

POLICY for PDCS

Training Policy for PDCS (B1505)

- 1) This tool is applicable only for **high-voltage measurements (>100 V to <3000 V)**.
- 2) Since PROXIMA can be used from -100 V to +100 V, any request for measurements **below 100 V will not be entertained**.
- 3) Interchanging between different measurement configurations:
 - i) Lateral I-V (**Standard connections**)
 - ii) Vertical I-V
 - iii) Lateral C-V
 - iv) Vertical C-V
 - v) Discrete Devices,

is not permitted, even by authorized users. Such changes can only be performed by the operator and the system owner (SO).

- 4) Training requests can only be approved by faculty after an email request is submitted by the user, keeping their PI in CC along with the operator, all SOs, and FIC. The email must clearly mention:
 - a) Why the PDCS is required, along with the approximate high-voltage range needed for measurement (> 100 V).
 - b) Why the measurement cannot be performed in PROXIMA or POLARIS.
- 5) Users without prior experience must undergo the following training before being authorized only for Lateral I-V high-voltage measurements (that do not require physical connection changes):
 - a) 3 Eyes-ON sessions
 - b) 5 Hands-ON sessions
 - c) Authorization test conducted by the System Owner only

- 6) Users with prior authorization on PROXIMA/POLARIS must undergo the following training before being authorized only for “**Lateral I-V high-voltage**” measurements (**that do not require physical connection changes**):
 - a) 2 Eyes-ON sessions
 - b) 3 Hands-ON sessions
- 7) Authorization test conducted by the System Owner only
- 8) Training requests must include complete sample details. Samples must be provided by the user, and the expected form of results should be clearly stated/known.
- 9) Slot booking can only be done with SO/Operator approval, after request approval by the SO/Operator. The request must clearly mention the justification as per point 4.
- 10) Probe tips may only be changed in the presence of the SO/Operator. Probe tip conditions must be checked before starting measurements.
- 11) For all measurements listed in point 3 (except Lateral I-V), the request must be sent via email to the SO, keeping operator and faculty in CC, with justifications as highlighted in point 4.
- 12) Users are assumed to be familiar with the basic Characterization Lab policy for electrical connections. It is also the trainer’s responsibility to remind trainees of this policy.
- 13) GPIB connection, system SMU, and CMU calibration, along with open/short circuit tests, are mandatory before performing any measurements.

- 14) The following physical movements must be performed with caution:
- i) Using the “tiny yellow knob button” to view devices on the display.
 - ii) Stage/microscope control.
 - iii) Light control for illuminating the sample.
 - iv) Manipulator position control (note: movement differs from PROXIMA/POLARIS).
 - v) Interlock shutter control.
- 15) These actions must be executed precisely to avoid damage to both the system and the sample, as two probes are used per contact (instead of one such as in the case of PROXIMA/POLARIS).
- 16) Device size must be $>30\text{ }\mu\text{m}$, as two probe tips of $7\text{ }\mu\text{m}$ each will overlap on smaller devices. Metal pads must be sufficiently thick to avoid scratches caused by opening/closing the interlock shutter, which could easily damage the device.
- 17) Users are strongly advised to mount vertical devices on Au/Ti deposited over SiO_2/Si substrates for measurements. This ensures standard connections and eliminates the need for physical connection changes, which require SO/Operator presence.
- 18) Users must be able to operate the software to:
- a) Save graphs
 - b) Change measurement locations (before and after use)
 - c) Modify step sizes/variation parameters
 - d) Reopen the software properly
- 19) Logbook entry (both online and offline) is mandatory. Probe book entry (including training dummy slot usage) must be made without fail. After each training/usage slot, the trainee must complete both logbooks.

- 20) Users/Trainees may also complete the online Training Form on the IITBNF Website [Online Modules → Slot Booking → Management Slot Booking → Equipment Training]. This informs the advisor of the trainee's progress.
- 21) A test will be conducted by the SO. All points mentioned above will serve as the minimum criteria for passing the test.
- 22) Authorization is valid for a maximum of 3 months (90 days).
- 23) For Authorized Users (AUs):
- a) Must check all probes (for bends/damage) and clean them (if dirty) before and after each slot.
 - b) Must record probe conditions, measurements, and sample details in both online and offline logbooks.
- 24) Tool shutdown can only be performed by SOs/Operators. (Tool shutdown refers to switching off the system, which may only occur during unavoidable circumstances such as lab shutdown.)
- 25) The logbook (online + offline) must be maintained with utmost priority. Failure to do so will be considered a violation.
- 26) No physical wires/cables changes to system connections are permitted without prior email notification to SOs, keeping the FIC in CC.
- 27) Users cannot book slots for more than 6 hours during working hours. If the slot requires SO/Operator involvement, the maximum slot duration is 3 hours.
- 28) Users must not turn off the software after usage but must clear the data storage path.

- 29) Violations include the following:
- i) Mishandling the system.
 - ii) Mishandling the manipulators.
 - iii) Mishandling or bending probe tips.
 - iv) Failure of an AU to report observed violations (e.g., bent tips, non-functional manipulators), even if it does not affect their work.
- 30) SOs are responsible for issuing and managing probe tips.
- 31) Generic 7 μm tips will be provided to users for standard use cases.
- 32) No lint-free cloths or filter papers should be left near the system. They must be disposed of in the designated area.
- 33) Manipulators must not be moved to extreme limits. Ideally:
- a) XY manipulators should be kept midway on the linear scale.
 - b) Z manipulator should be kept near the zero position.
- 34) Manipulators cannot be transferred between systems without informing SOs.
- 35) If required, the manipulator stage must be cleaned with IPA and lint-free cloth in the presence of an SO, if any vacuum issue is there.
- 36) For long slots (more than 6 hours for AUs, or more than 3 hours with SO involvement), prior intimation to SOs via email is mandatory. Such slots can be booked at most 1 week in advance.
- 37) If a user fails to report any issue/discrepancy/deviation from standard conditions (e.g., Physical connection change, probe tips damage,

tool damage), their authorization will be revoked immediately, and disciplinary action will follow as per committee policy.

38) If a user attempts to change any physical connections on their own, authorization will be revoked immediately, and strict disciplinary action will follow as per committee policy.

39) Once authorization is revoked, retraining and re-authorization will be considered by the FIC, subject to availability.

40) Retraining and re-authorization sessions will be conducted by SOs as per their availability. AUs must attend these sessions to regain authorization.

41) Instructions for Trainees:

The online training log sheet must be completed after every Eyes-ON/Hands-ON session. It is available in the IITBNF slot booking module under the "Equipment Training" tab.

42) Instructions for the SO:

- a) The SO/Operator must provide training within 1 week (or as per availability), after verifying the request received via email (with FIC, guide, operator, and all SOs in CC). All regulations mentioned in this policy must be followed before commencing training.
- b) The same email thread must be used for training status updates, authorization follow-ups, and reporting any issues during training.
- c) The SO must ensure that the training process is completed within 30–45 working days from the request date.

43) Once training sessions are completed and the AU notifies readiness, the SO will arrange for the authorization test.

NOTE: Apart from these, the basic PROXIMA/POLARIS tool policies along with NEW Lab policies must be followed other than the mentioned ones.