:

1:1.4/16 mm | 1:2.0/12 mm

Video output:

1 Vpp, 75 Ohm

Ambient temperature:

-10 to +50 °C | 0 to +40 °C

Power supply:

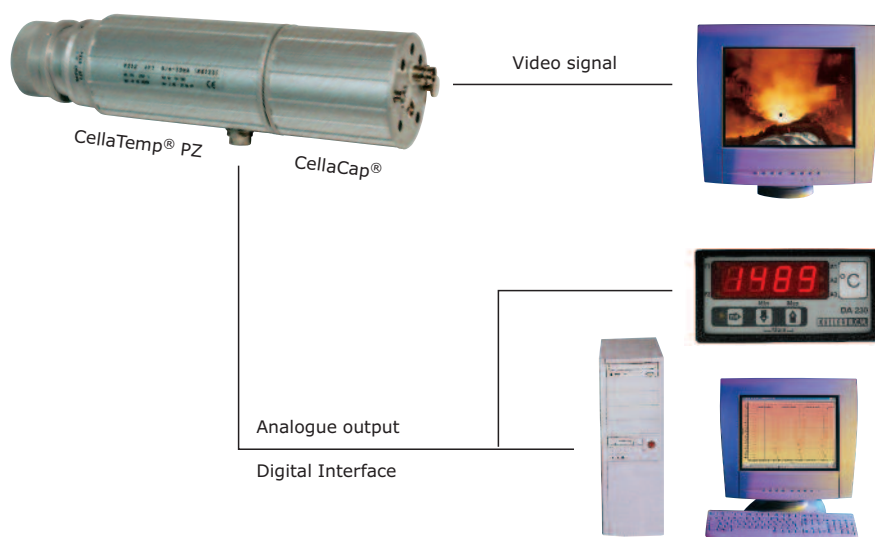
24 V DC, 60 mA

Dimensions:

65 x 89 mm
(with connection socket)

Length of cable for video signal:

100 m (without booster)



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Accessories and Fittings

■ Interchangeable Optics



The pyrometers of the PZ Series can be equipped with a variety of optical systems to serve a multitude of applications.

■ Supplementary lenses



Attaching additional lenses to the pyrometer's optical system makes it possible to achieve various target spot sizes as small as \varnothing 0.3 mm.

■ Protective windows



A protective window can be placed in front of the lenses to protect them.

■ PZ 20/B cooling jacket



Can be operated with air or water. Surrounds the pyrometer and protects it against high ambient temperatures up to 200 °C.

■ PZ 20/M cooling jacket



Similar to PZ 20/B but with the addition of a cap on the rear to completely seal the pyrometer for full environmental protection.

■ PZ 40/B protecting jacket



Protects the pyrometer against mechanical or physical damage in harsh industrial environments.

■ PZ 40/M sealed protecting jacket



The weather proof enclosure guards the instrument against physical damage, soiling and atmospheric exposure.

■ Pressure-proof enclosure



For pyrometer use in potentially explosive atmospheres. Certified EEx d IIC T6.

■ PZ 20/E adapter ring



Adapter for connecting the following accessories to the pyrometer when not using a cooling jacket.

■ PZ 20/A air purge



Prevents dirt or dust from settling on the pyrometer's lenses or quartz window. Circular airflow provides maximum efficiency with minimal air consumption.

■ PZ 40/C intermediate tube with socket



With purging air socket to keep the pyrometer optics clean

■ PZ 20/I quartz window with hinge



Prevents the pyrometer lens from becoming soiled. No tools needed to open the hinged window for occasional cleaning. Designed to withstand furnace pressure as high as 6 bar.

■ PZ 20/J intermediate tube



Serves as a tube extension for pyrometers with a telephoto lens. Can be attached to the mounting ring, the protective housing or the cooling jacket.

■ PZ 20/C intermediate tube



Enhances the purging effect of the PZ 20/A by increasing the air cushion to keep the lens free of dust and debris.

■ **PZ 20/T dust stop**

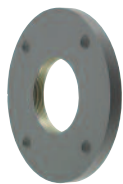


The small outlet hole causes the air flow to accelerate for maximum purging effect. To be positioned in front of the PZ 20/C intermediate tube.

■ **PZ 20/S dust stop**

Can be placed between the PZ 20/F mounting flange and the PB 08/I pedestal mount to increase the purge air flow rate.

■ **PZ 20/F mounting flanges**



For front-end mounting of the pyrometer assembly e.g. on an outer kiln wall. Available in a wide variety of diameters.

■ **PB 08/I, PZ 10/F ball flanges**



Includes a pivot bearing to serve as a ceiling or wall mount. Can pivot 5° for precise pyrometer alignment to the target.

■ **PB 08/K pedestal mount**



This sturdy mount permit attachment of all accessories, allowing horizontal and vertical tilt adjustment.

■ **PZ 20/L AF 2 (70 mm) and PZ 20/N AF 2 (65 mm) Clamping collars**



Serves to fasten the pyrometer or accessory to the PB 08/K pedestal mount or to the PZ 20/U mounting bracket.

■ **PZ 20/U AF 2 mounting bracket**



Simple pyrometer or accessory mounting, either horizontally or vertically.

■ **PZ 10/H ball and socket mounting**



For quick and easy pyrometer alignment.

■ **PZ 20/X AF 5 oscillating mirror**



Deflects the radiation emitted from the target for hot spot recognition or measurement of thin target objects. Can be mounted in front of any PZ or PS model pyrometer. Coupled to the pyrometer, the PZ 20/X can act as a scanner and generate a temperature profile across a target area. Using a digital interface, the data can be transmitted to a PC.

■ **PZ 10/P illumination ring**



Illuminates the measuring point during installation and facilitates correct pyrometer alignment towards dark target objects.

■ **PZ 20/Q AF 2 laser pointer**



Can be fitted into the eyepiece of pyrometers with through-the-lens sighting to indicate the centre of the target spot when an application provides poor visibility.

■ **VPT-40/24V remote-controlled swivelling/tilting device**



Used together with the PTL 124 control unit, this device enables remote aiming from the control room.

■ **DA 230 multifunctional display**



Programmable, all-purpose digital display with 24 V DC feed voltage. Supplements the pyrometer to provide a wide variety of special functions.

■ **URE 422 universal controller**



To actuate switching elements or to generate a continuous output signal. The device offers user-defined configuration of the outputs, control function and indicating range. Has two analogue outputs as well as two relay outputs.

Combination examples

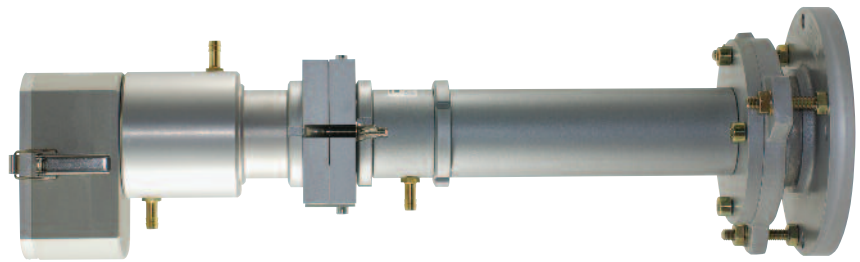
Due to their modular design, the PZ Series accessories enable a wide variety of combinations, thus creating customised assemblies to meet the requirements of specific measuring tasks and serve special applications.

The assembly PZ 20-024 provides total pyrometer protection.

The PZ 20/B cooling jacket guards the instrument against high ambient temperatures and mechanical forces.

The PZ 20/A air purge, the PZ 20/C intermediate tube, and the PZ 20/T dust stop combine to provide an air flow which keeps the optics free of dust and dirt.

The PB 08/K offers robust mounting and enables pyrometer alignment towards the target in any direction.



Combination PZ 20-007

Assembly PZ 20-007 has a flange mounting and provides complete pyrometer protection. The target can be sighted through-the-lens. The pivot bearing of the PB 08/I ball flange facilitates proper pyrometer alignment.

This assembly serves to install a pyrometer system onto the outer shell of a kiln, furnace or combustion chamber.

Even in severe industrial conditions, these accessories will guard against environmental influences so that the pyrometer's "vision" remains unobscured.

The PZ 20/A air purge creates an air cushion in the PZ 20/C intermediate tube. The air flow clears dust and vapour from the PZ 20/I quartz window. The hinge allows the quartz window to be quickly and easily cleaned when necessary.



Combination PZ 20-024



The PZ 20/M sealed cooling jacket guards the pyrometer against heat, soiling and other environmental factors. The viewing panel on the enclosure allows the operator to view the temperature reading at all times.

Product Overview

Non-contact temperature measuring instruments

Portix

Portable pyrometer with data storage and interface. Also available as combination device with sensor port.
-30 °C to +1999 °C.



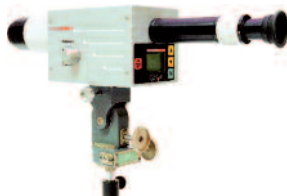
Optix

Portable Pyrometer with through-the-lens sighting and focusable interchangeable lenses.
+250 °C to +2500 °C.



Intensity Comparison Pyrometer Mikro

For high-precision temperature monitoring of objects as small as 0.1 mm. Continuous range +700 °C to +3500 °C.



CellaTemp® PM

Digital miniature pyrometer for temperatures between ±0 °C and +1200 °C.



CellaTemp® PS, PQ

Digital mini pyrometer enclosed in a high grade steel housing Ø 30 x 190 mm.
-30 °C to +3000 °C.



CellaTemp® PL

Pyrometer with variable focus and LED spot light indicates the exact target spot.
0 °C to +1400 °C



CellaTemp® PZ

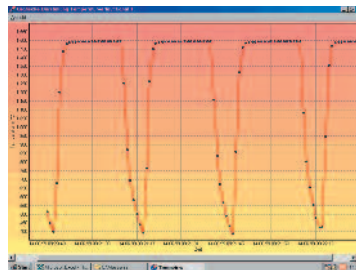
With through-the-lens sighting or fibre optics available as a spectral pyrometer or two-colour pyrometer for temperatures from ±0° C to +3000 °C.



Visualisation software

CellaMevis®

Industrial software running under Windows® for real-time display, analysis and archiving of temperature readings.



Temperature data logger

CellaLog®

Self-powered temperature logger.
-40 °C to +85 °C.



Humidity and temperature measuring instruments

CellaHum® GB

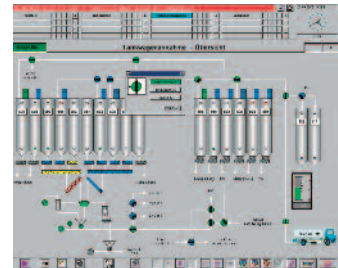
Combined humidity and temperature measuring instrument for gases.
±0 to 100 % RH and -30 °C to +170 °C.
Channel or cable version available.



Automation and systems engineering

System solutions for recording measurement values and for visualising and archiving data.

Process control, automation and visualisation solutions for weighing, mixing and dosing systems.



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