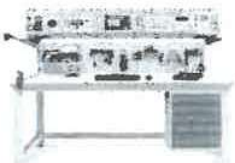




Details Specifications

A. Electronic Training Desk

EXAMPLE	QUANTITY REQUIRED
	1 x Electronic Training Desk

Electronic Training Desk Specifications

Specifications

Frame

- Dimensions (l x b x h) : 1800 x 1330 x 800mm
- 32mm Formica Folkstone Grey top : 1710 x 800mm
- Extruded aluminium frame with instrument and AIO PC holder fitted with Electrical panel isolator, overload breaker and RCB. Storage cabinet mounted below the desk.

Equipment

- Equipped with the following Test Equipment mounted in the frame:
 - 1 x Digital Oscilloscope (Supplied with probes)
 - 2 channels - 100 MHz analog channel bandwidth
 - Sampling rate up to 1 GSa/s
 - 8M memory depth
 - Vertical range 2mV/div ~ 10V/div
 - Vertical resolution: 8bit
- 1 x Dual Power supply 0 to 30 Volts 3Aamp with CC and CV mode
- 1 x Signal Generator
 - Frequency range: 1μHz - 40MHz
 - 300MSa/s sampling rate
 - 16-bit vertical resolution
 - 4.3-Inch colour TFT LCD screen
 - Modulation: AM, DSB - AM, FM, PM, ASK, FSK and PSK, BPSK, QPSK, 3 FSK, 4 FSK, OSK and PWM, etc.
 - 1μHz frequency resolution
- 1 x Digital Multimeter
 - 4 1/2 Digits Bench-Type Digital Multimeter
 - 3.5 Inch (480x320) high resolution LCD
 - 55000 counts, DC voltage accuracy up to 0.05%
 - Up to 60 readings per second
 - True RMS AC voltage / current measurement
- 1 x LCR Meter



- 5 Digit Basic Accuracy 0.1%
 - Range L 0.001μH - 9999H
 - Range C 0.001pF - 9999μF
 - Range R 0.0001Ω - 99.99MΩ
- 1 x CPI-C070WR4C (7" Industrial Raspberry Pi Touch Panel PC) With CM4 Fitted with I/O breakout board.
- 1 x All in one PC swivel mounted on the frame with the following specification:
 - Intel Core i5
 - 16 Mb RAM
 - 512 Gb SSD drive
 - 21" Touch Screen Resolution 1920x1080
 - Full size keyboard and mouse
 - Network adaptor and USB ports
 - Blue Tooth
 - Webcam
 - Microsoft Windows 11 Professional 64-bit operating system

Supplied with the following equipment:

- 1 x Temperature controlled solder extractor and soldering iron
 - Vacuum and blower operation
 - Temperature control of solder extractor with display
 - Temperature control of Soldering Iron with display
 - Safe for use on static sensitive components
 - Vane-type vacuum pump
 - Connection for optional air output
 - Twin spring safety holder with cleaning sponge
 - Clog-resistant desoldering handpiece with glass tube to collect solder
 - Vacuum - 268 mbar (22"Hg), Flow Rate 1,54m³/hour (0,91CFM)
 - Temp. Range - Solder Extractor 200°C~450°C, Soldering Iron 200°C to 420°C
- 1 x SMD hot air rework station 700 watt supplied with 3 different size air nozzles.
- 1 x 115mm Diagonal side cutter
- 1 x Bent nose precision plier approx. 30mm x 10mm at 58 degrees
- 1 x Precision 7-piece screwdriver set
- 1 x Hex key set folding 1.5mm to 10mm
- 1 x Torx bit folding set (T9 to T40)
- 1 x Network crimping tool RJ11 – RJ12 – RJ45 x Screwdriver set 6 - piece
- 1 x Bread board approx. size 200mm x 75mm
- 1 x Manual solder sucker
- 1 Hot air gun 200watt
- 1 x Long nose plier 115mm
- 1 x Junior hacksaw
- 1 x Mini PCB vice
- 1 x Scriber
- 1 x 300mm Steel rules
- 1 x Logic Probe
- 1 x Wire stripper
- 1 x Resistor decade box 1 ohm to 11.111 Mohm 0.5 watt
- 1 x Capacitance decade box 100pF to 11.111 uF
-

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- 1 x Digital Trainer with the following specification:
- Solderless breadboard
- Variable DC power
 - Positive output voltage: 0 - +15V±10%
 - Negative output voltage: 0 - -15V±10%
 - Maximum output current: 300 mA
- Fixed power supply
 - Positive output voltage: +5V±10% Maximum output current: 1Amp
 - All DC power supplies with short circuit protection
- Function generator
 - Frequency ranges (6 ranges): 0.1Hz - 200 KHz
 - Sine wave output: 0 - 5 Vpp 10% variable
 - Triangle wave output: 0 - 5Vpp 10% variable
 - Square wave output: 0 - 15 Vpp 10% variable
 - TTL mode output: +5V 10%
- Digital voltmeter
 - 3½ digits LED display
 - 0 - 19.99V full scale
 - Input impedance: 10Mohm
- Universal counter
 - Frequency range: 1Hz - 99.999999MHz
 - Period range 0.01us - 99999999us
 - Input signal: TTL or CMOS level
 - 8-digit 7-segment LED display
- 8 x buffered LED displays
- 8 x data switches
- 2 x function switches
- 2 x pulse switches

Supplied with the following kits and consumables:

- 1 x NES532 Stereo preamplifier module
- 1 x Audio Amplifier (Discrete components)
- 1 x AM-FM transistorised radio
- 1 x 4 Channel running light generator
- 1 x Car alarm Kit (voltage drop method)
- 30 x Arduino starter kit UNO R3 latest Rev with shields
- 5 x Roll solder wire 0.9mm 60/40 500 gram
- 5 x Veroboard 300mm x 100mm
- 1 x Metal Film Resistors 2600pcs 130 Values 1/4W -1% in enclosure
- 50 x Crocodile leads 22mm x 300mm
- 100 pcs 120mm length jumper cable for breadboard
- 20 pcs 150mm length jumper cable for breadboard
- 10 pcs 200mm length jumper cable for breadboard
- 10 pcs 240mm length jumper cable for breadboard
- 1 x Heat shrink kit 1.5 to 5mm

H



B. Pneumatic Training Desk

EXAMPLE	QUANTITY REQUIRED
	2x Pneumatic Training Desk

Pneumatic Training Desk Specifications

Frame

- Dimensions (l x b x h) : 1800 x 800 x 1820mm
- 32mm Formica Folkstone Grey top: 1800 x 800mm
- 1 x Extruded Frame with Module Rack and LCD Screen Holder (Double Sided)
- Frame to be double sided for 2 students to work on one station
- The following quantities for training parts are for a double-sided station (The list must not be duplicated.)
- No compressor required

Frame to be supplied with the following modules and equipment:

- 2 x 24V Power Supply 240W (1 on each side) Frame mounted
- 2 x E-Stop Safety Module fitted with safety relay (1 on each side) Frame mounted
- 2 x 24V and OV Distribution Module (1 on each side) Frame mounted
- 2 x Banana Plug cable holder (1 on each side) Frame mounted
- 4 x Signal input, electrical Frame mounted
- 4 x Relay, three-fold Frame mounted
- 2 x Time relay, two-fold Frame mounted
- 2 x Preset counter, electronic Frame mounted

Equipment for basic pneumatic training:

- 4 x 3/2-way valve with pushbutton actuator, normally closed
- 2 x 3/2-way valve with pushbutton actuator, normally open
- 2 x 5/2-way valve with selector switch
- 2 x 3/2-way valve with selector switch, normally closed
- 4 x 3/2-way roller lever valve, normally closed
- 4 x Proximity sensor, pneumatic, with cylinder attachment
- 2 x Pneumatic timer, normally closed
- 2 x Pressure sequence valve
- 2 x 3/2-way valve, pneumatically actuated at one end
- 2 x 5/2-way valve, pneumatically actuated at one end
- 6 x 5/2-way double pilot valve, pneumatically actuated at both ends
- 2 x Shuttle valve (OR)
- 4 x Dual-pressure valve (AND)
- 2 x Quick-exhaust valve
- 4 x One-way flow control valve
- 2 x Single-acting cylinder
- 2 x Double-acting cylinder
- 2 x Start-up valve with filter control valve



- 2 x Pressure regulator valve with gauge
- 4 x Pressure gauge
- 2 x Manifold
- 4 x Plastic tubing, 4 x 0.75 Blue 10 m
- 4 x Plastic tubing, 4 x 0.75 Red 10 m

Equipment set for advanced pneumatic training:

- 4 x 3/2-way valve with pushbutton actuator, normally closed
- 2 x 3/2-way valve with mushroom-head emergency switch, normally open
- 2 x 3/2-way roller lever valve with idle return, normally closed
- 2 x Back pressure valve
- 8 x 3/2-way valve, pneumatically actuated at one end
- 4 x 5/2-way double pilot valve, pneumatically actuated at both ends
- 4 x Plastic tubing, 4 x 0.75 silver 10 m
- 8 x Shuttle valve (OR)
- 6 x Dual-pressure valve (AND)
- 2 x Pneumatic timer, normally open
- 2 x Pneumatic preset counter
- 2 x Stepper module
- 4 x One-way flow control valve
- 4 x non-return valve, delockable
- 4 x Double-acting cylinder

Equipment set for Basic Electropneumatic Training:

- 2 x Limit switch, electrical, left-actuated
- 2 x Limit switch, electrical, right-actuated
- 2 x Proximity sensor, optical, M12
- 4 x Proximity sensor, electronic, with cylinder mounting
- 4 x 3/2-way solenoid valve with LED, normally closed
- 2 x 5/2-way solenoid valve with LED
- 4 x 5/2-way double solenoid valve with LED
- 2 x Pressure sensor with display
- 8 x One-way flow control valve
- 2 x Single-acting cylinder
- 4 x Double-acting cylinder
- 2 x Start-up valve with filter control valve
- 2 x Manifold
- 2 x Plastic tubing, 4 x 0.75 Blue 10 m
- 2 x Plastic tubing, 4 x 0.75 Blue 10 m

Equipment set for Advanced Electropneumatic Training:

- 2 x Proximity sensor, inductive, M12
- 2 x Proximity sensor, capacitive, M12
- 2 x Valve terminal with 4 valve slices (MMJJ)
- 4 x Non-return valve, delockable

Equipment set for Vacuum Technology:

- 2x Air pressure reservoir, 0.4 litre
- 2x Pressure switch, 0 – -1 bar

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- 2x Vacuum gauge
- 2x Flow control valve
- 2x Vacuum generator, type H
- 2x Vacuum generator, type L
- 2x Non-return valve
- 2x non-return valve, delockable
- 2x Suction gripper 20 SN
- 2x Suction gripper 30 SN
- 2x Suction gripper 20 SS
- 2x Suction gripper 30 SS
- 4x Suction gripper 20 CS with vacuum security valve
- 2x Suction gripper 4x20 ON

Equipment set for PLC Training:

PLC must be able to mount into frame

2 x PLC with the following base specifications:

- Working memory 100Kb, CPU processing time 0.085uS/instruction, Supply Voltage 24Vdc, Retentive data area 10Kb, with RTC
- Digital Inputs 14 (6 x High speed counting) + 8 via add on card (22 Inputs)
 - Digital Outputs transistor 10 (4 x High Speed with 100Khz pulse train output)
 - + 8 via add on card (18 Outputs)
 - Analog Inputs 2 (Voltage 0 to +10V)
 - Analog Outputs 2 (10 Bit resolution)
 - Interface – Profinet and 1 x RS232 port via an add on card

Equipment set for Sensors and Transducers Training:

With brackets to mount in extruded slots on the frame

- 2 x Inductive Proximity Sensor 18mm Barrel Sn = 8mm PNP NO
- 2 x Magnetic Sensor Sn = 60mm PNP NO
- 2 x Ultrasonic Sensor with 1 to 10V output Sn 40 to 500mm
- 2 x Diffused Reflection sensor 200mm IO link PNP
- 2 x Retro reflective Sensor 4m IO link with reflector
- 2 x Tru Beam Transmitter
- 2 x Tru Beam Receiver PNP
- 2 x Incremental Encoder
- 2 x Temperature Transmitter -50 to 150°C
- 2 x LVDT with 0 to 10V output 0 to 200mm
- 2 x 4 Port IO link master

Additional equipment required:

- 2 x All in one PC with swivel arm mounting on the frame with the following specifications:
 - Intel Core i5
 - 16 Mb RAM
 - 512 Gb SSD drive
 - 21" Touch Screen Resolution 1920x1080
 - Full size keyboard and mouse
 - Network adaptor and USB ports
 - Blue Tooth
 - Webcam
 - Microsoft Windows 11 Professional 64-bit operating system

HA

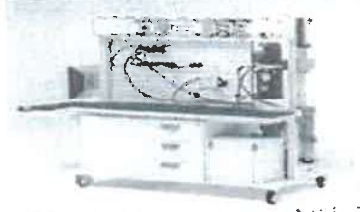


Connectors:

- 20 x red 50 mm 4mm Banana plug lead (safety type)
- 20 x blue 50 mm 4mm Banana plug lead (safety type)
- 16 x black 50 mm 4mm Banana plug lead (safety type)
- 16 x red 300 mm 4mm Banana plug lead (safety type)
- 16 x blue 300 mm 4mm Banana plug lead (safety type)
- 36 x black 300 mm 4mm Banana plug lead (safety type)
- 16 x red 500 mm 4mm Banana plug lead (safety type)
- 16 x blue 500 mm 4mm Banana plug lead (safety type)
- 36 x black 500 mm 4mm Banana plug lead (safety type)
- 4 x red 1000 mm 4mm Banana plug lead (safety type)
- 6 x blue 1000 mm 4mm Banana plug lead (safety type)
- 4 x black 1000 mm 4mm Banana plug lead (safety type)
- 2 x red 1500 mm 4mm Banana plug lead (safety type)
- 2 x blue 1500 mm 4mm Banana plug lead (safety type)
- 2 x black 1500 4mm Banana plug lead (safety type)

Curriculum to be developed together with EMC.

C. Hydraulic Training Desk

EXAMPLE	QUANTITY REQUIRED
	2x Hydraulic Training Desk

Hydraulic Training Desk Specifications

Frame

- Dimensions (l x b x h) : 1800 x 800 x 1820mm
- 32mm Formica Folkstone Grey top: 1800x 800mm
- 1 x Extruded Frame with Module Rack and LCD Screen Holder
- Frame to be double sided for 2 students to work on one station
- The following quantities for training parts are for a double-sided station (The list must not be duplicated.)
- 2 x Hydraulic power pack with a constant-displacement pump mounted on the frame
 - External gear motor with pressure relief valve adjustable from 0 – 6 MPa (0 – 60 bar)
 - Operating pressure: 6 MPa (60 bar)
 - Motor: 230Vac, 650 watt single-phase with overload protection, and ON/OFF switch
 - Delivery rate 2.5 litres per minute
 - Tank volume 5 litres, with temperature display, drain screw
 - Self-sealing coupling nipples for P and T
 - Plug socket for unpressurized return
 - Connecting flange for measuring container return



- 2 x 24V Power Supply
- 2 x E-Stop Safety Module fitted with safety relay
- 2 x 24V and OV Distribution Module
- 2 x Hydraulic tube holder
- 2 x Banana Plug cable holder

Equipment for Basic Hydraulic Training

- 2 x Pressure Relief valve
- 2 x 2-Way Flow Control valve
- 2 x 1-Way Flow Control valve
- 2 x Non return valve, Delockable
- 2 x Non return valve, 6 bar Opening pressure
- 2 x 4/2 Way hand lever valve, spring return
- 2 x 4/3 Way hand lever valve, relieving mid position
- 2 x 4/3 Way hand lever valve closed mid-position
- 2 x Shutoff valve
- 2 x Differential cylinder 16/10/200 with cover and mounting kit
- 2 x Weight – 9Kg
- 2 x Hydraulic motor
- 2 x T Distributor
- 2 x 4 Way distributor with pressure gauge
- 6 x Pressure Gauges
- 2 x Flow sensor

Equipment for Advanced Hydraulic Training

- 2 x Pressure relief valve, compensated
- 2 x 3 Way pressure reducing valve
- 2 x Flow dividing valve
- 2 x 2/2 Way stem actuated valve, convertible
- 6 x Non return valve, 6 bar opening pressure
- 2 x Diaphragm accumulator with shutoff block
- 2 x Differential cylinder 16/10/200 with cover and mounting kit
- 10 x T distributor

Equipment for Electrohydraulic Training

- 2 x Pressure relief valve
- 2 x 2 Way flow control valve
- 2 x 1 Way flow control valve
- 2 x Non return valve, 6Bar opening pressure
- 2 x 4/2 Way solenoid valve 24Vdc, spring return
- 2 x 4/3 Way solenoid valve, closed mid position
- 2 x 4/3 Way double solenoid valve, detenting
- 2 x Shutoff valve
- 2 x Weight 9Kg
- 4 x Differential cylinder 16/10/200 with cover and mounting kit
- 4 x T Distributor
- 4 x 4 Way Distributor with pressure gauge
- 4 x Pressure gauges
- 2 x Electronic pressure switch



- 4 x Relays
- 2 x Signal input electrical
- 2 x Limit switch, electrical, left activated
- 2 x Limit switch, electrical, right activated
- 4 x Proximity Sensor M12
- 2 x Timer relay
- 2 x Preset electronic counter
- 2 x 4/3 Way solenoid valve, relieving mid-position
- 2 x Proximity Sensor, inductive type M12

Equipment for Proportional Training

- 2 x Relay Control box for frame
- 2 x Proportional amplifier
- 2 x Set point card
- 2 x Signal input box for frame
- 4 x Proximity sensor, inductive M12
- 2 x 4/3 Way proportional valve
- 2 x 4/2 Ay solenoid valve, spring return
- 2 x Proportional pressure relief valve
- 2 x Pressure filter
- 2 x pressure balance (Proportional flow control valve)

Additional equipment required:

- 2 x All in one PC with swivel arm mounting on the frame with the following specifications:
 - Intel Core i5
 - 16 Mb RAM
 - 512 Gb SSD drive
 - 21" Touch Screen Resolution 1920x1080
 - Full size keyboard and mouse
 - Network adaptor and USB ports
 - Blue Tooth
 - Webcam
 - Microsoft Windows 11 Professional 64-bit operating system
- 20 x red 50 mm 4mm Banana plug lead (safety type)
- 20 x blue 50 mm 4mm Banana plug lead (safety type)
- 16 x black 50 mm 4mm Banana plug lead (safety type)
- 16 x red 300 mm 4mm Banana plug lead (safety type)
- 16 x blue 300 mm 4mm Banana plug lead (safety type)
- 36 x black 300 mm 4mm Banana plug lead (safety type)
- 16 x red 500 mm 4mm Banana plug lead (safety type)
- 16 x blue 500 mm 4mm Banana plug lead (safety type)
- 36 x black 500 mm 4mm Banana plug lead (safety type)
- 4 x red 1000 mm 4mm Banana plug lead (safety type)
- 6 x blue 1000 mm 4mm Banana plug lead (safety type)
- 4 x black 1000 mm 4mm Banana plug lead (safety type)
- 2 x red 1500 mm 4mm Banana plug lead (safety type)
- 2 x blue 1500 mm 4mm Banana plug lead (safety type)
- 2 x black 1500 mm 4mm Banana plug lead (safety type)

H



- 14 x Hydraulic hose with QRC 600mm
- 6 x Hydraulic hose with QRC 1000mm
- 4 x Hydraulic hose with QRC 1500mm
- Curriculum content to be developed together with EMC

D. Technology Training Desk

EXAMPLE	QUANTITY REQUIRED
	1x Technology Training Desk
Technology Training Desk For the teaching of automation and control devices including PLC programming. Frame <u>Dimensions (l x b x h) : 2000 x 680 x 1900mm</u> 32mm Formica Folkstone Grey top Basic 3 tier frame to hold A4 sized modules. Frame to be manufactured from aluminum profile. A4 Module frame holding size (3 tier) Desktop size and height L = 2000mm H = 1mm W = 500mm Frame to house the following equipment on the side of the frame 3 Phase 380 Volt supply fitted with 10A RCBO device with 4mm safety banana plugs output connections 1 Phase 220 Volt supply fitted with 10A RCBO device with 4mm safety banana plugs and 6 x IEC C13 sockets 1 x 24V 5A power supply with 4mm banana plug sockets 1 x 3 Phase isolator 1 x 5V 1A power supply with 4mm banana plug sockets 1 x +15 -15 Volt 800mA Power Supply with 4mm Banana plug sockets 1 x 0 to 10 V process Indicator 1 x 0 to 20mA process Indicator	



To be supplied with the following A4 training modules

All inputs and outputs where possible must be connected via 4mm safety banana plugs

1. Light Curtain (Transmitter and receiver mounted to different modules) IFM OY051S 160mm CAT.
Module size Transmitter 297mm x 150mm
Receiver 297mm x 280mm
2. E Stop + Safety relay (PNOZ X1).
Module Size 297mm x 280mm
3. Push Buttons x 4 Push to make Spring return (1 x NO + 1 x NC contact).
Module size 297mm x 150mm
4. Push Buttons x 4 Push to make - Push to Release (1 x NO + 1 x NC contact).
Module size 297mm x 150mm
5. Selector Switches x 4 (1 x NO + 1 x NC contact).
Module size 297mm x 150mm
6. Like "Siemens" HMI 7 " KTP700 with Profinet and USB port.
Module Size 297mm x 280mm
7. Like "Siemens" PLC S7-1212C DC/DC/DC with 8 Digital Inputs, 6 Digital Outputs (6ES7212-1AE40-0XB0, Add On Modules: Digital I/O 8 Inputs, 8 Outputs Module (6ES7223-1BH32-0XB0), Analog Module (6ES7234-4HE32-0XB0).
Module size 297mm x 550mm
8. Like "Siemens" PLC S7-1511-1PN (6ES7511-1CK01-0AB0) with 16 Input and 16 Output module, 5 Analog inputs, 2 Analog outputs.
Module size 297mm x 550mm
9. Two Hand Control with 2 x ABB Push Balls and Safety Relay.
Module Size 297mm x 280mm
10. Contactors 24 V x 3 with 2 x NO contacts and 2 x NC contacts on each contactor. Module Size 297mm x 280mm
11. 24 V relays x 2 (Finder relays 24Vdc 60.12.9.024.0040).
Module size 297mm x 150mm
12. Single lane bridge PLC application module for PLC training Single Lane bridge Traffic signal to control flow of vehicles crossing the bridge. Vehicle counters to be fitted on all lanes entering and exiting the bridge. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.



Module Size 297mm x 280mm

13. Traffic control PLC application module for PLC training. T junction configuration. Traffic signals to control the flow of traffic. To include pedestrian crossing on all lanes. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.
Module Size 297mm x 280mm.

14. Profinet I/O link master IFM AL1100.
Module size 297mm x 150mm

15. Temperature sensor I/O link IFM TA2105.
Module size 297mm x 150mm

16. Distance sensor I/O link IFM OSD150.
Module Size 297mm x 280mm

17. Ethernet switch Siemens 8 Port (6GK5008-0BA10-1AB2).
Module size 297mm x 150mm

18. Residual circuit breaker 3 phase 25 Amp Sensitivity 30mA.
Module size 297mm x 150mm

19. Timers 2 x Multi-function timers GIC 1CMDTO.
Module size 297mm x 150mm

20. 22mm Indicator Lamps 24V dc x 5 (red, orange, green, blue, white).
Module size 297mm x 150mm

21. Motor overload switch 3 phase 0.45 to 0.63 Amps Siemens 3RV2011-0GA20.
Module size 297mm x 150mm

22. Rotary encoder (Sick 1024 PPR) (incremental type) To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.
Module size 297mm x 150mm

23. Tower light I/O link TLF100P3AKQP 3 segments.
Module size 297mm x 150mm

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24. Stepper motor - Stepper motor size NEMA 17 with driver, ball screw, linear guide and limit switches for over travel. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.
25. VSD Drive 220 Volt single phase supply for 3 phase 0.18 Kw motor (Motor to be supplied) Schnieder Drive ATV320U02M2C.
Module Size 297mm x 280mm
26. Magnetic coded safety switch IFM MN503S.
Module size 297mm x 150mm
27. Linear displacement transducer (resistive) PK-M-0100 L000X000X00.
Module Size 297mm x 280mm
28. Proximity Sensors (capacitive, magnetic, ferrous metals)
Module Size 297mm x 280mm
29. Angle gauge Accustar 02111002-000 with analog output.
Module size 297mm x 150mm

Banana plug leads:

- 60 x 300mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 500mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 1000mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 1500mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)

20 RED 19mm Jumper

20 BLUE 19mm Jumper

- 1 x 24Mb memory card for S7-1511 PLC
- 2 x Electric motor single phase capacitor start 0.18kw 4 pole 230v foot mount
- 2 x Electric motor single phase capacitor run 0.18kw 4 pole 230v foot mount
- 2 x Electric motor single phase capacitor start/run 0.18kw 4 pole 230v foot mount
- 2 x 3 phase Electric braked foot mount 0.37kw 4 pole
- 2 x Slip ring motor 0.27kw 400v 4 pole, Excitation voltage 95v

All motor connections to be terminated with 4mm colour coded safety banana plugs.

Motor is to be attached to an extruded aluminium profile with rubber feet.

Motor shaft is to be enclosed.

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Annexure A: Mandatory Requirements

Description of Appendix	Requirement	Circle yes if submitted	
		Yes	No
RFQ Document	Submission of a detailed and signed quotation	Yes	No
Technical specifications and pricing	Pricing according to the technical specification	Yes	No
Proof of Bank Account	Signed letter from the Bank (not older than 3 Months)	Yes	No
Company registration documents	Supply Company registration documents	Yes	No
Tax PIN	PIN Status certificate	Yes	No
BBBEE certification	A valid BBBEE certificate / An original Sworn-In Affidavit	Yes	No
Declaration of Interest	SBD 4 SBD 6.1 SBD 6.2 SBD 8 SBD 9	Yes	No
CSD	Supply proof of registration with the National Treasury	Yes	No
ID Copy of Company's director(s)	Supply with certified copy of IDs	Yes	No
Complete and sign the official document	Request for proposal form to be completed, signed and email back	Yes	No
Eligible Companies	OEM's or authorised resellers or distributors. Must provide signed letter that you are an authorised reseller/distributor of the product in South Africa	Yes	No



higher education
& training
Department
Higher Education and Training
REPUBLIC OF SOUTH AFRICA



Eastcape
Midlands
TVET College

creating new futures

Costing Proposal	Detail quote separating Labour from Equipment costs	Yes	No
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AA

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Interim Chairperson: Dr O van Heerden | Principal: CJ van Heerden

Annexure B: Functional criteria

Electronic Training Desk

Functional/Technical criteria	Weighting	0	5	7	10
Specifications Frame - Dimensions (l x b x h) : 1800 x 1330 x 800mm 32mm Formica Folkstone Grey top : 1710 x 800mm - Extruded aluminium frame with instrument and AIO PC holder fitted with Electrical panel Isolator, overload breaker and RCB. Storage cabinet mounted below the desk. Equipment - Equipped with the following Test Equipment mounted in the frame: 1 x Digital Oscilloscope (Supplied with probes) 2 channels - 100 MHz analog channel bandwidth - Sampling rate up to 1 GSa/s 8M memory depth - Vertical range 2mV/div ~ 10V/div - Vertical resolution: 8bit 1 x Dual Power supply 0 to 30 Volts 3Aamp with CC and CV mode 1 x Signal Generator - Frequency range: 1µHz - 40MHz 300MSa/s sampling rate 16-bit vertical resolution 4.3-inch colour TFT LCD screen - Modulation: AM, DSB - AM, FM, PM, ASK, FSK and PSK, BPSK, QPSK, 3 FSK, 4 FSK, OSK and PWM, etc. 1µHz frequency resolution 1 x Digital Multimeter 4 1/2 Digits Bench-Type Digital Multimeter	50%	Meeting none of the specifications	Meets <50% of the machine specifications	Meets > 50% of the specifications, but not all	Meets all of the specifications

3.5 inch (480x320) high resolution LCD 55000 counts, DC voltage accuracy up to 0.05% - Up to 60 readings per second - True RMS AC voltage / current measurement			
1 x LCR Meter 5 Digit Basic Accuracy 0.1% - Range L 0.001µH - 9999H - Range C 0.001pF - 9999µF - Range R 0.0001Ω - 99.99MΩ			
1 x CPl-C070WR4C (7" Industrial Raspberry Pi Touch Panel PC) With CM4 Fitted with I/O breakout board.			
1 x All In one PC swivel mounted on the frame with the following specification: - Intel Core i5 16 Mb RAM 512 Gb SSD drive 21" Touch Screen Resolution 1920x1080 - Full size keyboard and mouse - Network adaptor and USB ports - Blue Tooth - Webcam - Microsoft Windows 11 Professional 64-bit operating system			
Supplied with the following equipment: 1 x Temperature controlled solder extractor and soldering iron - Vacuum and blower operation - Temperature control of solder extractor with display - Temperature control of Soldering Iron with display - Safe for use on static sensitive components - Vane-type vacuum pump - Connection for optional air output - Twin spring safety holder with cleaning sponge - Clog-resistant desoldering handpiece with glass tube to collect solder - Vacuum - 268 mbar (22"Hg), Flow Rate 1,54m³/hour(0,91CFM)			

- o Temp. Range - Solder Extractor 200°C~450°C, Soldering Iron 200°C to 420°C • 1 x SMD hot air rework station 700 watt supplied with 3 different size air nozzles. • 1 x 115mm Diagonal side cutter • 1 x Bent nose precision plier approx. 30mm x 10mm at 58 degrees • 1 x Precision 7-piece screwdriver set • 1 x Hex key set folding 1.5mm to 10mm • 1 x Torx bit folding set (T9 to T40) • 1 x Network crimping tool RJ11 – RJ12 – RJ45 1 x Screwdriver set 6 - piece • 1 x Bread board approx. size 200mm x 75mm • 1 x Manual solder sucker • 1 Hot air gun 200watt • 1 x Long nose plier 115mm • 1 x Junior hacksaw • 1 x Mini PCB vice • 1 x Scriber • 1 x 300mm Steel rules • 1 x Logic Probe • 1 x Wire stripper • 1 x Resistor decade box 1 ohm to 11.111 Mohm 0.5 watt • 1 x Capacitance decade box 100pF to 11.111 uF • 1 x Digital Trainer with the following specification: - Solderless breadboard - Variable DC power - o Positive output voltage: 0 - +15V±10% - o Negative output voltage: 0 - -15V±10% - o Maximum output current: 300 mA - Fixed power supply - o Positive output voltage: +5V±10% Maximum output current: 1Amp - o All DC power supplies with short circuit protection • Function generator - o Frequency ranges (6 ranges): 0.1Hz - 200 KHz				
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- o Sine wave output: 0 - 5 Vpp 10% variable
 - o Triangle wave output: 0 - 5Vpp 10% variable
 - o Square wave output: 0 - 15 Vpp 10% variable
 - o TTL mode output: +5V 10%
 - Digital voltmeter
 - o 3½ digits LED display
 - o 0 - 19.99V full scale
 - o Input Impedance: 10Mohm
 - Universal counter
 - o Frequency range: 1Hz - 99.999999MHz
 - o Period range 0.01us - 99999999us
 - o Input signal: TTL or CMOS level
 - o 8-digit 7-segment LED display
 - 8 x buffered LED displays
 - 8 x data switches
 - 2 x function switches
 - 2 x pulse switches
- Supplied with the following kits and consumables:**
- 1 x NE5532 Stereo preamplifier module
 - 1 x Audio Amplifier (Discrete components)
 - 1 x AM-FM transistorised radio
 - 1 x 4 Channel running light generator
 - 1 x Car alarm Kit (voltage drop method)
 - 30 x Arduino starter kit UNO R3 latest Rev with shields
 - 5 x Roll solder wire 0.9mm 60/40 500 gram
 - 5 x Veroboard 300mm x 100mm
 - 1 x Metal Film Resistors 2600pcs 130 Values 1/4W -1% in enclosure
 - 50 x Crocodile leads 22mm x 300mm
 - 100 pcs 120mm length jumper cable for breadboard
 - 20 pcs 150mm length jumper cable for breadboard
 - 10 pcs 200mm length jumper cable for breadboard
 - 10 pcs 240mm length jumper cable for breadboard
 - 1 x Heat shrink kit 1.5 to 5mm

Technical Capability	40%	No experience or capability are demonstrated	Limited experience and capabilities demonstrated	NA	Relevant capabilities and experience are demonstrated
Concept Design Provide a concept design of the training desk through a CAD drawing or rendering. This should provide the evaluator with a view of how the equipment is going to look like once completed.	10%	No design	Poor design	NA	Good design

Pneumatic Training Desk

Functional/Technical criteria	Weighting	0	5	7	10
Frame - Dimensions (l x b x h) : 1800 x 800 x 1820mm 32mm Formica Folkstone Grey top: 1800 x 800mm 1 x Extruded Frame with Module Rack and LCD Screen Holder (Double Sided) - Frame to be double sided for 2 students to work on one station - The following quantities for training parts are for a double-sided station (The list must not be duplicated.) - No compressor required Frame to be supplied with the following modules and equipment: 2 x 24V Power Supply 240W (1 on each side) Frame mounted 2 x E-Stop Safety Module fitted with safety relay (1 on each side) Frame mounted 2 x 24V and OV Distribution Module (1 on each side) Frame mounted 2 x Banana Plug cable holder (1 on each side) Frame mounted 4 x Signal Input, electrical Frame mounted 4 x Relay, three-fold Frame mounted 2 x Time relay, two-fold Frame mounted 2 x Preset counter, electronic Frame mounted Equipment for basic pneumatic training: 4 x 3/2-way valve with pushbutton actuator, normally closed 2 x 3/2-way valve with pushbutton actuator, normally open	50%	Meeting none of the specifications	Meets <50% of the machine specifications	Meets > 50% of the specifications, but not all	Meets all of the specifications

- 2 x 5/2-way valve with selector switch
- 2 x 3/2-way valve with selector switch, normally closed
- 4 x 3/2-way roller lever valve, normally closed
- 4 x Proximity sensor, pneumatic, with cylinder attachment
- 2 x Pneumatic timer, normally closed
- 2 x Pressure sequence valve
- 2 x 3/2-way valve, pneumatically actuated at one end
- 2 x 5/2-way valve, pneumatically actuated at one end
- 6 x 5/2-way double pilot valve, pneumatically actuated at both ends
- 2 x Shuttle valve (OR)
- 4 x Dual-pressure valve (AND)
- 2 x Quick-exhaust valve
- 4 x One-way flow control valve
- 2 x Single-acting cylinder
- 2 x Double-acting cylinder
- 2 x Start-up valve with filter control valve
- 2 x Pressure regulator valve with gauge
- 4 x Pressure gauge
- 2 x Manifold
- 4 x Plastic tubing, 4 x 0.75 Blue 10 m
- 4 x Plastic tubing, 4 x 0.75 Red 10 m

Equipment set for advanced pneumatic training:

- 4 x 3/2-way valve with pushbutton actuator, normally closed
- 2 x 3/2-way valve with mushroom-head emergency switch, normally open
- 2 x 3/2-way roller lever valve with idle return, normally closed
- 2 x Back pressure valve
- 8 x 3/2-way valve, pneumatically actuated at one end
- 4 x 5/2-way double pilot valve, pneumatically actuated at both ends
- 4 x Plastic tubing, 4 x 0.75 silver 10 m
- 8 x Shuttle valve (OR)
- 6 x Dual-pressure valve (AND)
- 2 x Pneumatic timer, normally open
- 2 x Pneumatic preset counter
- 2 x Stepper module

- 4 x One-way flow control valve
 - 4 x non-return valve, delockable
 - 4 x Double-acting cylinder
- Equipment set for Basic Electropneumatic Training:**
- 2 x Limit switch, electrical, left-actuated
 - 2 x Limit switch, electrical, right-actuated
 - 2 x Proximity sensor, optical, M12
 - 4 x Proximity sensor, electronic, with cylinder mounting
 - 4 x 3/2-way solenoid valve with LED, normally closed
 - 2 x 5/2-way solenoid valve with LED
 - 4 x 5/2-way double solenoid valve with LED
 - 2 x Pressure sensor with display
 - 8 x One-way flow control valve
 - 2 x Single-acting cylinder
 - 4 x Double-acting cylinder
 - 2 x Start-up valve with filter control valve
 - 2 x Manifold
 - 2 x Plastic tubing, 4 x 0.75 Blue 10 m
 - 2 x Plastic tubing, 4 x 0.75 Blue 10 m

Equipment set for Advanced Electropneumatic Training:

- 2 x Proximity sensor, inductive, M12
- 2 x Proximity sensor, capacitive, M12
- 2 x Valve terminal with 4 valve slices (MMU)
- 4 x Non-return valve, delockable

Equipment set for Vacuum Technology:

- 2x Air pressure reservoir, 0.4 litre
- 2x Pressure switch, 0 --1 bar
- 2x Vacuum gauge
- 2x Flow control valve
- 2x Vacuum generator, type H
- 2x Vacuum generator, type L
- 2x Non-return valve
- 2x non-return valve, delockable
- 2x Suction gripper 20 SN
- 2x Suction gripper 30 SN



• 2x Suction gripper 20 SS • 2x Suction gripper 30 SS • 4x Suction gripper 20 CS with vacuum security valve • 2x Suction gripper 4x20 ON Equipment set for PLC Training: PLC must be able to mount into frame 2 x PLC with the following base specifications: • Working memory 100Kb, CPU processing time 0.085us/instruction, Supply Voltage 24Vdc, Retentive data area 10Kb, with RTC • Digital Inputs 14 (6 x High speed counting) + 8 via add on card (22 Inputs) - o Digital Outputs transistor 10 (4 x High Speed with 100Khz pulse train output) - o + 8 via add on card (18 Outputs) - o Analog Inputs 2 (Voltage 0 to +10V) - o Analog Outputs 2 (10 Bit resolution) - o Interface – Profinet and 1 x RS232 port via an add on card Equipment set for Sensors and Transducers Training: With brackets to mount in extruded slots on the frame • 2 x Inductive Proximity Sensor 18mm Barrel Sn = 8mm PNP NO • 2 x Magnetic Sensor Sn = 60mm PNP NO • 2 x Ultrasonic Sensor with 1 to 10V output Sn 40 to 500mm • 2 x Diffused Reflection sensor 200mm IO link PNP • 2 x Retro reflective Sensor 4m IO link with reflector • 2 x Tru Beam Transmitter PNP • 2 x Tru Beam Receiver PNP • 2 x Incremental Encoder • 2 x Temperature Transmitter -50 to 150°C • 2 X LVDT with 0 to 10V output 0 to 200mm • 2 x 4 Port IO link master Additional equipment required: • 2 x All in one PC with swivel arm mounting on the frame with the following specifications:					
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- o Intel Core i5 - o 16 Mb RAM - o 512 Gb SSD drive - o 21" Touch Screen Resolution 1920x1080 - o Full size keyboard and mouse - o Network adaptor and USB ports - o Blue Tooth - o Webcam - o Microsoft Windows 11 Professional 64-bit operating system				
Connectors: • 20 x red 50 mm 4mm Banana plug lead (safety type) • 20 x blue 50 mm 4mm Banana plug lead (safety type) • 16 x black 50 mm 4mm Banana plug lead (safety type) • 16 x red 300 mm 4mm Banana plug lead (safety type) • 16 x blue 300 mm 4mm Banana plug lead (safety type) • 36 x black 300 mm 4mm Banana plug lead (safety type) • 16 x red 500 mm 4mm Banana plug lead (safety type) • 16 x blue 500 mm 4mm Banana plug lead (safety type) • 36 x black 500 mm 4mm Banana plug lead (safety type) • 4 x red 1000 mm 4mm Banana plug lead (safety type) • 6 x blue 1000 mm 4mm Banana plug lead (safety type) • 4 x black 1000 mm 4mm Banana plug lead (safety type) • 2 x red 1500 mm 4mm Banana plug lead (safety type) • 2 x blue 1500 mm 4mm Banana plug lead (safety type) • 2 x black 1500 mm 4mm Banana plug lead (safety type)				
Curriculum to be developed together with EMC.				

AA

Technical Capability	40%	No experience or capability are demonstrated	Limited experience and capabilities demonstrated	NA	Relevant capabilities and experience are demonstrated
Concept Design Organisation should demonstrate experience in constructing similar equipment, providing case studies or references for similar projects. Provide a concept design of the training desk through a CAD drawing or rendering. This should provide the evaluator with a view of how the equipment is going to look like once completed.	10%	No design	Poor design	NA	Good design

Hydraulic Training Desk

Functional/Technical criteria	Weighting	0	5	7	10
Frame - Dimensions (l x b x h) : 1800 x 800 x 1820mm 32mm Formica Folkstone Grey top: 1800x 800mm 1 x Extruded Frame with Module Rack and LCD Screen Holder - Frame to be double sided for 2 students to work on one station - The following quantities for training parts are for a double-sided station (The list must not be duplicated.) 2 x Hydraulic power pack with a constant-displacement pump mounted on the frame - External gear motor with pressure relief valve adjustable from 0 – 6 MPa (0 – 60 bar) - Operating pressure: 6 MPa (60 bar) - Motor: 230Vac, 650 watt single-phase with overload protection, and ON/OFF switch - Delivery rate 2.5 litres per minute - Tank volume 5 litres, with temperature display, drain screw - Self-sealing coupling nipples for P and T - Plug socket for unpressurized return - Connecting flange for measuring container return 2 x 24V Power Supply 2 x E-Stop Safety Module fitted with safety relay 2 x 24V and OV Distribution Module 2 x Hydraulic tube holder 2 x Banana Plug cable holder	50%	Meeting none of the specifications	Meets <50% of the machine specifications	Meets > 50% of the specifications, but not all	Meets all of the specifications



Equipment for Basic Hydraulic Training • 2 x Pressure Relief valve • 2 x 2-Way Flow Control valve • 2 x 1-Way Flow Control valve • 2 x Non return valve, Delockable • 2 x Non return valve, 6 bar Opening pressure • 2 x 4/2 Way hand lever valve, spring return • 2 x 4/3 Way hand lever valve, relieving mid position • 2 x 4/3 Way hand lever valve closed mid-position • 2 x Shutoff valve • 2 x Differential cylinder 16/10/200 with cover and mounting kit • 2 x Weight – 9Kg • 2 x Hydraulic motor • 2 x T Distributor • 2 x 4 Way distributor with pressure gauge • 6 x Pressure Gauges • 2 x Flow sensor Equipment for Advanced Hydraulic Training • 2 x Pressure relief valve, compensated • 2 x 3 Way pressure reducing valve • 2 x Flow dividing valve • 2 x 2/2 Way stem actuated valve, convertible • 6 x Non return valve, 6 bar opening pressure • 2 x Diaphragm accumulator with shutoff block • 2 x Differential cylinder 16/10/200 with cover and mounting kit • 10 x T distributor Equipment for Electrohydraulic Training • 2 x Pressure relief valve • 2 x 2 Way flow control valve • 2 x 1 Way flow control valve • 2 x Non return valve, 6Bar opening pressure • 2 x 4/2 Way solenoid valve 24Vdc, spring return • 2 x 4/3 Way solenoid valve, closed mid position • 2 x 4/3 Way double solenoid valve, detenting • 2 x Shutoff valve					
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- 2 x Weight 9Kg
- 4 x Differential cylinder 16/10/200 with cover and mounting kit
- 4 x T Distributor
- 4 x 4 Way Distributor with pressure gauge
- 4 x Pressure gauges
- 2 x Electronic pressure switch
- 4 x Relays
- 2 x Signal input electrical
- 2 x Limit switch, electrical, left activated
- 2 x Limit switch, electrical, right activated
- 4 x Proximity Sensor M12
- 2 x Timer relay
- 2 x Preset electronic counter
- 2 x 4/3 Way solenoid valve, relieving mid-position
- 2 x Proximity Sensor, inductive type M12

Equipment for Proportional Training

- 2 x Relay Control box for frame
- 2 x Proportional amplifier
- 2 x Set point card
- 2 x Signal input box for frame
- 4 x Proximity sensor, inductive M12
- 2 x 4/3 Way proportional valve
- 2 x 4/2 Ay solenoid valve, spring return
- 2 x Proportional pressure relief valve
- 2 x Pressure filter
- 2 x pressure balance (Proportional flow control valve)

Additional equipment required:

- 2 x All in one PC with swivel arm mounting on the frame with the following specifications:
 - Intel Core i5
 - 16 Mb RAM
 - 512 Gb SSD drive
 - 21" Touch Screen Resolution 1920x1080
 - Full size keyboard and mouse
 - Network adaptor and USB ports
 - Blue Tooth

- o Webcam
- o Microsoft Windows 11 Professional 64-bit operating system
 - 20 x red 50 mm 4mm Banana plug lead (safety type)
 - 20 x blue 50 mm 4mm Banana plug lead (safety type)
 - 16 x black 50 mm 4mm Banana plug lead (safety type)
 - 16 x red 300 mm 4mm Banana plug lead (safety type)
 - 16 x blue 300 mm 4mm Banana plug lead (safety type)
 - 36 x black 300 mm 4mm Banana plug lead (safety type)
 - 16 x red 500 mm 4mm Banana plug lead (safety type)
 - 16 x blue 500 mm 4mm Banana plug lead (safety type)
 - 36 x black 500 mm 4mm Banana plug lead (safety type)
 - 4 x red 1000 mm 4mm Banana plug lead (safety type)
 - 6 x blue 1000 mm 4mm Banana plug lead (safety type)
 - 4 x black 1000 mm 4mm Banana plug lead (safety type)
 - 2 x red 1500 mm 4mm Banana plug lead (safety type)
 - 2 x blue 1500 mm 4mm Banana plug lead (safety type)
 - 2 x black 1500 mm 4mm Banana plug lead (safety type)
 - 14 x Hydraulic hose with QRC 600mm
 - 6 x Hydraulic hose with QRC 1000mm
 - 4 x Hydraulic hose with QRC 1500mm
- Curriculum content to be developed together with EMC

Technical Capability Organisation should demonstrate experience in constructing similar equipment, providing case studies or references for similar projects.	40%	No experience or capability are demonstrated	Limited experience and capabilities demonstrated	NA	Relevant capabilities and experience are demonstrated
Concept Design Provide a concept design of the training desk through a CAD drawing or rendering. This should provide the evaluator with a view of how the equipment is going to look like once completed.	10%	No design	Poor design	NA	Good design

Technology Training Desk

Functional/Technical criteria	Weighting	0	5	7	10
Frame - Dimensions (l x b x h) : 2000 x 680 x 1900mm 32mm Formica Folkstone Grey top - Basic 3 tier frame to hold A4 sized modules. Frame to be manufactured from aluminum profile. - A4 Module frame holding size (3 tier) - Desktop size and height L = 2000mm H = 1mm W = 500mm - Frame to house the following equipment on the side of the frame 3 Phase 380 Volt supply fitted with 10A RCBO device with 4mm safety banana plugs output connections 1 Phase 220 Volt supply fitted with 10A RCBO device with 4mm safety banana plugs and 6 x IEC C13 sockets 1 x 24V 5A power supply with 4mm banana plug sockets 1 x 3 Phase isolator 1 x 5V 1A power supply with 4mm banana plug sockets 1 x +15 -15 Volt 800mA Power Supply with 4mm Banana plug sockets 1 x 0 to 10 V process Indicator 1 x 0 to 20mA process Indicator	50%	Meeting none of the specifications	Meets <50% of the machine specifications	Meets > 50% of the specifications, but not all	Meets all of the specifications

To be supplied with the following A4 training modules



- All inputs and outputs where possible must be connected via 4mm safety banana plugs

1. Light Curtain (Transmitter and receiver mounted to different modules) IFM OY051S 160mm CAT Module size Transmitter 297mm x 150mm Receiver 297mm x 280mm
2. E Stop + Safety relay (PNOZ X1) Module Size 297mm x 280mm
3. Push Buttons x 4 Push to make Spring return (1 x NO + 1 x NC contact) Module size 297mm x 150mm
4. Push Buttons x 4 Push to make - Push to Release (1 x NO + 1 x NC contact) Module size 297mm x 150mm
5. Selector Switches x 4 (1 x NO + 1 x NC contact) Module size 297mm x 150mm
6. Like "Siemens HMI 7" KTP700" with Profinet and USB port Module Size 297mm x 280mm
7. Like "Siemens PLC S7-1212C" DC/DC/DC with 8 Digital Inputs, 6 Digital Outputs (6ES7212-1AE40-0XB0, Add On Modules: Digital I/O 8 Inputs, 8 Outputs Module (6ES7223-1BH32-0XB0), Analog Module (6ES7234-4HE32-0XB0) Module size 297mm x 550mm
8. Like "Siemens PLC S7-1511-1PN" (6ES7511-1CK01-0AB0) with 16 Input and 16 Output module, 5 Analog inputs, 2 Analog outputs. Module size 297mm x 550mm
9. Two Hand Control with 2 x ABB Push Balls and Safety Relay Module Size 297mm x 280mm



10. Contactors 24 V x 3 with 2 x NO contacts and 2 x NC contacts on each contactor Module Size 297mm x 280mm					
11. 24 V relays x 2 (Finder relays 24Vdc 60.12.9.024.0040) Module size 297mm x 150mm					
12. Single lane bridge PLC application module for PLC training Single Lane bridge Traffic signal to control flow of vehicles crossing the bridge. Vehicle counters to be fitted on all lanes entering and exiting the bridge. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module. Module Size 297mm x 280mm					
13. Traffic control PLC application module for PLC training. T junction configuration. Traffic signals to control the flow of traffic. To include pedestrian crossing on all lanes. Module Size 297mm x 280mm. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.					
14. Profinet I/O link master IFM AL1100 Module size 297mm x 150mm					
15. Temperature sensor I/O link IFM TA2105 Module size 297mm x 150mm					
16. Distance sensor I/O link IFM O5D150 Module Size 297mm x 280mm					
17. Ethernet switch Siemens 8 Port (6GK5008-0BA10-1AB2) Module size 297mm x 150mm					
18. Residual circuit breaker 3 phase 25 Amp Sensitivity 30mA Module size 297mm x 150mm					
19. Timers 2 x Multi-function timers GIC 1CMDTO Module size 297mm x 150mm					

20. 22mm Indicator Lamps 24V dc x 5 (red, orange, green, blue, white) Module size 297mm x 150mm
21. Motor overload switch 3 phase 0.45 to 0.63 Amps Siemens 3RV2011-0GA20 Module size 297mm x 150mm
22. Rotary encoder (Sick 1024 PPR) (incremental type) To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module. Module size 297mm x 150mm
23. Tower light I/O link TLF100P3AKQP 3 segments Module size 297mm x 150mm
24. Stepper motor - Stepper motor size NEMA 17 with driver, ball screw, linear guide and limit switches for over travel. To be able to interface into PLC S7-1212C and PLC S7-1511-1PN module.
25. VSD Drive 220 Volt single phase supply for 3 phase 0.18 Kw motor (Motor to be supplied) Schnieder Drive ATV320U02M2C Module Size 297mm x 280mm
26. Magnetic coded safety switch IFM MNE03S Module size 297mm x 150mm
27. Linear displacement transducer (resistive) PK-M-0100 L000X00X00 Module Size 297mm x 280mm
28. Proximity Sensors (capacitive, magnetic, ferrous metals) Module Size 297mm x 280mm
29. Angle gauge Accustar 02111002-000 with analog output. Module size 297mm x 150mm

20mm plug leads:

- 60 x 300mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 500mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 1000mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 60 x 1500mm 4mm Safety socket on each end (Black x 20 , Red x 20, Blue x 20)
- 20 RED 19mm Jumper
- 20 BLUE 19mm Jumper
- 1 x 24Mb memory card for S7-1511 PLC
- 1 x 24Mb memory card for S7-1511 PLC
- 2 x Electric motor single phase capacitor start 0.18kw 4 pole 230v foot mount
- 2 x Electric motor single phase capacitor run 0.18kw 4 pole 230v foot mount
- 2 x Electric motor single phase capacitor start/run 0.18kw 4 pole 230v foot mount
- 2 x 3 phase Electric braked footmount 0.37kw 4 pole
- 2 x Slip ring motor 0.27kw 400v 4 pole, Excitation voltage 95v
- All motor connections to be terminated with 4mm colour coded safety banana plugs.
- Motor is to be attached to an extruded aluminium profile with rubber feet.
- Motor shaft is to be enclosed.

Technical Capability Organisation should demonstrate experience in constructing similar equipment, providing case studies or references for similar projects. <u>Concept Design</u> Provide a concept design of the training desk through a CAD drawing or rendering. This should provide the evaluator with a view of how the equipment is going to look like once completed.	40%	No experience or capability are demonstrated No design	Limited experience and capabilities demonstrated Poor design	NA	Relevant capabilities and experience are demonstrated Good design
	10%			NA	