



SALIENT FEATURES

1. Useful for **STEM** based education. Will prepare students for their careers using multi technology enabled training system consisting of - electropneumatic, mechanical, electronic controls, Automation, sensor technology, electrical motors, production engineering, PLC programming, robotics (optional) etc.
2. Mass production technique of a simulated auto component is split into **4 stations**, each of which can be individually programmed/operated/trained.
3. Industrial quality equipment makes students feel like they are actually training in real industrial setting so that students are better prepared for the entire scope of the technologies they will encounter.
4. Working with various mechanisms & hardware by students using 4mm patch cords.
5. Provided curriculum helps to teach troubleshooting with organized problem-solving methods & changing PLC programs etc.
6. Optionally Industry 4.0 compatible FMS with SCADA (Wincc) for cloud based MIS & HMI for smart factory demonstration, PC (Win10 or better) not in scope of supply..

Technical Specifications

A) Need One **TMS-PLC** trainer with 40 IOs , easy connectivity through set of D connector cable

B) **FMS** stations:

Parameters	Station1	Station2	Station3	Station4
Name	Feeding	Inline QC	Stamping, Pick & place & indexing	Dispatch
Function	Mixed round work pieces are stored in vertical transparent storage bin and fed one by one into production line. 7mm metal - 10nos. 10mm metal - 4 nos. 7mm plastic - 5 nos.	As the work pieces are moved on the conveyor, plastic, over height work pieces are separated from correct size metal pieces & rejected.	Each work piece is stamped, picked using vacuum suction and transferred to inline 6 position RTU or rotary storage bin & passed on to despatch line.	Work piece is transferred to long conveyor waiting to be dispatched to storage bin either manually or using 6 axis robot (optional)..
Sensors		• PNP, 24vdc operated photo reflective Proximity 1No. For over height detection. • PNP, 24vdc operated Inductive proximity 1no. for metal detection. • PNP, 24vdc operated Capacitive proximity 1 No for plastic detection.	• PNP, 24vdc operated Inductive proximity 2nos to detect presence of work piece. • 16 position absolute encoder.	• PNP, 24vdc operated Inductive proximity for work piece detection 2 Nos at 2 ends of conveyor • PNP, 24vdc operated Inductive proximity 1 no below RTU 3rd position.

Parameters	Station1	Station2	Station3	Station4
Control devices	• 5/2 way single Solenoid valve 24Vdc operated, 2 nos.	• 5/2 way single Solenoid valve 24Vdc operated, 2 nos.	• 5/2 way double Solenoid valve 24Vdc operated, 1no. , • 3/2 way single Solenoid valve 24Vdc operated, 1no.	• 5/2 way double Solenoid valve 24Vdc operated, 1no to control DSR located on station 3.
Actuators	• Double acting Cylinders- 2 nos, stroke length - 50mm, Dia- 12mm	• 1 ph. AC Sync motor 60rpm, flange mounted • Double acting Cylinders- 2 nos, stroke length - 50mm, Dia- 12mm	• Swing Cylinder: Swing angle 90°, dia: - 40mm, Stroke : 50mm, 1 nos. • DSR (Semi rotary) cylinder 1 no. With settable swivel angle 0-180 degree & cushioning angle 1.6 degree, • Vacuum generator & gripper (Suction Cup), 1 no.	• 1 ph. AC Sync motor, 60rpm, flange mounted • Signal Tower 1no, 4 colors + 1 sound
Material Handling system	• Work piece transparent storage bin with dia-43mm, height-100mm,	• Conveyor belt size 490x137x112mm, • slider plate (chute) to guide work piece from one station to another, • Reject part Storage bin 2nos,	• Rotary transfer unit (RTU): Rotating disc of 170mm dia. Can hold 6 work pieces, position F/B using absolute rotary encoder. • Stamping Pad ,	• Conveyor belt size 490x137x112mm, • End bin for overflow of jobs. • slider plate (chute) to guide work piece from one station to another,
Panels used	• PLC IO distribution panel - EMT62/1 (BS5 - 4nos.) • 9 pin D (F)- 1no..	• PLC IO distribution panel - EMT62/2 (BS5 - 8nos.). • 9 pin D (F)- 1no.	• PLC IO distribution panel - EMT62/3 (BS5 - 14nos.). • 9 pin D (F)- 2no.	• PLC IO distribution panel - EMT62/4 (BS5 - 10nos.). • Signal tower (ST) for annunciation • 9 pin D (F)- 2no.
Air distribution & manual control	• FRL unit with pressure gauge (set for 6 bars) & output control ball valve, • 4 way manifold with self sealing QRC,	• 4 way manifold with self sealing QRC,	• 4 way manifold with self sealing QRC,	-
Net / gross weight	• Net wt = 9 kg • Gross wt = 10kg	• Net wt = 13 kg • Gross wt = 14kg	• Net wt = 11 kg • Gross wt = 12kg	• Net wt = 12 kg • Gross wt = 13kg
Mechanical Dimensions	• Individual stations Mounted on profile plates of 500x350 mm joined together lengthwise using 2 nos. of long (4 screw) T nuts, laid out on 2 meter table top, • Optionally 4 floor standing profile tables mounted setup may be provided.			
Accessories	• Compressor (Optional): single phase, 6-8 bars, 3 CFM with QRC socket PU 6x4 tube. • 4mm Patch cords set. • D connector cable set - 37 pin D(1), 9 pin D (7), 15 pin D (1). • SW & IG manuals - 1no for FMS & 2nos for XPO-PLC (refer XPO-PLC leaflet)			
List of experiments	• Working with station pneumatics • Working with FMS. • Optional: Working with Industry 4.0 compatible FMS with SCADA for cloud based MIS & HMI for smart factory demonstration. Order SCADA & HMI separately (PC is not in scope of supply).			