

# Non-contact temperature measurement of casting jets

with digital ratio pyrometers  
**PYROSPOT DSRF 44N**



# Measuring systems with ratio pyrometers PYROSPOT

## ➤ Digital pyrometers with fibre cable and special optics



The casting house measuring system consists of a digital ratio pyrometer **PYROSPOT DSRF 44N** combined with a display and evaluation unit and a parameterizable software. It is specially designed for industrial applications in casting houses for temperature measurements of the casting jet from 700 °C.

The advantage of this system is its reliable temperature measurement even at very low and variable emissivities. A movement of the casting jet is balanced by the special optics that needs only a partial filling of the measuring field. The **DSRF 44N** detects from a distance of about 3 to 5 m with an optical head, the temperature of the casting jet. To reduce influence of dust, the sensor head can be protected by an air purge adaptor and a sighting tube.

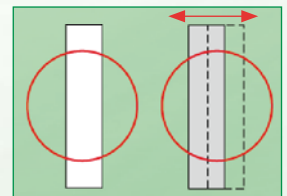
Alignment of the pyrometer to the measuring object is made simple with the integrated laser aiming light.

With the special software that can be called up via a web browser various parameters can be adjusted to the respective casting process. For every casting process a relevant average value is output. Occurring faults, e.g. during gating, are hidden.

The controller is programmed via an Ethernet interface and can be included in the remote maintenance. In this way it is possible to get access to the device during the production process, to optimize system settings and debug when necessary.

The standard 0/4 to 20 mA temperature linear output signal is still available of course. The measuring temperature is displayed on a large seven segment display.

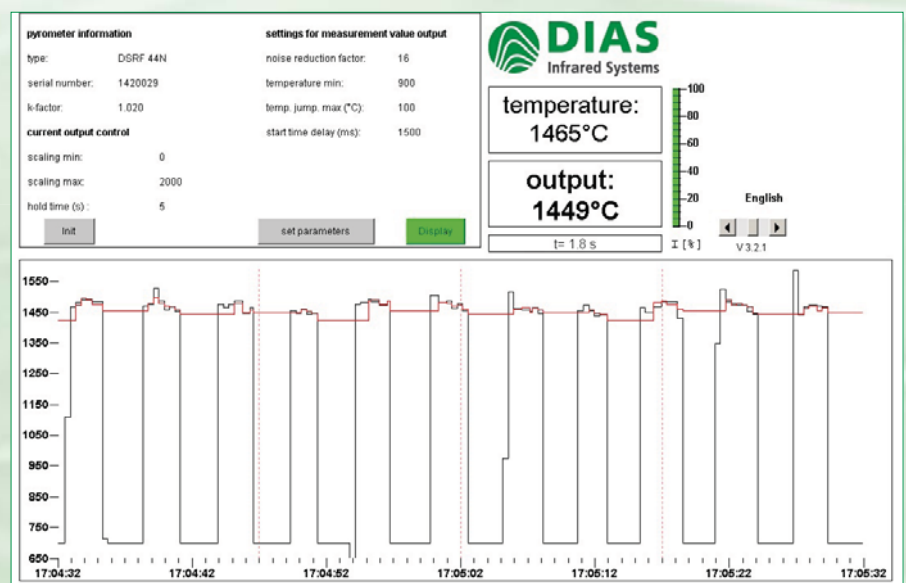
**Special optics** guarantees an accurate temperature acquisition even for not completely filled measuring spots and moving measurement objects.



## ➤ Software

The system is controlled via the integrated web server. Even in current process adjustments can be made via the web browser that displays the temperature profile and the value table.

The web server allows the adjustment of different parameters to the respective casting process since the detection of the relevant average value via whom signal variations can be masked out (e.g. sprue). In addition the beginning and end of the casting process are detected automatically.



# DSRF 44N for casting houses

## Overview: all parts of measuring systems for casting houses

<b>PYROSPOT DSRF 44N</b>	<ul style="list-style-type: none"> <li>– digital ratio pyrometer</li> <li>– temperature range 700 °C to 1800 °C</li> <li>– with special optics</li> <li>– optional with air purge adaptor and sighting tube</li> </ul>
<b>Junction box with seven segment display</b>	<ul style="list-style-type: none"> <li>– dimensions junction box: 380 mm × 300 mm × (W × H)</li> <li>– weight junction box: approx. 9 kg</li> <li>– display: 4 numerics</li> <li>– dimensions digit field: approx. 135 mm × 38 mm (W × H)</li> </ul>
<b>Fibre cable</b>	<ul style="list-style-type: none"> <li>– stainless steel</li> <li>– various lengths, special lengths available</li> </ul>
<b>Connection cable</b>	<ul style="list-style-type: none"> <li>– various lengths, special lengths available</li> <li>– with straight or angulated plug</li> <li>– aiming light button available</li> <li>– also for high temperature (–50 °C to 200 °C)</li> </ul>
<b>Software</b>	<ul style="list-style-type: none"> <li>– special evaluation and parameterization software</li> <li>– available via website</li> </ul>



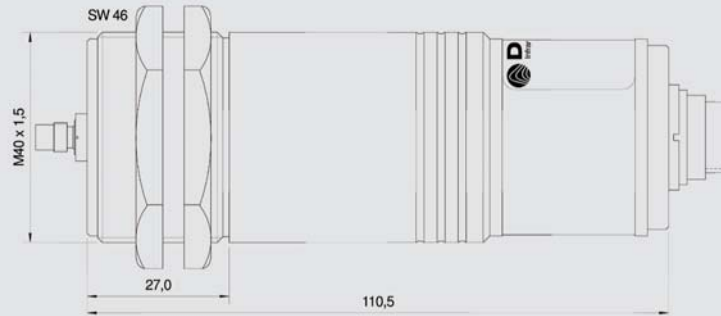
A large seven segment display is integrated in the junction box for temperature display. The large display is clearly visible from afar.

## Technical data

Type (Order number)	DSRF 44N (4442010203)
Temperature range	700 °C to 1800 °C
Sub temperature range	adjustable via RS-485 interface within temperature range, minimum span 50 °C
Spectral range	0.7 µm to 1.1 µm
Optics	ROH F44
Measurement uncertainty <sup>1</sup>	0.5 % of measured value
Reproducibility <sup>1</sup>	0,2 % of measured value
NETD <sup>2</sup>	0.1 K <sup>1</sup>
Response time (t95)	5 ms, adjustable up to 100 s, adjustable via RS-485 interface
Emissivity	0.050 to 1.000, adjustable via RS-485 interface
Ratio correction	0.800 to 1.200
Storage	minimum and maximum value storage, adjustable via RS-485 interface
Output	0/4 to 20 mA, switchable, temperature linear, max. burden: 700 Ω at 24 V
Interface	galvanically isolated RS-485 interface, half duplex, max. baudrate 115 kBd, Ethernet interface (junction box)
Aiming	laser aiming light
Software	PYROSOFT Spot for Windows®, Software for parameterization of casting parameters
Parameters	ratio correction, emissivity, response time, storage, sub temperature range, baudrate, address, measurement mode (1- or 2-channel)
Power supply	24 V DC ± 25 % (pyrometer), 230 V AC (junction box)
Power consumption	max. 1.5 W (pyrometer)
Operating temperature	0 °C to 70 °C (pyrometer), 0 °C to 250 °C (fibre cable and optical head), 0 °C to 55 °C (junction box)
Storage temperature	–20 °C to 70 °C
Weight	appr. 450 g (without fibre cable and optical head)
Dimensions	thread M40 × 1.5, length 125 mm
Housing	stainless steel housing with plug connector
Safety class	IP 65 (according to DIN EN 40050)
CE symbol	according to EU regulations

<sup>1</sup> Specifications for black body radiator,  $T_u = 23\text{ °C}$ ,  $\varepsilon = 1$ ,  $t_{95} = 1\text{ s}$   $\varepsilon = 1$ . <sup>2</sup> Noise equivalent temperature difference.

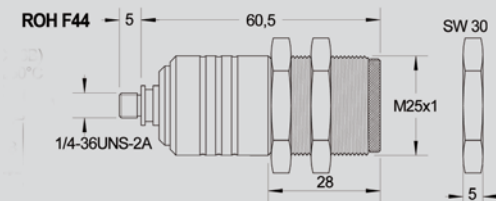
## Dimensional drawing pyrometer



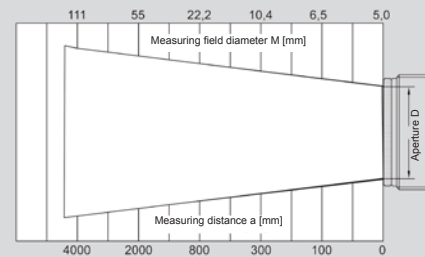
## Optics type ROH F44 (order number 3310A55010)

Measuring distance a in mm	0	100	300	800	1000	2000	3000	4000
Measuring field diameter M in mm								
DSRF 44N (700 °C to 1800 °C)	5.0	6.5	10.4	22.2	27.5	55.0	83.0	111.0

## Optics ROH F44



## Measuring field diameter



## Electrical, mechanical and optical accessories<sup>1</sup>

Electrical, mechanical and optical accessories <sup>1</sup>		Order number
Connection cable	length 2 m	3310A11111
	length 5 m	3310A11112
	length 10 m	3310A11113
	length 15 m	3310A11114
	length 20 m	3310A11115
	length 25 m	3310A11116
	length 30 m	3310A11117
Fibre cable	length 2 m	3310A46002
	length 3 m	3310A46003
	length 6 m	3310A46005
	length 10 m	3310A46006
	length 15 m	3310A46007
	length 22 m	3310A46008
Mounting angle	fixed	3310A21522
	adjustable	3310A21520
Air purge adaptor	stainless steel, purge air 0.1 to 0.5 bar, oil-free	3310A22520
Ball and socket mounting		3310A21521
Sighting tube for air purge adaptor	100 mm	3310A22530
	300 mm	3310A22535

<sup>1</sup> More accessories available.