

→ Infrared validation test equipment

# DCN1000W/L series

LOW TEMPERATURE

BLACKBODIES

## INTRODUCTION

Although similar to the traditional differential and absolute infrared reference sources, the DCN1000W/L blackbodies incorporate specific features in order to reach lower temperatures.

They consist in an emissive head equipped with thermoelectric coolers whose heat dissipation is ensured by water (W type) or a refrigerated liquid (L type). The liquid is supplied by a separate cooling liquid unit and circulated through a jacket at the back of the thermoelectric coolers. The temperatures which can be reached with such a layout are much lower than those of traditional blackbodies equipped with fans for cooling.

In order to avoid dew condensation on low temperature surfaces, the system includes several options such as sweeping dry gas on the emissive area, enclosing the emissive area inside a nitrogen filled chamber sealed by an IR window, coupling the blackbody to a nitrogen filled cabinet housing the unit under test.

The emissive head also includes a target support. Temperatures of both the target and the emissive surface are measured in real time thanks to high precision calibrated Pt sensors. Various emissive area sizes are available to suit different applications, i.e. characterisation of thermal imagers (MRTD, LSF and NETD targets), calibration of focal plane arrays, non-uniformity correction of infrared sensors, etc.



→ DCN1000 L7 & L12 blackbodies



→ DCN1000 L, cooling unit & anti condensation frost system

## CONFIGURATION

- Absolute temperature range from  $-40\text{ }^{\circ}\text{C}$  to  $+150\text{ }^{\circ}\text{C}$ , for any ambient temperature
- Differential and absolute mode operation
- Real time display of emissive area and set point temperature
- Fast response time and high stability
- High thermal uniformity and emissivity
- Compact emissive head including target support
- Control through touchscreen panel
- Radiometric calibration over  $8\text{-}14\text{ }\mu\text{m}$  bandwidth
- Remote control via Ethernet link.

## OPTIONS

- IEEE488, RS232 interfaces
- Radiometric calibration over  $3\text{-}5\text{ }\mu\text{m}$  bandwidth
- Motorised target wheel
- NETD, LSF/MTF and MRTD calculation software
- LabVIEW drivers
- e-BlackBody Smartphone app.



## NEW FEATURES

- LabVIEW drivers for all communication interfaces
- Remote control through e-BlackBody smartphone application

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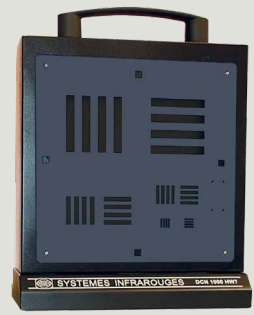
BLACKBODIES



→ DCN1000 W2



→ DCN1000 L12 and anti condensation frost system



→ DCN1000 W7 and MRTD target

## TECHNICAL DATA

	DCN1000 W2/L2	DCN1000 W3/L3	DCN1000 W4/L4	DCN1000 W7/L7	DCN1000 W12/L12
Emissive area	50mm x 50mm	75mm x 75mm	100mm x 100mm	180mm x 180mm	300mm x 300mm
Temperature range (L type)	-40°C to +150°C -60°C to +130 °C				
<ul style="list-style-type: none"> <li>absolute (for any ambient T)</li> <li>differential (20°C ambient)</li> </ul>					
Temperature range (W type)	-20°C to +100°C -40°C to +80°C				
<ul style="list-style-type: none"> <li>absolute (for a 20°C ± 2°C water circulation)</li> <li>differential (20°C ambient)</li> </ul>	-20°C to +100°C -40°C to +80°C	-10°C to +100°C -30°C to +80°C	-10°C to +100°C -30°C to +80°C	-10°C to +100°C -30°C to +80°C	-5°C to +100°C -25°C to +80°C
Thermal uniformity at ambient ±5 °C / at 50 °C	± 0.01°C / 0.3°C	± 0.01°C / 0.3°C	± 0.01°C / 0.3°C	±0.03°C / 0.4°C	±0.04°C / 0.4°C
Max. power consumption					
L Type	2300 W	2300 W	3500 W	2900 W	4500 W
W Type	800 W	800 W	1000 W	900 W	900 W
Head dimensions W x H x D	115x200x111 mm <sup>3</sup>	145x1200x111 mm <sup>3</sup>	192x200x120 mm <sup>3</sup>	286x370x150 mm <sup>3</sup>	406x493x126 mm <sup>3</sup>
Head weight	2 kg	4 kg	5 kg	10 kg	30 kg
Electronic unit size	3U x 19"	3U x 19"	3U x 19"	4U x 19"	4U x 19"
Electronic unit weight	11 kg	11 kg	11 kg	15 kg	15 kg
Emissivity / Apparent emissivity after calibration	0.98 ±0.02 / 1.00				
Regulation type	real time PID adjustment				
Stability	±0.002°C				
Temperature sensor type	calibrated Pt sensor				
Temperature measurement accuracy	differential mode : 0.01°C/ absolute mode : 0.03°C				
Display resolution	0.001°C (actual temperature and set point display)				
Warm-up time	< 1 minute from ambient to 50 °C±0.2 °C				
Stabilisation time at ±0.01°C for a ΔT<10°C	less than 60 seconds			less than 90 seconds	
Remote control	Ethernet interface				
Operating temperature	-20°C to +70°C				



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