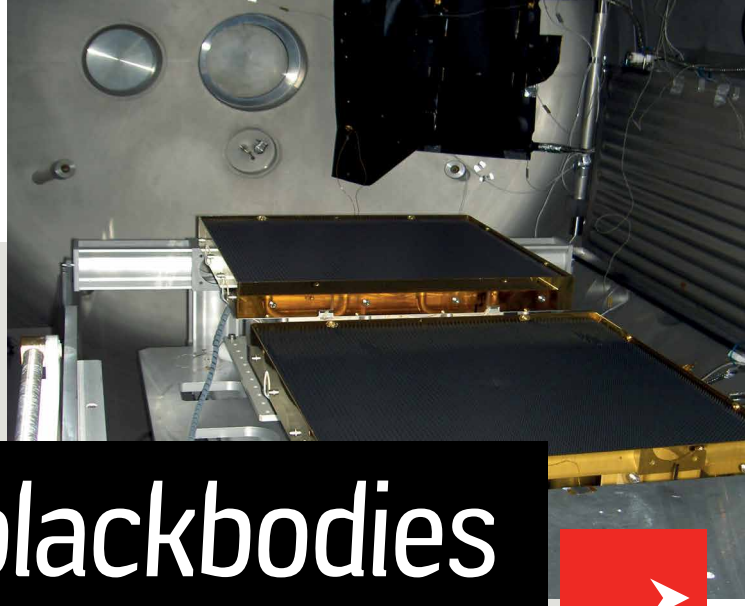
HGH Infrared Systems



→ ECN100V in vacuum chamber

Vacuum blackbodies

FOR CRYOGENIC OR AMBIENT **IRRADIATIVE ENVIRONMENT**

INTRODUCTION

Vacuum blackbodies combine performance of traditional infrared reference sources with specific features in order to operate in vacuum chamber, at cryogenic or ambient temperatures. They can emit over an ultra extended temperature range, set and controlled with high accuracy.

They consist in a vacuum compatible emissive head connected to a controller located out of the chamber. High stability of regulation is ensured by the optimized control of the losses through radiation and conduction.

High emissivity up to 0.999 is obtained thanks to a vacuum compatible coating on a specific surface structure of the blackbody. Temperature of the emissive surface is measured in real time via high precision calibrated Pt sensors.

Various principles of thermal exchanges are available to suit different applications such as characterisation and radiometric calibration of space borne imagers, non-uniformity correction of infrared sensors, etc...

→ RCNV with 0.999 emissivity

→ test of a spatial instrument with DCN1000 V

CONFIGURATION

- Absolute temperature range from +100K to +425K
- Real time display of emissive area and set point temperature
- Integration in clean room conditions
- Use of vacuum compatible coatings and materials
- Fast response time and high stability
- High thermal uniformity and emissivity
- Guaranteed radiometric specifications
- Control through touchscreen
- Remote control via Ethernet interface,
- Radiometric calibration over 3-5 µm or 8-14 µm spectral bands.

NATIONAL INSTRUMENTS LabVIEW

NEW FEATURES

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

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Vacuum blackbodies

ref: VBB-Len-acl

Vacuum blackbodies

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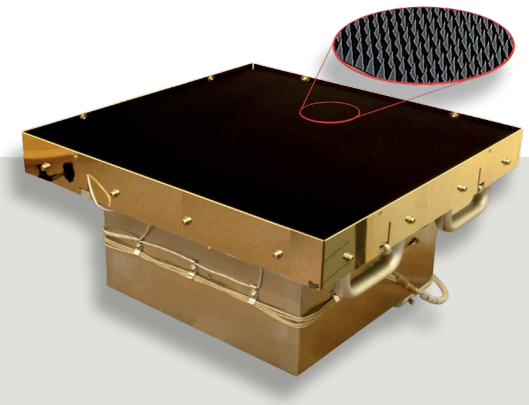
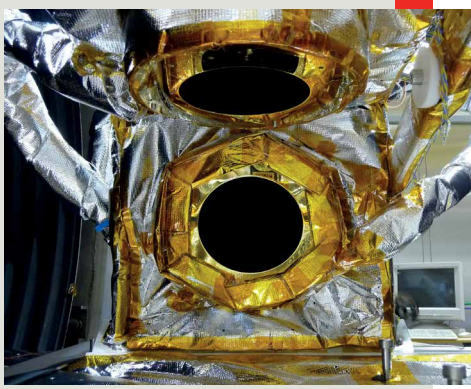


→ 500x500 mm² ECN100V blackbody head and emissive surface structure

→ Infrared validation test equipment



→ Characterization of space borne imager

TECHNICAL DATA

	DCN1000V	ECN100V	RCNV
Principle	TEC and circulating fluid cooling	Heater, cooling through cryogenic cold plate (optional)	Fluid circulation around cavity
Emissive surface	50 x 50, 75 x 75 and 100 x 100 mm²	100 x 100 to 500 x 500 mm²	Φ 100 mm
Absolute temperature range	235 K to 420 K	100 K to 420 K	100 K or 235K to 335 K
Emissivity	0.98 ± 0.02 (0.99 in option)	0.99 ± 0.01	>0.999
Stability	±0.02 °C	±0.02 °C	±0.05 °C
Temperature measurement accuracy	±0.01 °C		
Thermal uniformity at irradiative environment temperature ±5 °C	± 0.01°C		
Stabilisation time	<10 minutes for any ΔT	30 minutes for ΔT = 100K	<30 minutes for any ΔT
Display resolution	0.001 °C (surface temperature and set point)		0.001 °C (surface temperature) 0.01 °C (set point)
Operating temperature (head)	-20°C to 70°C	80K to 350K	-20°C to 70°C
Operating pressure (head)	10^{-6} to 1 bar		
Remote control	Ethernet interface		
Operating temperature (controller)	+5°C to +45°C		
Power supply	115/230 VAC, 1 ph., 50/60 Hz		

Above information is subject to changes without notice

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ALAVA INGENIEROS

Edificio Antalia
Albasanz, 16
28037 MADRID
Tel. 91 567 97 00
Fax: 91 570 26 61
www.alavaingenieros.com

Torre Mapfre-Vila Olímpica
Marina, 16 - Planta 11-C 2
08005 BARCELONA
Tel. 93 459 42 50
Fax: 93 459 42 62
alava@alava-ing.es

WWW.HGH.FR