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Complete Catalogue



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How to choose the right pyrometer: Avoid bad purchases and prevent incorrect measurement results

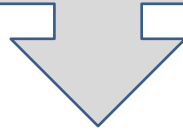
With the help of this guide, you can select the right pyrometers, infrared temperature measuring devices, infrared thermometers or infrared temperature sensors that are suitable for your application.



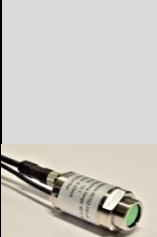

In order to select the right pyrometer, it is necessary to consider/answer the following technical questions:

1. What do you want to measure? What material is your measurement object made of?

This question is very important in order to select a pyrometer that measures in the correct spectral range.

While pyrometers in the spectral range of 8-14 μ m are suitable for most non-metals, this spectral range is unsuitable for metals, especially bare or polished metal surfaces.



Spectral range of the pyrometer				
Spectral range	Application examples	Stationary pyrometers	Portable infrared thermometers	
8 - 14 μ m	Food, paper, textiles, plastics, leather, tobacco, pharmaceuticals, chemicals, rubber, coal, asphalt and almost all non-metallic surfaces	IR 402 novasens 2050		
2.3 - 5.0 μ m	Measurements during glass production, glass finishing and further processing, tempering and hardening processes, production of flat glass, car glass, glass bottles and solar cells		HighTemp 520	
2.2 μ m	Measurement of shiny and polished metal surfaces in low temperature range, melting processes, steel melting, heat treatment/tempering, rolling processes, laser cutting processes, laser welding, welding processes, continuous casting, metal recycling, forming process, sintering process, die casting, steel rolling, soldering, monitoring of induction processes and induction heating	IR702		
1.1 - 3.7 μ m	Iron and steel production, melting and casting processes, forging processes and metal finishing processes, high-temperature chemical processes, thermoforming processes such as bending, rolling and cutting		HighTemp 530	

2. How high is the process temperature of the measured object?

If the process temperature of your measured object is 170°C, for example, select the temperature measuring range 0-250°C for the pyrometer.



Temperature measuring ranges		
Temperature measuring ranges	Designation	
-20°C – 100°C, 0–250°C	IR402	
-40°C to +60°C, 0-30°C, 0-50°C, 0-100°C, 0-250°C, 0-500°C,	novasens 2050	
100°C to +1800°C	HighTemp 520	
45°C - 300°C, 250°C - 1000°C, 450°C - 2000°C	IR702	
200°C to +2400°C	HighTemp 530	

3. What response time/reaction time should the pyrometer have?

This value is important if you want to measure a very fast-moving object, such as a conveyor belt.

4. How high is the ambient temperature around the sensor head?

For higher ambient temperatures, we recommend the use of a heat sink or the option of air cooling/lens cleaning with compressed air to increase the measuring accuracy of the pyrometer and the longevity of the sensor electronics.

Is the ambient air around the pyrometer lens contaminated with dirt/dust particles?

Select the air cooling/lens cleaning with compressed air option or an air purge attachment option for the sensor.



Connection for air cooling/lens cleaning with compr. air



Water cooling body and air purge attachment

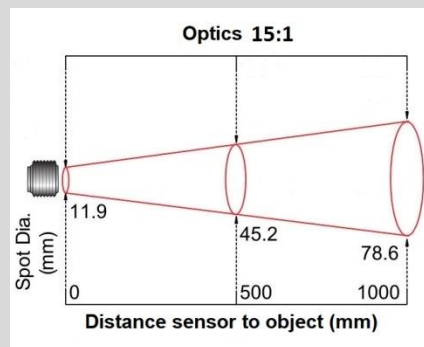


5. Which output signal do you need for integration into your application?
4-20mA, 0-20mA, 0-10V, Thermocouple Type-K or ModBus RTU?

6. How to select the right sensor optics:



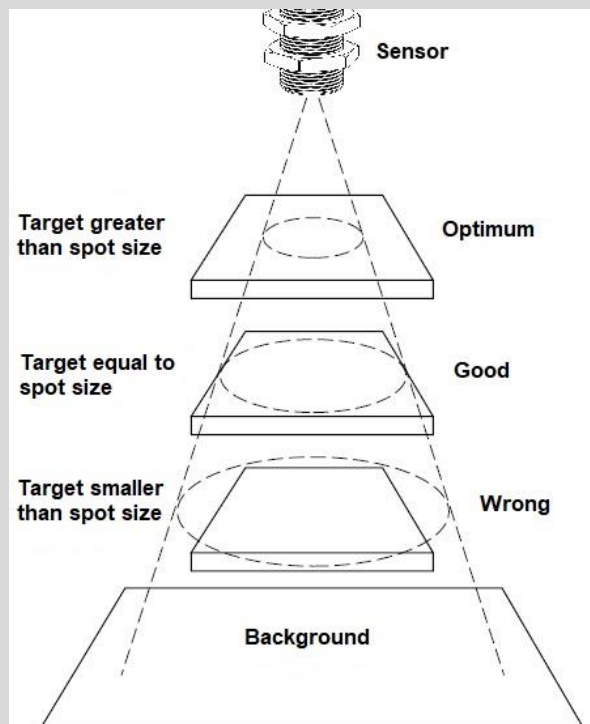
Pyrometers and sensors are available in various optical resolutions. The optical parameters are specified as D:S ratio (Distance to Spot Size). A 15:1 ratio has a measuring spot diameter of 25.2mm at a measuring distance of 200mm ($200\text{mm}/15=13.33\text{mm} + 11.9\text{mm lens diameter} = 25.2\text{mm}$).



If your measurement object is <25mm, place the sensor in the machine at a distance of up to 200mm. To select the correct optical resolution, consider the following parameters:

- How large is the measuring distance between the pyrometer and the measured object?
- Is it still variable or already fixed?
- What size/dimensions does your measurement object have?

To ensure correct temperature measurement, the measurement object must always completely fill the measurement spot.



Pyrometer novasens IR402

The novasens IR402 is a very cost-effective pyrometer for non-contact temperature measurement of food, paper, textiles, plastics, leather, chemicals, rubber, coal, asphalt and other materials.

Benefits for your applications

- Precision optics made of germanium for different measuring distances
- Robust sensor housing made of stainless steel
- 4-20mA or thermocouple type-K output
- Compact design - integrated electronics in sensor housing

4-20mA Typ-K



Technical Data

Measuring range	-20°C to +100°C and 0°C to +250°C
Spectral range	8-14 µm
Emissivity correction	0,95 fixed
Dimensions	Length 103 mm x 18 mm Diameter with M 16 x 1 thread
Permissible ambient temperature	0°C to +70°C (additional sensor cooling housing for higher temperatures is available)
Distance to measuring spot/optical resolution	2:1 15:1 30:1
Accuracy	+/- 1% of reading
Repeat accuracy	0.5% of the measured value
Reaction time T90	240ms
Resolution	1/10°C
Outputs	Thermocouple type-K or 4-20mA (2-wire)
Weight	95 grams (measuring head with 1m cable)
Housing material	Stainless steel
Protection class	IP65
Power supply	6-24 VDC (25 mA)
Delivery scope	Sensor with 1m cable and mounting screw
Conformity	RoHS, CE

Options/Accessories

Attachment for lens cleaning Laserpointer attachment Attachment for watercooling/lens cleaning Adjustable sensor holder



Pyrometer novasens IR702

The novasens IR702 pyrometer is the right choice for non-contact temperature measurement on metal surfaces. With an extensive range of accessories, the pyrometer can be precisely customised for your application.

Benefits for your applications

- Precise measurement of steel and bare metal surfaces also in low temperature range
- Linear 4-20mA output
- Simple configuration via USB with the novasens Config-Software
- Parameterisation and network integration via ModBus RTU protocol
- USB cable included in delivery
- Robust stainless steel sensor housing protection class IP65



ModBus RTU **4-20mA** **USB**

Technical Data

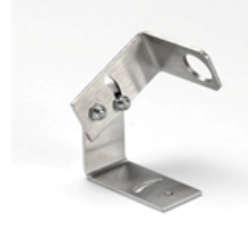
Measuring ranges	45°C-300°C, 250°C-1000°C, 450°C-2000°C
Spectral range	2.2 µm
Emissivity correction	1,0 to 0,1 adjustable
Dimensions	Length 61mm x 28mm diameter including cable gland
Permissible ambient temperature	0°C to +70°C (additional sensor cooling housing for higher temperatures is available)
Distance to measuring spot/optical resolution	15:1 25:1 75:1
Accuracy	+/-2°C or +/- 1% of the measured value, depending on which value is higher
Repeat accuracy	+/-0.5°C or +/- 0.5% of the measured value, depending on which value is higher
Response time	200ms
Resolution	1/10°C
Outputs	4-20mA (2-wire), USB 2.0 via ModBus protocol
Weight	155 grams (sensor head with 1m cable length)
Housing material	Stainless steel
Protection class	IP65
Power supply	6 – 24VDC
Scope of delivery	Sensor with mounting nut, detachable USB cable 1.8m long and 4-20mA output cable 1m long, software
Conformity	RoHS, CE

Options/Accessories

Attachment for lens cleaning Laserpointer attachment watercooling/lens cleaning



Adjustable sensor holder



Pyrometer novasens 2050

The endurance runner. The novasens 2050 pyrometer can be customised to suit your purpose and application thanks to its wide range of options. The measuring system consists of the novasens 2050 controller and the respective sensor. Both the sensor and the controller are available separately as spare parts.



Benefits for your applications







- Optional relay or hold function
- Selection of different sensors for different use cases
- Individual customisability
- Sensor and controller can be replaced individually and are available as a spare part

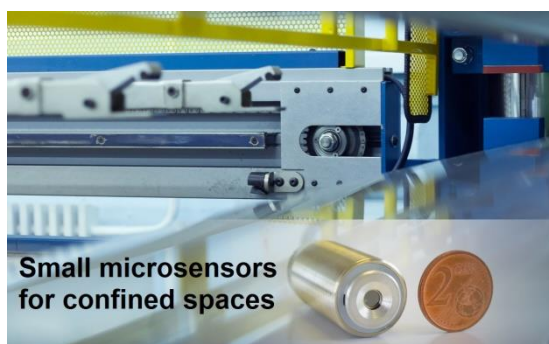


Technical Data

Measuring ranges	0°C-30°C, -40°C to +60°C, 0°-50°C, 0°-100°C, 0°-250°C, 0°-500°C, 100°-1000°C
Spectral range	8 – 14 µm
Emissivity correction	1.0 to 0.1 adjustable
Dimensions	Controller box: length 125mm x width 80mm x height 60m
Permissible ambient temperature	Controller box: 0°C to +60°C
Accuracy	+/- 1% of the measured value
Repeat accuracy	+/-0.5°C or +/- 0.5% of the measured value, depending on which value is higher
Response time	200ms
Resolution	1/10°C
Outputs	0-20mA, 4-20mA, 0-10V
Options	Relay for switching functions, hold function, adjustable response time
Weight	800 gram controller box with sensor
Housing material	Controller box: Aluminum, Sensor housing: Stainless steel
Power supply	24VDC, 230VAC
Conformity	RoHS, CE

Sensors for the novasens 2050 Pyrometer

Model	IR502G	IR502GAC	IR502GACV40	IR508G	IR501	IR501AC
						
Description	Precise sensor with germanium optics for detecting small measuring spots over large measuring distances	Robust sensor with air cooling / lens cleaning with compressed air for use in very hot or very dirty environments	Data as sensor IR502GAC additionally with 40mm attachment tube against contamination and interference radiation	Data as IR502G with different optics for larger measuring spot	Small, compact sensor for detecting large measuring surfaces and object	Robust, small sensor with air cooling /lens cleaning with compressed air for detecting large measuring surfaces and objects
Dimensions	Length 62mm x 18mm diameter	Length 62mm x 18mm diameter	Length 100mm x 18mm diameter	Length 62mm x 18mm diameter	Length 43mm x 18mm diameter	Length 43mm x 18mm diameter
Permissible humidity	95% non-condensing	95% non-condensing	95% non-condensing	95% non-condensing	95% non-condensing	95% non-condensing
Permissible ambient temperature	-20°C to +50°C	-20°C to +170°C (with air cooling)	-20°C to +170°C (with air cooling)	-20°C to +50°C	-20°C to +50°C	-20°C to +170°C (with air cooling)
Optical resolution/ Distance to measuring spot	100:2	100:2	100:2	50:8	1:1	1:1
Repeat accuracy	0.5°C (0-100°C) 1.0°C (over 100°C)	0.5°C (0-100°C) 1.0°C (over 100°C)	0.5°C (0-100°C) 1.0°C (over 100°C)	0.5°C (0-100°C) 1.0°C (over 100°C)	0.5°C (0-100°C) 1.0°C (over 100°C)	0.5°C (0-100°C) 1.0°C (over 100°C)
Weight	170 grams	190 grams	210 grams	170 grams	160 grams	180 grams
Sensor cable length	3m (can be extended up to 20m)	3m (can be extended up to 20m)	3m (can be extended up to 20m)	3m (can be extended up to 20m)	3m (can be extended up to 20m)	3m (can be extended up to 20m)
Protection class	IP64	IP64	IP64	IP64	IP54	IP64
Article number	0200231	0200236	0200241	0200209	0200207	0200208



Infrared temperature sensor novasens IR602

The robust one. For applications where other sensors can't go any further. The novasens IR602 infrared temperature sensor is ideal for non-contact temperature measurement in the food industry. Thanks to its IP69K protection rating, the sensor is resistant in all production processes with high humidity or wet cleaning processes. Its V4A stainless steel housing is extremely resistant. In addition to food production, our customers also use this sensor in other areas where conventional sensors would quickly be destroyed. The IR602 sensor is part of the novasens 2050 measuring system.

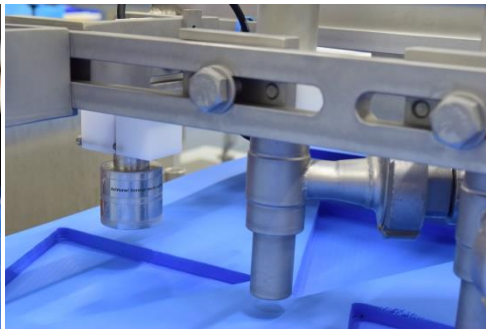
Benefits for your applications

- IP69K resistance
- Robust sensor housing made of V4A stainless steel
- Compact design
- Surface roughness Ra <0.8µm

4-20mA

0-20mA

0-10V



Technical Data

Measuring ranges	0°C-30°C, -40°C to +60°C, 0°-50°C, 0°-100°C, 0°-250°C, 0°-500°C, 100°-1000°C
Spectral range	8-14 µm
Emissivity correction	1,0 to 0,1 adjustable
Dimensions	Length 68mm x 43mm
Permissible ambient temperature	-20°C to +50°C
Distance to measuring spot/optical resolution	100mm : 2mm 50mm : 8mm 1:1
Accuracy	+/- 1% of the measured value
Repeat accuracy	+/- 0.5% of the measured value
Response time	200ms
Resolution	1/10°C
Outputs	0-20mA, 4-20mA, 0-10V
Weight	550 grams (sensor head with 3m cable)
Housing material	V4A stainless steel 1.4571
Protection class	IP69K
Housing surface	Electropolished, surface roughness Ra < 0.8µm
Delivery scope	Sensor with 3m cable
Conformity	RoHS, CE

Infrared thermometer novasens HighTemp 520

The novasens HighTemp 520 infrared thermometer is a portable high-temperature pyrometer in the short-wave infrared range for non-contact temperature measurement in glass production and further processing in the measuring range 100°C to 1800°C with thermocouple input and double laser for marking the measuring spot.

The HighTemp 520 is characterised by a very good price-performance ratio.



Benefits for your applications

- IR temperature measuring device with input for Thermocouple sensor NiCr-Ni (type K)
- Measuring range up to 8 meters
- Large temperature measuring range: 100°C to 1800°C
- High quality Ge optics 100:1 measuring spot ratio
- Audible and visual limit value alarm (HI-LOW)
- With aiming laser for simple and precise detection of the measured object
- HOLD/MAX/MIN/DIF/AVG/LOCK-function

Technical Data

Measuring ranges	100°C to +1800°C (infrared) -64°C to +1370°C (thermocouple input)
Spectral range	2,3 – 5,0 µm
Emissivity correction	1,0 to 0,1 adjustable
Dimensions	233 mm length x 207 mm width x 60 mm height
Permissible ambient temperature	0°C to +50°C
Distance to measuring spot/optical resolution	100:1 with aiming laser
Accuracy	+/- 2% of the measured value (infrared) +/- 1% of the measured value (thermocouple input)
Repeat accuracy	+/- 2% of the measured value (infrared)
Response time	< 1 second
Resolution	0.1 °C (from 1000°C = 1°C)
Laser	Class 2
Power supply	2 x 1,5V AA
Battery life	Approx. 40 hours in continuous operation
Weight	475 grams
Delivery scope	Thermometer, batteries, carrying case
Conformity	RoHS, CE

Infrared thermometer novasens HighTemp 530

The novasens HighTemp 530 infrared thermometer is a portable high-temperature pyrometer in the short-wave infrared range for non-contact temperature measurement in the production and processing of metals and steel in the measuring range 200°C to 2400°C with thermocouple input and double laser for marking the measuring spot. Like the HighTemp 520, the HighTemp 530 is characterised by a very good price-performance ratio.



Benefits for your applications

- IR temperature measuring device with input for Thermocouple sensor NiCr-Ni (type K)
- Measuring range up to 8 meters
- Large temperature measuring range: 200°C to 2400°C
- High quality Ge optics 100:1 measuring spot ratio
- Audible and visual limit value alarm (HI-LOW)
- With aiming laser for simple and precise detection of the measured object
- HOLD/MAX/MIN/DIF/AVG/LOCK-function

Technical Data

Measuring ranges	200°C to 2400°C (infrared) -64°C to +1370°C (thermocouple input)
Spectral range	1,1 – 3,7 µm
Emissivity correction	1,0 to 0,1 adjustable
Dimensions	233 mm length x 207 mm width x 60 mm height
Permissible ambient temperature	0°C to +50°C
Distance to measuring spot/optical resolution	100:1 with aiming laser
Accuracy	+/- 2% of the measured value (infrared) +/- 1% of the measured value (thermocouple input)
Repeat accuracy	+/- 2% of the measured value (infrared)
Response time	< 1 second
Resolution	0.1 °C (from 1000°C = 1°C)
Laser	Class 2
Power supply	2 x 1,5V AA
Battery life	approx. 40 hours in continuous operation
Weight	475 grams
Delivery scope	Thermometer, batteries, carrying case
Conformity	RoHS, CE

Subject to technical changes

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