



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Reference No. (PR No. 1000021533)

RFx No. 6100000877

TECHNICAL SPECIFICATIONS

Micro-Factory

Sr. No.	Equipment and Specifications	Quantity																												
A. Digital Fabrication																														
1	<p>3D Printer Dual Extruder</p> <table border="1"><tbody><tr><td data-bbox="240 884 578 1423" rowspan="8">Build Specification</td><td data-bbox="578 884 919 947">Build Volume</td><td data-bbox="919 884 1317 947">Min 350 *400*400 mm</td></tr><tr><td data-bbox="578 947 919 1010">No. of Extruders</td><td data-bbox="919 947 1317 1010">2</td></tr><tr><td data-bbox="578 1010 919 1073">Max Extrusion Engine Temp</td><td data-bbox="919 1010 1317 1073">270 deg C</td></tr><tr><td data-bbox="578 1073 919 1136">Max Build substrate temp</td><td data-bbox="919 1073 1317 1136">130 deg C</td></tr><tr><td data-bbox="578 1136 919 1199">Positioning Accuracy Z</td><td data-bbox="919 1136 1317 1199">5 um</td></tr><tr><td data-bbox="578 1199 919 1262">Positioning Accuracy X- Y</td><td data-bbox="919 1199 1317 1262">10 um</td></tr><tr><td data-bbox="578 1262 919 1356">Recommended Materials</td><td data-bbox="919 1262 1317 1356">PLA, ABS, PVA, HIPS, PC, ASA.</td></tr><tr><td data-bbox="578 1356 919 1423">Bed Type</td><td data-bbox="919 1356 1317 1423">Heated</td></tr><tr><td data-bbox="240 1423 578 1873" rowspan="5">Features</td><td data-bbox="578 1423 919 1518">IMEX Tool changer</td><td data-bbox="919 1423 1317 1518">Independently Moving Extrusion Tool Changer</td></tr><tr><td data-bbox="578 1518 919 1619">Integrated "Mat-Protect" Material Storage</td><td data-bbox="919 1518 1317 1619">400 x 400 x 400</td></tr><tr><td data-bbox="578 1619 919 1713">Replaceable Extrusion Engines</td><td data-bbox="919 1619 1317 1713">Change from 0.25mm to 1mm Engines</td></tr><tr><td data-bbox="578 1713 919 1776">Build view Beta</td><td data-bbox="919 1713 1317 1776">Live camera</td></tr><tr><td data-bbox="578 1776 919 1873">32 Bit Kinematics</td><td data-bbox="919 1776 1317 1873">Up to 2x faster motion traverse in this category</td></tr></tbody></table>	Build Specification	Build Volume	Min 350 *400*400 mm	No. of Extruders	2	Max Extrusion Engine Temp	270 deg C	Max Build substrate temp	130 deg C	Positioning Accuracy Z	5 um	Positioning Accuracy X- Y	10 um	Recommended Materials	PLA, ABS, PVA, HIPS, PC, ASA.	Bed Type	Heated	Features	IMEX Tool changer	Independently Moving Extrusion Tool Changer	Integrated "Mat-Protect" Material Storage	400 x 400 x 400	Replaceable Extrusion Engines	Change from 0.25mm to 1mm Engines	Build view Beta	Live camera	32 Bit Kinematics	Up to 2x faster motion traverse in this category	01
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		Active Material Sensor	Measures flow and presence of Material	
		7" "Mission Control: Touch" Panel	Onboard User Interface	
	Additional Accessories	<ul style="list-style-type: none">• 0.6mm Nozzle: 2 Nos.• Nylon Built Plate: 1 No• Filament: 10kg• Filament Dehydrator: 1 No		



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2.

Single Extruder 3D printer

04

Print Technology	FFF
Maximum printable area	Minimum 200mm x200mmx200mm
Filament diameter	1.75mm
Extruder diameter	0.4 mm
Extruder temperature	270C
Number of extruder	1
Recommend material	PLA, ABS, flexible
Layer Resolution	60-300 um
Maximum travel speed	150mm/s
Heated bed	Yes
Bed temperature	100C
Lcd support	Yes
Connectivity	Wi-Fi, USB
Enclosure type	Powder coated Galvanized steel
Software supported	Should be provided with machine
Additional Accessories	<ul style="list-style-type: none">• 0.4mm Nozzle: 1 No.• Surface Built Plate: 1 No.• Filament: 1kg



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3

CO2 Engraver and Cutting Machine

01

Working Area	Min 600* Min 400 mm
Laser Type	CO2 DC Glass laser tube
Laser Power	100 W
Laser length	10.6 micro meter
Supply Voltage	AC 230 V +-0.05%/ AC415 V+-0.05%
Reposition Accuracy	0.1 mm (max)
Cutting Speed	0~30000 mm/min
Engraving Speed	0~64000 mm/min
Cooling	Air/Water Cooled
Working Environment	Tem: 0C~45C Humidity 5%~95%
Acceleration Speed	1G
Graphic File Support	PLT, CDR, DWG, DST, DXF, BMP, JPEG, TIFF, GIF, PCX
Additional Accessories	<ul style="list-style-type: none">● Focus Lens: 1 No.● Mirror 25mm: 3 Nos.● Acetone: 1 litre● Acrylic sheet 600*400*3mm: 2 Nos.



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4

Vinyl Printing and Cutting Machine

01

Printing Method	Piezo ink-jet method
Width	Min 150 to 515 mm
Thickness	Max. 1.0 mm (39 mil) with liner, for printing Max. 0.4 mm (16 mil) with liner and 0.22 mm (9 mil) without liner, for cutting
Roll outer diameter	Max. 150 mm
Roll weight	Max. 6 kg
Core diameter	76.2 mm or 50.8 mm
Printing/cutting width	Max. 480 mm
Ink Type	ECO-SOL MAX and 3 220 cc cartridges
Ink Colours	4 colours (Cyan, Magenta, Yellow, Black) 5 colours (Cyan, Magenta, Yellow, Black, Metallic Silver or White) (MAX 3 configuration uses MAX 2 Metallic Silver or White)
Printing Resolution (dots per inch)	Max. 1440 dpi
Cutting Speed	10 to 150 mm/s
Blade force	30 to 300 gf
Blade Type	Roland CAMM-1 series blade
Blade Offset	0.25 mm
Software resolution (when cutting)	0.025 mm/step



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Distance accuracy (when printing)	Error of less than $\pm 0.3\%$ of distance traveled or $\pm 0.3\text{mm}$, whichever is greater
Distance accuracy (when cutting)	Error of less than $\pm 0.4\%$ of distance travelled, or $\pm 0.3\text{ mm}$, whichever is greater
Repeatability (when cutting)	$\pm 0.1\text{ mm}$ or less
Alignment accuracy for printing & cutting	$\pm 0.5\text{ mm}$ or less
Alignment accuracy for printing & cutting when reloading media	Error of less than $\pm 0.5\%$ of distance traveled, ($\pm 3\text{ mm}$), whichever is greater
Print Heater	Temperature: 35°C
Connectivity	USB (compliant with Universal Serial Bus Specification Revision 2.0)
Power saving function	Automatic sleep feature
Power requirements	AC 100 to 240 V $\pm 10\%$, 1.5 A, 50/60 Hz
Power consumption	Approx. 90 W (During operation) Approx. 5.5 W (Sleep mode)
Acoustic noise level During operation	62 dB (A) or less
Acoustic noise level During standby	42 dB (A) or less
Dimensions	Min 1009 (W) x 582 (D) x 293 (H) mm
Weight	36 kg
Environment	Temperature: 20 to 32°C (68 to 90°F), humidity: 35 to 80%RH (no condensation) (Power on) Temperature: 5 to 40°C (41 to 104°F), humidity: 20 to 80%RH (no condensation) (Power off)
Included Items	<ul style="list-style-type: none"> • Dual RIP Software, power cable, USB cable, blade, blade holder, User's Manual, etc. • Vinyl Roll 24x50ft: 1 No.



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Desktop PCB Marking and Engraving Machine

01

Acceptable materials	Resins such as chemical wood and modeling wax (metal not supported)
Operating range	X: min 203.2mm Y: min 152.4mm Z: min 60.5mm
Table size	W: min 232.2mm D: min 156.6mm
Loadable work piece weight	Max 2kgs.
Axis drive	Stepper Motor
Operating Speed	6-1800 mm/min
Software resolution	0.000039in/step (RML-1), 0.000039 in/step (NC Code, 0.001mm/step (NC Code)
Mechanical resolution	0.000998594mm/step
Spindle motor	DC motor Type 380
Spindle rotation speed	Adjustable 3000 rpm to 7000 rpm
Tool chuck	Cutting tool chuck
Tool Change Method	Collet Method
Tool Shank Diameter	0.250in, 0.125in (6.35, 3.175mm)
Operating noise	During operation 65(dba) or less during stand by 45(dba) or less
Interface	USB
Power requirements (VAC/A)	AC 100 to 240 V $\pm 10\%$, 50/60 Hz, 1.2 A
Power consumption (W)	$\approx 50W$
Weight	19.6 Kg



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	Installation environment	Humidity	35 to 80%RH (no condensation)
		Ambient pollution degree	2 (as specified by IEC 60664-1)
		Short-term temporary overvoltage	1440 V
		Long-term temporary overvoltage	490 V
	Additional Accessories	<ul style="list-style-type: none"> • Collate 3mm: 1 No. • End mill 0.4mm: 2 Nos. • End mill 0.8mm: 2 Nos. • End mill 1 mm: 1 Nos. • End mill 3 mm: 1 Nos. • End mill 6 mm: 1 Nos. • Ball mill 1mm: 1 Nos. • Ball mill 6mm: 1 Nos. • Engraving bit: 2 Nos. • Copper Cam Software with installation: 1 No. • Resin Wood 200mm*200mm: 5 Nos. • Copper Clad Plate Laminate Single Side PCB Size: 6*4 inch: 10 Nos. • Double-sided tape 1 Roll of 12mm X 10mtr: 2 Nos. 	



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3D Scanner

01

Single Shot Accuracy:	Less than 0.1 mm
Scan Volume:	Minimum 3 × 3 × 3 cm
Scan Volume	Maximum 70×70×70 cm
Range of Single Capture:	Min 200×150 mm
Scan Speed:	Greater than 8 s
Point Distance:	0.17 mm ~ 0.2 mm
Texture:	Yes
File Format:	OBJ, STL, ASC, PLY
Camera Resolution:	Minimum 1.3 Mega Pixels
Light Source:	White Light
Stand-off Distance:	290 ~ 480 mm
Computer Requirements: (Required)	USB:1 ×USB 2.0 or 3.0; OS: Win7, Win8, Win10 (64 bit); CPU: Dual-core i5 ; RAM: 8G
Computer Requirements: (Recommended)	Graphics card: Nvidia series
Weight (unpacked):	Maximum 4.7 kg
Weight (packed):	Maximum 5.1 kg
Dimension:	Minimum 565×207×207 mm
Power Supply:	40 w
Input Voltage:	DC : 12 v, 3.33 A
Calibration Board:	Yes
Turntable:	Yes
Load Capacity of Turntable:	Maximum 5 kg



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7	Desktop Forming Machine	01
Size and Weight	<p>Height: 315mm (12.4 inches)</p> <p>Length (with handles): 466mm (18.3 inches)</p> <p>Width: 274mm (10.8 inches)</p> <p>Forming bed: 200 x 200mm (7.9 x 7.9 inches)</p> <p>Draw depth: 130mm (5.1 inches)</p> <p>Weight: 13kg (28.7lbs)</p>	
Heater	The temperature range of the built-in ceramic heater is 160°C - 340°C.	
Power	110V 5A 1000W and 240V 5A 1000W models available depending on region. 2000W maximum power-through for vacuum cleaner port.	
Operating Environment	<p>Recommended Operating Temperature: 15-30°C; Humidity: 30-50% RH</p> <p>Recommended Storage Temperature: 10-35°C; Humidity: 20-90% RH</p>	
Regulatory Compliance	<ul style="list-style-type: none"> • CE • FCC • IC • PSE • RoHS • SAA 	
Sheet Materials	The machine works with thermoplastic sheets between 0.25 and 1.5mm in thickness.	
Compatible Sheet Materials	PETg, Polystyrene, EVAfoam, HIPS, PVC, TPU, PLA, Kydex, ABS, Polypropylene, HDPE, Extruded, Acrylic, Polycarbonate, LDPE	



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		<ul style="list-style-type: none"> • 3D printed FDM PLA • 3D printed FDM ABS • 3D printed FDM Nylon • Most 3D printed SLA materials tooling foam • Most 3D printed SLS materials • Wood • Milled and injection moulded plastics such as ABS or nylon 	<ul style="list-style-type: none"> • Steel • Aluminum • Plaster • Polyurethane • Hardened clays • Silicone • Paper and card • Toughened glass 																							
	Compatible Casting Materials	Concrete Silicone • Jesmonite Chocolate • Plaster	<ul style="list-style-type: none"> • Jello • Resin • Ice 	• Foam																						
	Additional Accessories	<ul style="list-style-type: none"> • Cast Sheet (PVC): 30pcs • Form sheet (PET sheet): 30pcs 																								
8	Lath Machine				01																					
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Max Swing Over Bed</td> <td style="padding: 2px;">Max 85 mm</td> </tr> <tr> <td style="padding: 2px;">Center Distance</td> <td style="padding: 2px;">Min 400mm</td> </tr> <tr> <td style="padding: 2px;">Height of cross slide</td> <td style="padding: 2px;">Max 58mm</td> </tr> <tr> <td style="padding: 2px;">Headstock Type</td> <td style="padding: 2px;">MK-3</td> </tr> <tr> <td style="padding: 2px;">Spindle Bore (mm)</td> <td style="padding: 2px;">Min 21mm</td> </tr> <tr> <td style="padding: 2px;">Spindle Speed (rpm)</td> <td style="padding: 2px;">Max 80-2880</td> </tr> <tr> <td style="padding: 2px;">Type of Bed</td> <td style="padding: 2px;">Crossed –braced wide legged shaped bed</td> </tr> <tr> <td style="padding: 2px;">Tailstock type</td> <td style="padding: 2px;">MK-2</td> </tr> <tr> <td style="padding: 2px;">Sleeve</td> <td style="padding: 2px;">Min 24mm</td> </tr> <tr> <td style="padding: 2px;">Tail Stock Sleeve Travel</td> <td style="padding: 2px;">Min 40mm</td> </tr> <tr> <td style="padding: 2px;">Lead Screw</td> <td style="padding: 2px;">12*1.5</td> </tr> </table>	Max Swing Over Bed	Max 85 mm	Center Distance	Min 400mm	Height of cross slide	Max 58mm	Headstock Type	MK-3	Spindle Bore (mm)	Min 21mm	Spindle Speed (rpm)	Max 80-2880	Type of Bed	Crossed –braced wide legged shaped bed	Tailstock type	MK-2	Sleeve	Min 24mm	Tail Stock Sleeve Travel	Min 40mm	Lead Screw	12*1.5		
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		Range of Longitudinal Feeds	0.05 to 1mm		
		Range of Transverse Feeds	0.025 to 1mm		
		Threads cutting	0.2-3mm 10-48 TPI		
		Chuck type	3-Jaw Class 1		
		Power rated	Min 0.870KW 220V 50/60Hz		
		Power output	Min 0.550 KW		
		Weight	Min 45 kg		
		Machine Size	Min 900 x 300 x 400 mm		
		Addition	<ul style="list-style-type: none">• Cutter set with tungsten inserts : 1Nos• Tungsten disposable tips ten-piece set : 1 Nos.• Sample Workpieces (Nylon Rod, Aluminium Rod)		



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Milling Machine

01

Power Supply	220-240V /50/60Hz
Spindle Speed	Min 200-4000 rpm
Throat	Min 125 mm
Sleeve Stroke	Min 30 mm
Column	Min 120*100*430 mm
Table	Min 400*125 mm
Transverse range Vertical (Z axis)	Min 220 mm
Transverse (X axis)	Min 310mm
Depth (Y axis)	Min 100 mm
Dimensions	H= max 750mm W= max 550mm D= max550 mm
Total weight	Machine: max 47kg
Additional Accessories	<ul style="list-style-type: none">• Step clamp set of steel : 1 No• Milling cutter set (2 - 5mm) : 1 No• Sample Workpieces (Aluminium plate)



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Belt Sander

01

Rated Power	Min 230V, 0.150Kw
Grinding Band	Min 40 x 260mm
Grinding Surface	Min 60 x 40 mm
Band Speed	Min 160m/min
Length	Min 175 mm
Insulation Type	Class 2
Weight	Min 700g
Addition accessories	Sanding Belt of Different Grid



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B. Electronics

1	Electronic Workstation	04										
	<table border="1"><tr><td>SIZE (in mm)</td></tr><tr><td>1800H X 1800W X 900D</td></tr><tr><td>Product Description</td></tr><tr><td>ESD Workstation in 40 x 80 Al ESD Powder Coating 18mm thick ESD laminated post formed MDF Table top</td></tr><tr><td>ESD accessories consists of Wrist band (ESD), Connectors (ESD) & Grounding cord.</td></tr><tr><td>Electrical per table: 16A MCB, Ind, 6/16 Amp Sw+Skt - 4 nos. 4 ft 20W LED Tube light</td></tr><tr><td>EBL closed with MS tool Board</td></tr><tr><td>Soft board</td></tr><tr><td>Conductive 3 Drawer unit</td></tr><tr><td>Foot stand, Levellers</td></tr></table>	SIZE (in mm)	1800H X 1800W X 900D	Product Description	ESD Workstation in 40 x 80 Al ESD Powder Coating 18mm thick ESD laminated post formed MDF Table top	ESD accessories consists of Wrist band (ESD), Connectors (ESD) & Grounding cord.	Electrical per table: 16A MCB, Ind, 6/16 Amp Sw+Skt - 4 nos. 4 ft 20W LED Tube light	EBL closed with MS tool Board	Soft board	Conductive 3 Drawer unit	Foot stand, Levellers	
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2

Soldering Station

06

Dimensions L x W x H (mm)	Max 150 x 120 x 98
Weight (approx.) in kg	Max 1.4 Kg
Display	Digital LC
Channels	1
Temperature range (depends on tool) °C	Max 100-450
Temperature accuracy °C	Average tip temperature can be "offset" to +/- 5°C at idle with no load
Temperature stability °C	± 6
Heating time (approx.) in seconds (50–350 °C/120–660 °F)	28 sec
Power	85 W
Voltage	120 V



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3	Digital Multimeter	04
DC VOLTAGE		
Range		500mV, 5V, 50V, 500V, 1000V 5 ranges
Accuracy		$\pm(0.03\% \text{ rdg} + 4 \text{ digits})$
Input Impedance		10M Ω
AC VOLTAGE True RMS (AC or AC+DC True RMS)		
Range		500mV, 5V, 50V, 500V, 1000V 5 ranges
Accuracy		500mV ~ 50V 3 ranges: 20Hz ~ 45Hz: $\pm(1\% \text{ rdg} + 15 \text{ digits})$ 45Hz ~ 2kHz: $\pm(0.5\% \text{ rdg} + 15 \text{ digits})$ 2kHz ~ 10kHz: $\pm(1\% \text{ rdg} + 15 \text{ digits})$ 10kHz ~ 20kHz: $\pm(2\% \text{ rdg} + 30 \text{ digits})$ 20kHz ~ 50kHz: $\pm(5\% \text{ rdg} + 30 \text{ digits})$ 500V, 1000V 2 ranges: 45Hz ~ 1kHz: $\pm(0.5\% \text{ rdg} + 15 \text{ digits})$
Input Impedance		10M Ω
DC CURRENT		
Range		500 μ A, 5mA, 50mA, 500mA, 2A, 20A 6 ranges
Accuracy		500 μ A ~ 500mA 4 ranges : $\pm(0.02\% \text{ rdg} + 2 \text{ digits})$ 2A ~ 20A 2 ranges : $\pm(0.3\% \text{ rdg} + 2 \text{ digits})$
AC CURRENT True RMS (AC or AC+DC True RMS)		
Range		500 μ A, 5mA, 50mA, 500mA, 2A, 20A 6 ranges
Accuracy		500 μ A ~ 20A 6 ranges 20Hz ~ 45Hz: $\pm(1\% \text{ rdg} + 15 \text{ digits})$ 45Hz ~ 2kHz: $\pm(0.5\% \text{ rdg} + 15 \text{ digits})$ 500 μ A ~ 50mA 3 ranges



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	2kHz ~ 10kHz: $\pm(1\% \text{ rdg} + 15 \text{ digits})$ 10kHz ~ 20kHz: $\pm(2\% \text{ rdg} + 15 \text{ digits})$
RESISTANCE	
Range	500 Ω , 5k Ω , 50k Ω , 500k Ω , 5M Ω , 20M Ω 6 ranges
Accuracy	500 Ω range : $\pm(0.1\% \text{ rdg} + 4 \text{ digits})$ 5k Ω ~ 500k Ω 3 ranges : $\pm(0.1\% \text{ rdg} + 2 \text{ digits})$ 5M Ω range : $\pm(0.2\% \text{ rdg} + 2 \text{ digits})$ 20M Ω range : $\pm(0.3\% \text{ rdg} + 2 \text{ digits})$
DIODE TEST	
	Maximum forward voltage 1.5V, open voltage 2.8V
CAPACITANCE	
Range	5nF, 50nF, 500nF, 5 μ F, 50 μ F 5 ranges
Accuracy	$\pm(2\% \text{ rdg} + 4 \text{ digits})$
FREQUENCY	
Input Level (Sine Wave)	mV range : 10Hz ~ 50kHz >120mV 50kHz ~ 150kHz >200mV 5V ~ 50V range : 10Hz ~ 200kHz >1.2V 500V range : 20Hz ~ 1kHz >12V
FUNCTIONS	Auto Range, Manual Range, Max, Min, dBm, Rel, Hold
CONTINUITY BEEP	< 5 Ω
DISPLAY	Dual display 0.4", 0.5" 7 segment LED
POWER SOURCE	AC 100V/120V/230V $\pm 10\%$, 50/60Hz
DIMENSIONS & WEIGHT	251(W) \times 91(H) \times 291(D) mm Approx 2.6kg



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4	Mixed Signal Oscilloscope	04																																								
	<table border="1"> <tr> <td>Band</td> <td>≤100 MHz</td> </tr> <tr> <td>Number of channels</td> <td>2</td> </tr> <tr> <td>Memory Record Length</td> <td>10Mpts</td> </tr> <tr> <td>Sampling</td> <td>1Gsps</td> </tr> <tr> <td>Rise Time</td> <td>≤3,5 ns</td> </tr> <tr> <td>Kind of display used</td> <td>TFT 8" (800x480)</td> </tr> <tr> <td>Time base</td> <td>1n...100s/div</td> </tr> <tr> <td>Vertical resolution</td> <td>8bit</td> </tr> <tr> <td>Trigger Modes</td> <td>Automatic, normal, signal</td> </tr> <tr> <td>Max. input voltage</td> <td>300V</td> </tr> <tr> <td>Input Sensitivity</td> <td>1Mv/div...10V/div</td> </tr> <tr> <td>Input Coupling</td> <td>AC, DC, GND</td> </tr> <tr> <td>Trigger Coupling</td> <td>AC, DC, High pass, Lowpass</td> </tr> <tr> <td>Dimensions</td> <td>Min 350x200x120mm</td> </tr> <tr> <td>Weight</td> <td>Max 3 kg</td> </tr> <tr> <td>Input Impedance</td> <td>1MΩ/16pF</td> </tr> <tr> <td rowspan="5">Measuring instrument features</td> <td>automatic measurement of many parameters required</td> </tr> <tr> <td>AUTOSET function for setting display parameters (time base, gain) required</td> </tr> <tr> <td>background noise filter required</td> </tr> <tr> <td>protocols analyse: CAN/LIN</td> </tr> <tr> <td>protocols analyse: I2C, SPI, UART</td> </tr> <tr> <td>Standard equipment</td> <td>mains cable, manual (CD), oscilloscope probe (1 per channel), probe GTL-16E</td> </tr> </table>	Band	≤100 MHz	Number of channels	2	Memory Record Length	10Mpts	Sampling	1Gsps	Rise Time	≤3,5 ns	Kind of display used	TFT 8" (800x480)	Time base	1n...100s/div	Vertical resolution	8bit	Trigger Modes	Automatic, normal, signal	Max. input voltage	300V	Input Sensitivity	1Mv/div...10V/div	Input Coupling	AC, DC, GND	Trigger Coupling	AC, DC, High pass, Lowpass	Dimensions	Min 350x200x120mm	Weight	Max 3 kg	Input Impedance	1MΩ/16pF	Measuring instrument features	automatic measurement of many parameters required	AUTOSET function for setting display parameters (time base, gain) required	background noise filter required	protocols analyse: CAN/LIN	protocols analyse: I2C, SPI, UART	Standard equipment	mains cable, manual (CD), oscilloscope probe (1 per channel), probe GTL-16E	
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5

DC Power Supply

04

4 Independent Isolated Output	Out Puts: CH 1 & 2 : 0-32V/3A CH 3 : .0- 5 V/1A CH 4 : 0 – 15 V/1A
Constant Voltage Mode	Line Regulation: $\leq 0.01\% + 3\text{mV}$ Load Regulation: $\leq 0.01\% + 3\text{mV}$ Ripple & Noise: 1mVrms
Constant Current Mode	Line Regulation: $\leq 0.2\% + 3\text{mA}$ Load Regulation: $\leq 0.2\% + 3\text{mA}$ Ripple Current: $\leq 3\text{mArms}$
Safety Operations	Output ON/OFF Switch required
Displays	Four Different Displays required
Display Size	4.3 Inch LCD Display
Other Features	Tracking Operation and Auto Series/Parallel Operation required
Supply	230 V AC / 50 hz
Standard accessories	User manual, Power cord & test leads 4 nos.



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6

Function Generator

04

Technology	DDS Technique and FPGA Chip Design with Digital Key pad
Frequency Range	0.1Hz ~ 3MHz
Output Function	Sine, Square, Triangle, TTL
Amplitude Range	2mVpp~10Vpp (50Ω load)
Impedance	50Ω ± 10%
Attenuator	-40dB ± 1dB x1
DC Offset	< -5V ~ >+5V (50Ω load)
Duty Range	25% ~ 75%, ≤1MHz (Square Wave)
Display	6 digits LED display
Sine/Square Waveform Range	0.1Hz ~ 3MHz
Triangle Waveform Range	0.1Hz ~ 1MHz
Low Distortion Sine Wave	-55dBc, 0.1Hz~200kHz
Resolution	0.1Hz maximum
Stability	±20ppm
Accuracy	±20ppm
Aging	±5ppm/year
Cursor selection	Cursor (frequency editing point) left or right. facility for Accurate frequency setting
Output Control	Out Put with ON/OFF selector
Standard accessories	BNC – crocodile x 1, Mains cord



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Power Tools		Quantity
1. Angle Grinder		01
Rated input power	660 W	
No-load speed	12.000 rpm	
Disc diameter	100 mm	
Grinding spindle thread	M 10	
Tool dimensions (width)	77 mm	
Tool dimensions (length)	263 mm	
Tool dimensions (height)	95 mm	
Weight	1.5 kg	
Switch	2-way	
2. Bench Grinder		01
Grinding wheel diameter	200 mm	
No-load speed	3,600 rpm	
Grinding wheel widths	25 mm	
Grinding wheel bore	32 mm	
Grit	24 , 60	
Rated input power	600 W	
Weight	15 kg	
Tool dimensions (width)	230 mm	
Tool dimensions (length)	370 mm	



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Tool dimensions (height)	260 mm	
3. Table Saw		01
Incline setting	47 ° L / 2 ° R	
Table size	642 x 572 mm	
Saw blade diameter	25 mm	
Cutting height 90°	79 mm	
Saw blade bore diameter	30 mm	
Weight	26 kg	
Max. cutting capacity on the right	460 mm	
Max. cutting capacity on the left	210 mm	
No-load speed*	3,650 rpm	
4. Jigsaw		01
Rated input power	500 W	
Stroke rate at no load	1450 - 3200 spm	
Weight	2.1 kg	
Saw, stroke length	20 mm	
Rated input power	500 W	
Cutting depth in wood	70 mm	
Cutting depth in aluminium	10 mm	



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Cutting depth in non-alloyed steel	6 mm	
Vibration emission value ah	3.9 m/s ²	
Uncertainty K	1.5 m/s	
Vibration emission value ah	4.2 m/s ²	
Uncertainty K	1.5 m/s ²	
5. Handheld Drill		01
Rated input power	600 W	
No-load speed	0 - 2800 rpm	
Power output	301 W	
Weight	1.8 kg	
Rated torque	1,8 Nm	
Drill spindle connecting thread	1/2" – 20 UNF	
Chuck capacity, min./max.	1,5 - 13 mm	
Tool dimensions (length)	266 mm	
Tool dimensions (height)	180 mm	
Impact rate at no-load speed	0 - 44800 bpm	
Drilling diameter in concrete	13 mm	
Drilling diameter in wood	25 mm	
Drilling diameter in steel	10 mm	
Drilling diameter in masonry	15 mm	



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Drilling in metal		
Vibration emission value ah	3 m/s ²	
Uncertainty K	1.5 m/s ²	
Impact drilling in concrete		
Vibration emission value ah	26 m/s ²	
Uncertainty K	3 m/s ²	
Screw driving		
Vibration emission value ah	2.5 m/s ²	
Uncertainty K	1.5 m/s ²	
6. Cordless Drill		01
Battery voltage	18 V	
Torque (soft/hard/max.)	21/54/- Nm	
No-load speed (1st gear / 2nd gear)	0 – 450 / 0 – 1.700 rpm	
Battery type	Lithium-ion	
Max. impact rate	27,000 bpm	
Torque settings	20+2	
Max. drilling diameter in wood	35 mm	
Max. drilling diameter in steel	10 mm	
7. Hot Air Gun		01
Rated input power	1,800 W	
Weight	0.75 kg	
Tool dimensions (width)	86 mm	
Tool dimensions (length)	238 mm	



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Tool dimensions (height)	244 mm	
Working temperature	60 – 550°C	
Airflow	350 – 550 l/min	
Heat-up time	1 mins	
Continuously variable temperature control	-	
Cold stage, 50°C	-	
Control, airflow	3-stage	
8. Random Orbit Sander		01
Sanding pad diameter	125 mm	
Rated input power	250 W	
Oscillating circuit diameter	2.5 mm	
No-load speed	7.500 – 12.000 rpm	
Orbital stroke rate	15.000 – 24.000 opm	
Eccentricity	1.25 mm	
Sanding sheet / disc attachment	hook-and-loop fastening	
Weight	1.3 kg	
Vibration emission value ah	5 m/s ²	
Uncertainty K	1.5 m/s ²	
9. Wet/Dry Extractor		01
Weight	6 kg	
Container volume, net	10 l	
Rated input power	1,100 W	
Container volume, gross	15 l	
Container volume, net, water	8 l	
Tool dimensions (length)	360 mm	



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Tool dimensions (height)	440 mm	
Max. airflow rate (turbine)	53 l/sec	
Max. vacuum pressure (turbine)	270 mbar	
10. 3-in-1 Rotary tool kit		03
Cord Length	6ft	
Speed	5,000 to 35,000 RPM	
Tool Level	1 - Corded – variable speed high	
Weight	1.3kg	
Amperage	1.6	
Length	6"	
<p>3-in-1 tool: It's a drill press, rotary tool holder, and flex-shaft tool stand. Articulating drill press: drills perpendicular and angled holes in 15-degree increments, up to 90 degrees horizontal Tool holder: holds tool at 90 degrees horizontal for tasks such as polishing metal objects, sanding different shapes and grinding metal pieces Flex shaft tool stand: allows telescopic adjustment to any height between 16" and 29"</p> <p>3-in-1 tool: It's a drill press, rotary tool holder, and flex-shaft tool stand. Articulating drill press: drills perpendicular and angled holes in 15-degree increments, up to 90 degrees horizontal</p>		
<p>Clamps to any work surface up to 2-1/2" thick Rotates 360° and tilts 50° allowing the user to lock the workpiece in any position Tool holder turns Dremel rotary tools into a stationary sander, grinder or polisher Removable clamping jaws create a stand-alone bar clamp Includes: Vise head, tool holder, and adjustable base</p>		



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C. Hand Tools						
1	Rubber Grip Hacksaw <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Depth of Throat</td> <td style="padding: 2px;">98mm / 3.85 Inch</td> </tr> <tr> <td style="padding: 2px;">Blade Length</td> <td style="padding: 2px;">254mm / 10 Inch</td> </tr> </table>	Depth of Throat	98mm / 3.85 Inch	Blade Length	254mm / 10 Inch	04
Depth of Throat	98mm / 3.85 Inch					
Blade Length	254mm / 10 Inch					
2	CLAW HAMMER STEEL SHAFT <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Weight</td> <td style="padding: 2px;">8 Oz / 220 gms</td> </tr> <tr> <td style="padding: 2px;">Dimensions</td> <td style="padding: 2px;">27.8 x 12.4 x 3.6 cm</td> </tr> </table>	Weight	8 Oz / 220 gms	Dimensions	27.8 x 12.4 x 3.6 cm	02
Weight	8 Oz / 220 gms					
Dimensions	27.8 x 12.4 x 3.6 cm					
3	BALL PEIN HAMMER <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Weight</td> <td style="padding: 2px;">110 gms</td> </tr> <tr> <td style="padding: 2px;">Dimensions</td> <td style="padding: 2px;">32.6 x 10 x 2 cm</td> </tr> </table>	Weight	110 gms	Dimensions	32.6 x 10 x 2 cm	02
Weight	110 gms					
Dimensions	32.6 x 10 x 2 cm					
4	Rubber mallet <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Weight</td> <td style="padding: 2px;">450gms</td> </tr> <tr> <td style="padding: 2px;">Dimensions</td> <td style="padding: 2px;">33.6 x 9.6 x 6.2 cm</td> </tr> </table>	Weight	450gms	Dimensions	33.6 x 9.6 x 6.2 cm	02
Weight	450gms					
Dimensions	33.6 x 9.6 x 6.2 cm					
5	Wood handle Nail hammer <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Weight</td> <td style="padding: 2px;">450gms</td> </tr> <tr> <td style="padding: 2px;">Dimensions</td> <td style="padding: 2px;">16-inch length</td> </tr> </table>	Weight	450gms	Dimensions	16-inch length	02
Weight	450gms					
Dimensions	16-inch length					
6	Hammer compo cast STD Soft face <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Weight</td> <td style="padding: 2px;">510gms</td> </tr> </table>	Weight	510gms	01		
Weight	510gms					



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7	Ring spanner set 12Pcs		Weight	3.08 Kg	02
			Pc/Set	12 pcs	
			Size	6mm to 32mm	
8	Open end spanner set 12pcs		Weight	1.74 Kg	01
			Pc/Set	12 pcs	
			Size	6mm to 32mm	
9	Combination Spanner set 8Pcs		Weight	649 g	01
			Pc/Set	8 pcs	
			Size	8mm to 19mm	
10	Allen Hex Key 10pcs		Hex Key Size	1.5mm, 2mm, 2.5mm, 3mm ,4mm, 5mm, 5.5mm, 6mm, 8mm, 10mm	01
			Pc/Set	10pcs	
11	Allen key 12pcs ball type		Ball Key Size	1/16",5/64",3/32",7/64",1/8",9/64", >5/32",3/16",7/32",1/4",5/16",3/8"	01
			Pc/Set	12pcs	



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12	Combination pliers		weight	422 g	02
			Size	8 inch / 200 mm	
13	Long Nose plier		weight	399 g	02
			Size	180mm / 6"	
14	Circlip Straight		weight	399 g	01
			Size	180mm / 6"	
15	Circlip bent		weight	399 g	01
			Size	180mm / 6"	
16	Diagonal Cutting Pliers		weight	281 g	01
			Size	180mm/6"	
17	Wire stripper		weight	281 g	02
			Size	180mm	
18	Adjustable Spanner		Weight	299 g	01
			Size	250mm	



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19	C-Clamp	Size	150mm	04
20	LIGHT DUTY F-CLAMP	Size	200 mm/8inch	02
21	HEAVY-DUTY BAR CLAMP/SPREADER	Size	450 mm/18inch	02
22	16pcs screw driver set	Pieces per set	16 Pcs	02
23	Hot glue gun	Power	40W	04
		Weight	381 g	
24	Bench Wise	Base Type	Fixed	01
		Size	2 3/8 Inch	
		Jaw Width	60mm	
25	Drill bit set	Width Across Flat (mm)	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13	01
		Weight kg	1.3	
		Size (mm)	205x115x55	



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26	Pegboard <table border="1" data-bbox="457 386 956 449"><tr><td data-bbox="457 386 708 449">Size</td><td data-bbox="708 386 956 449">505 x 390 mm</td></tr></table>	Size	505 x 390 mm	05						
Size	505 x 390 mm									
27	<table border="1" data-bbox="380 512 1034 1138"><tr><td data-bbox="380 512 1034 575">SIZE (in mm)</td></tr><tr><td data-bbox="380 575 1034 638">2000H X 1800W X 750D</td></tr><tr><td data-bbox="380 638 1034 701">Product Description</td></tr><tr><td data-bbox="380 701 1034 831">Workbench- MS with powder coating. Working height- 900mm Load capacity- 500 kg UDL</td></tr><tr><td data-bbox="380 831 1034 926">Worktop with GI Cladding & Rubber Mat.</td></tr><tr><td data-bbox="380 926 1034 1020">Perforated panel - MS with powder coating.</td></tr><tr><td data-bbox="380 1020 1034 1083">Shelf- MS with powder coating</td></tr><tr><td data-bbox="380 1083 1034 1138">Tube light provision</td></tr></table>	SIZE (in mm)	2000H X 1800W X 750D	Product Description	Workbench- MS with powder coating. Working height- 900mm Load capacity- 500 kg UDL	Worktop with GI Cladding & Rubber Mat.	Perforated panel - MS with powder coating.	Shelf- MS with powder coating	Tube light provision	01
SIZE (in mm)										
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Product Description										
Workbench- MS with powder coating. Working height- 900mm Load capacity- 500 kg UDL										
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Tube light provision										



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D. Measuring Instruments

D. Measuring Instruments											
1	Digital Vernier Calliper	<table border="1"> <tr> <td>Type of Product:</td> <td>Digital Calliper</td> </tr> <tr> <td>Measuring Range (mm):</td> <td>0-150 mm</td> </tr> <tr> <td>Resolution (mm):</td> <td>0.01 mm</td> </tr> <tr> <td>Measuring Range (Inch):</td> <td>0-6 Inch</td> </tr> </table>	Type of Product:	Digital Calliper	Measuring Range (mm):	0-150 mm	Resolution (mm):	0.01 mm	Measuring Range (Inch):	0-6 Inch	02
Type of Product:	Digital Calliper										
Measuring Range (mm):	0-150 mm										
Resolution (mm):	0.01 mm										
Measuring Range (Inch):	0-6 Inch										
2	Steel Rule	<table border="1"> <tr> <td>Type of Product:</td> <td>Steel Rule</td> </tr> <tr> <td>Size of Scale / Gage in (Inch):</td> <td>12 Inch/300mm</td> </tr> <tr> <td>Material:</td> <td>Stainless Steel</td> </tr> </table>	Type of Product:	Steel Rule	Size of Scale / Gage in (Inch):	12 Inch/300mm	Material:	Stainless Steel	02		
Type of Product:	Steel Rule										
Size of Scale / Gage in (Inch):	12 Inch/300mm										
Material:	Stainless Steel										
3	Inside	<table border="1"> <tr> <td>Material:</td> <td>Carbon Steel</td> </tr> <tr> <td>Measuring Range (mm):</td> <td>20-170 mm</td> </tr> <tr> <td>Jaw Length (mm):</td> <td>150mm</td> </tr> </table>	Material:	Carbon Steel	Measuring Range (mm):	20-170 mm	Jaw Length (mm):	150mm	calliper 01		
Material:	Carbon Steel										
Measuring Range (mm):	20-170 mm										
Jaw Length (mm):	150mm										
4	Outside calliper	<table border="1"> <tr> <td>Material:</td> <td>Carbon Steel</td> </tr> <tr> <td>Measuring Range (mm):</td> <td>0-140 mm</td> </tr> <tr> <td>Jaw Length (mm):</td> <td>155 mm</td> </tr> </table>	Material:	Carbon Steel	Measuring Range (mm):	0-140 mm	Jaw Length (mm):	155 mm	01		
Material:	Carbon Steel										
Measuring Range (mm):	0-140 mm										
Jaw Length (mm):	155 mm										
5	Engineering Square	<table border="1"> <tr> <td>Weight:</td> <td>0.225 Kg</td> </tr> <tr> <td>Size (inch):</td> <td>6 Inch</td> </tr> <tr> <td>Type of Product:</td> <td>Engineers Square</td> </tr> </table>	Weight:	0.225 Kg	Size (inch):	6 Inch	Type of Product:	Engineers Square	01		
Weight:	0.225 Kg										
Size (inch):	6 Inch										
Type of Product:	Engineers Square										



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6	Laser Measuring <table border="1" data-bbox="245 436 954 915"><tr><td>Measurement range</td><td>0.15 – 30.00 m</td></tr><tr><td>Laser diode</td><td>635 nm, < 1 mW</td></tr><tr><td>Weight, approx.</td><td>0.09 kg</td></tr><tr><td>Measurement time, typical</td><td>< 0.5 s</td></tr><tr><td>Units of measurement</td><td>ft/inch</td></tr><tr><td>Laser class</td><td>2</td></tr><tr><td>Measurement accuracy, typical</td><td>± 2.0 mm* (*plus use-dependent deviation)</td></tr><tr><td>Measurement time, max.</td><td>4 s</td></tr><tr><td>Power supply</td><td>2 x 1.5 V LR03 (AAA)</td></tr><tr><td>Automatic deactivation</td><td>5 min</td></tr><tr><td>Dust and splash protection</td><td>IP 54</td></tr><tr><td>Laser colour</td><td>Red</td></tr><tr><td>Measuring range, up to</td><td>30 m</td></tr></table>	Measurement range	0.15 – 30.00 m	Laser diode	635 nm, < 1 mW	Weight, approx.	0.09 kg	Measurement time, typical	< 0.5 s	Units of measurement	ft/inch	Laser class	2	Measurement accuracy, typical	± 2.0 mm* (*plus use-dependent deviation)	Measurement time, max.	4 s	Power supply	2 x 1.5 V LR03 (AAA)	Automatic deactivation	5 min	Dust and splash protection	IP 54	Laser colour	Red	Measuring range, up to	30 m	02
Measurement range	0.15 – 30.00 m																											
Laser diode	635 nm, < 1 mW																											
Weight, approx.	0.09 kg																											
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Laser colour	Red																											
Measuring range, up to	30 m																											
7	Spirit Level <table border="1" data-bbox="329 978 870 1232"><tr><td>Number of Vials:</td><td>3</td></tr><tr><td>Level Accuracy:</td><td>0.5 mm/m</td></tr><tr><td>Length (mm):</td><td>300 mm</td></tr><tr><td>Type of Product:</td><td>Level</td></tr></table>	Number of Vials:	3	Level Accuracy:	0.5 mm/m	Length (mm):	300 mm	Type of Product:	Level	02																		
Number of Vials:	3																											
Level Accuracy:	0.5 mm/m																											
Length (mm):	300 mm																											
Type of Product:	Level																											



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E. Safety Equipment

1	Goggle – Industrial Standard Make	50					
2	Apron - Industrial Standard Make	10					
3	Ear Muff - Industrial Standard Make	20					
4	Mask - Industrial Standard Make	200					
5	Fire Extinguisher – 4Kg	03					
6	First aid kit	02					
7	Gloves - Industrial Standard Make	50 pairs					
8	Desktop <table border="1" style="margin-left: 20px;"><tr><td>Core i5 10th Gen or equivalent processor</td></tr><tr><td>8 GB RAM / Graphics Card Min 2GB</td></tr><tr><td>1 TB SSD</td></tr><tr><td>Min 21-inch screen</td></tr><tr><td>Windows 10, Home operating system, 3-year licence</td></tr></table>	Core i5 10th Gen or equivalent processor	8 GB RAM / Graphics Card Min 2GB	1 TB SSD	Min 21-inch screen	Windows 10, Home operating system, 3-year licence	04
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9

Computerized Sewing Machine

01

Material	Aluminium Die Cast, Plastic Shell
Weight	12kg
Dimensions (LxWxH)	75 x 18.5 x 29.8 Cm
Product Description	7 one-step buttonholes
	Manual thread tension control
	Built-in one-hand needle threader
	Snap-on presser feet
	Memorized needle up/down with down as default setting
	7-piece feed dog
	Drop feed
	Built in thread cutter
	Locking stitch button
	Speed control slider
	Twin needle guard
	Easy reverse button
	Start-stop button
	Stitch pattern memory capability
	Auto declutch bobbin winder
	Extra high presser foot lift
	LCD screen with enhanced informational display and touchpad for easy navigation
	Foot pressure adjustment
	Horizontal full rotary hook bobbin system
	Maximum Stitch Width: 7mm
	Maximum Stitch Length: 5mm
	Memorised needle up/down with down as default setting.
Accessories	18 N Thread Spools, 12 N Buttons, 1 N Scissor, 5 N Needles and 1 N Measuring Tape) 120 built in stitches and alphabets



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10 **Online UPS/Backup System**

01

Type	Online UPS
Capacity	5.5KVA, 4.4 Kilo Watts
Battery Module	External Battery Module
Nos of Battery Required	Sixteen Batteries - 16 Nos
Battery Type	SMF - VRLA
DC Voltage	192V
Waveform	Pure sine wave
Noise Level	Less than 50dB @ 1 meter
Voltage	165 ~285 VAC
Input Features	
Input Voltage	192 V
Input Frequency	50 Hz
Output Features	
Output Voltage	192 V
Output Frequency	50 Hz
Output Power Wattage	500 W
Efficiency	91 %
Output Waveform	sine
Transfer Time	0 ms
Number of Outlet Plugs	5
Dimensions	48 x 45 x 44 cm
Weight	10 Kg



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INFRA STRUCTURE		
SR NO	DESCRIPTION	QTY
1	RUBBER FLOOR SCRAPING Removing and discarding existing rubber mats in gym area and scraping off of adhesive. Surface cleaning of original kota stone flooring as a base for ESD and laminated wood flooring.	1,220 sq.ft
2	WALL MOUNTED TILE CLEANING Acid cleaning of existing wall mounted tiles in all rooms	770 Sq.ft
3	ESD FLOORING Supply and Installation of Grey colored ESD flooring in Micro Factory 1 (350 sq.ft.) and Micro Factory 2 (545 sq.ft.).	895 Sq.ft
4	LAMINATED WOODEN FLOORING Supply and Installation of laminated wooden flooring in Discussion Area (325 sq.ft.). Flooring material to be HDF with interlocking fixing. Action Tesa or equivalent	325 Sq.ft
5	GLASS DOORS Hinged glass door in 12mm clear toughened glass with minimal frosting and crystal polish to edges with standard SS hardware and locking of Ebco brand of equivalent. (4' x 8' x 1 no. And 3' x 7' x 2 nos.)	74 Sq.ft
6	PARTITION BETWEEN DISCUSSION ROOM AND LAB: 16'8" X 8'4" Bottom partition 3'2" high in Plywood and laminate finish. Top 5'2" partition in toughened glass with minimal frosting.	139 Sq.ft
7	WHITE BOARD: 18' X 5'2" Back painted glass in white color mounted on existing wall surface above existing wall tiles.	94 Sq.ft
8	PAINTING (WALLS+CEILING) Wall scraping, cleaning, putty touch-ups and 2 coats of washable premium emulsion paint (Asian Apcolite or equivalent) in base white color.	5,000 Sq.ft
9	ELECTRICAL WORKS Removal of existing wiring and casing, providing for new wall mounted conduits, wiring of Polycab or equivalent grade, switches of Legrand Lynkus make or equivalent, LED tube lights and fans of standard make, provision for UPS/ inverter backup	1,220 Sq.ft



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10	INDUSTRIAL EARTHING Earthing as per electrical consultant's specification	1 nos.
11	PROJECTOR AND SUSPENDED SCREEN Epson make or equivalent	1 nos.
12	Conference Room CHAIRS	12nos.
13	CHAIRS - FOLDING CHAIRS	20 nos.
14	Workbench Size: 4' X 2'6" X 2'6" 25mm thick Plywood Top & Shelf finished Laminate, All insides in White Laminate, Wooden / PVC Edge Band, M.S.P.C. Frame & Legs. With Wire Manager	6 nos.
15	Workbench Size: 8' X 4' X 2'6" Ht. 25mm thick Plywood Top finished Laminate, All insides in White Laminate, Wooden / PVC Edge Band, M.S.P.C. Frame & Legs. With Wire Manager	1 nos.
16	Discussion Table Size: 12' X 4' X 2'6" Ht. 25mm thick Plywood Top finished Laminate, All insides in White Laminate, Wooden / PVC Edge Band, M.S.P.C. Frame & Legs. With Wire Manager	1 nos.
17	Computer table Size: 4' X 2'6" X 2'6" Ht. 25mm thick Plywood Top finished Laminate, All insides in White Laminate, Wooden / PVC Edge Band, M.S.P.C. Frame & Legs. With Wire Manager	3 nos.



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18	Tool Trolley Depth: 74 cm Height: 70.50 cm Number of Drawers: 5 Product: 5 Drawers Closed Tool Trolley Technical Specifications: Wheels with: Brake, Handle: Ergonomic, Latches for the Drawers, Capacities: 3 Drawers Support 15 kg, 2 Drawers Support 25 kg Weight: 41.90 Kg Width: 49 cm	1 nos.
19	Cupboard Swing door cupboard- MS with powder coating. No of shelf- 4 nos.(1900H X 915W X 450D) mm	5 nos.

Human Resource

Sr.No	Details	Position
1	Project Engineer	1- Mechanical Engineer or Electronics/ Electronics & Communication Engineer with relevant experience of Managing similar facility. Minimum of 1-year Experience is necessary.



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Additional Terms & Conditions:

- a. Complete technical specification of the instruments and its necessary parts and accessory items required for running the instrument.
- b. A complete design along with the clear indication/marketing of the specification mentioned in the technical bidding document (wherever possible) of the instrument.
- c. Make, model and specification of the list of equipment as mentioned in schedule of requirement.
- d. Scanned copy of the technical brochure and website reference of the same must be included in the bid.
- e. There must be a local maintenance centre with the availability of the spares in India.
- f. A declaration from the principal stating that the spares will be made available for the equipment for at least 2 years from the date of installation.
- g. A duly signed detailed User List (at least 5) with the concerned person's valid contact details, in India where the instrument is still in the operational condition must be provided.
- h. A copy of the Authorization Certificate issued by the principal in favour of the Indian agent along with a certified copy of the Agency Agreement between the foreign Principal and Indian agent. Both these certificates must be up-to-date. (If applicable)
- i. A duly signed separate compliance sheet of the specification (at every point) mentioned in the technical part along with the deviation (if any). This compliance sheet will not be considered as the technical specification of the instrument.
- j. Each bidder has to mandatorily quote for all the items as mentioned in BOQ.
- k. Partial submission of bid is not permitted. Bidders should apply for all items.
- l. Bidder will have to demonstrate the execution plan and strength through Power Point Presentation. In the presentation, the bidder will have to include the procedure they will adopt to execute, the proposed set-up, equipment brand, specifications and quantity etc. For Presentation, all the Bidders will be informed by email

Warranty: Comprehensive warranty for equipment or lab setup should be 1 year from the date of installation.