Electro Optical Industries

DCN1000W/L series

→ 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

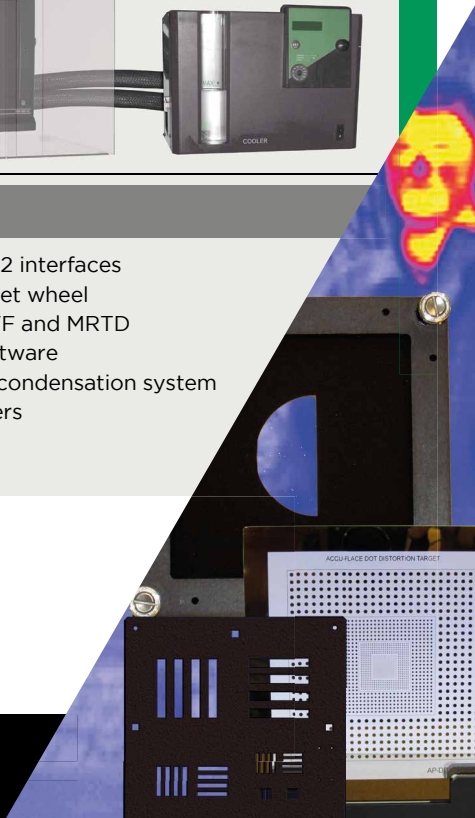
→ DCN1000 L , cooling unit & anti condensation frost system

CONFIGURATION

- Absolute temperature range from -75 °C to +150 °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 3-5 µm or 8-14 µm bandwidth
- Remote control via Ethernet link.

OPTIONS

- IEEE488, RS232 interfaces
- Motorised target wheel
- NETD, LSF/MTF and MRTD calculation software
- Anti frost and condensation system
- LabVIEW drivers



OPTIONS

- Anti frost and condensation system
- LabVIEW drivers for all communication interfaces

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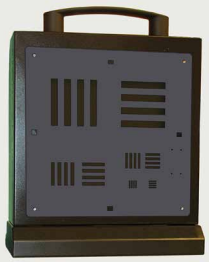
DCN1000W/L series

LOW TEMPERATURE **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 VL8	DCN1000 W12/L12
Emissive area	50mm x 50mm	75mm x 75mm	100mm x 100mm	180mm x 180mm	203mm x 203mm	300mm x 300mm
Temperature range (L type)						
• absolute (for any ambient T)	-40°C to +150°C				-75°C to +100°C	-40°C to +150°C
• differential (20°C ambient)	-60°C to +130 °C				n/a	-60°C to +130 °C
Temperature range (W type)						
• absolute (for a 20°C ± 2°C water circulation)	-20°C to +100°C	-10°C to +100°C	-10°C to +100°C	-10°C to +100°C	n/a	-5°C to +100°C
• differential (20°C ambient)	-40°C to +80°C	-30°C to +80°C	-30°C to +80°C	-30°C to +80°C		-25°C to +80°C
Thermal uniformity						
• at ambient ±5 °C	± 0.01°C				± 0.01°C	± 0.01°C
• at other T°C	± 1% (T - T_{AMB})				± 0.3% (T - T_{AMB}) within central 80%	± 1% (T - T_{AMB})
Emissivity	0.98 ±0.02 (Option: 0.99 ±0.01)				0.97 ±0.02 (Option: 0.992±0.004)	0.98 ±0.02 (Option: 0.99 ±0.02)
Apparent emissivity after calibration	1.00				1.00	1.00
Stability	±0.002°C				±0.003°C	±0.002°C
Temperature measurement accuracy	differential mode : 0.01°C absolute mode : 0.03°C				±0.03°C for T > 0°C ±0.05 for T < 0°C	differential mode: 0.01°C absolute mode: 0.03°C
Display resolution	0.001°C					
Slew rate	> 0.5 °C / second				> 0.1 °C / second	> 0.5 °C / second
Stabilisation time at ±0.01°C for a ΔT<10°C	less than 60 seconds				less than 90 seconds	
Operating temperature (head)	-20°C to +70°C					
Operating temperature (controller)	+5°C to +45°C					
Max. power consumption						
• L Type	1800 W	1800 W	2700 W	3500 W		5100 W
• W Type	1000 W	1000 W	1000 W	1500 W	n/a	1500 W
Head dimensions W x H x D	115x200x111 mm³	145x1200x111 mm³	192x210x120 mm³	247x410x112 mm³	307x282x221 mm³	370x531x112 mm³
Head weight	2 kg	4 kg	5 kg	10 kg		20 kg
Controller size	3U x 19"	3U x 19"	3U x 19"	3U x 19"	3U x 19"	3U x 19"
Controller weight	10 kg	10 kg	10 kg	12 kg		12 kg
Remote control	Ethernet interface (RS232 and IEEE488 in option)					

Above information is subject to changes without notice

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