

Prayas Centre Name Society for Innovation and Entrepreneurship, IIT Bombay
City Mumbai
State Maharashtra
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Equipment available at SINE DST PRAYAS SHALA

Section		Prototyping Facility
Sr. No.	Equipment Name	Equipment detail
1	3D Scanner	<p>Brand - 3D Systems Model - Sence-2 3D Specification - Scan volume - min 20 x 20 x 20 cm, max 200 x 200 x 200 cm, Colour image size - 1920(w) x 1080(h) px, Depth image size - 640(w) x 480(h) px, Operating range - min 40 cm, max 160 cm Operational area - Scanning, Observe a scene in three dimensions Software support - itseez3d (Only scan human body), SENSE 3D SCANNER (Not supporting with 3D Scanner) Link of the user manual - https://docs.rs-online.com/c26f/0900766b812a6c6c.pdf</p>
2	3D Printer 1	<p>Brand - Ultimaker 2+ Model - Think3D Specification -Build volume : 22.3 x 22.3 x 20.5 cm, Max layer resolution - 20 microns, XY positioning precision - 12.5 microns, Z positioning precision - 5 microns, Print speed - 30 cm/s, Print technology- FDM, Filament diameter- 0.285 cm, File supported - *.stl, Software support - CURA Operational area - Product development, Manufacturing, End-use parts, Architecture, Education Material support - PLA, ABS Filament Link of the user manual - https://docs.rs-online.com/70d5/0900766b816176aa.pdf</p>

3	3D Printer 2	<p>Brand - FLASHFORGE Model - GUIDER IIs Specification - Build volume- 25 x 28 x 30 cm, Max layer resolution- 50 microns, XY positioning precision- 11 micron, Z positioning precision- 2.5 micron, Print speed- 10 cm/s, Print technology- FFF, Filament diameter- 0.175 cm, File supported- *.stl, Software support - CURA or FlashPrint Operational area - Manufacturing & Engineering, Healthcare, Construction, Art, Research Material support - PLA , ABS Filament Link of the user manual - https://flashforge-germany.com/images/Bedienungsanleitungen/Flashforge-GuiderIIS-User-Guide.V.20180410.pdf</p>
4	PCB Printer	<p>Brand - Voltera V-ONE Model - Scientech Specification - Min trace width- 0.02 cm, Min pin to pin pitch- 0.065 cm, Resistivity- 12 Ω/sq @70 μm, Print area- 12.8 x 10.5 cm, Compatible file format- Gerber Operational area - Drills holes, Lays down the track, Dispenses solder paste, Reflow SMDs into Your Circuit Material support - PCB Plate or sheet Link of the user manual - https://assets.ctfassets.net/e6vf9wdhbae5/2HpfDojKmdE1JbfuxhXXP9/827eb5bce15a8e772cd0d4c16e535b17/Voltera_V-One_Manual_English_.pdf</p>
5	PCB Milling Machine	<p>Brand - Roland Model - MDX 50 Specification - Spindle Speed- 4500-15000 rpm, Work Area- 40.13 x 30.48 x 13.51 cm, Loadable Workpiece Size- 40.13 x 30.48 x 9.90 cm, Loadable Workpiece Size- 37.08 x 11.98 cm dia with Rotary, Table Size- 40.13 x 30.48 cm, Maximum Tool Size- 0.6 cm, Operating Speed- 6 cm/sec, Mechanical Resolution- 0.01 mm , File support - .stl file for SRP Players and .gbr file for Copper CAM Operational area - PCBs can be produced within the lab, PCB fabrication is instant, Tracks and land patterns can be produced very accurately such as for microwave and RF applications, A single machine can be used for milling, drilling and cutting the PCB.Software Support - SRP Players for milling and Copper CAM for PCB Material support - ABS or acrylonitrile butadiene styrene, is a terpolymer, meaning a combination of three polymers, Acrylic, Brass, Delrin, FR-1 Circuit Board (PCB) Blanks. Link of the user manual - https://webmanual.rolanddg.com/contents/manuals/MDX-50_USE_EN_R5.pdf</p>
6	PCB Drilling Machine	<p>Brand - PROXXON Model - TBM 220 Specification - Spindle speeds- 1,800, 4,700, 8,500 rpm, Feed- 3 cm, Throat depth (column to drill spindle)- 14 cm Operational area - Drilling Material support - PCB plate, Copper plate, Acrylic sheet Link of the user manual - https://www.manualslib.com/manual/1165250/Proxxon-Tbm-220.html?page=2#manual</p>

7	Solder Paste Stencil Printer	Brand - NEODEN Model - CHIPMAX Specification - Length- 61.01 cm, Width- 41.65 cm, Height- 32 cm Operational area - Applying solder paste to a PCB
8	SMT Pick and Place	Brand - NEODEN4 Model - CHIPMAX Specification - Applicable PCB Size- 31 x 120 cm to 35 x 40 cm, Placement Capacity- 12000 CPH(vision off), 5000 CPH(vision on), Applicabble Component- Min 0201, Max 3 x 3 cm, Automatic Electric Feeders- Max 12 set, Placement Accuracy- +0.02 mm to -0.02 mm Operational area - Place a wide variety of components on a single board – or thousands of boards. Link of the user manual - https://www.neodensmt.com/uploads/20180/User-manual.pdf?rnd=171
9	Reflow Oven	Brand - NEODEN Model - IN6 Specification - Conveyor speeds- 15 to 60 cm/min, Capability for lead-free soldering- 300°C/ 572°F, Maximum assembly clearance- 3 cm, Soldering width- 26 cm, Process chamber length- 68 cm Operational area - Reflow soldering for PCB manufacturers Material support - Solder paste Link of the user manual - https://www.ams-electronics.co.uk/wp-content/uploads/2019/05/Neoden-IN6-Reflow-oven-manual.pdf
10	Vinyl Cutter	Brand - Roland Model - CAMM-1 GS 24 Specification - Max cutting speed- 50 cm/s, Max cutting media thickness- 0.1 cm, Replot memory- 2 MB, Mechanical resolution- 0.0125 mm/step Operational area - Designapparels, Signandstickers, Partyboard, Makingcalendar, Carddesigning, Project presentation, Schooldecoration,etc. Material support - Vinyl roll, cardboard and cardstock, paper, stickers and stencils. Software support - CutStudio , Inkscape Link of the user manual - https://files.rolanddga.com/Files/GS-24/UsersManual/Responsive_HTML5/index.htm#t=GS-24_USE_EN_04_1.html

Section		Electronics
Sr. No.	Equipment Name	Equipment detail
11	Manual Tripple DC Power Supplya	Brand - KEITHLEY Model - 2231A-30-3 Specification - Output type- Manual, Output voltage range- 0 V to 30 V, Output current range- 0 A to 3 A
12	Programmable Tripple DC Power Supply	Brand - KEITHLEY Model - 2230-30-1 Specification - Number of outputs- 2, Output voltage- 30 V, Current- 1.5 A, Output power- 120 W

13	Digital Phosphor Oscilloscope	Brand - TEKTRONIX Model - DPO 2014B Specification - Bandwidth- 50 MHz, Sampling rate- 1 GS/s, Channels- 2, Record length- 1 m
14	Digital Storage Oscilloscope	Brand - TEKTRONIX Model - TBS 2000 SERIES Specification - Bandwidth- 70 MHz, Sample rate- 1 GS/s, Channels- 2, Record length- 220 m
15	Digital Storage Oscilloscope	Brand - TEKTRONIX Model - TBS1102B-EDU Specification - Bandwidth- 100 MHz, Sample rate- 2 GS/s, Channels- 2, Record length- 2250 m
16	Arbitrary Function Generator	Brand - TEKTRONIX Model - AFG3052C Specification - Analog bandwidth- 50 Mhz, Channels- 2, Output frequency- 128 K points
17	Arbitrary Function Generator	Brand - TEKTRONIX Model - AFG1022
18	Rework Station	Brand - WELLER Model - WR 3M Specification - Rework station- WR 3000 M, Channel- 3 of 400 V
19	Soldering Station	Brand - WELLER Model - T0053294999 Specification - WSD 81i Soldering Station 230 V
20	Differential Preamplifier	Brand - TEKTRONIX Model - ADA400A Specification - Low pass filters for 100 Hz, 3kHz, 100kHz and full (1 MHz), Sensitivity- 10 μ V/div
21	Digital IC Tester	Brand - ASICO Specification - Tests most of the 6 to 40 pin ICs in DIP package
22	Linear IC Tester	Brand - G SAS MICRO SYSTEMS Model - abi Specification - Tests analog ICs with up to 16 pins through a ZIF socket

Section Metalworking Facility		
Sr. No.	Equipment Name	Equipment detail
23	CNC Lathe	Brand - Haas CNC Model - Toolroom Lathe-1 Specification - CNC 2 Axes Lathe Machine Travel- X axis- 203 mm, Z axis- 762 mm Operations -Facing, Turning,Form Turning, Taper Turning, Chamfering, Cut-Off or Parting, Boring, Threading, Drilling, Knurling Materials -Metal

24	CNC Milling	Brand- Haas CNC Model- Mini mill Specification- CNC Single spindle 3 axes vertical milling machine Travel- X axis- 406 mm, Y axis- 305 mm, Z axis- 254 mm Operations- Face milling, End Milling, Side and face milling, Drilling Material- Metal
25	Manual Lathe machine	Brand- Proxxon Model- PD 400 Specification- Power Output- 550W Travel- X axis- 80 mm, Z axis- 330 mm Operations- Facing, Turning, Form Turning, Taper Turning, Chamfering, Cut-Off or Parting, Boring Materials- Metal, Plastic
26	Manual Milling machine	Brand- Wabeco Model- F1200 Specification- Power output- 400W Travel- X axis- 260 mm, Y axis- 150 mm, Z axis- 280 mm Operations- Face milling, End Milling, Side and face milling, Form milling Material- Metal
27	Laser Cutting and Engraving machine	Brand- SIL Model- 1390 Specification- Max working area- (L* B) 900*1200 mm Laser Type- CO2 Laser Tube Graphic Format Supported- *.cdr, *.ai, *.dwg, *.dst, *.dxf, *.bmp, *.jpeg,*.tiff, .pcx etc. Materials- Acrylic, Mdf, PVC, Glass, wood etc.
28	Bench Drill machine	Brand- Optimum Model- DX 17V Specification- Drill Table Size- (L*B) 290*290 mm Drilling Capacity- Dia 16 mm Threading Cutting Capacity- M8 Operations- Drilling Material- Metal, Wood etc.
29	Horizontal band saw	Brand-- Meba Model- Mini 120G Specification- (705 x 290 x 490 mm) Purpose- To cut long materials such as pipe or bar of required length. Material- Metal, ceramics, Plastic etc.
30	Mitre Saw	Brand- BOSCH Model- GCM 12 GDL Specification -670 x1100 x740mm(width x length x height) Operation- Make a quick, accurate crosscut in a workpiece at a selected angle. Material- Metal, Wood etc.
31	Bench Grinder	Brand- BOSCH Model- BOSCH-GBG 35-15 Purpose- For sharpening cutting tools such as tool bits, drill bits, chisels, and gauges.
32	Angle Grinder	Brand- Bosch Model- GWS 600

Section		Power Tools
Sr No.	Equipment Name	Equipment detail
33	Chop Saw Orbit, Straight Grinder, Cordless Drill, Random Sander, Dremel 4000, Jig Saw, Vacuum Cleaner, Circular Saw, Cordless Screwdriver, Polisher, Electric Rotary Drill, Shear Saw,	Brand- Bosch
34	Drill Sharpener	Brand- PROXXON Model- BSG 220

Section		Measuring equipment
Sr. No.	Equipment Name	Equipment detail
35	Digital Precision Multimeter	Brand - KEITHLEY Model - 2110-240-GPIB Specification - No. of digits- 5.5, DMM connectivity- GPIB USB, Current measure AC max- 10 A, Voltage measure AC max- 750 V
36	Digital Precision Multimeter	Brand - TEKTRONIX Model - DMM 4050 Specification - No. of digits- 6.5, Accuracy- 0.0024 %
37	LCR Meter	Brand - HIOKI Model - IM3523 Specification - Test frequency- 40 Hz to 200 KHz, Basic accuracy- ± 0.05 % with 4 terminal Kevin probe
38	Pocket Thermal Imager	Brand - FLUKE Model - PTi120 Specification - Infrared resolution- 10,800 pixels, Field of view- 50° H x 38° V, Temp measurement range- (20° to 150° C), Minimum focus distance 22.8 cm
39	Digital Luxmeter	Brand - HTC Model - LX-103 Specification - Display- 2000 counts, Accuracy- 3 %, Measurement range- (0~200000Lux or 0~20000FC)
40	Vernier Caliper	Brand - INSIZE Specification - Resolution: 0.01mm/0.0005" , Accuracy: +/- 0.03mm/0.0012"

41	Digital Tachometer	<p>Brand - KUSUM-MECO Model - KM-2234BL Specification - Accuracy- 0.05%, Resolution- 1 rpm, Display- 5 digit, Operating Temperature- 0-5° C, Sampling Time- 1 sec, Speed Range- 5 - 99999 rpm</p>
42	Infrared Thermometer	<p>Brand - FLUKE Model - FLUKE-59 Specification - Accuracy- $\pm 2^{\circ}\text{C}$ (3.5°F) of reading, Display resolution- 0.2°C (0.5°F), Measurement range- (- 18°C to 275°C), Ambient operating range- 0°C - 50°C, Distance-to-spot size- 8:1 calculated @ 90% energy</p>
43	Other general Measuring tools and Hand tools	
44	Refrigerated Centrifuge	<p>Brand - Ependorff Model - 5430 R Specification -The Centrifuge 5430R has two types of rotors: • FA-45-30-11(A)-15 ml Rotor • F-35-6-30(B)-1.5 ml Rotor Attaching FA-45-11(A)-1.5ml Rotor: The rotor is equipped with aerosol tight Quick-Lock rotor lid. It can accommodate 30 tubes at one time. The rotor has a speed limit of 14,000rpm or 6x110g. Attaching F-35-6-30(B)-15ml Rotor: o The rotor is equipped with 12 attachments. It can accommodate 6 falcon tubes of 50ml and 6 falcon tubes of 15ml at one time. The rotor has a maximum speed limit of 7,830rpm or 30x375g.</p>