# Technical Specifications

**Lot 9** : **Industrial Automation – PKG 2**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Automatic Production Line Trainer | Kindly refer to the technical specifications attached as **Annex D9.** | 2 | set | | | |

* Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.

All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D9.**

Instruction Manual is an instructional book or booklet that is supplied with almost all technologically advanced products such as electrical products.

Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

**I hereby certify that the statement of compliance to the foregoing technical specifications are true and correct, otherwise, if found to be false either during bid evaluation or post-qualification, the same shall give rise to automatic disqualification of our bid.**

| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# ANNEX D9

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 9 | Industrial Automation - PKG 2 | 09-001 | Automatic Production Line Trainer | refer to Technical Specification of Item Code 09-001 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of The Learning System** | **Automatic Production Line Trainer** |
| **Item Code** | 09-001 |
| **Technology Area(s)** | Industrial Automation - PKG 2 |

**Description:** The equipment simulates an automated production process that requires stamping/boring holes on a workpiece based on material composition and/or workpiece size/height. The system also includes automatic sorting of materials based on set parameters.

**Required Topics/Lessons:**
The training system shall include, but not limited to the following topics/lessons:

- Mechanical structure disassembly and adjustment
- Automatic detection technology application training
- Pneumatic technology application training
- Programmable controller programming training
- Touch screen technology application training
- Frequency converter technology application training
- Control drive technology application training
- Mechanical system installation and commissioning training
- System maintenance and fault detection training
- System communication technology application training
- Understanding of fingerprint recognition
- Application of Fingerprint Recognition

**Technical Description**

. **Description of system operation**

- Distribution station:
  This station holds the workpiece in que and releases it one-by-one into the system either manually or automatically.

- Handling station:
  This station is composed of a pick and place system and a guided rail synchronous belt transmission system which transfer the workpiece from distribution station to the succeeding stations. This system can be manual (push of a button) and automatic.

- Assembly station:
  This is a rotary table which assembles the workpiece based on set instruction. This system can be manual (push of a button) and automatic.

- Stamping station:
  This simulates a workpiece stamping process. There should be a clamping mechanism, and workpiece presence sensor for safety operation. This system can be manual (push of a button) and automatic (time-based setting).

- Sorting station:
  The sorting station will segregate the workpiece based on a given condition. A minimum of two kinds of workpiece can be sorted.

**B. General parameters**

- Working power supply 220 ± 10% 60Hz single phase (a transformer should be provided if the system requires other power supply)
- Protection: short circuit, leakage, grounding, overcurrent, undervoltage, and emergency stop.
- Security: fingerprint for system power on.
- Web server and networking: stations should be interconnected via ethernet protocol which allows remote data collection, monitoring and control and accessible via a web server.
- Overall size should not be greater than 2m (width) x 3m (height) to ensure that ingress of the machine will not be an issue.
- One (1) computer station for programming and visualization. with the following specs:
  - OS: Windows 11 or higher,
  - No. of Cores: 20 cores,
  - RAM: 32 GB RAM,
  - Storage: 1TB SSD and 2TB HDD,
  - Network: 2x 1Gbit LAN, WiFi and Bluetooth port
  - Dual 27" inch ultrawide 2K/4K curved monitor.
  - Industry grade table and chair

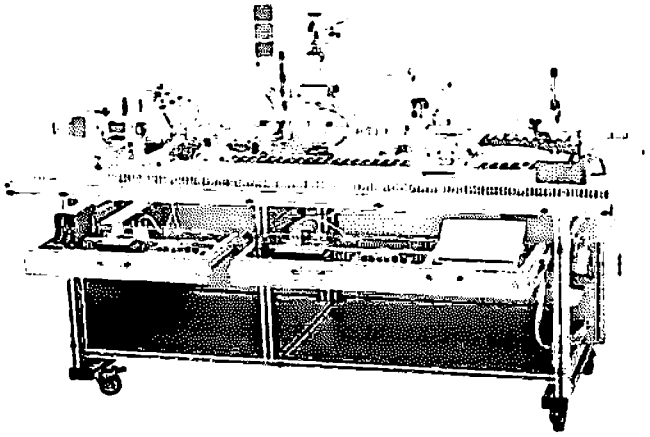
- Programmable Logic Controller/s
  - Ethernet and other communication standards
  - Support cloud-based monitoring and control
  - With digital and analog I/Os
  - Expandable centrally and on distributed basis

- PLC Programming software (2 users), compatible to latest release of Windows
- Touch screen Human Machine Interface (HMI) 4~6 inches
- Silent type compressor

- Includes 3 set of workpiece
- This includes curriculum and instruction to exercises in print and digital format

**Sample Image:**

**YL-335B Automatic production line training equipment**



*Picture for reference only*

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# Technical Specifications

**Lot 10** : **Industrial Automation – PKG 3**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Smart Factory Enterprise | Kindly refer to the technical specifications attached as **Annex D10**. | 1 | lot | | | |

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Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

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|---|---|---|

**ANNEX D10**

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 10 | Industrial Automation - PKG 3 | 10-001 | Smart Factory Enterprise | refer to Technical Specification of Item Code 10-001 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of The Learning System** | **Smart Factory Enterprise** |
| **Item Code** | 10-001 |
| **Technology Area(s)** | Industrial Automation - PKG 3 |

**General Description**

This training equipment simulates common manufacturing processes such as mechanical cutting, combined with CNC machine tools, industrial robots, laser equipment, intelligent sensing and control equipment, and intelligent testing.

**Required Topics/Lesson**

- Installation and application of PLC programming software
- HMI touch screen programming software button and application
- Robot installation, debugging, programming and application;
- Robot Fixture Installation, Debugging, Programming and Application
- Assembly, adjustment, maintenance and programming application of CNC lathe
- Application of Assembly, Maintenance and Programming of CNC Machining Center
- Application of Bus Communication Technology
- Application of industrial automation network;
- Application of PLC technology;
- Application of motor drive technology
- Application of motion control system;
- Instrumentation use;
- Safe and civilized production, etc
- Network monitoring, control and data collection

**Technical Description**

. **System Assembly**

The minimum subsystem of the training equipment are the following:

- Robot automatic pickup assembly
  This assembly pick-up the blank workpiece from the feeding module and positions it into the CNC machine. Either the same robot arm or another robot arm will pick-up the workpiece from the CNC, after the milling process has been completed and transfer it to the transport system.
- CNC milling assembly
  The CNC machine will cut the blank workpiece based on the given design.
- Transport assembly
  The transport assembly transfers the workpiece from one processing station to another.
- Laser marking
  This assembly simulates the robot laser welding/cutting process as applied into the workpiece.
- Storage assembly
  This is mainly composed of storage shelves, stackers, connecting platforms, unit electric control and communication systems, etc. This uses an auto stacking system for easy storage and retrieval of workpieces.

Visual inspection

This uses an industrial grade color camera with at least 3.2MP and uses vision software which can assist in conducting visual inspection on the workpiece.

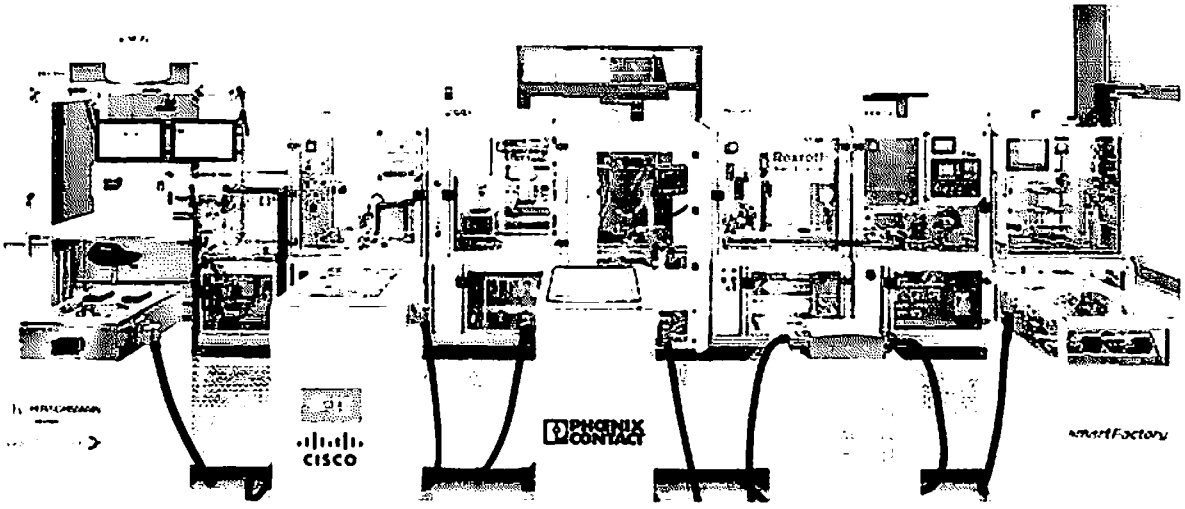
- Monitoring and Control System

  The system should use an RFID system, to monitor the location of the workpiece within the system. At least five (5) industry grade cameras should be installed in the system to monitor the system process in real time. It should have a touchscreen Human Machine Interface for visualization and control interface.

**B. General parameters**

- Working power supply 220 ± 10% 60Hz single phase (a transformer should be provided if the system requires other power supply)
- Protection: short circuit, leakage, grounding, overcurrent, undervoltage, and emergency stop.
- Security: fingerprint for system power on.
- Web server and networking: stations should be interconnected via ethernet protocol which allows remote data collection, monitoring and control and accessible via a web server.
- Overall size should not be greater than 2m (width) x 3m (height) to ensure that ingress of the machine will not be an issue.
- Two (2) computers for system programming and visualization should be Windows 11 compatible, 20 cores, 32 GB RAM, 1TB SSD, 2TB HDD, 2x 1Gbit LAN port and dual 27" inch 4K curved monitor.
- Two (2) Two (2) computers for CNC Operations and visualization should be Windows 11 compatible, 20 cores, 32 GB RAM, 1TB SSD, 2TB HDD, 2x 1Gbit LAN port and dual 27" inch 4K curved monitor.
- Programmable Logic Controller/s
  - Ethernet and other communication standards
  - Support cloud-based monitoring and control
  - With digital and analog I/Os
  - Expandable centrally and on distributed basis
- PLC Programming software (2 users), compatible to latest release of Windows
- CAD/CAM software for (2 users) perpetual license
- Robot simulation software
  - Combination of 3D technology and interactive animation, which can simulate the mechanical structure of disassembling and assembling the robot arm in 3D
  - It should have an step-by-step assembly and disassembly guide
  - It support PC and Mobile Device platform
- Touch screen Human Machine Interface (HMI) 4~6 inches
- Silent type compressor
- Set of tools equipment servicing
- Includes 2 sets of bottles/workpiece
- This includes curriculum and instruction to exercises in print and digital format
- 2 sets connecting wires and two sets of hoses

**Sample Image:**




*Picture for reference only*

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# Technical Specifications

**Lot 11** : **Industrial Process Control**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Pressure, Flow, Level, Temperature Process Learning Systems | Kindly refer to the technical specifications attached as **Annex D11.** | 1 | set | | | |
| 2 | Bottle Filling Production Line Trainer | | 2 | set | | | |
| 3 | Motor Control Trainer | | 2 | set | | | |

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# ANNEX D11

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 11 | Industrial Process Control | 11-001 | Pressure, Flow, Level, Temperature Process Learning Systems | refer to Technical Specification of Item Code 11-001 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 11 | Industrial Process Control | 11-002 | Bottle Filling Production Line Trainer | refer to Technical Specification of Item Code 11-002 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 11 | Industrial Process Control | 11-003 | Motor Control Trainer | refer to Technical Specification of Item Code 11-003 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of the Learning System** | **Pressure, Flow, Level, and Temperature Process Learning Systems** |
| **Item Code** | 11-001 |
| **Technology Area(s)** | Industrial Process Control |

**General Description**

This training equipment simulates an automated industrial process control using distributed control system and programmable control system PLC) technologies. With this equipment, one can learn to install sensors and monitoring devices, wiring of electrical circuits, configuration of instrumentation devices and controls, programming of PLC, debugging of programs and operation and monitoring of automated process control systems.

**Required Topics/Lessons:**

- Installation and application of PLC programming software
- Programming and Application of DCS Control System
- Application of DCS Communication System
- Installation and Application of Process Control Equipment Piping
- Installation and application of pressure transmitter
- Installation and Application of Temperature Transmitter
- Installation and application of flow sensor
- Installation and application of liquid level transmitter
- Installation and Application of Weight Sensor
- Application of Industrial Automation Network
- Installation and wiring application of digital network intelligent measurement and control system
- Application of Instrument Communication System
- Cognition and application of production process technology
- Safe and civilized production

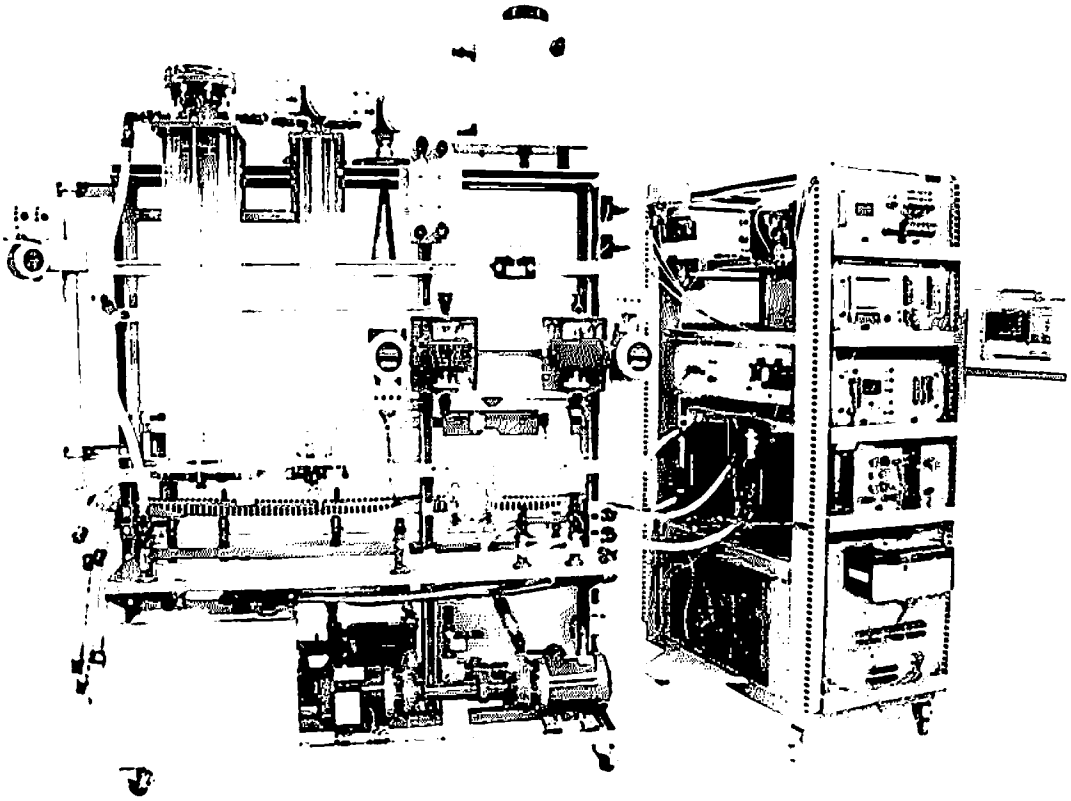
**Technical Description**

- **Description of system operation**
  This training simulator will consists of the following sub-systems:

| No | Training Platforms | Qty | Unit Measure |
|---|---|---|---|
| 1 | Mini-industrial process/System process<br>*This training equipment is a simulation of a chemical processing plant wherein it feeds material to a reactor through two feedlines for batching. The batching system is composed of two (2) raw material tanks and product mixing tanks. The system can perform functions such as precise proportioning of materials, timing control, and material mixing according to process requirements. The system allows monitoring and control of process variables such as pressure, level, flow and temperature, weight and others.* | 1 | set |
| 2 | Intelligent measurement and control system<br>*DCS system can support multi-domain control and operation, and has multi-programming language support in compliance with IEC international standards; including SFC, CFC, ST, LD and other languages, the system has fail-safe functions and complete project management functions, including multi-engineer collaborative work, configuration integrity management, online single-point configuration download, configuration and operation authority management, etc., and provide historical traceability of relevant operation records. The system is compatible with MODBUS, HART and other international standard field buses and the comprehensive integration of various heterogeneous systems. The system should allow real-time monitoring of subsystems over LAN and cloud.* | 1 | set |
| 3 | Energy management platform<br>*This platform allows monitoring and control of all electrical parameters in the system in local and remote computers/devices* | 1 | set |
| 4 | Visualization platforms<br>*This is composed of computer/s where the dashboard on process variable status and process simulation are displayed accessible in local and remote computers/devices* | 1 | set |
| 5 | Training platform<br>*This includes reference materials, exercises/activities (20+ activities) and the tools and consumables needed to run the exercises.* | 1 | set |

- **General parameters**
  - Working power supply 220 ± 10% 60Hz single phase (a transformer should be provided if the system requires other power supply)
  - Protection: Overpressure, over temperature, liquid level alarm and emergency stop.
  - Overall size should not be greater than 2m (width) x 3m (height) to ensure that ingress of the machine will not be an issue.
  - Two (2) computer/s for programming and visualization should be Windows 11 compatible, 20 cores, 32 GB RAM, 1TB SSD, 2TB HDD, 2x 1Gbit LAN port and dual 27" inch 4K curved monitor
  - DCS controller:
    - Supports PROFIBUS/HART/MODBUS and other common international fieldbus. Third-party devices, such as intelligent instruments, PLCs, and inverters are easily added.
    - Centralized supervision in real time
    - Centralized/decentralized I/O modules,
    - Decentralized risks and control
    - Open system architecture supporting OPC industrial standards
  - Programmable Logic Controller/s
    - Ethernet and other communication standards
    - Support cloud-based monitoring and control
    - With digital and analog I/Os
    - Expandable centrally and on distributed basis
  - Field devices
    - Pressure Transmitter, 0-100 Kpa 4-20mA, HART protocol
    - Level Transmitter 0-5 Kpa 4-20mA, HART protocol
    - Temperature Transmitter 0-100°C 4-20mA, HART protocol
    - Flow Sensors-RS485 communication
    - Weight sensor 0-10 kg RS485
  - Software (2 users), compatible to latest release of Windows
    - PLC Programming software
    - Visualization design software
    - DCS Monitoring and supervision software
  - Set of tools for equipment servicing
  - This includes curriculum and instruction to exercises in print and digital format
  - Extra hoses and electrical wires

**Sample Image:**



*Picture for reference only*

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# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of the Learning System** | **Bottle Filling Production Line Trainer** |
| **Item Code** | 11-002 |
| **Technology Area(s)** | Industrial Process Control |

**General Description**

The learning system is a miniature bottle filling process simulation equipment which allows remote data collection, monitoring and control. In detail, the system should provide simulation of liquid mixing, bottle filling and labeling, handling and transferring, and sorting and storage.

**Required Topics/Lessons:**

1. Pneumatic technology
    - air pump
    - air source processor
    - vacuum generator
    - various cylinders
    - solenoid valve
    - Cognition and application of magnetic switch
    - Knowledge of tracheal intubation
    - Knowledge of speed joint
    - Solenoid valve installation and commissioning
    - Cylinder installation and debugging
    - Installation and commissioning of air source treatment
    - Maintenance and maintenance of various cylinders
    - Maintenance and maintenance of various solenoid valves

0. Sensor technology
    - Cognition and application of photoelectric sensor
    - Cognition and application of optical fiber sensor
    - Cognition and application of magnetic sensor
    - Cognition and application of inductive sensors
    - Wiring methods of various sensors
    - Fault judgment and maintenance of various sensors
    - Wide application of various sensors in industrial field

0. Mechanical transmission technology
    - belt transmission
    - cylinder transmission/actuation

0. Industrial automation technology
    - The principle and application of PLC
    - The method of programming the filling station program by PLC
    - The method of programming assembly station program by PLC
    - The method of programming the transfer station program by PLC

- The method of writing storage station program by PLC
- Ethernet communication
- Application of stepping motor and stepping driver
- PLC motion control programming method
- PID control programming method
- Configuration and application of touch screen
- Dynamic real-time monitoring
- Dynamic real-time monitoring
- Different programming language
    - LD(Ladder Diagram) (ladder diagram)
    - IL (Instruction List) (Instruction List)
    - SFC (Sequential Function Charts) (Sequential Function Chart)
    - FBD (Function Block Diagram) (Function Block Diagram)
    - ST (Structured Text) (Structured Text)
- Equipment calibration, fault diagnosis and maintenance

**Technical Description**

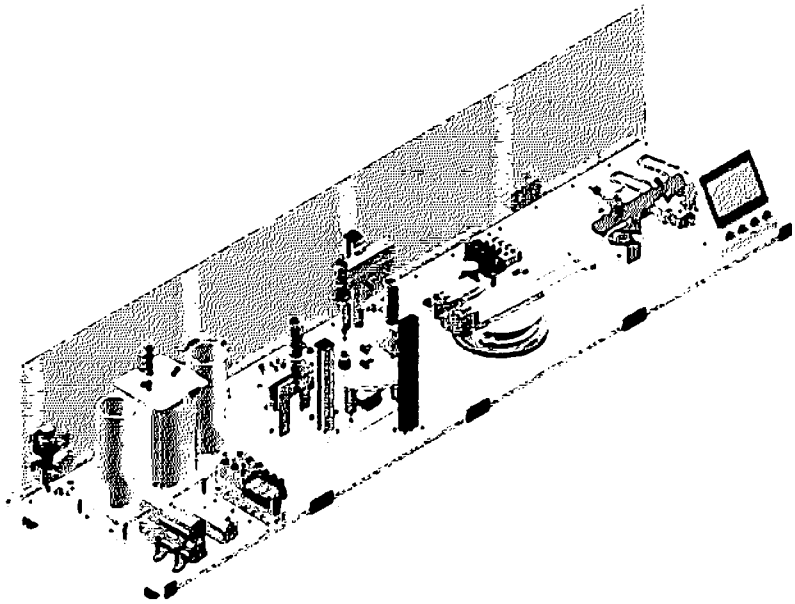
. **Description of system operation**

- Filling station
  *The filling station will simulate how liquid from two tanks will be pumped-in a mixing container in which the ratio is based on a certain percentage/amount. This liquid mixture will then be transferred to the empty bottles in the assembly station.*
- Assembly station
  *The assembly station is the simulation of the process where the bottles will be filled with the liquid mixture, sealed with a cap and stamped with a label.*
- Handling station
  *The handling station is a pick and place system that simulates the transferring of filled bottles to the simulated warehousing station.*
- Storage/Warehousing station.
  *This station will simulate the sorting process of bottles that are to be transported into two different locations/ containers.*

**B. General parameters**

- Working power supply 220 ± 10% 60Hz single phase (a transformer should be provided if the system requires other power supply)
- Protection: short circuit, leakage, grounding, overcurrent, undervoltage, and emergency stop.
- Security: fingerprint for system power on.
- Web server and networking: stations should be interconnected via ethernet protocol which allows remote data collection, monitoring and control and accessible via a web server.
- Overall size should not be greater than 2m (width) x 3m (height) to ensure that ingress of the machine will not be an issue.
- Two (2) computer/s for programming and visualization should be Windows 11 compatible, 20 cores, 32 GB RAM, 1TB SSD, 2TB HDD, 2x 1Gbit LAN port and dual 27" inch 4K curved monitor.
- Programmable Logic Controller/s
  - Ethernet and other communication standards
  - Support cloud-based monitoring and control
  - With digital and analog I/Os
  - Expandable centrally and on distributed basis
- PLC Programming software (2 users), compatible to latest release of Windows
- Touch screen Human Machine Interface (HMI) 4~6 inches
- Silent type compressor
- Set of tools equipment servicing
- Includes 2 sets of bottles/workpiece
- This includes curriculum and instruction to exercises in print and digital format
- 2 sets connecting wires and two sets of hoses

**Sample Image:**



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# TECHNICAL SPECIFICATION

| Name of The Learning System | Motor Control Trainer |
|---|---|
| Item Code | 11-003 |
| Technology Area(s) | Industrial Process Control |

**Brief Description**

This learning system will develop the learner's ability to apply control technology using various types of magnetic contactors, electromechanical and electronic switches both in AC and DC circuits.

**Required Topics/Lessons**

Specifically, this learning system will cover the following topics:

- Frequency Converter Panel Control Motor Start and Stop
- External Terminal Control Experiment Based on Frequency Converter
- Reverse Switch Control Motor Forward and Reverse Experiment
- Use Star - Delta starter to Star Motor
- Combination Switch Control Two-speed Motor Experiment
- Contactor Controlled Motor Self-locking Experiment
- Contactor Interlocking Motor Forward & Reversing Control Circuit
- Dual-interlock Three Phase Asynchronous Motor Forward/Reversing Control Circuit
- Y-Δ Start Experiment Controlled by Contactor
- Y-Δ Start Experiment Controlled by Time Relay
- Three-phase Asynchronous Motor Sequence Control
- Single-phase Capacitor Motor Start Experiment
- Single Phase Capacitor Motor Forward and Reverse Experiment
- Single-phase Resistance Motor Forward and Reverse Rotation Experiment
- Switched Reluctance Motor Speed Control Experiment
- How to Use Torque Sensor

**Technical Description**

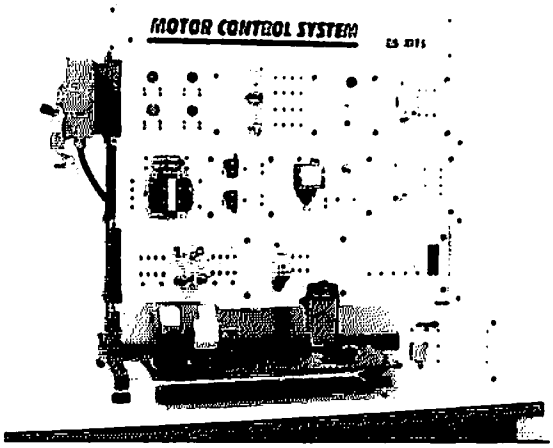
The requirements for this learning system are as follows:

- **Modules:**
  - Power supply
    - 3 phase 380V 60hz
    - 220 VDC 60Hz
    - Variable AC 0~220V 3 Phase
    - Variable DC 0~200V
    - Fixed 24 VDC

- Frequency converter
  - 3 phase
  - 0.55 kW
  - 1.7 A
  - 0~550Hz frequency out
  - Voltage depends on engineering design of the system
- Variable resistant module
  - 0-90Ω adjustable resistance
  - 150W
  - 4 groups
- Motor drag modules
  - Composed of circuit breaker, magnetic contactors,switches, relays, protection and other devices
  - Quantity and specification should be sufficient to run the exercises covered in each topics
- Motors
  - DC servo motor with controller
  - Shaded pole motor (motor + governor)
  - Repulsion motor with controller (single phase gear motor)
  - Single-phase capacitor motor 220VAC 60hz 120 watts, 1400 rpm
  - Two speed motor AC 380 VAC 60hz, 300/450 watts, 1400/2800 pm
  - Single-phase resistance motor, AC 220V 60Hz, 1400rpm
  - Three-phase induction motor AC380V, 60hz, 1 torque sensor, 1 magnetic powder brake and 3 sets of aviation plugs. (The motor can be replaced with any other motor)
  - Three-phase winding motor AC380V 60Hz 1400r/min
- Measuring instruments ( panel type or hand held instruments/multimeters)
  - 3 AC digital voltmeter
  - 3 digital ammeter
  - 1 three phase digital power meter
  - 1 single-phase power meter
  - 1 digital power factor meter
  - 1 digital frequency meter
  - phase-sequence indicator
  - digital tachometer
- Other devices
  - torque sensor display meter,
  - tension controller

- Multi-level frame to hold the modules, table top to hold additional instruments and storage cabinet to hold modules not in use.
- Three Phase 220VAC, 60Hz
- 150 pieces per color of connecting wires
- Dimension: The equipment when installed should not consume more than 6 sqm space and not over 1.2.5m for the overall height.
- This includes curriculum and instruction to exercises in print and digital format

**Sample Image:**




*Picture for reference only*

**I hereby certify that the statement of compliance to the foregoing technical specifications are true and correct, otherwise, if found to be false either during bid evaluation or post-qualification, the same shall give rise to automatic disqualification of our bid.**

| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# Technical Specifications

**Lot 12** : **Robotics**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Mobile Robotics 4.0 | Kindly refer to the technical specifications attached as **Annex D12.** | 1 | set | | | |
| 2 | Robot Station | | 1 | set | | | |

* Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.

All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D12.**

Instruction Manual is an instructional book or booklet that is supplied with almost all technologically advanced products such as electrical products.

Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

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# ANNEX D12

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 12 | Robotics | 12-001 | Mobile Robotics 4.0 | refer to Technical Specification of Item Code 12-001 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 12 | Robotics | 12-002 | Robot Station | refer to Technical Specification of Item Code 12-002 | Learning System | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of The Learning System** | **Mobile Robotics 4.0** |
| **Item Code** | 12-001 |
| **Technology Area(s)** | Robotics |

**Required Topics/Lessons:**

The training system shall include, but not limited to the following topics/lessons:

- Electrical and electronics circuit connection
- Mechanical assembly of robots
- Advance application in mobile robotics
- Familiarization and application of mechatronics and automation devices
- Application of the internet of things (IOT)
- Industry 4.0
- Programming

**Courseware:**

- Robotic SIM Professional
- CIROS Studio, single license

**Hardware / Specification:**

- **Parameters / Data**
  - Height: 325 mm
  - Diameter: 450 mm
  - Total weight (unladen weight): 20 kg
  - Total weight (including 4 rechargeable battery packs): 22.8 kg (approx. 700 g per rechargeable battery pack)
  - Degree of protection: IP 00
  - Battery voltage: 18 V
  - Housing material: Stainless steel, PA6
  - Degrees of freedom: 3 translational in x- and y-direction rotational about the z-axis

- **Control and Interface**
  - Controller: Embedded PC to COM Express specifications
  - Intel i5, 8th generation, 2.5 GHz frequency, up to 4.2 GHz in turbo mode, 4 physical cores with hyperthreading Integrated UHD Graphics 630
  - Main memory: 8 GB RAM
  - Hard disk: 64 GB SSD
  - Operating system: Linux Ubuntu 18.04 LTS (64 bit)
  - Motor control: microcontroller with 32-bit microprocessor and separate Ethernet interface

- Drive wheels: 3 x omnidirectional wheels with 120 mm diameter
- Drive wheels: 3 x DC motors, maximum 3,600 rpm, with encoders and gear unit, gear ratio: 32:1

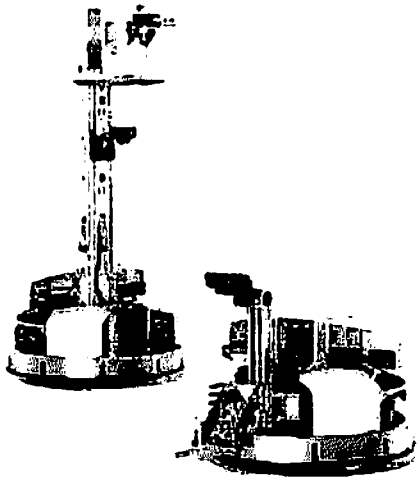
- **Interface**
  - 2 x USB 2.0 (1 x occupied by Access point)
  - 1 x RJ-45 (occupied by Access point)
  - 2 x 12 V WAGO-734-162 (max. 2 A total)
  - 4 x USB 3.0 (1 x occupied by camera)
  - 2 x PCI express slots (Gen3 4 x, extensions)
  - 1x HDMI 2 x Digital I/O connector 1 x analog input connector
  - 1 x relay connector
  - 1 x Wago 721-462 2-pole motor 4, power plug
  - 1 x MPE RM 2.54 2x3-pole motor 4, encoder
  - WLAN to specification, 5 GHz and 2.4 GHz as client or access point in bridge mode

- **Digital inputs/outputs**
  - Inputs: 8
  - Outputs: 8
  - Max. 24VDC
  - Max. 2.A per output
  - Max. 2 A total"
  - Analog inputs: 8
  - Analog output: 2"
  - "WLAN standards: 5 GHz (IEEE 802.11 ac/n/a)
  - 2.4 GHz (IEEE 802.11 b/g/n)
  - Transmission power: CE: max. 23 dBm (5 GHz) max. 20 dBm (2.4 GHz)
  - Power supply: 5 V max. 2 A

**Other Equipment & Accessories:**

- Tower
- Segment
- Laser range finder
- Legacy electric gripper
- Forklift
- Electric gripper
- Height adjustment
- Interface box
- Leg signal lamp
- Sensor package

**Sample Image:**



*Picture for reference only*

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|---|---|---|

# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of The Learning System** | **Robot Station** |
| **Item Code** | 12-002 |
| **Technology Area(s)** | Robotics |

**Required Topics/Lessons:**

The training system shall include, but not limited to the following topics/lessons:

- Installation and wiring of industrial robot body and controller;
- Initialization and parameter recovery of industrial robots;
- Pneumatic technology application;
- Application of sensor detection technology;
- Industrial robot IO wiring;
- Track programming and debugging of industrial robots;
- Installation and wiring of industrial robot handling applications;
- Selection and design of fixtures for industrial robot handling applications;
- Programming and debugging of industrial robot handling applications;
- Industrial robot palletizing application installation and wiring;
- Selection and design of fixtures for industrial robot palletizing applications;
- Industrial robot palletizing application programming and debugging;
- Programming and debugging of industrial robot trajectory curve
- Industrial robot detection, arrangement, application, installation and wiring;
- Selection and design of fixtures for industrial robot inspection and arrangement applications;
- Application programming and debugging of industrial robot detection and arrangement;
- Installation and debugging of industrial robot workstation.

**Technical Description**

- **Robot Arm System**
  - Basic platform
    - Made of aluminum profile
    - Includes cable and house management
    - Push button switches and emergency stop switch for manual/automatic selection switch, start, stop, enable, reset, alarm light, and emergency stop

- Six-axis robot arm
  - Load capacity: 4kg
  - Working range: 600mm
  - Robot fixtures: claw fixture, calibration block, suction cup fixture and tracing fixture
  - Clamps: drawing pen clamp, gripper clamp
- Tracing module
- Parts palletizing module
- Detection arrangement module
- Plane raw material warehouse
- Drawing puzzle module
- Electric control system

- **General parameters**
  - Working power supply 220 ± 10% 60Hz single phase (a transformer should be provided if the system requires other power supply)
  - Protection: short circuit, leakage, grounding, overcurrent, undervoltage, and emergency stop.
  - Security: fingerprint for system power on.
  - Web server and networking: stations should be interconnected via ethernet protocol which allows remote data collection, monitoring and control and accessible via a web server.
  - Overall size should not be greater than 2m (width) x 3m (height) to ensure that ingress of the machine will not be an issue.
  - One (1) computer station for programming and visualization. with the following specs:
    - OS: Windows 11 or higher,
    - No. of Cores: 20 cores,
    - RAM: 32 GB RAM,
    - Storage: 1TB SSD and 2TB HDD,
    - Network: 2x 1Gbit LAN, WiFi and Bluetooth port
    - Dual 27" inch ultrawide 2K/4K curved monitor.
    - Industry grade table and chair
  - Programmable Logic Controller/s
    - Ethernet and other communication standards
    - Support cloud-based monitoring and control
    - With digital and analog I/Os
    - Expandable centrally and on distributed basis
  - PLC Programming software (2 users), compatible to latest release of Windows
  - Touch screen Human Machine Interface (HMI) 4~6 inches
  - Silent type compressor
- Includes 3 set of workpiece
- This includes curriculum and instruction to exercises in print and digital format

**Hardware:**

- **Robot Handling Module**
  - Fiber-optic cable
    - Signal processing (measuring principle): red light
    - Switch triggering: Reflex
    - Function on actuation: Polymer fiber optic cable
    - Coverage range max.: 120 mm
    - Mounting thread: M 6
    - Material of housing: brass
    - Coating of housing: Nickel-plated
    - Degree of protection: IP65
  - Fiber-optic device
    - Signal processing (measuring principle): red light
    - Switch triggering: Reflex/Interrupt
    - Function on actuation: sender and receiver
    - Coverage range max.: 120 mm
    - Output potential (el. output): PNP
    - Thread for connector: M 8x1
    - Number of pins, plug connection: 4
    - Operating status display: Yellow LED
    - Type of mounting: Hole
    - Voltage type: DC
    - Nominal operating voltage [DC]: 24 V
    - Operating voltage min. (DC): 10 V
    - Operating voltage max. (DC): 30 V
    - Degree of protection: IP65
  - Mini I/O terminal
    - Operating voltage: 24V DC
    - Digital I/O, 4DI, 4DO: Max. 24V DC, Max. 2A per output
    - Analog I/O, 2AI, 1AO: 0....10V DC and ± 10V DC
    - Electrical connection: D-Sub HD 15-pin (3-row) Spring clip: 0.14 ... 0.5 mm2
    - Indicators: Status LEDs: Blue (power supply) Green (input signals) Orange (output signals)

- **Robot Assembly Module**
  - Fiber-optic cable
    - Signal processing (measuring principle): red light
    - Switch triggering: Reflex
    - Function on actuation: Polymer fiber optic cable
    - Coverage range max.: 120 mm
    - Minimum ambient temperature: -40 °C
    - Maximum ambient temperature: 70 °C
    - Mounting thread: M 6
    - Material of housing: brass
    - Product weight: 0,02 kg
    - Coating of housing: Nickel-plated
    - Degree of protection: IP65
  - Fiber Optic Device
    - Signal processing (measuring principle): red light
    - Switch triggering: Reflex/Interrupt
    - Function on actuation: sender and receiver
    - Coverage range max.: 120 mm
    - Output potential (el. output): PNP
    - Minimum ambient temperature: -5 °C
    - Maximum ambient temperature: 55 °C
    - Air connection type elec.: Plug
    - Thread for connector: M 8x1
    - Number of pins, plug connection: 4
    - Operating status display: Yellow LED
    - Type of mounting: Hole
    - Voltage type: DC
    - Nominal operating voltage [DC]: 24 V
    - Operating voltage min. (DC): 10 V
    - Operating voltage max. (DC): 30 V
    - Degree of protection: IP65

- Proximity Sensor
  - Materials note: Free of copper and PTFE
  - Nominal switching distance: 2.5 mm
  - Guaranteed switching distance: 2.03 mm
  - Switch output: PNP
  - Switching element function: Normally open contact
  - Max. switching frequency: 3,000 Hz
  - Inductive protective circuit: Integrated
  - Operating voltage range DC: 10 ... 30 V
  - Electrical connection: Plug, M8x1, 3-pin
  - Size: M8x1
  - Mounting type: with lock nut
  - Operating status display: Yellow LED
  - Protection class: IP65 IP67
- 5/2 Way Single Solenoid Valve
  - Design: for round slot
  - Conforms to standard: EN 60947-5-2
  - Ambient temperature: -20 ... 70 °C
  - Switch output: with contact, bipolar
  - Switching element function: Normally open contact
  - Reproducibility of switching value: +/- 0,1 mm
  - Switch-on time: <= 0.05 ms
  - Switch-off time: <= 0.05 ms
  - Max. switching frequency: 500 Hz
  - Operating voltage range AC/DC: 12 ... 27 V
  - Electrical connection: Cable, 3-core
  - Mounting type: Clamped in T-slot Insertable into slot lengthwise
  - Materials information, cable sheaths: TPE-U(PUR)

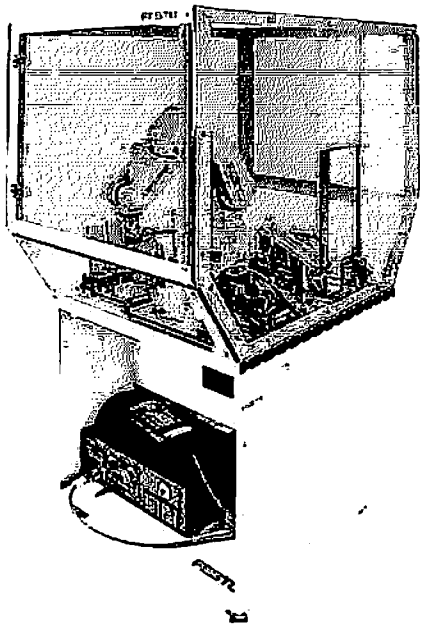
- **Interface**
  - C Interface
    - C interface
    - Operating voltage: 24VDC
    - Digital inputs/outputs 8DI/8DO: Max. 24 V DC, Max. 2 A per output Max. 4 A total
    - Analogue inputs/outputs 4AI/2AO: 0 – 10 V DC or ± 10 V DC
    - Electrical connection: 2x 15-pin D-Sub HD (3 rows)
    - 1x 24 pin IEEE-488 socket (SysLink)
    - 1x 15-pin D-Sub (2 rows)
    - Indicators: Status LEDs: blue (power supply) green (input signals) orange (output signals)
  - Robot Interface Unit
    - Supply: 24 V ±20%
    - Number of outputs: 16 digitals
    - Output voltage: 24 V DC
    - Output current: 0.3 A/Output, overall max. 4.5 A
    - Short-circuit protection: Yes, display via LED
    - Thermal overload protection: Yes, display via LED
    - Number of inputs: 16 digitals
    - Trigger level ON: Vin $>$8 V or Iin $>$2 mA
    - Trigger level OFF: Vin $<$4 V or Iin $<$1 mA
    - Input voltage/Input current: 12 V/3 mA, 24 V/7 mA
    - Protection classification: IP20
    - Permissible ambient temperature: 0 – +55 °C
    - Dimensions: Length 215 mm Width 220 mm Height 55 mm
- **Communication Cable**
  - 15 PIN D-Sub HD connecting cable crossed
    - Wires: 16
    - Cross section: 0.25 mm²
    - Plug type: D-Sub HD 15-pin (3 rows)
    - Socket type: D-Sub HD-15-pin (3 rows)
    - Power rating: Max. 2 A per wir

- **MPS Trolley**
  - Dimensions: H incl. Rolls unit top edge of Trolley x W x L 750 x 350 x 700 mm
  - Accessories
    - Profile plate and control console
    - Height adjustment
    - A4 mounting frame
    - A4 mounting profile
    - Assembly board
- **Robot Controller**
  - Operating voltage: 230 V AC
  - Current rating: Approx. 10mA
  - Input resistance: Approx. 2.2kΩ
  - Response time (OFF->ON): Approx. 2.2kΩ
  - Common method: 1 point per common
  - Connection method: Connector
  - Conformity electric wire size: AWG#24 to #18
  - Dummy plug for T/B: 2D-DP1
  - Connector for EMG1: DFMC 1,5/12-ST-3,5-LR
  - Connector for EMG2: DFMC 1,5/12-ST-3,5-LR
  - Electrical connection: 3 x 24-pin IEEE-488 socket

- **Control Panel Console**
  - Control console for syslink
    - Membrane keyboard: Start pushbutton with LED, stop pushbutton, Reset pushbutton with LED, 2 flexibly assignable control lamps, 4 mm safety sockets with LED status display for simple I/O connection. Syslink and Sub-D sockets for connection to PLC of choice are available on the rear panel.

Input supply voltage: 220-250VAC, 60Hz

**Sample Image:**



*Picture for reference only*

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|---|---|---|

# Technical Specifications

**Lot 13** : **Food Processing Equipment**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Fruits and Vegetables Slicing Machine | Kindly refer to the technical specifications attached as **Annex D13.** | 1 | unit | | | |
| 2 | Canning Machine, 4 seaming roller | | 1 | unit | | | |
| 3 | Food Dehydrator Machine | | 1 | unit | | | |
| 4 | Fine Powder Grinding Machine | | 1 | unit | | | |
| 5 | Vacuum Packing Machine, Table Top | | 1 | unit | | | |
| 6 | Meat Grinder | | 1 | unit | | | |
| 7 | Smokehouse | | 1 | unit | | | |

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All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D13.**

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# ANNEX D13

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 13 | Food processing equipment | 13-001 | Fruits and Vegetables Slicing Machine | Automatic and Manual<br>Slice thickness: 0.1 mm to 10 mm<br>Stainless body, cutter head/blade<br>Capacity: 9.8" x 5.1"<br>With push rod<br>4 rubber suction footing<br>English manual | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 13 | Food processing equipment | 13-002 | Canning Machine, 4 seaming roller | Stainless steel<br>Semi-Automatic<br>Packaging type: can<br>Function: tin canning, can seaming<br>Number of sealing head: 1<br>Number of seaming roller: 4<br>Sealing height: 50-200mm<br>Sealing can diameter: 30-156mm<br>Sealing Capacity: at least 30 cans/min<br>Power: 1.7kW, 220V, 60Hz, single phase<br>*Overall machine size: 2m (width) x 3m (height) to ensure that there will be no issue during ingress | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 13 | Food processing equipment | 13-003 | Food Dehydrator Machine | Digital<br>Stainless Steel<br>Number of Trays: 20<br>Tray size: 40 x 38 cm<br>Grid size: 6 mm<br>Temperature range: 30-90 degrees<br>Power: 2000watts, 220V, 60Hz single phase<br>with door handle<br>*Overall machine size: 2m (width) x | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| | | | | 3m (height) to ensure that there will be no issue during ingress | | | | |
| 13 | Food processing equipment | 13-004 | Fine Powder Grinding Machine | 2500W/220V/60Hz single phase<br>Material: Aluminum fuselage<br>Speed: 2800r/min<br>Fineness: 60-250 meshes<br>Capacity: 5-30kg<br>Size: 520 x 218 x 385 mm<br>Six hammers<br>Hopper<br>Elastic nut<br>Heat sink<br>Horn outlet<br>Coarse mesh<br>Copper motor<br>Fretting switch<br>Feed port<br>Blanking port<br>Ammeter indicator<br>Light indicator<br>Emergency stop switch<br>Air switch<br>*Overall machine size: 2m (width) x 3m (height) to ensure that there will be no issue during ingress | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 13 | Food processing equipment | 13-005 | Vacuum Packing Machine, Table Top | Table top<br>Double Sealing Bar<br>Stainless steel<br>Semi-automatic<br>Concave chamber<br>Chamber Size: 440*420*75 mm<br>Sealing: 400 x 10 mm<br>Speed: 1-4 times/min<br>Power: 900W, 220 V, 60 Hz single phase | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 13 | Food processing equipment | 13-006 | Meat Grinder | Stainless steel<br>Electric<br>3-in-1 slicer, grinder, mincer<br>Production capacity: 150-180kg/h | Equipment | Evaluation of Brochure with picture and/or data sheet and training | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of | Yes |

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| | | | | 2.2kw, 220V, 60Hz single phase<br>With orifice plate | | proposal | hardware vis-a-vis offered specifications<br>- Functionality testing | |
| 13 | Food processing equipment | 13-007 | Smokehouse | Capacity: 50kg/batch<br>Stainless steel<br>Automatic temperature control<br>Insulated layer<br>Precision bending casting<br>Double layer stainless steel radiator<br>Up and down smoke<br>Mobile wheel<br>Power: ≤13kW, 220V, 60Hz, 1Ph<br>With smoke tray<br>*Overall machine size: 2m (width) x 3m (height) to ensure that there will be no issue during ingress | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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# Technical Specifications

**Lot 14** : **3D Printing Technology**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance* | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Metal 3D Printer Machine | Kindly refer to the technical specifications attached as **Annex D14.** | 2 | set | | | |
| 2 | Resin 3D Printer - LCD Type | | 25 | set | | | |
| 3 | Fused Deposition Modeling 3D Printer | | 32 | set | | | |
| 4 | 3D Scanner | | 7 | set | | | |

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All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D14.**

Instruction Manual is an instructional book or booklet that is supplied with almost all technologically advanced products such as electrical products.

Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

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| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# ANNEX D14

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 14 | 3D Printing Technology | 14-001 | Metal 3D Printer Machine | refer to Technical Specification of Item Code 14-001 | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 14 | 3D Printing Technology | 14-002 | Resin 3D Printer - LCD Type | refer to Technical Specification of Item Code 14-002 | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 14 | 3D Printing Technology | 14-003 | Fused Deposition Modeling 3D Printer | refer to Technical Specification of Item Code 14-003 | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | 3D Printing Technology | 14-004 | 3D Scanner | refer to Technical Specification of Item Code 14-004 | Equipment | Evaluation of Brochure with picture and/or data sheet and training proposal | - Checking the conformity with the quantity including parts and accessories<br>- Checking the conformity of hardware vis-a-vis offered specifications<br>- Functionality testing | Yes |

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|---|---|---|

# TECHNICAL SPECIFICATION

| Name of The Learning System | Metal 3D Printer with Sintering Furnace |
|---|---|
| Item Code | 14-001 |
| Technology Area(s) | 3D Printing Technology |

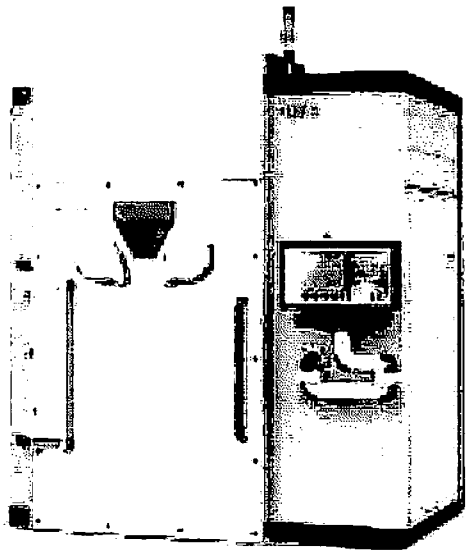
**Technical Specification**

- Print technology: Fusion deposition modeling (FDM/FFF) / Metal Fused Filament Fabrication (MFFF) with Capability to print with composites such as advanced fiber and Metal filaments
- Build size: 300 x 200 x 200mm
- Material compatibility: Compatible with 316L, 17-4PH, FDM/FFF - PLA/ ABS/ HIPS/ PC/ TPU/ TPE/ PETG/ ASA/ PP/ PVA/ Nylon/ Glass Fiber Infused/ Carbon Fiber Infused and many different engineering materials
- Print Head: Dual Extrusion Print head with unique auto-nozzle lifting system
- Filament diameters: 0.4mm up to 1.75mm
- Print Head Technology: Dual extruder
- Layer resolution: Compatible with down to 20 micron layer resolution
- Certification: FCC, RoHS, CB, CE
- Enclosure: Fully enclosed system with air filter that filter out particles during printing.
- Materials Detection: Auto detection of materials
- Must be equipped with camera for live print viewing
- Heated bed: must be able to reach at least 100 degree celsius or higher
- Printer should be able to be connected to a printer management system that can track the users, print times, print consumption and other statistics
- Bed leveling should be an automatic leveling system using capacitive sensor technology and Pre Calibrated
- Connectivity: Wifi, Ethernet, LAN, USB Drive Connectivity
- Power Requirements: 200-240VAC, 60Hz, Single-phase
- File types: STL/OBJ/DAE/AMF
- Includes Laboratory Furnace capable of reaching at least 1200C
- Size Capacity: At least 200 x 200 x 200 mm with Adjustable Multi-Level Tray for batch processing
- Includes catalytic debinding Furnace using Oxalic Acid Fluid with work envelope of At least 200 x 200 x 200 mm
- Certificate of authority to sell from the manufacturer or local distributor/reseller.
- Training certificate provided by manufacturer to certified trainer (see section 6 of the bid document for details)

**Package inclusion:**

- 1 unit Debinder
- 1 Unit vacuum furnace
- 1 set of materials and consumables – metal filaments, gas and Fluid

**Sample Image:**



*Picture for reference only*

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|---|---|---|

# TECHNICAL SPECIFICATION

| Name of The Learning System | Resin 3D Printer - LCD Type |
|---|---|
| Item Code | 14-002 |
| Technology Area(s) | 3D Printing Technology |

- Connectivity: USB / Ethernet
- Technology: Resin 3D Printer - LCD Type
- Operation: At least 3.0 inch touch screen
- Light source: at least 9 inches with minimum 6k resolution
- Monochrome screen
- XY Resolution: 35 um
- Layer Thickness: maximum range up to 0.2mm
- Maximum Printing Speed: up to 50mm/hr
- Power Requirement: AC100-240V-50/60Hz
- Printer size: at least L11.0 x W9.0 X H17.0 in
- Print Volume: at least L7.0 x 4.0 x 7.0 inch
- 1 year warranty with commissioning, testing and training
- Bookbinded modules in english language or video of instructional learning resources
- Must come with certificate of authorized distributorship issued by the manufacturer to ensure warranty
- Official warranty with certificate provided by the manufacturer to guarantee printer/parts availability
- Official brand training module covering topics on Hardware, Software usage & Technical deep dive published in english language.
- Training done by certified manufacturer's engineers with signed certificates
- Must include starter pack of resin materials of at least 1kg per machine
- Includes accessories for the complete operation of resin printer including 1 Wash and 1 Cure unit

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# TECHNICAL SPECIFICATION

| **Name of The Learning System** | **Fused Deposition Modeling 3D Printer** |
|---|---|
| **Item Code** | 14-003 |
| **Technology Area(s)** | 3D Printing Technology |

**Brief Description**
3D printer that uses fused deposition modeling technology in printing models.

**Technical Specification**

| | |
|---|---|
| Filament | PLA, ABS, PETG |
| Nozzle temperature | 260~300 degree celcius |
| Printing size | 235 x 235 x 270mm or larger |
| Maximum printing speed | 150mm/s |
| Leveling | Auto-levelling |
| Extruder | Multiple (at least 2 extruders) |
| Motor accuracy | ±0.1 |
| Motherboard | 32 bit silent motherboard |
| Data transmission | SD card and Type C USB |
| Language | English |
| Others | Touchscreen |
| Accessories | • Extruder cleaning kit<br>• 4 spools PLA<br>• 2 spools ABS<br>• 2 spool PETG |

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|---|---|---|

# TECHNICAL SPECIFICATION

| | |
|---|---|
| **Name of The Learning System** | **3D Scanner** |
| **Item Code** | 14-004 |
| **Technology Area(s)** | 3D Printing Technology |

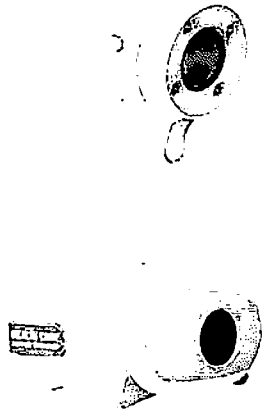
**Technical Specification**

- 3D point accuracy up to 0.1mm
- 3D resolution up to 0.2mm
- HD Mode
- Working Distance: 0.4 - 1 meter
- Volume capture zone: 61,000 cm3 or higher
- Linear field of view, HxW at closest range: 214 x 148 mm
- Linear field of view, HxW at furthest range: 536 x 371 mm
- Data processing algorithms: Geometry and texture based
- Ability to capture texture
- Texture resolution: 1.3 mp
- 3D reconstruction rate: 16 fps
- Data acquisition speed (minimum): at least 18 mln points/s
- Feature: Hybrid geometry and texture tracking, ability to capture texture
- System requirements: (Included and must be supplied)
- Intel Core i7 or i9, 64+GB RAM, NVIDIA GPU with 8+ GB VRAM, CUDA 6.0+ complete accessories
- 3D Formats: OBJ, PLY, STL, etc.
- Bookbinded modules in english language or video of instructional learning resources
- Certificate of authority to sell from the manufacturer or local distributor/reseller.
- Training certificate provided by manufacturer to certified trainer (see section 6 of the bidding document for details)

**Package inclusions:**

- 1 Unit Battery
- 1 Unit Hard Case
- 1 Set USB Kit
- 1 Set Licensed 3D Scanning Software

**Sample Image:**



*Picture for reference only*

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|---|---|---|

# Technical Specifications

**Lot 15** : **Electronics Prototyping Set**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance * | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Development Controller Board Kit | Kindly refer to the technical specifications attached as **Annex D15.** | 175 | set | | | |
| 2 | Micro-computer Development Kit | | 56 | set | | | |
| 3 | Rework Station | | 175 | set | | | |
| 4 | Digital Oscilloscope | | 35 | set | | | |
| 5 | Digital VOM | | 175 | set | | | |
| 6 | Mini CNC Machine for PCB | | 14 | set | | | |
| 7 | Mini Drill Press | | 14 | unit | | | |
| 8 | Variable DC Power Supply | | 70 | unit | | | |
| 9 | Toolkit | | 175 | set | | | |

* Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.

All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D15.**

Instruction Manual is an instructional book or booklet that is supplied with almost all technologically advanced products such as electrical products.

Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

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|---|---|---|

# ANNEX D15

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 15 | Electronics Prototyping Set | 15-001 | Development Controller Board Kit | refer to Technical Specification of Item Code 15-001 | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 15 | Electronics Prototyping Set | 15-002 | Micro-computer Development Kit | refer to Technical Specification of Item Code 15-002 | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 15 | Electronics Prototyping Set | 15-003 | Rework Station | • Working Voltage 60Hz, US Standard Plug (or with Adapter)<br>• Digital Readout<br><br>• Hot Air<br>- Output Power: 500watts<br>- Temperature Range: 100 degree C~500 degree C<br>- Airflow: 12L/min (max)<br><br>• Soldering Station<br>- output Power: 50 watts<br>- Temperature Range: 200 degree C~ 480 degree C<br>- Temperature Stability: + 2 degree C (Static)<br><br>• Includes<br>- 3 x Hot air nozzle/tips<br>- Soldering stand with tip cleaning pad | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | Electronics Prototyping Set | 15-004 | Digital Oscilloscope | • Desktop - type<br>• Four analog channel<br>• Bandwidth: 100 Mhz/120 Mhz<br>• Vertical Sensitivity: 1mV/div~20V/division<br>• Timebase Range: 2ns/div~50s/div<br>• Real time sample rate up to 1 GSa/s<br>• Memory dept at least 24 Mpts<br>• 7 inch (800x480) TFT Display or bigger<br>• Working Voltage: 220VAC 60Hz + 10%<br>• Interface: USB and LAN port<br>• Includes:<br>- 4 Test probes with X1 X10 ± 2 % attenuation ratio<br>- USB Cable at least 1m<br>- Power cord | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | Electronics Prototyping Set | 15-005 | Digital VOM | • DC Voltage: 200mv/2V/20V/200V/600V (0.5%+1) more precise tolerance is better<br>• AC Voltage: 200mv/2V/20V/200V/600V (0.8%+3) more precise tolerance is better<br>• DC Current: 2mA/20mA/200mA/10A ±(0.8%+3) more precise tolerance is better<br>• AC Current: 20mA/200mA/10A ±(1%+3) more precise tolerance is better<br>• Resistance: 200Ω/2kΩ/20kΩ/200kΩ/2MΩ ±(1%+2) more precise tolerance is better<br>• Capacitance: 2nF/20nF/200nF/2μF/100μF ±(4%+3) more precise tolerance is better<br>• Temperature: 40~+1000°C ±(1%+5) more precise tolerance is better<br>• Features:<br>- Display count: 2000<br>- Diode test: Yes<br>- Auto power off: Yes<br>- Continuity buzzer: Yes<br>- Low battery Indicator: Yes<br>- Hold: Yes<br>• Includes:<br>- Battery<br>- Test probes<br>- User's manual | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | Electronics Prototyping Set | 15-006 | Mini CNC Machine for PCB | • Working Area: 300mm x 180mm x 40mm (X,Y,Z) bigger working area the better<br>• Power Supply: 24VDC<br>• Software: GRBL<br>• Engraving material: plastic, wood, acrylic, pvc, pcb<br>• Support: offline controller, manual controller and computer control<br>• Includes:<br>- 10pcs x cutting tool<br>- 4pcs x plate clamp<br>- Power supply<br>- Installation media | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15 | Electronics Prototyping Set | 15-007 | Mini Drill Press | • Bench type mini drill press<br>• 250 Watts 5 speed<br>• Chuck size: 13mm max<br>• Maximum piercing capacity : Iron at least 8mm<br>• Forged iron base and tray<br>• Turntable right/left: 45 degrees<br>• 220VAC 60Hz single phase | Tool | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 15 | Electronics Prototyping Set | 15-008 | Variable DC Power Supply | • Bench type power supply<br>• Output voltage: 0~30 VDC or higher<br>• Output current: 0~10 Amp or higher<br>• Voltage and current ripple control<br>• Protection mode: Current limiting protection/Short circuit alarm stop output and self-recovery<br>• Digital readout: Four digit display for voltage, current and power measurement<br>• USB charging port<br>• Positive, Ground and Negative Output terminal (binding post type)<br>• 220 VAC 60Hz<br>• Accuracy 0.5% + 2 digit (more precise tolerance much better)<br>• Includes:<br>- Power cord<br>- Connecting wires (alligator type) | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | Yes |
| 15 | Electronics Prototyping Set | 15-009 | Toolkit | refer to Technical Specification of Item Code 15-009 | Tool | Evaluation of Brochure with picture and/or data sheet | - Checking the conformity with the quantity<br>- Checking the conformity of software vis-a-vis offered specifications<br>- Functionality testing | N/A |

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# TECHNICAL SPECIFICATION

| Name of The Equipment | Development Controller Board Kit |
|---|---|
| Item Code | 15-001 |
| Technology Area(s) | Electronics Prototyping Set |

Arduino Prototyping kit for various applications

Arduino Uno r3 Dip Type ATMEGA16U2 USB (stand-alone board)

- 14 Digital I/O
- 6 Analog I/O
- 5V
- USB Cable (0.5m Length)

Arduino Uno R3 Kit with the following parts

1. 1 xMainboard +1 x USB cable(0.5m Length)
2. 1 x GPIO Extension Board + 1 x Connecting Cable
3. 1 x Breadboard(830 Points)
4. 1 x Mini Breadboard+1 x Extension board
5. 10 x 3mm Red LEDs
6. 10 x 3mm Green LEDs
7. 10 x 3mm Yellow LEDs
8. 1 x 5mm RGB LED
9. 5 x Button with Cap
10. 10 x 330 ohm Resistor
11. 10 x 1k ohm Resistor
12. 10 x 10k ohmResistor
13. 1 x 1K Adjustable Trim Pot Resistor (Potentiometer)
14. 1 x 10K Adjustable Trim Pot Resistor (Potentiometer)
15. 1 x 2.54mm Elbow 40 Pin Header
16. 1 x 2.54mm Straight 40 Pin Header
17. 1 x 5516 LDR (Photoresistor)
18. 1 x Ball switch
19. 1 x Active Buzzer 5V
20. 1 x Passive Buzzer 5V
21. 1 x 74HC595 8bit Shift Register
22. 1 x LM35 Temperature Sensor
23. 1 x SS8050 NPN Transistor
24. 1 x 1838 Infrared Receiver
25. 1 x Infrared Sender
26. 1 x Infrared Phototransistor(Flame Sensor)
27. 1 x Infrared Remote controller(Battery Not Included)
28. 1 x Stepper Motor
29. 1 x SG90 Servo motor
30. 1 x 1602 LCD

31. 1 x 1-Digit Eight-segment Display
32. 1 x 4-Digit Eight-segment Display
33. 1 x 8*8 Dot Matrix Led Display
34. 1 x Stepper Motor Driver Board
35. 1 x Sound Sensor Module
36. 1 x PS2 Joystick module
37. 1 x RTC module(Battery Not Included)
38. 1 x Relay Module(5V-10A)
39. 65 x Jump Wires
40. 10 x Female-Female Dupont wires
41. 10 x Male-Female Dupont wires
42. 1 x 9V Battery Holder(Battery not included)
43. 1 x HC-SR04 Module

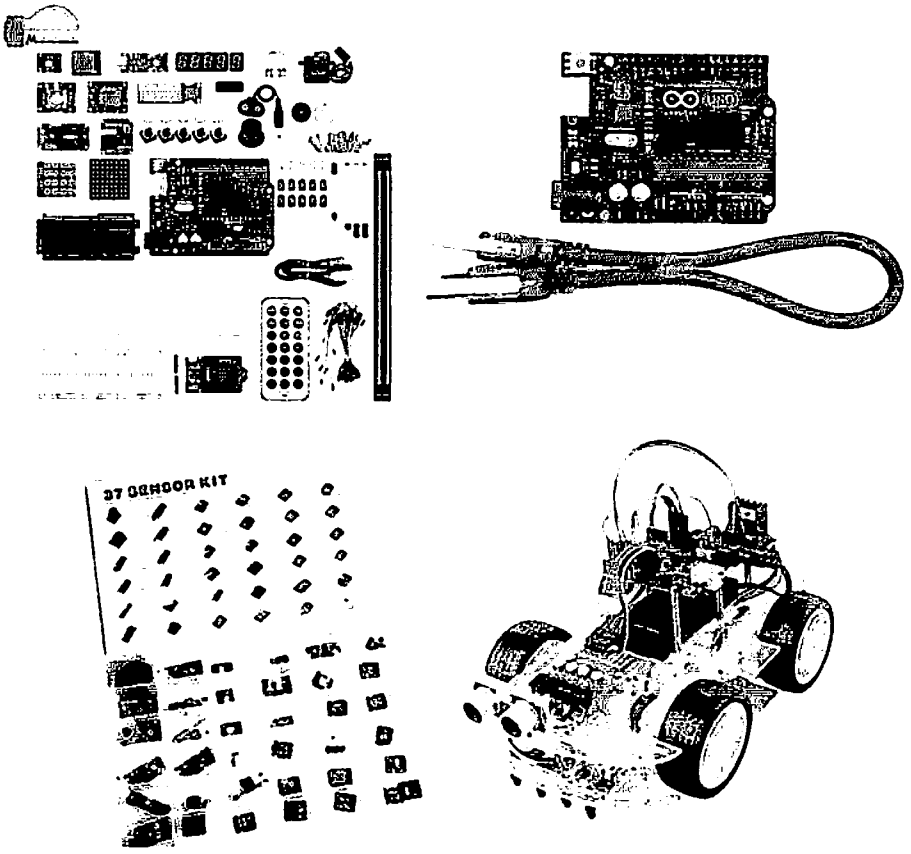
38 in 1 box Sensor Kit for Arduino with the following parts:

1. 1 x Joystick module
2. 1 x Flame Sensor module
3. 1 x RGB LED module
4. 1 x Heartbeat Sensor module
5. 2 x Light Cup module
6. 1 x Hall Magnetic module
7. 1 x Relay module
8. 1 x Linear Hall module
9. 1 x SMD RGB module
10. 1 x 7 Color Flash module
11. 1 x Hydrargyrum Switch module
12. 1 x 18B20 Temperature module
13. 1 x Big Sound module
14. 1 x Metal Touch module
15. 1 x Two-Color module
16. 1 x Tilt Switch module
17. 1 x Analog Temperature module
18. 1 x Small Sound module
19. 1 x Digital Temperature module
20. 1 x Mini Two-Color module
21. 1 x Button module
22. 1 x Photo Resistor module
23. 1 x IR Emission module
24. 1 x Tracking sensor module
25. 1 x Microphone sensor module
26. 1 x Active Buzzer module
27. 1 x Magnetic Spring module
28. 1 x Shock sensor module
29. 1 x Temperature and Humidity sensor module
30. 1 x IR Receiver sensor module
31. 1 x Avoidance Sensor module
32. 1 x Passive Buzzer module
33. 1 x Mini Reed Switch sensor module
34. 1 x Rotary Encoders sensor module
35. 1 x Analog Hall Sensor module
36. 1 x Tap sensor module
37. 1 x Light Blocking sensor module

4WD SMART Robot Car Chassis Kit for Arduino with the following parts:

1. 2 × Acrylic transparent 4-wheel trolley floor
2. 1 × CH340 with USB development board(with a data cable)
3. 1 × L298N motor drive module
4. 1 × Ultrasonic sensor module
5. 1 × Four-way tracking module
6. 4 × 5V DC gear motor (with wheels)
7. 1 × Ultrasonic bracket
8. 8 × Motor fixing bracket (acrylic transparent)
9. 4 × Speed Code Disc (Black)
10. 1 × 18650 battery box with switch
11. 3 × M3*50 copper pillar
12. 8 × M3*30 copper pillar
13. 2 × M3*15+6 copper pillar
14. 17 × M3 nuts
15. 33 × M3*8 round head screw
16. 8 × M3*30 round head screws
17. 3 × M2 nut
18. 2 × M2*8 round head screws
19. 4 × M1.6*8 round head screws
20. 4 × M1.6 nut
21. 1 × Male to female Dupont wire 30cm
22. 15 × Male to female Dupont line 20CM
23. 8 × Male to male Dupont line 20cm
24. 4 × Male to female Dupont wire 10cm
25. 2 × Male to male Dupont line 10cm
26. 1 × Four-way tracing and obstacle avoidance car kit CD
27. 1 × Yellow packing box(270*165*50mm)

**Sample Image:**



*Picture for reference only*

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# TECHNICAL SPECIFICATION

| Name of The Equipment | Micro-computer Development Kit |
|---|---|
| Item Code | 15-002 |
| Technology Area(s) | Electronics Prototyping Set |

**Board Specification**

| | |
|---|---|
| SOC | Broadcom BCM2771 |
| CPU | 64-Bit 1.5 Hz Quad-core |
| GPU | Broadcom VideoCore VI@500MHz |
| Bluetooth | 5.0 |
| USB Interface | USB 3.0 x 2 |
| HDMI | Micro HDMI supports 4K60 |
| Power Supply Interface | USB Type-C (5V 3A) |
| WiFi | 802.11<br>2.4GHz/5Ghz Dual band |
| Wired Network Interface | True Gigabit Ethernet |
| Ethernet POE | Powered Over additional HAT Ethernet (POE) |

**Includes**

- Case
- USB-C Power supply
- Micro HDMI to Standard HDMI Cable (1m)
- Heatsink and fan
- 32 GB Class 10 MicroSD Card

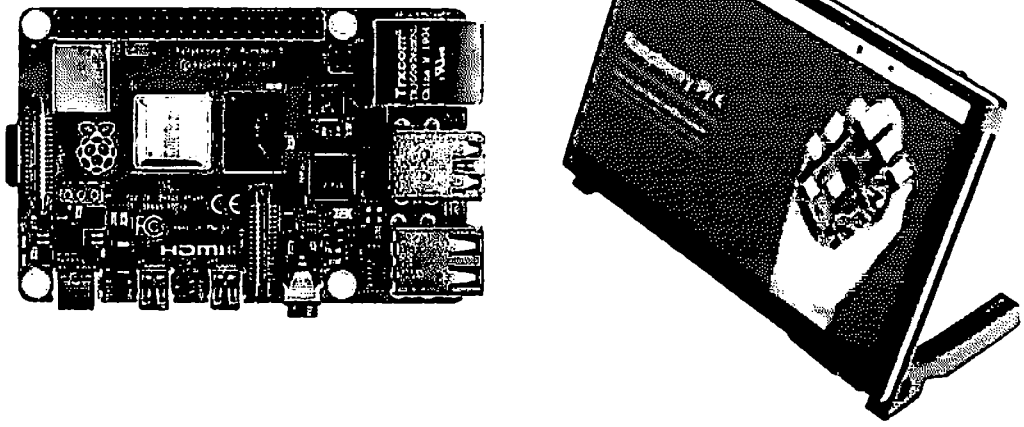
**LCD module**

- 5.0" 800*480 DSI IPS
- Multi-touch
- With case

**Toolbox/Organizer**

- 40~44 cm x 20~23 cm x 19~21 cm (L x W x H)
- Polypropylene/ABS plastic with metal latch
- 3 component storage on the top cover
- 1 Removable tray
- Max load: 15KG

**Sample Image:**



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# TECHNICAL SPECIFICATION

| Name of The Equipment | Toolkit |
|---|---|
| Item Code | 15-009 |
| Technology Area(s) | Electronics Prototyping Set |

**Screw driver set**

- Soft grip handle
- Chrome Vanadium
- Magnetic
- Includes plastic screw driver holder (table top)
- Sizes are as follows:
    - Flat
        - 1pc x 6.5 x 38mm
        - 1pc x 6.5 x 100mm
        - 1pc x 5.5 x 75mm
        - 1 pc x 8 x 150mm
    - Philips
        - 1 pc x 2 x 38mm
        - 1 pc x 2 x 100 mm
        - 1 pc x 1 x 75 mm
        - 1 pc x 3 x 150 mm
    - Precision Screwdrivers
        - 1 pc x Flat 1.5 x 50mm
        - 1 pc x Flat 2 x 50 mm
        - 1 pc x Flat 2.5 X 50mm
        - 1 pc x Flat 3 x 50 mm
        - 1 pc x Philips 000x50mm
        - 1 pc x Philips 00 x 50 mm
        - 1 pc x Philips 0 x 50mm
        - 1 pc x T6 x 50mm
        - 1 pc x T8 x 50mm
        - 1 pc x T10 x 50mm

**Plier set**

- Long nose plier
  - 6 inch long
  - Chrome Vanadium
  - Non-slip /Soft grip handle

- Flat nose/Electricians plier
  - 9 inch long
  - Chrome Vanadium
  - Non-slip /Soft grip handle

- Diagonal cutting plier
  - 6 inch long
  - Chrome Vanadium
  - Non-slip /Soft grip handle

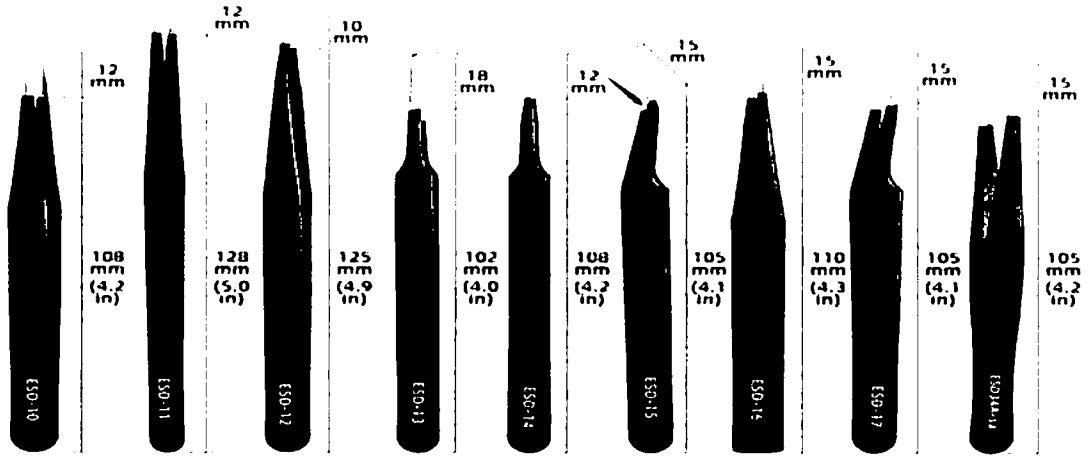
**Precision Diagonal Cutter**

- stainless steel
- 130mm long
- 8mm jaw opening
- with automatic reset spring
- non slip handle

**Tweezer**

- Stainless Steel
- Anti-static
- Includes: carrying case/pack
- Tip:
  - Straight tip:
    - ESD-10
    - ESD-11
    - ESD-12
    - ESD-14
    - ESD-16
  - Flat round head:
    - ESD-13
  - Curved Tip
    - ESD-15 45°
    - ESD-17 30°
  - Flat head
    - ESD34A-sa

**Sample Image:**




*Picture for reference only*

**Toolbox/Organizer**

- 40~44 cm x 20~23 cm x 19~21 cm (L x W x H)
- Polypropylene/ABS plastic with metal latch
- 3 component storage on the top cover
- 1 Removable tray
- Max load: 15KG

**I hereby certify that the statement of compliance to the foregoing technical specifications are true and correct, otherwise, if found to be false either during bid evaluation or post-qualification, the same shall give rise to automatic disqualification of our bid.**

| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# Technical Specifications

**Lot 16** : **Computers, Tablets and Handheld Devices**

| No. | Item | Minimum Agency Specifications Unless Otherwise Specified | Qty | Unit | Statement of Compliance * | Make Brand / Model | Reference |
|---|---|---|---|---|---|---|---|
| 1 | Network Attached Storage | Kindly refer to the technical specifications attached as **Annex D16.** | 7 | set | | | |
| 2 | Holographic Display | | 14 | set | | | |
| 3 | Laptop, high-end | | 1 | set | | | |
| 4 | Desktop Computer for 3D Design | | 59 | set | | | |
| 5 | Desktop Computer for Productivity Application | | 100 | set | | | |
| 6 | Android Tablet | | 100 | set | | | |
| 7 | Laptop for productivity applications | | 25 | set | | | |
| 8 | A3 Inkjet Printer | | 5 | set | | | |
| 9 | A4 Inkjet Printer | | 10 | set | | | |
| 10 | Wireless Router | | 43 | set | | | |

* Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.

All tools, equipment, gadgets and electrically operated instruments should have Standard Manufacturers Manual and/or Datasheet/Specification Sheet/Brochure as indicated in **Annex D16.**

Instruction Manual is an instructional book or booklet that is supplied with almost all technologically advanced products such as electrical products.

Datasheet/Specification Sheet/Brochure is a document that summarizes the performance and other characteristics of a product, machine, component that comes along with the product from its release from the manufacturer.

**I hereby certify that the statement of compliance to the foregoing technical specifications are true and correct, otherwise, if found to be false either during bid evaluation or post-qualification, the same shall give rise to automatic disqualification of our bid.**

| Name of Company/Bidder | Signature over Printed Name of Authorized Representative | Date |
|---|---|---|

# ANNEX D16

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-001 | Network Attached Storage | - Dual Core Processor or higher<br>- 6GB RAM or higher<br>- 4 Bays or more<br>- Hot swappable HD<br>- 2 built in M.2 SSD<br>- 2x GbE LAN<br>- 2 USB port<br>- Windows and Mac Compatible<br><br>Includes:<br>- 4x8TB NAS HD<br>- 220V 60Hz Power supply<br>- Management Software/OS | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |

| Lot No. | Lot | Code | Item | Agency Specification | Classification | Test Procedure (Post Evaluation) | Test Procedure (Inspection and Acceptance) | English Manual |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-002 | Holographic Display | 1 unit Holographic Display, single display, 75cm/ 30"<br><br>Key features<br>- Fine pixel pitch (1.1mm)<br>- 3000 Nits Brightness<br>· Wide, accurate colour spectrum<br>· Interactive capabilities<br>· Larger display, perfect for viewing at a distance<br>· Supports 3D and 2D content<br>· HDMI input, LAN connectivity, Wi-Fi controllable, Stream enabled<br><br>Specifications<br>· Hardware: Holographic Display L module, Box 1<br>· Services: Display Software Service L<br>· Applications: Web-based CMS and Holographic Display App<br>· Accessories: Tripod, Dome L<br>· Add-ons: Pro - Remote Access Capacity 3 years subscription<br>· Content: 3D Studio, Use your own, Media Library<br><br>3D Hologram Accessories<br>· Dome interface<br>· Anti-Static Gloves | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-003 | Laptop, high-end | - Processor & Chipset 12th Generation Intel Core i9-12900H<br>2.5 GHz (24M Cache, up to 5.0 GHz, 6P+8E cores)<br>RAM Memory 32 GB DDR5 4800 MHz<br>Solid State Drive (SSD) 2TB + 2TB M.2 NVMe PCIe 4.0 Performance RAID0 SSD<br>Screen Size 16.0 inch<br>Type & Capacity 90WHrs, 4S1P, 4-cell Li-ion battery<br>Battery Timing Up to 8 Hours<br>Power Supply Wattage ø6.0, 240W AC Adapter<br>Output: 20V DC, 12A, 240W<br>Input: 100~240V AC 50/60Hz universal<br><br>with licensed OS (Windows 11)<br>with licensed Microsoft Office 2019 or higher | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-004 | Desktop Computer for 3D Design | - CPU<br>- Processor: 12 Cores 24 threads 4.7GHz or higher overclockable<br>- Motherboard: 4 memory slot, Built-in Audio port, Gigabit Lan Port, 2x 3.2 Gen USB port, Hardware monitoring, Multiple Temperature Feature, Q-Flash Update Bios<br>- Memory: 64GB DDR4 (2 x 32GB) or higher<br>- Video: 8GB GPU at least 200 GB/sec memory bandwidth, Direct X 11 Compliant, 3x video port output<br>- Dual Drive: SSD NVME 500GB HD: 6TB 540 RPM or faster<br>- 850 watts true rated power supply 220VAC 60Hz<br>- ATX casing Mid/Full Tower Form Factor, 4 RGB Fans<br>- Dual Monitor WQHD, 34" 21:9 screen ratio, 144Hz refresh rate, 220VAC 60Hz<br>- Wired full sized mechanical keyboard<br>- Mouse<br><br>- Includes<br>+ Wifi Dongle/Card installed in CPU supports multiple band (i.e 5G, 2.4G)<br>+ Bluetooth 5.1 Dongle/Card installed in the CPU or higher<br>+ Windows 11 Professional with installation/recovery media<br>+ 1080P USB Webcam Bluetooth over the ear, Active Noise Cancellation Headset<br><br>- With OS installation | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-005 | Desktop Computer for Productivity Application | - OS: Windows 10/ Windows 11 or higher<br>- Core I5 (2.9GHZ)<br>- 4GB DDR4 or faster<br>- 1TB HDD, 2GB Graphics<br>- DVD writer<br>- 220VAC 60Hz compliant<br>- 21.5 inch monitor FHD<br>- With Mouse<br>- With OS installed | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |
| 16 | Computers, Tablets and Handheld Devices | 16-006 | Android Tablet | - Operating System: Android 13 or newer<br>- Processor Snapdragon 8 Gen 1, Octa-core or higher<br>- Display: 11-13 inches, up to 120Hz, at least 1600 x 2560 pixels, Corning Gorilla Glass 5, 500 nits min<br>- Storage: 256GB or higher with external memory provision upto 1TB or higher<br>- Main Camera (Back): Dual 13MP, f/2.4 (wide) and 6MP, f/2.2 (Ultrawide) or higher<br>- Video recording: 4K video @30fps/60fps, 1080p @30fps or better<br>- Speaker: 4 Speakers<br>- Pen Support: Yes<br>- Connectivity: USB-C, WiFi 6E, Bluetooth 5.2 or higher<br><br>Features:<br>- can be used as 2nd monitor for windows<br>- available service center nationwide<br><br>Includes:<br>- Folio cover with keyboard (same brand as the tablet)<br>- Rechargeable pen (same brand as the tablet)<br>- Travel adapter 220VAC 60Hz with charging cable (same brand as the tablet) | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-007 | Laptop for productivity applications | - OS: Windows 10/ Windows 11 or higher<br>- i5 11th Generation or higher<br>- 8GB 2400MHz DDR4 or faster<br>- Dual Storage: 256GB SSD + 1TB HDD<br>- 14~16" IPS or better<br>- Full HD or higher resolution<br>- Connectivity: Gb Lan port, WiFi and Bluetooth<br>- At least two (2) USB 3.0 Port<br><br>Includes<br>- Mouse<br>- Licensed MS Office 2019 or higher<br>- AC 220 - 240v 60Hz | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |
| 16 | Computers, Tablets and Handheld Devices | 16-008 | A3 Inkjet Printer | • print, scan, copy, fax<br>• wide format inkjet printer<br>• 1200 x 4800 dpi print resolution<br>• print width 291mm, 297mm (borderless)<br>• 250 sheets input tray<br>• 100 sheets output tray<br>• LAN and WiFi Connectivity<br>• Supports mobile device direct print and full duplex printing | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 | Computers, Tablets and Handheld Devices | 16-009 | A4 Inkjet Printer | • With Print, Scan, Copy, Fax features<br>• Tank type ink system<br>• Supports A4 and Legal Paper sizes<br>• Approximately 15 page per minute (Black)<br>• Can scan documents over network environment<br>• Photo Quality<br>• WiFi Connectivity<br>• Support full duplex printing | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test | Yes |
| 16 | Computers, Tablets and Handheld Devices | 16-010 | Wireless Router | Dual band 2.4 and 5 GHz<br>Networks Standard: 802.11b, 802.11a, 802.11n, 802.11ac, 802.11gi<br>3000-7200 Mbps<br>6 x Gigabit Ethernet LAN Ports<br>1 x Gigabit Ethernet WAN Port<br>2 x USB 3.0 Ports<br>Google Assistant Integration<br>Amazon Alexa Integration<br>-AC 220 - 240v 60Hz | Equipment | Evaluation of Brochure with picture and/or data sheet | - Checking of specification and quantity (offered vs. actual)<br>- Check package completeness<br>- Functionality test<br>- 24 hr burn-in test | Yes |

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