Technical Datasheet

a **KPM** ANALYTICS brand

Stand Alone Pyrometer Series *Sirius SS* and *SI*

The *Sirius* line of Pyrometers was developed to meet the growing demand for small and easy-to-install sensors with first-class optical and electronic characteristics. *Sirius*-Pyrometers operate at the near end of the infrared spectrum and are therefore an excellent choice for measurement of ferrous and non-ferrous metals above 250°C because the emissivity of un-oxidized metal surfaces is higher at shorter wavelengths. Other major advantages are the lower sensitivity for changes in emissivity at shorter wavelengths.

The units are exceptionally robust due to the fact that the measuring process is performed without mechanically moving parts and because the lens, detector and electronics are housed in a stainless steel cabinet. By utilizing the digital signal process, the *Sirius* line exceeds standard analog Pyrometers as far as precision and repeatability are concerned.

Model	SS09	SI16
Spektral Range	0.67 – 1.1 µm	1.45 – 1.8 µm
Temperature Range	550 – 1400°C 650 – 1800°C	250 – 1000°C 300 – 1300°C 350 – 1800°C

Chart 1: Temperature Range and **Spectral Response**

Sirius-Pyrometer in stainless steel housing

Lenses: The infrared energy radiated by the target is centered directly on the detector by factory provided focused lenses. Lenses are made of BK7, an optical glass which is highly transparent in the spectral region of *Sirius SS* and *SI.* If additional windows are necessary, they must offer similar optical characteristics.

Lens	Aperture Ø	Distance	Spot Ø
OP09-A0	14 mm	170 mm	1.3 mm
		200 mm	1.4 mm
		245 mm	1.5 mm
OP09-B0	14 mm	..260 mm	1.6 mm
		400 mm	2.5 mm
		500 mm	3.2 mm
OP09-C0	14 mm	480 mm	3 mm
		1000 mm	6 mm
		2000 mm	11 mm

The detector is sensitive to infrared radiation in an area called **cone of vision.** For the spot size diameter Ø of it at shortest, medium and widest distances, if focused, pls. see **Chart 2.** The cone of vision diameter in front of the lens is about 14 mm. This area has to be kept free from any intervening objects. The spot size diameter for distances not given in the chart can be calculated by interpolation.

Chart 2: Spot size diameter at lens (aperture) and at focussed distance

Optical Alighnment: The optical alignment of the Pyrometers on the measured object is facilitated by the precise laser marking which indicates the centre of the measured spot. The optical axis is aligned with the mechanical axis of the sensor housing. The laser can be switched on directly at the back of the housing or by an externally installed contact.

Temperature Output Signal: *Sirius* Pyrometers offer analog and digital output signals for indication, recording, archiving and controlling of measured process temperatures. The isolated analog output is selectable from 0 to 4 to 20 mA. Zero- and full-scale temperatures are adjustable to cover any portion of the instrument's available temperature span to a minimum of 51°C.

There is a choice of 23 digital communication interfaces: **RS 232** or **RS 485** max. 57.6 kBd.

Signal Filtering: For measuring and holding of the highest instantaneous temperature value a **peak picker** (maximum value storage) is installed to compensate interruptions or attenuations in radiation caused by bursts of steam, smoke or dust. It can be either reset automatically, by an external contact closure or periodically, by user preset clear time. In this last case the highest temperature will be held in a dual storage and will be reset in only one of the two storages, after preset clear time to avoid a decrease of the temperature output, should a short cold period appear just at the reset moment. The **exposition time** is the length of time it takes for the output signal to reach 90% of a step change in measured temperature. It can be used to filter out rapid variations in temperature and achieve a "more quiet" signal for control or display purposes.

Software: The *PSCWin* **Software** is available for automatic or manual set up of the pyrometer. Since the connection of the computer is done via a separate interface cable, which can be removed following the setup procedure, the Pyrometer normally operates in stand-alone mode. If there is, however, an automatic, process dependent parametrization of the Pyrometer or recording or saving of graphical or table files necessary, the interface can be maintained. At the same time, these files can be used for quality assurance purposes because the parameter settings are recorded, too. Minimum computer requirements are: 500 MHz clock frequency and Windows® 95, 98, ME or XP operating system.

Additional Specifications

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Spectral Range:	0.67 - 1.1 μm (*Sirius SS*) and 1.45 - 1.8 μm (*Sirius SI*)
Temperature Range:	can be positioned within the limits of the basic range, minimum adjustable span 50°C
Signal Conditioning:	digital
Accuracy:	± 0.5% of measured value in C + 1C
Repeatability:	0.1% or reading + 1C
Exposition Time t_{90}:	5 ms, adjustable to 10s
Emissivity Adjustment:	20 % - 100 %
Power Supply:	24 V DC (12 - 30 V DC); 1 VA max.
Isolation:	power supply, analog and digital output are galvanically isolated against each other and against housing
Analog Output:	0/4 – 20 mA, selectable, isolated, max. load: 500 Ω
Digital Interface:	RS232C addressable, baud rate 57,6 kBd max., galvanically isolated
Parameter:	changeable and readable via serial interface: emissivity, exposition time, peak picker reset time, device temperature, address, baud rate, temperature range
Resolution:	0.1 °C
Optical Alighnment:	laser pointer (laser class 2, max. output power 1mW, 635nm)
Operation Indicator:	green LED
Housing rated:	IP 65 (refer to DIN 40 050) power cable connected
Ambient Temperature:	0 - +70°C at housing
Storage Temperature:	-20 - +70°C
Weight:	300 g
CE - Directive:	conform to EMV regulation 89/336/EWG

Accessories:

Model	Description
AK43-05	Interconnecting cable 5 m, including PC – configuration software
BL11-00	Air Purge
HA10-01	Mounting Bracket for Cooling Housing KG60
HA11-00	Stainless Steel adjustable Mounting Bracket
KG60-00	Cooling Housing for high ambient temperature up to 140°C

Sirius Mounting Bracket HA11

Scope of supply: Sensor with lens, 2 mounting nuts M40 x 1.5 and Manual. Connecting cable with Software has to be ordered separately

Sirius Cooling Housing KG60

Dimensions: *Sirius SS* and *SI*
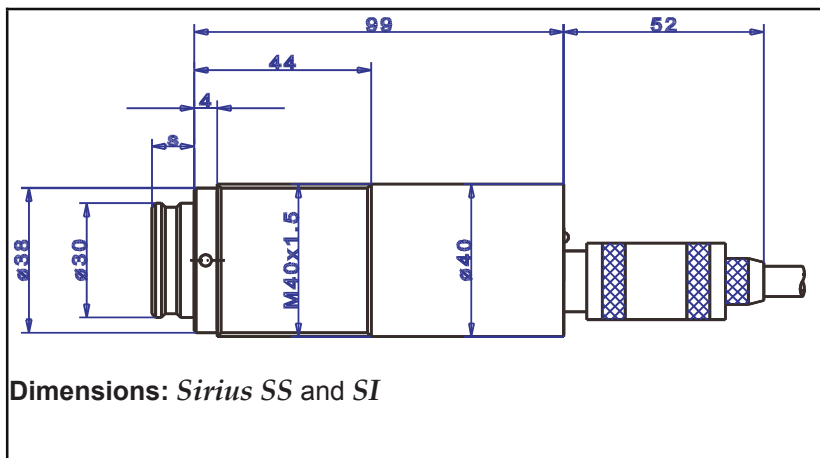
Specifications are subject to be changed without notice.
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