



# BIRD 210™

## Test Bench for Optical Detectors

### INTRODUCTION

The BIRD 210 bench enables to make measurements on optical detectors, single or multi-element type (linear, focal plane array) in the visible and/or infrared spectrums. The basic functions and measurements achieved are:

- Fixed pattern and temporal noise
- Responsivity and detectivity
- Dynamic range / linearity
- NETD
- Non Uniformity Correction
- Bad pixel localisation
- Spectral response
- Crosstalk / MTF

### CONFIGURATION

The bench includes three sub-units:

- One optical table supporting the opto-mechanical parts,
- One control cabinet housing the various rackable units,
- One PC with video acquisition board and software for data acquisition and processing.

### OPTO-MECHANICAL UNITS

- One optical table 1.25 m x 1.25 m and supports,
- One cavity blackbody and one differential blackbody (visible and infrared sources),
- One monochromator, one optical chopper and one pyroelectric detector (spectral response measurement),
- One pin-hole target and one set of horizontal / vertical slit targets (for crosstalk and MTF measurements),
- One set of optics for focusing targets onto detector,
- Three motorised translation stages for detector positioning
- One electronic board enabling connection between detector and control cabinet.



Optical test bench



Electronic control cabinet

## CONTROL CABINET

The control cabinet includes the following items:

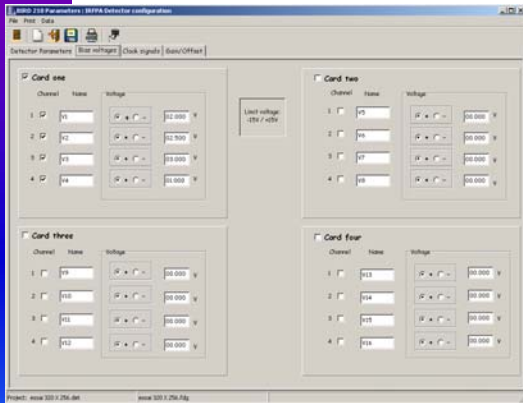
- Bias voltage generator
- Clock signal generator
- Lock-in amplifier
- Low noise analogue to digital converter
- 3 - axis translation stage controller
- Optical chopper controller
- Differential blackbody controller
- Cavity blackbody controller

## PC / SOFTWARE

The PC is equipped with a video acquisition board.

The Windows based software functions are:

- Detector set-up: single- / multi-element format, number of pixels, frame rate, integration time, pixel dimensions, field of view, criterion for definition of bad pixels,
- Bias voltage and clock signals setting,
- Pixel remapping,
- temporal and fixed pattern noise measurement,
- Responsivity, detectivity and NETD calculations,
- Signal dynamic range and linearity,
- Bad pixel localisation,
- Non uniformity correction,
- Spectral response curve,
- MTF curve,
- Crosstalk,
- Selection of area of interest,
- Image rotation, zoom, automatic range,
- Image storage,



Bias voltage configuration (setting)



Bad pixel map

MEASUREMENT RESULTS				
Date: 04/12/2002				
Detector: Total 320x256				
Serial number: 12345				
	Full array	Full array less bad pixels	Restricted area	Restricted area less bad pixels
Responsivity 1e9 V/W	2.343	2.254	2.490	2.502
Detectivity 1e9 cm HZ/W	119.785	119.419	125.680	125.979
NETD mk	129.243	83.784	81.851	79.120
RMS noise #V	1.012	1.010	1.022	1.019
Fixed pattern noise #V	82.097	0.000	84.234	0.000
Bad pixels, total	589		51	
Bad pixels C1	342		7	
Bad pixels C2	373		50	
Bad pixels C3	153		19	

Result table for sensitivity parameters

Above information is subject to changes without notice



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