

Pyrometer for temperature measurement of non-metallic surfaces as well as painted, coated or anodized metals. Temperature range between -32 and 900°C.

impac® IN 210
Infrared thermometry



- Small, robust stainless steel housing for easy installation, with electrical connector for facile mounting / demounting
- 2-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Temperature subrange programmable for adaptation of the analog output to the measuring task



The **IN 210** is a stationary pyrometer for non-contact temperature measurement of non-metallic surfaces or painted, coated or anodized metals.

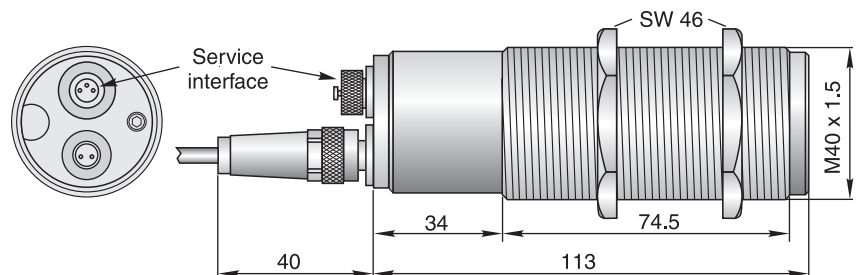
The instruments are operating as digital two wire pyrometers. This technique combines the high accuracy of the digital signal processing with the simple connection and operating with two wires.

The setting of the programmable parameters such as emissivity, sub-range and response time can be adjusted either with the portable setting device HT 6000 or via USB adapter and the setting software *InfraWin*.

This enables the instrument to be adapted to various measuring tasks. On request all necessary values can be set ex works.

The solid and robust design of the instrument guarantees high operational safety even in rough industrial environments.

Dimensions:



Technical Data

Spectral range:	8 to 14 μm	Power supply:	24 V DC \pm 25%; ripple \leq 500 mV
Accuracy:	1% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Power consumption:	Max. 0.6 W
Repeatability:	0.5% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Aperture:	15 mm
Resolution:	0.1 $^{\circ}\text{C}$	Protection class:	IP65 (according to DIN 40 050)
Parameters ¹⁾ :	Sub range, emissivity, response time	Ambient temp.:	0 to 70 $^{\circ}\text{C}$
Response time t_{90} :	120 ms, adjustable up to 10 s via service interface	Storage temp.:	-20 to 70 $^{\circ}\text{C}$
Emissivity ϵ :	0.2 to 1.0 adjustable via service interface	Weight:	Approx. 450 g
Output:	4 to 20 mA, linear; max. load 700 Ohm at 24 V	CE-label:	According to EU directives about electromagnetic immunity

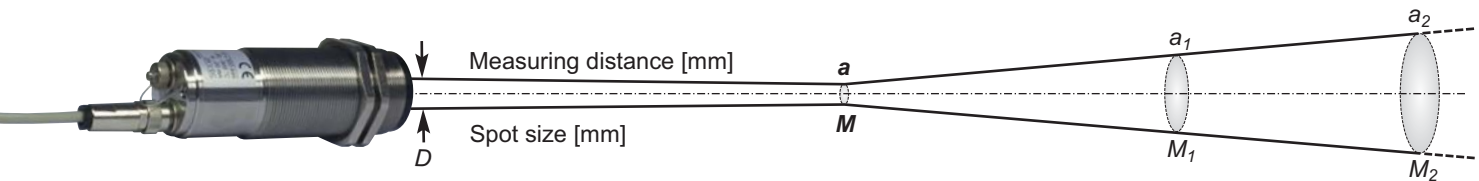
¹⁾ Programming via service interface with portable battery driven setup device HT 6000 or via USB adapter and software *infraWin* (optional) or preset ex works (on request)

Optica Data

The pyrometers are equipped ex works with one of the following optics. These optics are fixed to a certain distance, i.e. at these distances each optic achieves its smallest spot size in relation to the measuring distance. The spot size will change in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

Optics	a : M *)	a [mm]	M [mm]	a ₁ [mm]	M ₁ [mm]	a ₂ [mm]	M ₂ [mm]	D [mm]
100	50 : 1	100	2	200	18	300	35	15
300	50 : 1	300	6	600	22	1000	45	
800	50 : 1	800	16	1500	36	2500	68	

*) a : M; distance ratio (90% intensity); M: spot size; a: measuring distance; D: aperture (effective lens diameter)



Reference Numbers

Instruments:

3 819 540 IN 210; -32 to 900 $^{\circ}\text{C}$, optics a = 100 mm
 3 819 550 IN 210; -32 to 900 $^{\circ}\text{C}$, optics a = 300 mm
 3 819 560 IN 210; -32 to 900 $^{\circ}\text{C}$, optics a = 800 mm

3 890 640

Digital display DA 4000-N with 2 wire form power supply

3 890 650

Digital display DA 4000 with 2 wire form power supply and 2 limit switches

3 852 290

Power supply NG DC (100...240 V AC \Rightarrow 24 VDC, 1 A)

3 837 360

Water cooling jacket with integrated air purge unit

3 835 320

Air purge unit

3 834 350

Mounting angle, adjustable

3 834 360

Mounting angle, fixed

3 827 110

Battery driven laser targeting light

Accessories:

Connection cable:

2 m	5 m	10 m	15 m	20 m	25 m	30 m
...820	...830	...840	...850	...860	...870	...880

3 821 ...

3 826 500 Portable battery driven setup device HT 6000

3 820 980 Connecting cable to HT 6000

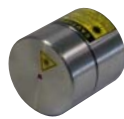
3 826 660 USB adapter + adjustment software *InfraWin*



Mounting angle fixed



Mounting angle adjustable



Laser targeting light



Water cooling jacket with integrated air purge unit



DA 4000
DA 4000-N



HT 6000

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Pyrometer especially for temperature measurements of glass surfaces and quartz glass surfaces between 100 and 1200°C.

impac® IN 210/5
Infrared thermometry



- Spectral range optimized for measurement of glass surfaces
- Small, robust stainless steel housing for easy installation, with electrical connector for facile mounting / demounting
- 2-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Temperature subrange programmable for adaptation of the analog output to the measuring task



The **IN 200/5** is a stationary pyrometer for non-contact temperature measurement of glass surfaces and quartz glass surfaces.

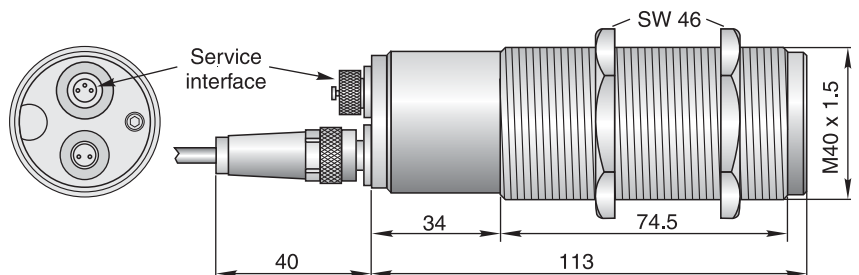
The instruments are operating as digital two wire pyrometers. This technique combines the high accuracy of the digital signal processing with the simple connection and operating with two wires.

The setting of the programmable parameters such as emissivity, sub-range and response time can be adjusted either with the portable setting device HT 6000 or via USB adapter and the setting software *InfraWin*.

This enables the instrument to be adapted to various measuring tasks. On request all necessary values can be set ex works.

The solid and robust design of the instrument guarantees high operational safety even in rough industrial environments.

Dimensions:



Technical Data

Spectral range:	5.14 μm	Power supply:	24 V DC \pm 25%; ripple \leq 500 mV
Accuracy:	1% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Power consumption:	Max. 0.6 W
Repeatability:	0.5% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Aperture:	15 mm
Resolution:	0.1 $^{\circ}\text{C}$	Protection class:	IP65 (according to DIN 40 050)
Parameters ¹⁾ :	Sub range, emissivity, response time	Ambient temp.:	0 to 70 $^{\circ}\text{C}$
Response time t_{90} :	120 ms, adjustable up to 10 s via service interface	Storage temp.:	-20 to 70 $^{\circ}\text{C}$
Emissivity ϵ :	0.2 to 1.0 adjustable via service interface	Weight:	Approx. 450 g
Output:	4 to 20 mA, linear; max. load 700 Ohm at 24 V	CE-label:	According to EU directives about electromagnetic immunity

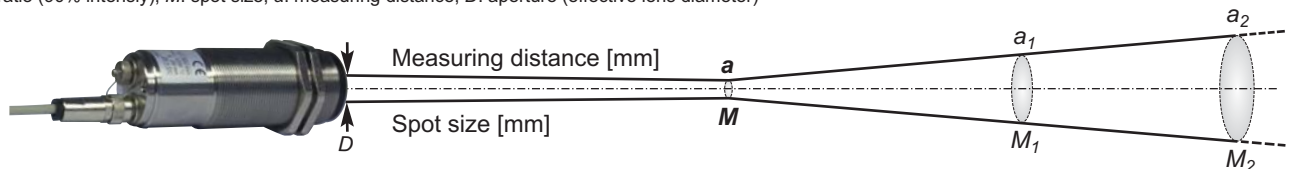
¹⁾ Programming via service interface with portable battery driven setup device HT 6000 or via USB adapter and software *infraWin* (optional) or preset ex works (on request)

Optica Data

The pyrometers are equipped ex works with one of the following optics. These optics are fixed to a certain distance, i.e. at these distances each optic achieves its smallest spot size in relation to the measuring distance. The spot size will change in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

Optics	a : M *)	a [mm]	M [mm]	a ₁ [mm]	M ₁ [mm]	a ₂ [mm]	M ₂ [mm]	D [mm]
100	40 : 1	100	2,5	200	18	300	35	15
300	50 : 1	300	6	600	22	1000	45	
1200	50 : 1	1200	24	2500	50	4000	80	

*) a : M; distance ratio (90% intensity); M: spot size; a: measuring distance; D: aperture (effective lens diameter)



When measuring the temperature of very large and hot surfaces (for example by the float glass production), additional radiation is received by the pyrometer's detector due to unavoidable effects (diffraction, multiple reflection). These effects increase the temperature output.

To get correct temperature values in this case, the pyrometer must be prepared ex works. The effect will be compensated by the so-called **float glass calibration**.

Reference Numbers

Instruments:

3 809 440	IN 210/5; 100 ... 1200 $^{\circ}\text{C}$, optics a = 100 mm
3 809 450	IN 210/5; 100 ... 1200 $^{\circ}\text{C}$, optics a = 300 mm
3 809 460	IN 210/5; 100 ... 1200 $^{\circ}\text{C}$, optics a = 800 mm
3 891 040	Float glass calibration (to order separately)

3 890 640	Digital display DA 4000-N with 2 wire form power supply
3 890 650	Digital display DA 4000 with 2 wire form power supply and 2 limit switches
3 852 290	Power supply NG DC (100...240 VAC \Rightarrow 24 VDC, 1 A)
3 837 360	Water cooling jacket with integrated air purge unit
3 835 320	Air purge unit
3 834 350	Mounting angle, adjustable
3 834 360	Mounting angle, fixed
3 827 110	Battery driven laser targeting light

Accessories:

Connection cable:

2 m	5 m	10 m	15 m	20 m	25 m	30 m
...820	...830	...840	...850	...860	...870	...880

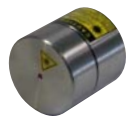
3 821 ...	Portable battery driven setup device HT 6000
3 826 500	Connecting cable to HT 6000
3 820 980	USB adapter + adjustment software <i>InfraWin</i>
3 826 660	Digital display DA 4000-N with 2 wire form power supply
3 890 640	Digital display DA 4000-N with 2 wire form power supply



Mounting angle fixed



Mounting angle adjustable



Laser targeting light



Water cooling jacket with integrated air purge unit



DA 4000
DA 4000-N



HT 6000

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Pyrometers in 2 wire form with digital signal processing for temperature measurements of metal surfaces, graphite, ceramics etc. between 300°C and 2500°C

impac® IS 210 • IGA 210
Infrared thermometry



- Small, robust stainless steel housing for easy installation with electrical connector for facile mounting / demounting
- 2-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Built-in LED targeting light for fast and precise alignment to the measuring object
- Built-in maximum value storage detects always the highest temperature value of a series of measurements
- Temperature subrange programmable to adapt the analog output to the measuring task



IS 210 and **IGA 210** are stationary pyrometers for non-contact temperature measurement of metal surfaces, graphite, ceramics etc.

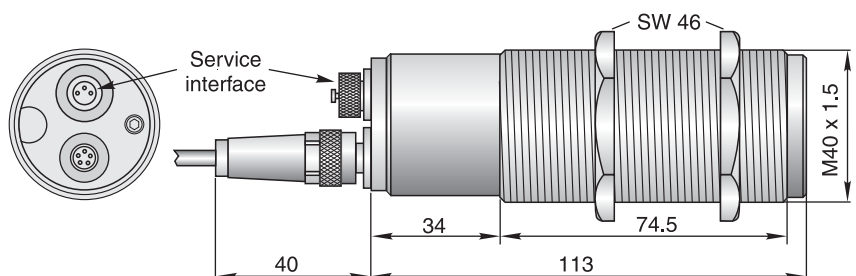
The instruments are digital pyrometers in two wire format. This format combines the high accuracy of the digital signal processing with the simple connection and operating with two wires.

The setting of the programmable parameters such as emissivity, sub-range, response time or maximum value storage can be adjusted either with the portable setting device HT 6000 or via USB adapter and the

setting software *InfraWin*. This enables the instrument to be adapted to various measuring tasks. On request all necessary values can be set ex works.

The solid and robust design of the instruments guarantees high operation safety even in rough industrial environments.

Dimensions:



Technical Data

Temperature range:	See reference numbers
Spectral range:	IS 200: 0.8 to 1.1 μm IGA 200: 1.45 to 1.8 μm
Accuracy ¹⁾ :	0.5% of reading in $^{\circ}\text{C} + 1^{\circ}\text{C}$
Repeatability ¹⁾ :	0.1% of reading in $^{\circ}\text{C} + 1^{\circ}\text{C}$
Resolution:	0.1 $^{\circ}\text{C}$
Parameters ²⁾ :	Sub range, emissivity, response time, maximum value storage
Response time t_{90} :	20 ms ... 10 s
Clear time of maximum value storage:	Off, 50 ms, 250 ms, 1 s, 5 s, 25 s, auto
Emissivity ϵ :	0.05 ... 1.0
Output:	4 - 20 mA, linear; max. load 700 Ω at 24 V

Power supply:	24 V DC \pm 25%, ripple 500 mV; LED targeting light: 5 to 30 V DC, 35 mA
Power consumption:	Max. 0.6 W (without LED targeting light)
Sighting:	LED targeting light
Protection class:	IP65 (according to DIN 40 050)
Ambient temp.:	0 to 70 $^{\circ}\text{C}$
Storage temperature:	-20 to 70 $^{\circ}\text{C}$
Weight:	approx. 450 g
CE-label	According to EU directives about electromagnetic immunity

Scope of delivery: Instrument, works certificate, user manual.

Ordering note: A connection cable is not included in scope of delivery and has to be ordered separately.

¹⁾ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)

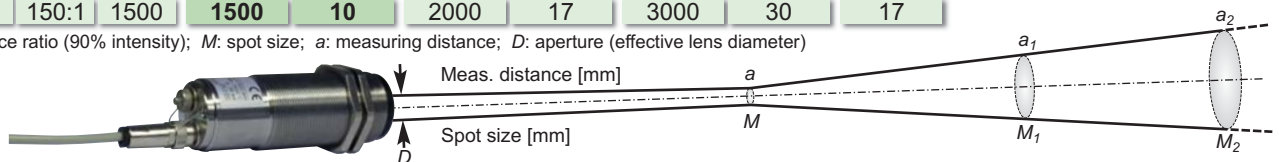
²⁾ Programming via service interface with portable battery driven setup device HT 6000 or via USB adapter and software *infraWin* (optional) or preset ex works (on request)

Optics

Type	a : M *)	Optics	a [mm]	M [mm]	a ₁ [mm]	M ₁ [mm]	a ₂ [mm]	M ₂ [mm]	D [mm]
IS 210	(MB 18) 130:1	600	600	4.5	1000	15	1500	28	13
	(MB 25) 240:1			2.5		12		23	
	(MB 18) 140:1	1000	1000	7	1500	15	2000	24	16
	(MB 25) 240:1			4.2		12		19	
	(MB 18) 135:1	1500	1500	11	2000	17	3000	32	17
	(MB 25) 235:1			6.4		14		23	
IGA 210	165:1	300	300	1.8	400	6	600	15	17
	175:1	350	350	2	500	8	800	18	16
	145:1	500	500	3.4	800	11	1000	16	14
	150:1	600	600	4	1000	13	1500	24	13
	140:1	1000	1000	7	1500	14	2000	22	16
	150:1	1500	1500	10	2000	17	3000	30	17

The pyrometers are equipped ex works with one of the specified optics. The smallest spot size M [mm] for each optics is in the nominal distance a [mm]. If the distance to the measuring object is decreased or increased the spot sizes will enlarge (see example values in the table).

*) a : M; distance ratio (90% intensity); M: spot size; a: measuring distance; D: aperture (effective lens diameter)



Reference Numbers

Optics	IS 210		IGA 210	
	650 ... 1800 $^{\circ}\text{C}$ (MB 18)	800 ... 2500 $^{\circ}\text{C}$ (MB 25)	300 ... 1300 $^{\circ}\text{C}$ (MB 13L)	350 ... 1800 $^{\circ}\text{C}$ (MB 18L)
300	-	-	3 819 860	3 819 890
350	-	-	3 819 870	-
500	-	-	3 819 880	-
600	3 819 740	3 819 770	3 819 800	3 819 830
1000	3 819 750	3 819 780	3 819 810	3 819 840
1500	3 819 760	3 819 790	3 819 820	3 819 850

Overview:

Water cooling jacket with air purge unit

adjustable / fixed mounting angle

Setup device HT 6000

DA 4000
DA 4000-N

	Connection cable:							
	2 m	5 m	10 m	15 m	20 m	25 m	30 m	
3 821 750	... 760	... 770	... 780	... 790	... 800	... 810	
3 852 290	Power supply NG DC; 100...240 V AC \Rightarrow 24 V DC, 1 A							
3 826 500	Portable battery driven setup device HT 6000							
3 821 600	Interface cable to HT 6000							
3 826 660	USB adapter + adjustment software <i>infraWin</i>							
3 890 640	Digital display DA 4000-N with 2-wire supply							

3 890 650	Digital display DA 4000 with 2-wire supply and 2 limit switches
3 852 290	Power supply NG DC (100...240 V AC \Rightarrow 24 V DC, 1 A)
3 837 360	Water cooling jacket with integrated air purge unit
3 835 320	Air purge unit
3 834 350	Mounting angle, adjustable
3 834 360	Mounting angle, fixed

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Pyrometer for temperature measurement of metal parts in flame heated furnaces. The chosen spectral range avoids the influence of combustion gases.

impac® IN 210/4
Infrared thermometry



- Measurement through flames and combustion gas without influencing the measurement
- Penetrating measurement into glass
- Small, robust stainless steel housing for easy installation, with electrical connector for facile mounting / demounting
- 2-wire technique for current supply and temperature measurement at the same time
- Internal digital signal processing for high accuracy
- High quality optics for detection of small measuring objects
- Temperature subrange programmable for adaptation of the analog output to the measuring task



The **IN 210/4** is a stationary pyrometer for non-contact temperature measurement of objects in flame heated furnaces. The narrow spectral range of 3.9 μm avoids the influence of combustion gases to the measurement.

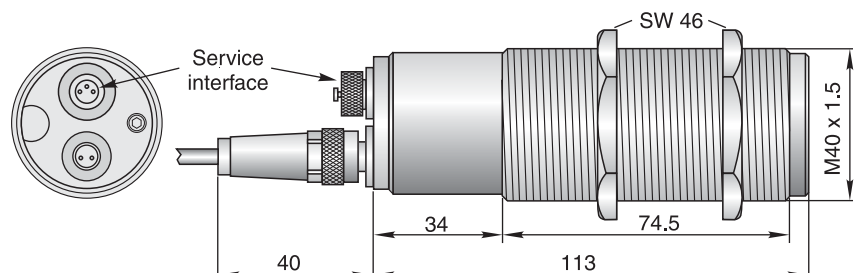
Another application is the measurement of glass if a small penetration into the glass is necessary (e.g. glass drop). Measurement errors caused by partially cooled down surfaces can be avoided.

The instruments are operating as digital two wire pyrometers. This technique combines the high accuracy of the digital signal processing with the simple connection and operating with two wires.

The setting of the programmable parameters such as emissivity, sub-range and response time can be adjusted either with the portable setting device HT 6000 or via USB adapter and the setting software *InfraWin*.

This enables the instrument to be adapted to various measuring tasks. On request all necessary values can be set ex works. The solid and robust design of the instrument guarantees high operational safety even in rough industrial environments.

Dimensions:



Technical Data

Spectral range:	3.9 μm	Power supply:	24 V DC \pm 25%; ripple \leq 500 mV
Accuracy:	1% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Power consumption:	Max. 0.6 W
Repeatability:	0.5% of reading in $^{\circ}\text{C}$ + 1 $^{\circ}\text{C}$ ($\epsilon = 1$, $T_{\text{amb}} = 25^{\circ}\text{C}$, $t_{90} = 1$ s)	Aperture:	15 mm
Resolution:	0.1 $^{\circ}\text{C}$	Protection class:	IP65 (according to DIN 40 050)
Parameters ¹⁾ :	Sub range, emissivity, response time	Ambient temp.:	0 to 70 $^{\circ}\text{C}$
Response time t_{90} :	120 ms, adjustable up to 10 s via service interface	Storage temp.:	-20 to 70 $^{\circ}\text{C}$
Emissivity ϵ :	0.2 to 1.0 adjustable via service interface	Weight:	Approx. 450 g
Output:	4 to 20 mA, linear; max. load 700 Ohm at 24 V	CE-label:	According to EU directives about electromagnetic immunity

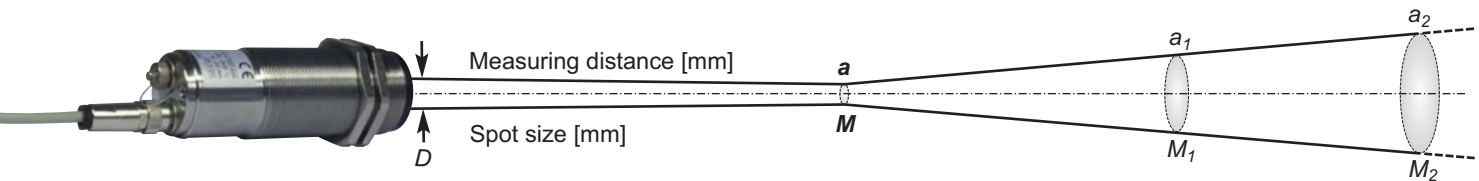
¹⁾ Programming via service interface with portable battery driven setup device HT 6000 or via USB adapter and software *infraWin* (optional) or preset ex works (on request)

Optica Data

The pyrometers are equipped ex works with one of the following optics. These optics are fixed to a certain distance, i.e. at these distances each optic achieves its smallest spot size in relation to the measuring distance. The spot size will change in any other distance (shorter or longer). Please note that the measuring object must be at least as big as the spot size.

Optics	a : M *)	a [mm]	M [mm]	a ₁ [mm]	M ₁ [mm]	a ₂ [mm]	M ₂ [mm]	D [mm]
100	40 : 1	100	2,5	200	18	300	35	15
300	50 : 1	300	6	600	22	1000	45	
1200	50 : 1	1200	24	2500	50	4000	80	

*) a : M; distance ratio (90% intensity); M: spot size; a: measuring distance; D: aperture (effective lens diameter)



Reference Numbers

Instruments:

3 819 340 IN 210/4; 300 ... 1000 $^{\circ}\text{C}$, optics a = 100 mm
 3 819 350 IN 210/4; 300 ... 1000 $^{\circ}\text{C}$, optics a = 300 mm
 3 819 360 IN 210/4; 300 ... 1000 $^{\circ}\text{C}$, optics a = 1200 mm

3 890 640

Digital display DA 4000-N with 2 wire form power supply

3 890 650

Digital display DA 4000 with 2 wire form power supply and 2 limit switches

3 852 290

Power supply NG DC (100...240 V AC \Rightarrow 24 VDC, 1 A)

3 837 360

Water cooling jacket with integrated air purge unit

3 835 320

Air purge unit

3 834 350

Mounting angle, adjustable

3 834 360

Mounting angle, fixed

3 827 110

Battery driven laser targeting light

Accessories:

Connection cable:

2 m	5 m	10 m	15 m	20 m	25 m	30 m
...820	...830	...840	...850	...860	...870	...880

3 821 ...

3 826 500 Portable battery driven setup device HT 6000

3 820 980 Connecting cable to HT 6000

3 826 660 USB adapter + adjustment software *InfraWin*



Mounting angle fixed



Mounting angle adjustable



Laser targeting light



Water cooling jacket with integrated air purge unit



DA 4000
DA 4000-N



HT 6000

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