

## Metis Pyrometers for Non-Contact Temperature Measurement

Metis, the Pyrometer designed for the toughest tasks in temperature measurements

- proven in production, research and development
- excellent for multiple applications in all sectors

Comprehensive digital signal processing with direct digitization of sensor signal produces system characteristics which defy comparison:

- spectral and two-colour pyrometers
- tele-maintenance functions using service data
- maximum measurement accuracy and reproducibility
- wide range of measurement areas with magnification function
- response times from 500µs and spot sizes beginning at 0,20 mm
- focusable and fixed-focus lenses
- focusable fiber-optic lenses
- easy integration into existing systems
- laser spot marking, through the lens sighting or integrated video camera
- digital communication using RS232 / RS485 und Profibus DP
- analog temperature output
- galvanic insulation of all interfaces
- robust and comprehensive accessories for industrial use
- all-purpose „Sensorwin“ software: supplied as standard product feature



### Lenses and Sighting Options

Fiber-optic-version with  
Depending on the model selected, both Metis and Metis II Pyrometers are available with different lenses and sighting accessories. A focusable lens offer the the maximum in flexibility. The measuring spot can be optimally adjusted to teh measuring task. With the fiber-optic version, two focusable lenses are available for the MS, MI and MQ models.



with focusable lens



with fixed-focus lens

focusable lenses  
25 and 12 mm  
diam.

We recommend the use of a fixed-focus lens whenever very small measuring spots are required. Thus, a distance ration of 700:1 can be reached by using the MS and MI models.

The optical sighting on the measured object can be done using one of the three following methods:

Through the lens sighting

Laser aiming

Integrated video modul

Marking the spot with a circular sight

Laser spot marking

Reticle shown in video picture



## Metis MQ11 and MQ22

Top-of-the line Two-Colour Pyrometers

By utilizing Quotient Pyrometers MQ11 and MQ22 the intensity can be analyzed simultaneously via two detectors. The radiation signal ratio creates the output quantity therefore these units are also known as ratio pyrometers.

**One advantage is the excellent measurement results - disturbances in the cone of vision caused by smoke, dust and dirty windows can be eliminated to large extent. Also appropriate for measuring extremely small objects which don't completely fill the measuring field.**

Metis MQ is also available in the Metis II version

Both product series are attractive for the following reasons:

- exceptionally rapid, with response times under 1 ms
- all channels can be read individually (digital and analog)
- spot sizes starting from 0,2 mm
- focusable lens with or without fiber-optic
- extensive temperature ranges
- detects pollution on the lens glasses

New

## Metis II

always two steps ahead of the game

The logical evolution of the Metis Series

In order to provide for a temperature display on site, *Sensortherm* has further enhanced the *Metis* Series and offers additional options.



All Metis Pyrometers can be supplied with the Metis II options, starting today

- 10-digit alphanumeric LED display on the back panel
- measured temperature as well as the parameter settings are displayed
- data transfer with up to 115 kBaud
- interface switchover between RS232/RS485 located on the pyrometer
- testsignal output 10/12mA
- two limit switches in the pyrometer unit, adjustabel as required
- two analog outputs
- functional and readiness signal outputs

### Advantage:

The keyboard integrated in the unit permits simple and individual adjustment to all types of measuring jobs. Every set point can be accessed and modified using the menu. **No PC or Notebook is necessary.** The 10-digit LED-display gives **excellent readability even under difficult conditions.**



MBA: 0300% E: 100.0% BAUD: 115 K  
MDE: 1300% T90: 10ms ADR.: 00  
OUT: 0-20mA MAXI: OFF GTMP: 30%



## Controller included upon demand:

Two limit switches integrated in the unit perform additional on-off controlling with adjustable hysteresis. They can be defined as required within the measurement range. The limit values can be used as make contacts or as break contacts.

A PID controller, included in the pyrometer, with programmability in all parameters, fulfills even the fastest control tasks. Through self-optimization, an automatic adjustment of the control parameters for each control loop is executed. Actual value and controlled quantity can be outputted simultaneously via two analog outputs (optional) and generally can be accessed in digital fashion via the interface. The limit values as well as the control parameters can be operated using the menu provided with the *Metis II*.



## Metis and Profibus



Of course, the pyrometers *Metis* and *Metis II* are available in the Profibus-DP version.



Independent of your selection of *Metis* or *Metis II*, all parameters are accessible via the interface and can be adjusted. In addition to the data processing interface, you always have the analog output of 0/4-20mA available. On the pyrometer itself, the interface of the Profibus can be switched over to RS232/RS485. this permits operation using a laptop or computer via the "Sensorwin" Software supplied.

### Metis : Overview of Temperatures Ranges and Detectors

When choosing an appropriate pyrometer keep in mind that the influence of the emission factor increases with the increasing wavelength. **As a rule, measurements should be done using the shortest possible wavelength. Always measure bright metal surfaces with as short a wavelength as possible. Here our experts will be pleased to advise you.**

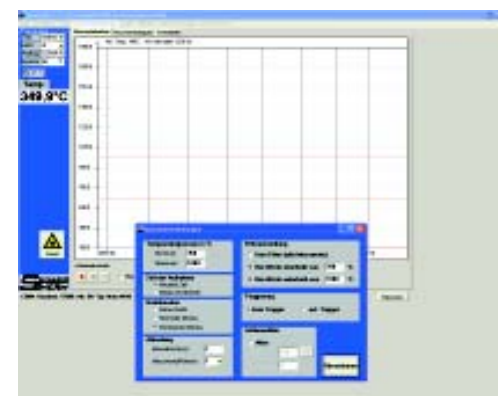
The following tabel indicates the minimum and maximum temperatures of the respective spectral ranges.

Models MS09 to MY51 are available only for smaller sub-ranges.

Model	Detector	Temperature-Ranges (°C)	Main application areas
Metis MS09	Si	550-3300	metals, molten glass
Metis MQ11	Si/Si	600-3300	metals, molten glass, graphite, molten metal
Metis MI16	InGaAs	200-2500	laser applications, metals
Metis MI 18	InGaAs	120- 800	laser applications, plastics, metals, tempering
Metis MQ 22	InGaAs/InGaAs	300-1500	laser hardening & soldering, metals at low temperatures
Metis MP25	PbS	75-1300	laser applications, plastics, tempering
Metis MB35	PbSe	50-1000	glue tracks, brake discs, plastics, tempering
Metis MY34	Pyroel.	300-1300	interior temperature of glass, wafer temperatures
Metis MY39	Pyroel.	150-2600	through flames, interior temperatures of glass
Metis MY51	Pyroel.	100-2500	glass, glass surface
Metis MY68	Pyroel.	50-400	films, synthetic materials
Metis MY80	Pyroel.	50-400	films, synthetic materials, glass
Metis MY81	Pyroel.	0-400	films, synthetic materials
Metis MY84	Pyroel.	0-1000	organic materials, rubber, paper, paints

**Sensorwin**  
Analytical and Operating Software

All Metis Pyrometers are supplied with comprehensive and user friendly software "Sensorwin" as standard feature. "Sensorwin" supports the parametrization of the pyrometer for data display and representation of the temperatures measured. Stored values can be transferred to other programs like Excel. Once a service file is created, it is possible to do tele-maintenance. Furthermore, "Sensorwin" helps to commission new units since the temperature curve facilitates the parametrization of a pyrometer. Operating systems used are Windows 98, 2000, ME, XP



Using the menu window "Start settings", "Sensorwin" can ideally be suited to all your needs.

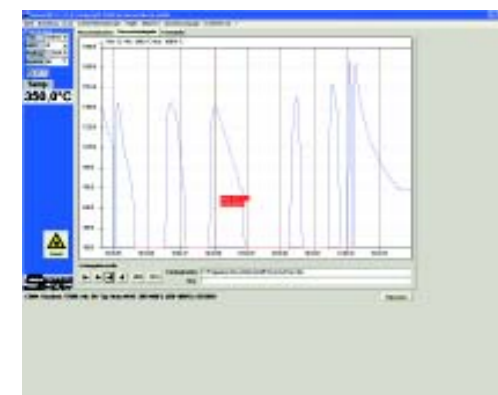
- scaling of the temperature axis
- time axis in real or actual time, as required
- start / stop of the data graphics, done manually or via an extension trigger
- setting of the scanning rate for customized adjustment of the data quantity
- adjustable software filter
- limit temperatures adjustable for the data graphics

Full parametrization of the pyrometer using "Sensorwin"

- emissivity level
- response time
- maximum value storage
- measurement range magnification for the analog output
- switchover of the analog output from 0-20mA to 4-20mA
- controller activation and parametrization
- unit temperature display
- baud rate and address
- display of the pyrometer model and interface



The function called "simulate temperature" permits the output of the desired temperature value, within the temperature range, as a 0/4-20mA signal on the analog output of the pyrometer. This facilitates the checking of any units that may be connected.



Representation of the stored temperature curves

- Representation of the values via an on-line graph
- Zoom function for temperature and time
- Cursor with display of time and temperature
- Display as graph or value table
- Printing directly from the application
- Transfer of values to other programs

Accessories and Extensions

Regulus



Extremely fast, digital program controller with a capacity of nine programs and capable of being combined with all Sensortherm Pyrometers. The controller can be operated using the frontside push buttons or the software "Reguluswin".

- up to four limit switches
- manipulated variable limitation
- ramp function
- self-optimization
- including software



**Digital display and table top housing**  
Digital displays for the front panel mount or in Table top housing with integrated power supply permits representation of measured temperatures. Operation and parametrization of the connected pyrometer can be done without software or laptop

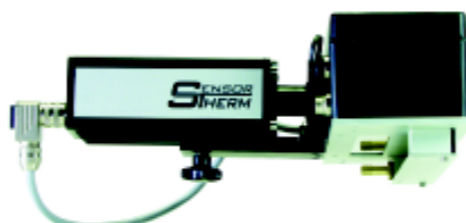
SC10 scanning accessory with Swivel Base



In order to measure accurately small objects, e.g., thin wires which might drop out of the measuring path temporarily. To measure the real temperatures of scaled surfaces where the unscaled points are visible in a few locations only, this requests a continuously moving mirror, scanning the measured object. In combination with its extremely fast response time, it's very small measuring spot and the integrated peak-picker, the Metis pyrometer will give you a new definition of the word "performance".

System Solution Galaxy

Temperature profile and 3D-graphics



up to four programmable zones supply either life, maximum, minimum or average temperatures  
variable scanning angle up to 90°  
variable scanning frequency up to 60Hz  
analytical software



Calibration-Software



Black body calibration source up to 500°C for all pyrometers to assure effortless after-calibration



attachable accessories  
cooling jacket  
cooling Plate  
air purging unit  
oven attachment accessories  
Vacuum accessories

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SENSOR  
SIHERM

Pyrometer

Sensortherm

New

Digitalpyrometer

Metis II



The logical evolution of the Metis series

SENSOR  
SIHERM

DIN EN ISO 9001:2000

Certificated