

# FT test system

System for testing IR FPA sensors and design support of IR camera cores

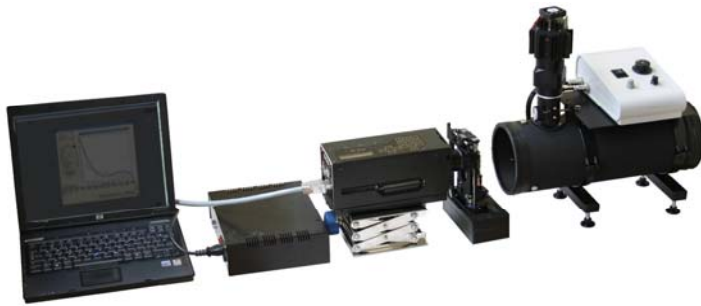


Fig. 1. Photo of FT test system in configuration for measurement of image quality parameters (FT-I configuration)

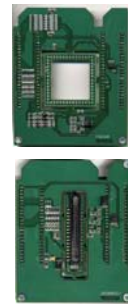


Fig. 2. Photo of two adapters to connect IR FPA sensors

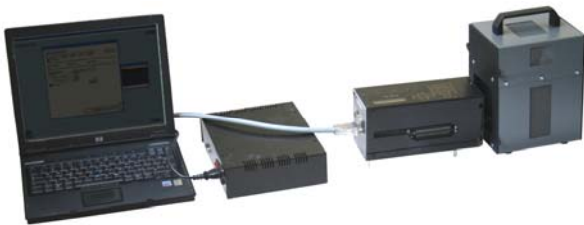


Fig.3. Photo of FT test system in configuration for measurement of noise/responsivity parameters (FT-N configuration)



Fig.4. Photo of FT test system in configuration for measurement of spectral parameters (FT-S configuration)

## BASIC INFORMATION:

IR FPA sensors are the most important modules of thermal imagers. Design of sensor electronics (camera core) is a crucial part of designing of new thermal imager.

Knowledge of precise parameters of IR FPA sensor is needed by both professionals involved in both IR FPA technology/thermal imagers technology because parameters of IR FPA sensors determine performance limits of thermal imagers. Therefore test equipment that enable measurement of IR FPA sensors is a vital tool for development of both IR FPA technology/thermal imagers technology.

It is commonly known that data sheets provided by manufacturers of IR FPA sensors (both cooled or non-cooled) provide too little details for electronics designers. Sometimes the provided data is not accurate enough and better sensor performance can be achieved using modified control signals. Therefore design teams

loose sometimes years to develop electronic camera core optimized for a specific IR FPA sensor. When the type of the IR FPA sensor is changed the whole process is to be repeated. In this situation an universal, flexible camera core that would accept IR FPA sensors from different manufacturers and to carry out semi-automatic determination of optimal signal controls for a specific IR FPA sensor would be highly desirable.

FT test system is a modular test system developed to enable two tasks. First, to enable measurement of all important parameters (noise/sensitivity parameters, image quality parameters, spectral parameters) of IR FPA sensors. Second, to carry out semi-automatic determination of optimal signal controls for a specific IR FPA sensor would enable to achieve the highest performance of this sensor.

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## FEATURES:

- Extensive testing of IR FPA sensors and IR FPA modules (measurement of NETD, FPN, non uniformity, 1/f noise, 3D noise model, NPSD, response function, number of bad pixels, bad pixel localisation, MTF, cross talk, PVF, relative spectral sensitivity of IR FPA pixel array),
- Semi-automatic determination of optimal signal controls for a specific IR FPA sensor would enable to achieve the highest performance of this sensor,
- All typical IR FPA sensors present on the market can be tested (non-cooled, cooled, shutter, shutterless, low/high resolution, different formats of output electronic signal, different spectral types: LWIR, MWIR, SWIR)
- Development time of new thermal imagers can be shortened,
- Universal IR camera core as an internal module of the FT test system.

## VERSIONS

FT test system can be delivered in different versions of different test capabilities and at different price level. listed below. The version can be precisely determined using the six digit code as shown in the table below.

For example FT 324-213 is FT test station capable to test both IR FPA modules and IR FPA sensors (chips), to measure noise parameters and imaging parameters of MWIR/LWIR FPAs of medium resolution and the output electrical signal is generated using USB 2.0 digital standard. The station provides also semi-automatic optimization of customer control electronic for the IR FPA sensor.

**Tab. 1. Versions of FT test system**

Code	Tested	Test range	Spectral range	Resolution of tested IR FPA	Output image standard	Design support
1	IR FPA modules (thermal engines)	Noise/response parameters	MWIR	Low resolution (about 320x240), video frame rate	USB 2.0; analog video	No. Only testing.
2	IR FPA sensors (chips)	Imaging parameters	LWIR	Medium resolution (about 640x480), video frame rate	CameraLink; analog video	Support for optimal correction of FPN of IR FPA module
3	Both IR FPA modules and IR FPA sensors (chips)	Spectral parameters	SWIR	High resolution (about 1280x1024, video frame rate)	GigE	Support for optimization of control electronic of IR FPA (manual version of DES module).
4		Noise parameters and imaging parameters	MWIR, LWIR			Semi-automatic optimization of control electronic
5		Noise parameters, imaging parameters, spectral parameters	MWIR, LWIR, SWIR			

\*specifications are subject to change without prior notice

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