IHEP ATLAS HGTD Phase-II upgrade	Standard Operating Procedure	
	SOP No.:	102
	Title:	**Sensor I-V test**
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Document Revision History

Revision	Date	Editor	Contents
v1	2019.09.10	Feng Lyu and Xin Shi	Created document

Abstract

Describes the procedures to test sensor IV on a probe station. The procedure takes place in the IHEP MB-B106 clean room.

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I. Scope

This is a regular part in the testing process of LGAD sensor at IHEP.

II. Purpose

scan the I-V curve of HGTD LGAD sensors to find out the good one, especially after radiation.

III. Definitions

IV. Equipment

- Probes: Probe station with upto 6 probes, vaccum-bottom plate, lights-microscope, 3D-positioning and cables.
- SourceMeter (bias Adaptor): One (lower) supply 100V direct current power with an adapter for Alternatting current up to 100kHz, the other one (upper) pick up the charges from sensor.
- Laptop : python scripts to scan I-V

V. Procedure

- Power on
  1. Switch the main patch panel on the floor to ON
  2. Swith two SourceMeter power ON and click Terminal to choose REAR. (Fig.**??**)
- Touch the probes (Pls following the operation-recipes for the probe-station)
  1. Fix the sensor and touch one probe onto the bottom plate.
  2. Touch the 2nd probe into the circle printed on the top surface of sensor. Upon successful touches there will be (small but relatively-stable) same current values on the two SourceMeters. One can also supply a few Volte to highlight and crosscheck this current by python scanIV3.py (excuting see below, similar to run scanIV2.py) which setting voltage as 3V (3E3 mV)
  3. Make sure to turn off the light and screen the station with black cloth.
- Perform scanning with a python script on a laptop
  1. start an power-shell application within Windonw, cd Desktop\sensor-Test directory in this session.
  2. vim scanIV2.py to specify the voltage 250V (250E3 mV), current 100μA.

3. python scanIV2.py to act, followed with plot.C for a I-V curve. It's better to check the readout on the upper SourceMeter such that the current come at a few μA.
4. It's never good to interrupt the scanning by $Ctrl + C$ once unexpected case happens, nor directly halt SourceMeter pannel. Just leave the scan job controlling/rampping. Any voltage and current control should be applied by scanIV3.py which related values can be re-setting inside.
5. Output from successful scan should be stored into folders accordingly. Copy test.cvs file from sensor-Test to related saving directory, and change it name to be 1, if it's PIN, then named as 1_PIN

- Take out the sensor (follwing the operation-recipes for the probe-station) then accommodate it into fridge in correct catalog.