



IRCOL series

→ Infrared imagers characterization



IRCOL series



ELECTRO-OPTICAL

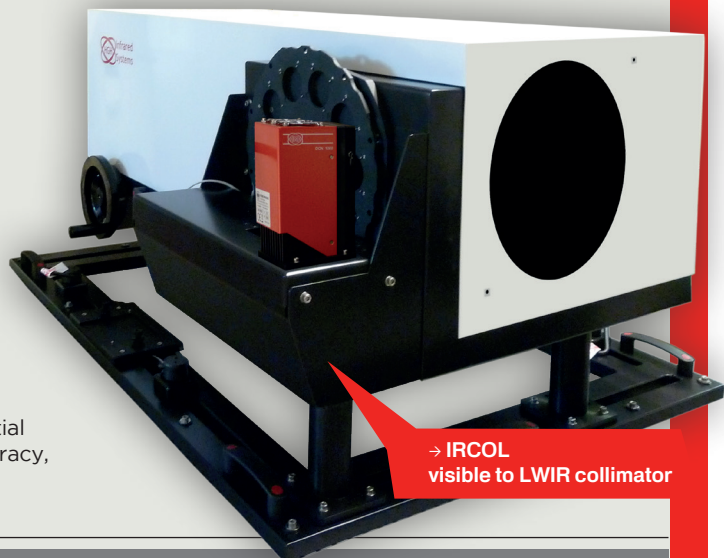
TEST EQUIPMENT

→ HIGH-END BENCHES TO TEST VISIBLE TO IR CAMERAS & LASER RANGEFINDERS

The IRCOL series are test equipment designed for the **characterization** and the **performance validation** of a wide array of electro-optical sensors: visible cameras, night vision devices, NIR, SWIR, MWIR, LWIR imagers, laser rangefinders.

The core of the IRCOL system is an **off-axis projector** with a wide clear aperture, the **best wavefront** flatness and a high reflectance over a wide range of wavelengths, from visible to far IR. This **diffraction limited** collimator can be equipped with a complete set of interchangeable reference sources, depending on the device under test: low to high level visible sources, absolute and differential low temperature blackbodies, high temperature blackbodies. A 6 or 12 position motorized wheel enables accurate setting of test targets at collimator focus.

The **INFRA TEST software** completes the system, for the automation of an exhaustive range of **electro-optical measurements**: NETD, temporal noise, fixed pattern noise, MTF, FOV, distortion, spatial resolution, MRTD, MDTD, TOD, laser divergence, rangefinding accuracy, boresighting between emitter, optical and mechanical axes, etc.



→ IRCOL visible to LWIR collimator

→ BENEFITS

- A wide range of optical projectors compatible with the test requirements for all standard cameras and laser range finders:
 - 150 to 600 mm clear aperture off-axis collimator
 - Focal length from 750 to 6000 mm
- UV and Visible to far IR operating spectral bandwidth depending on coatings: aluminium, silver or gold available
- Output wavefront map supplied
- Motorized wheel with interchangeable targets
- Tests along vertical and horizontal axes with only one target
- High repeatability of target positioning
- Robust mechanical structure with a protective cover of the optical components against shocks, dust and stray light
- Background temperature accurately measured thanks to a calibrated Pt sensor
- Exhaustive range of targets and options for electro-optical testing
- Short delivery time

→ OPTIONS

- Custom focal length and aperture upon request;
- Custom target pattern upon request;
- Reflective targets for background temperature control, with additional blackbody;
- Exclusive azimuth and elevation adjustment of the optical axis;
- Laser traced optical axis;
- Target wheel assembly adaptable to any existing collimator
- Motorized stages for accurate and automated measurement of distortion and FOV of Wide FOV cameras;
- Exclusive motorized boresight module for E-O and mechanical axes alignment control;
- Laser range finders test resources;
- Climatic chamber operating



IRCOL series

ELECTRO-OPTICAL

TEST EQUIPMENT



→ IRCOL 150-750 with RCN IR reference source



→ IRCOL 250/1500S in climatic chamber



→ Motorized target wheel

TECHNICAL DATA

OFF-AXIS PROJECTOR

	150/750	150/1000	300/1500	300/4000	400/2500	600/6000	250/1500S for climatic chamber
Focal length (mm)	750	1000	1500	4000	2500	6000	1533
F-number	5.2	6.9	5.3	14	6.6	10	5.7
Field of view for full aperture	3.4°	2.5°	1.7°	0.6°	1°	1°	1.6°
Motorized target wheel	6 positions		10 positions			6 positions	12 positions
Wavefront quality @633 nm	$\lambda/2$ PTV and $\lambda/10$ rms						$\lambda/4$ rms
Operating temperature range	+15°C to +35°C						→ -54°C to +71°C

REFERENCE SOURCES FOR TESTING SWIR TO LWIR CAMERAS

- **DCN1000 H** Low temperature differential blackbody
Emissive area size: 50 x 50 mm² or 100 x 100 mm² ✦ Absolute temperature range (at 20°C ambient temp.): -15°C to +150°C
Differential temperature range: -35°C to +130°C ✦ Operating temperature range: -20°C to +70°C (-55°C to +85°C in option for climatic chamber application)
(Full specifications on DCN1000 N/H datasheet)
- **RCN1250** High temperature cavity blackbody
✦ Temperature range: 50°C to 1250°C - Full specifications on RCN datasheet
- **ECN100 H6** High temperature extended area blackbody
Emissive area size: 150mm x 150mm ✦ Temperature range: 50°C to 600°C - Full specifications on ECN100 datasheet

Other models (fluid cooled, larger size) also compatible

REFERENCE SOURCES FOR TESTING CCD, ICCD, NIR CAMERAS AND GOGGLES

- **ISV** Visible source
Luminance range: from low light (10 cd/m²) to high light (25000 cd/m²) ✦ Luminance uniformity: $\pm 1\%$ ✦ Aperture: 2 in. - Full specifications on ISV datasheet

ADDITIONAL EQUIPMENT FOR LASER RANGEFINDER TESTING

- **Standard laser rangefinder testing module**
Test of alignment between emitter and visible/IR axis ✦ Measurement of laser profile/ divergence ✦ For all lasers from visible to 1.6 μm
- **Advanced laser rangefinder testing module**
Rangefinding accuracy measurement through multimode fiber optic simulating 1 km \pm 10 m distance ✦ Extinction test (for all lasers from visible to 1.6 μm)
- **High rangefinding accuracy and long distances simulation**
Simulation of distances from 75 m to 40 km with 1 meter accuracy

INFRA TEST SOFTWARE

Acquisition and live display of the video signal of the unit under test, control of the IRCOL (blackbody temperature and target selection) and display of exhaustive range of test results: noise tests (NETD, fixed pattern noise, temporal noise ...), spatial tests (MTF, FOV, distortion), detection/recognition tests (MRTD, MDT, TOD), alignment and harmonization tests.
(Full specifications on Infratest datasheet)



Headquarters

HGH SYSTEMES INFRAROUGES
10 rue Maryse Bastié
91430 Igny, France
Phone: +33 1 69 35 47 70
Fax: +33 1 69 35 47 80
Email: sales@hgh.fr

US Office

ELECTRO OPTICAL INDUSTRIES
320 Storke Rd., Ste. 100
Goleta, CA 93117, USA
Phone: 805.964.6701
Fax: 805.967.8590
Email: sales@electro-optical.com

Asia Office

ASIA INFRARED SYSTEMS
541 Orchard Rd., #09-01 Liat Towers
Singapore 238881
Phone: +65 6933 1394
Email: sales@hgh-infrared.com