ELECTRO OPTICAL
TEST SOLUTIONS

INFRATEST®

Electro-optical test software

INFRATEST

ELECTRO-OPTICAL TEST SOFTWARE

INFRATEST Software is a modular software suite dedicated to electro-optical systems test and qualification: cameras, thermal imagers, Night Vision Devices and binoculars, goggles, sensors...

INFRATEST Software supports any kind of device and electro-optical system.

Based on referenced algorithms, INFRATEST provides high accuracy measurement data for visible and infrared cameras (NIR, SWIR, IR) in real-time.

The software is also particularly efficient for Night Vision devices and Laser Rangefinders test and development.

SUPPORTED DEVICES

Thermal cameras (cooled or uncooled)
NETD, spatial resolution (LSF/MTF), MRTD and DRI ranges, alignment of optical axis vs mechanical axis

Visible to SWIR cameras
Noise equivalent Irradiance, effective focal length, resolution (MRC), distortion, field of view, latency

Night vision gun sights & goggles
Gain, resolution, infinity focus, zero and range of eyepiece, parallelism of goggles axes, figure of merit, spot defect

Laser rangefinders and designators
Alignment, beam profiling, divergence, accuracy of distance measurement, laser pulse energy and power

Multiple axes optronic systems
Camera axis alignment, boresighting between cameras (any type) and mechanical axis

Multi-functional binocular systems
Alignment of axes, large apertures compatible

Focal plane arrays and cameras
Bad pixel location, non-uniformity correction, temporal noise and fixed pattern noise measurement, detectivity, responsivity
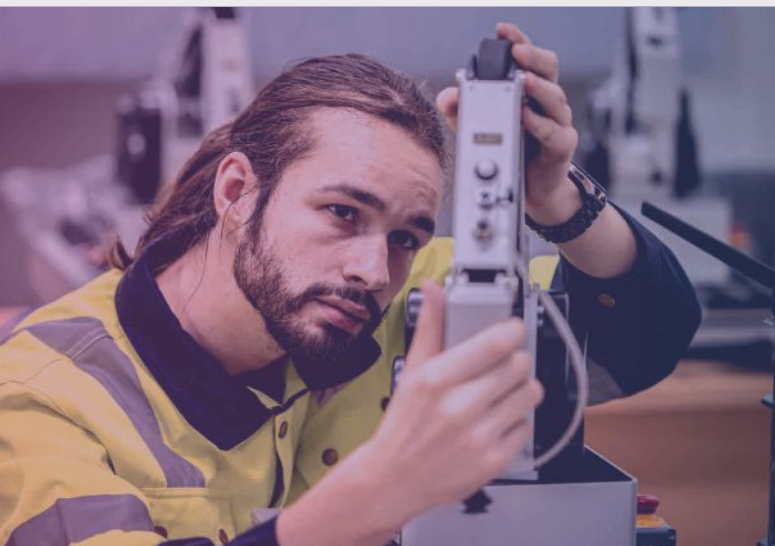
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APPLICATIONS

R&D

PRODUCT DEVELOPMENT, OPTIMIZATION AND QUALIFICATION

MAINTENANCE

PROPER OPERATION CHECK, OPERATIONAL CONDITION MAINTENANCE

PRODUCTION LINE

QUALITY CONTROL

INFRATEST PLATFORM

NATIVE SOFTWARE STRUCTURE

INFRATEST is a software suite composed with a native structure INFRATEST PLATFORM allowing to plug different packages to test Electro-optical systems: Cameras, Laser Rangefinders and Pointers Night vision Devices. INFRATEST PLATFORM is delivered with all HGH products; blackbodies, visible to SWIR sources, collimators, IRCOL benches, BIRD bench, etc.

INFRATEST PLATFORM

Infratest Platform is a software platform delivered with all HGH products; blackbodies, visible to SWIR sources, collimators, IRCOL benches, BIRD bench, etc.

TEST RESSOURCES MANAGEMENT FEATURES

- Sources control
- Target management
- Motor control (source selection, projected distance selection, target wheel position)

SYSTEM UNDER TEST INTERFACE

- Azimuth/elevation position selection
- Multiple video protocol acquisition
- Real time video signal display
- Image saving and data export

CUSTOM SCENARIO BUILDING FUNCTIONS

- Ressources scenario
- Image saving
- Test sequence

VIDEO SIGNAL MANAGEMENT

▸ Real time acquisition   ▸ Image acquisition

▸ Live display   ▸ Accurate measurement analysis

▸ Full performances calculation
– Auto saved data
– Multi-format data export (.csv, .xml, .png, .html)

VIDEO PROTOCOLS

Infratest Software is compatible with a wide range of video protocols, even with the highest definition:

▸ Analog (CCIR, RS170, PAL, NTSC)   ▸ USB3 Vision   ▸ GigE Vision

▸ Camera Link   ▸ 3G SDI, HD SDI, SD SDI   ▸ DVI, HDMI

INFRATEST PLATFORM

CUSTOM SCENARIO – EXCLUSIVE FEATURE

The flexible structure of INFRATEST allows the operator to build-up **customized test scenarios** for any electro-optical system. The operator only has to pick from an exhaustive list of **hardware control functions** and accurate tests according to their needs. Then, they can create their own sequences with the « drag & drop » function. Thanks to a user-friendly interface, it is easy to create and drive **customized and fully automated benches** based on HGH products portfolio including **blackbodies, ISV visible to SWIR sources** or **IRCOL** and **BIRD benches**. It is a time-saving function leading to unlimited testing capabilities !

INFRATEST SUITE

ELECTRO-OPTICAL SYSTEM TESTING PACKAGES

INFRATEST SUITE

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ic INFRATEST CAMERA PACK

The essential functions to test any kind of cameras from visible to Infrared are listed below.

CAMERA PACK MAIN FUNCTIONS

VISIBLE AND INFRARED NOISE TESTS

- Temporal Noise
- Signal to Noise ratio (SNR)
- 3D noise
- Temporal & Spatial NPSD
- Fixed Pattern Noise (FPN)

THERMAL RESOLUTION

- Signal transfer function (SiTF)
- Noise equivalent temperature difference (NETD)
- Noise Equivalent Power, Irradiance and Radiance (NEP, NEI, NER)
- Detectivity (D*)
- Responsivity, Peak Responsivity and Quantum Efficiency

SPATIAL RESOLUTION

- New – Line Spread Function (LSF)/ Modulation Transfer Function (MTF) – live analysis
- Spatial resolution with 1951 USAF target

IMAGE QUALITY ANALYSIS (INFRARED)

- Non Uniformity Correction (NUC)
- Bad Pixel location

RANGE CALCULATION (INFRARED)

- NEW ERGONOMICS: Minimum Resolvable Temperature Difference (subjective MRTD)*
- Detection, Recognition and Identification Ranges (DRI)*

RANGE CALCULATION (VISIBLE AND SWIR CAMERAS)

- New – Minimum Resolvable Contrast (MRC)
- SWIR cameras Detection, Observation, Recognition, Identification ranges (DORI)**

MULTIPLE AXES ALIGNMENT

- Camera axis alignment
- Boresighting between cameras (any type)
  EXCLUSIVE – Boresighting between cameras (any type) and mechanical axis
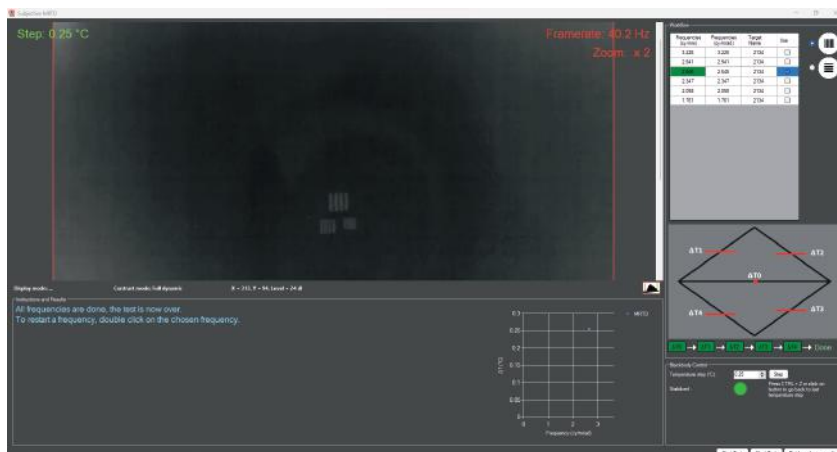
MRTD test with new ergonomics

* Subjective MRTD and DRI methods are compliant with STANAG 4347 and 4349
** Coming soon

INFRATEST SUITE

ELECTRO-OPTICAL SYSTEM TESTING PACKAGES

Ce INFRATEST CAMERA EXPERT PACK

Dedicated to demanding operators seeking for qualifying high performance cameras, this pack offers the most advanced functions such as the accurate measurement of the Distorsion map, even for fish-eye cameras or the range calculation based on the objective TOD method.

INFRATEST CAMERA PACK Included

EXPERT FUNCTIONS

ADVANCED CAMERA PROPERTIES

- Field of view
- NEW – Distortion
- Effective Focal Length (EFL) – Magnification

ADVANCED MULTIPLE AXES ALIGNMENT

- Roll difference between axes

CAMERA PERFORMANCES MEASUREMENT

- Automatic Gain Control (AGC)
- Spatial latencies

### ADVANCED RANGE CALCULATION FEATURES

- Minimum Detectable Temperature Difference (MDTD)
- Triangle Orientation Discrimination (TOD)

FOCUSED SPATIAL RESOLUTION

- Modulation Transfer Function (MTF) – sine wave target method

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The INFRATEST CAMERA PACK can be upgraded with the Expert functions.

Distortion (%) : = -39.79
UUTDetectorCenter [X, Y] (pixels) : = [320,240]
OpticalCenter [X, Y] (pixels) : = [,]
Calculated UUT FocalLength (mm) : = 5.9

- Barycenter position
- Detector center
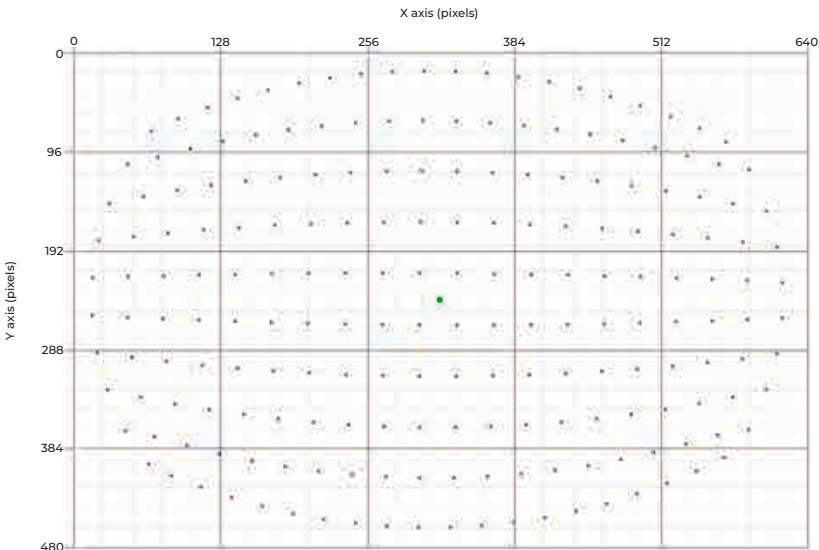
Distortion map on fisheye camera

INFRATEST LASER PACK

Testing Laser Rangefinders and Laser Pointers is a challenging task acheived through INFRATEST Laser Pack. The testing methods are compatible with **all laser types including eye-safe**. It particularly includes 2 methods for laser alignment measurement with sighting axis, visible or infrared.
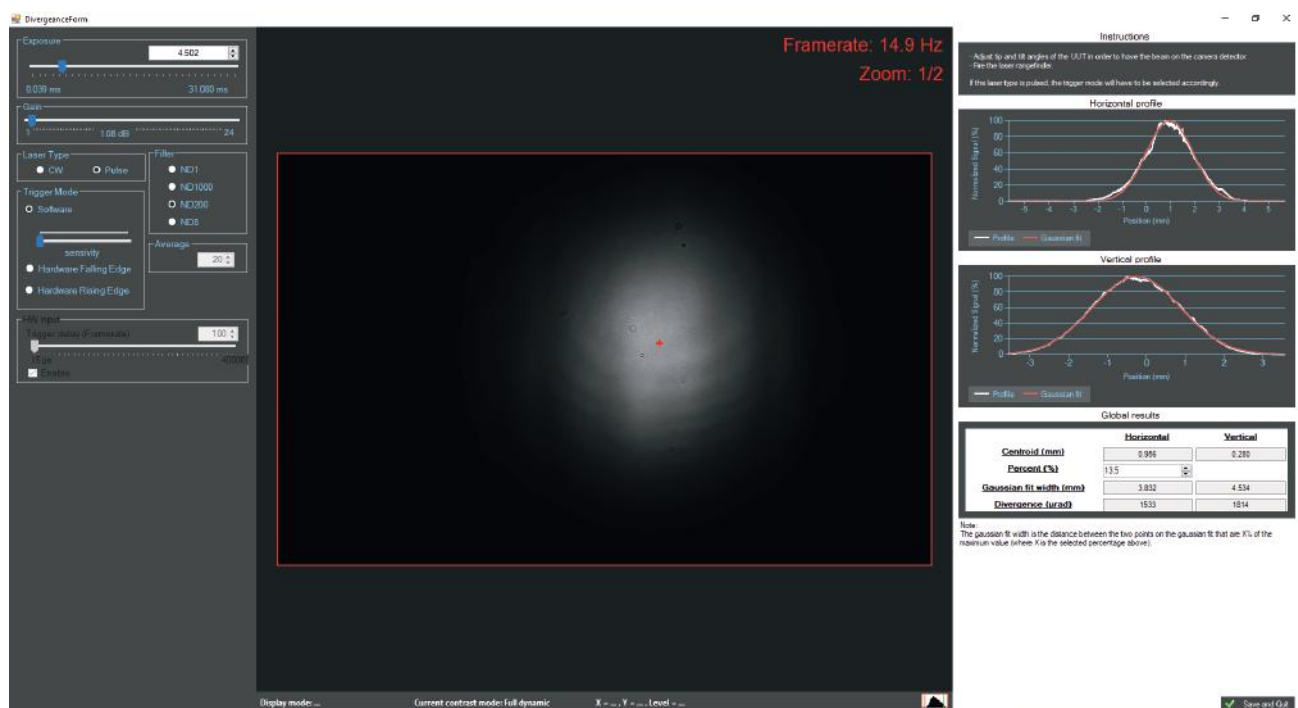
LASER PACK FUNCTIONS

LASER TESTS

- Laser energy
- Beam Divergence
- Distance Measurement accuracy

MULTIPLE AXIS ALIGNMENT

- Boresighting between transmitter and visible or infrared sighting axis

Laser beam divergence measurement

INFRATEST SUITE

ELECTRO-OPTICAL SYSTEM TESTING PACKAGES

INFRATEST NIGHT VISION PACK

Combined with HGH's exclusive high resolution Eye-Camera, this Pack offers objective and accurate measurements of NVD, including the challenging measurement of the parallelism of goggle axes.

NIGHT VISION PACK FUNCTIONS

NVD PROPERTIES

- Zero and Focus of eyepiece
- Magnifying power
- NVD – Field of view
- NVD – Distortion

IMAGE QUALITY ANALYSIS

- New – Line Spread Function (LSF)/ Modulation Transfer Function (MTF) – live analysis
- Spatial resolution with USAF 1951 target
- New – Minimum Resolvable Contrast (MRC)
- Gain
- Spot defects

MULTIPLE AXES ALIGNMENT

- Boresighting: cameras (any type) with NVD
- Goggles axes paralleslism

HGH's eye-camera collecting a high resolution image through the eyepiece

INFRATEST SERVICES

ELECTRO-OPTICAL SYSTEM TESTING SERVICES

Keep up to date with the latest software innovations!
One new INFRATEST software version is released at least every year. New versions enhance and extend testing capabilities thanks to the **most efficient algorithms**, while constantly **seeking to improve the ergonomics**.

HGH also offers **a yearly training**: it aims at optimizing the use of the Infratest Software so that operators can collect the most accurate data on the tested equipment. This **one-day personalized training** is held **at the customer's site**. An HGH engineer specialized in electro-optical systems design, development and testing methods conducts the training, **fully tailored to the client's application**.
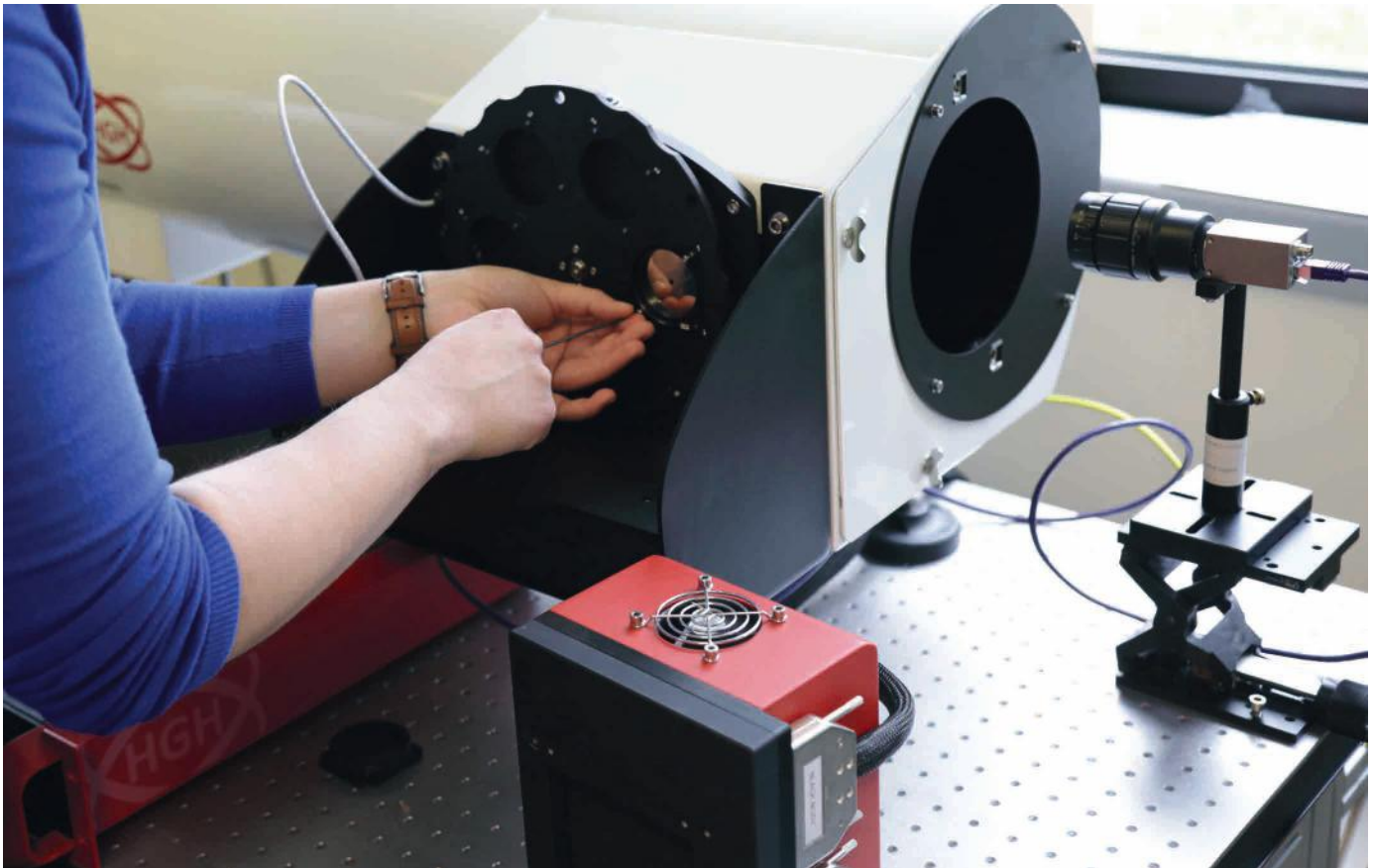
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HGH
Enlighten the Unseen

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