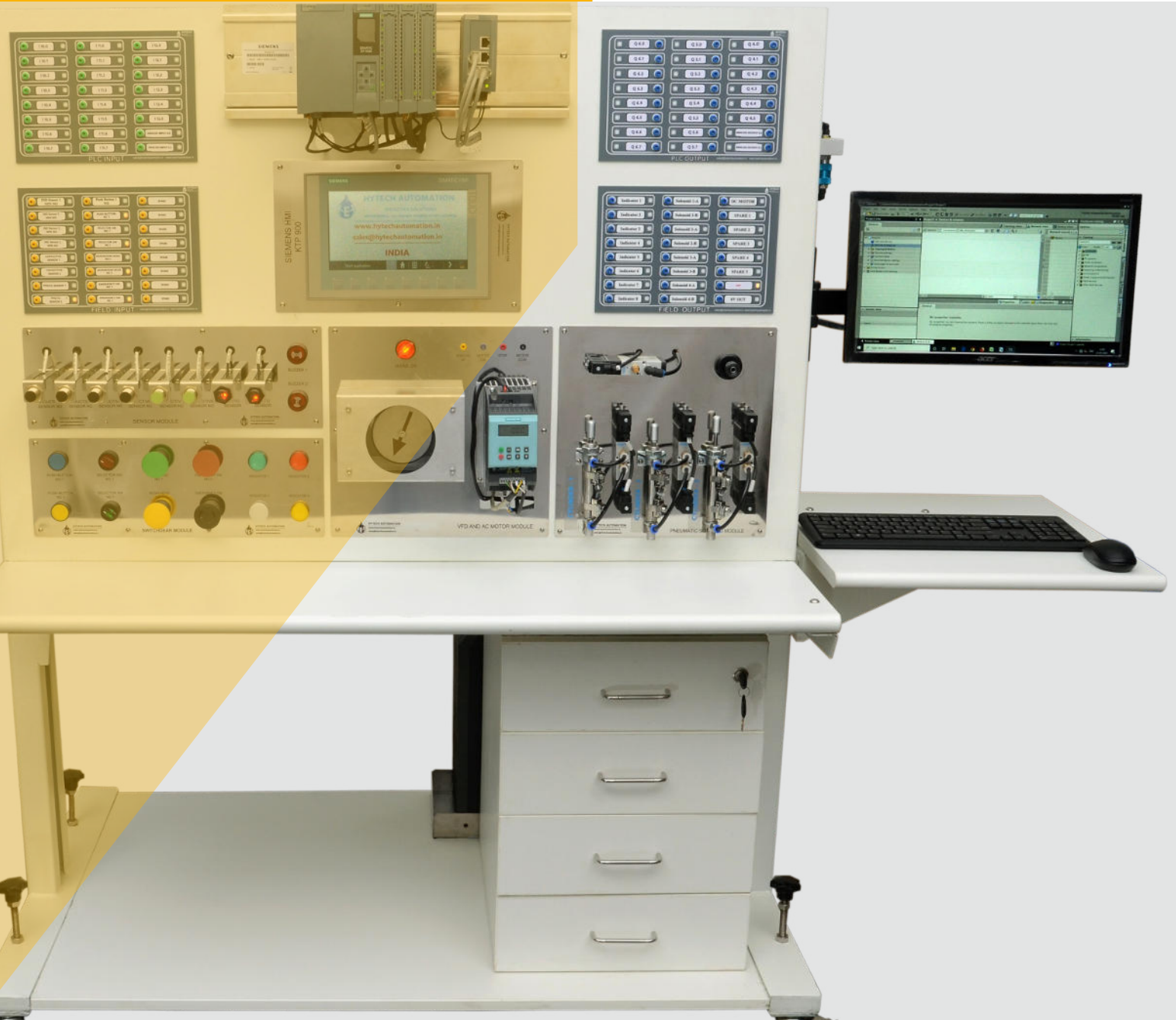


# PLC & HMI Training Kit

## HYTECH

Since 1992

[www.hytechautomation.in](http://www.hytechautomation.in)



'Hytech PLC and HMI Training Kits' are designed to provide hands on experience on industrial applications of PLC and HMI. Static as well as Dynamic automation modules make sure that students can operate most of the industrial automation components in integration with PLC, HMI and computer workstations.

# PLC & HMI TRAINING KIT



**PLC-HMI Training kit** is a fully equipped workstation with INPUT and OUTPUT Field as well as PLC modules providing necessary ease in operating complex PLCs as well as HMIs.

Various static and dynamic modules expose users to various advantages of different makes and models of PLCs. Most of the commonly used industrial automation components such as servo motors, stepper motors, external encoders, sensors, pneumatic solenoid valves, etc are ergonomically mounted on the training kits for efficient operation and ladder /screen design.



## PLC – HMI KITS



### PLC – HMI TRAINING KIT (PH ADVANCE)

PH Advance is a floor mounted training kit equipped with workstation and suitable for higher end (advance) PLC and HMI such as Siemens S7 1200 / S7 1500, Mitsubishi Q series, etc. Dedicated arrangement for high speed outputs as well as analog inputs and outputs is provided in this kit. This is a mobile unit equipped with Caster wheels with brakes as well as stationery mounting arrangement. Arrangement for pneumatic compressor mounting is also provided.



### PLC – HMI TRAINING KIT (PH BASIC)

PH Basic is a table top training kit with holding arrangement. This training kit is suitable for entry level PLCs such as Siemens S7 200 Smart, Mitsubishi FX series etc. Limited number of dynamic as well as static automation modules can be integrated with this training kit. External workstation can be connected to the training kit through Ethernet switch.



### INPUT AND OUTPUT MODULES

There are four input / output modules in each Hytech PLC – HMI Training kit. First is PLC input module. This module is connected with PLC inputs. This module consists of 24 inputs, each of which is provided with override button. With this push button, user can manually override desired PLC input. Second is Field input module which is connected with field automation components with a 3 pin connector. This module has connections for 24 field input devices. Use of three pin connector makes it very easy to maintain as well as understand electrical connections. Third is PLC output module with 24 connections. First 8 connections are dedicated for high speed outputs as well as analog outputs and next 16 connections are provided with surface mounted relays. Fourth module is field output module which has 24 connections connected to field output devices through 3 pin connectors.



# DYNAMIC AUTOMATION MODULES



## ■ PNEUMATIC SOLENOID VALVES AND CYLINDERS MODULE

Basic concept of this module is to provide hands on experience on Solenoid and pneumatic cylinder operations with reed switch feedback from PLC and HMI. Users can carry out various sequencing, timer as well as counter based applications with this module. Solenoid valves are one of the most popular as well as commonly used industrial automation devices. Necessary pneumatic accessories such as pneumatic junction box, PU tube, push pull connectors as well as necessary spares are provided along with

## ■ VFD AND AC MOTOR MODULE

This module works on analog output from PLC which controls the AC Induction motor operation. This is again a very commonly used application in industry which can also be demonstrated as well as integrated with HMI. Handheld RPM indicator is provided as an optional accessory. This module can be operated with digital PLC output as well as analog PLC output.



## ■ TEMPERATURE CONTROL MODULE



This module works in integration with PLC and HMI. Digital output from PLC is used to activate the module and the output from RTD is used as an analog input to PLC. With efficient calibration, temperature can be indicated on the HMI. Separate display device is also provided on the module to indicate the actual temperature.

## ■ SWITCHGEAR MODULE

This module is provided along with every PLC – HMI training kit. This module consists of various types of push buttons as well as switches which can be used as input devices. Indicators as well as buzzers are used as output devices.



## ■ SENSOR MODULE



This module consists of various types of sensors which provide inputs to PLC. This module consists of Photosensors, inductive sensors, capacitive sensors. Analog proximity sensors are also available (Optional) which provide analog output.

## ■ AC MOTOR AND ENCODER MODULE

This module is designed to provide hands on experience on External encoder with feedback to PLC and HMI. Participants can determine the RPM of motor and represent the same on HMI. Three high speed outputs from External encoder are to be connected to high speed inputs of PLC. AC Motor is provided which is operated on 230V AC +/- 10%. Gear box (In line) is provided along with AC Motor to reduce the speed.



## ■ SERVO MOTOR MODULE



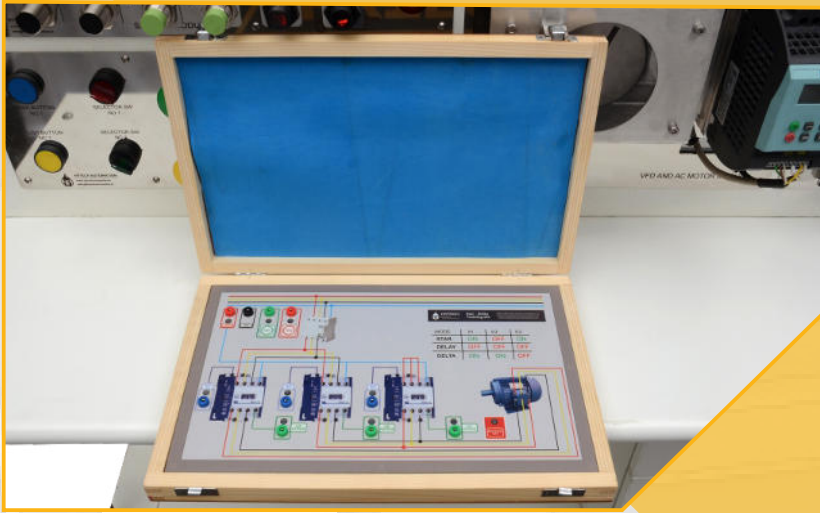
This module consists of a Servo Motor, Servo Drive, Encoder cable and power cable. Servo motor provided is a low inertia motor which runs on 230V AC supply. This module can also be used as a separate module for Servo motor training. Generally, this module is mounted on a PLC kit for the ease of use as well as operation. High speed inputs are required to operate this module which are provided and indicated on PLC o/p module.

## ■ STEPPER MOTOR MODULE

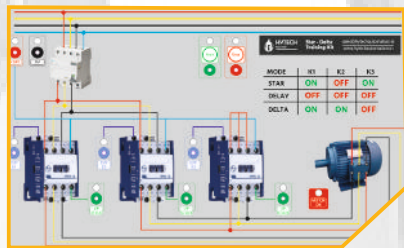
This module consists of stepper motor, stepper drive and necessary cables. This module can be operated in integration with PLC and HMI and can be used as an individual unit for stepper motor training.



# STATIC AUTOMATION MODULES



Static Automation modules are provided to expose users to actual industrial applications of PLC and HMI. These static automation modules represent various industrial processes which can be operated in integration with PLC and HMI. Banana connections are provided on static automation modules for PLC input and output connections. Depending on the user's requirement, various static modules are supplied along with PLC – HMI training kits.

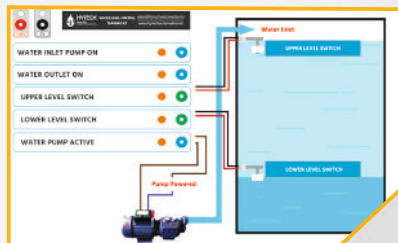


## Star Delta Module for AC Induction Motor Operation

This module is used for Star and Delta connection of AC Induction motor. User can represent this entire operation on HMI as well. K1, K2 and K3 connections for each contactor are provided as outputs auxiliary contacts of each contactor are provided as inputs. Motor indication is provided as PLC output.

## Traffic Signal Operation

This module makes use of both counter as well as timer applications of PLC. Each traffic signal light is controlled with PLC output. Start and stop signals act as PLC inputs. This module can be operated in synchronization with HMI for better understanding.

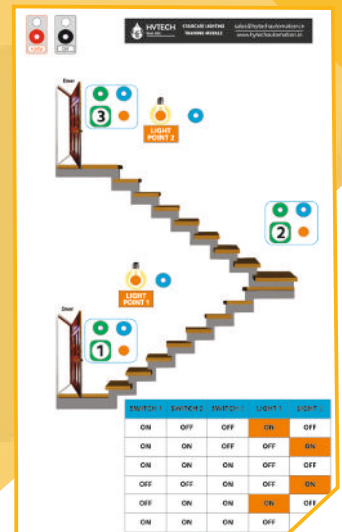


## Water Level Controller

This module makes use of timer application. Pump power and water outlet are used as an PLC outputs whereas Lower Level Switch, Upper Level Switch, Water Outlet ON, Pump ACTIVE are used as an PLC inputs.

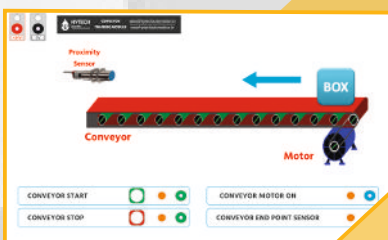
## Staircase Lighting

In this module, each floor is provided with latchable input switch which acts as a light switch for each floor. Each light is represented by an LEDs which are activated from PLC outputs. User can make use of timers as well as counters to represent automation.



## Elevator Operation

This module represents exact model of elevator with four floors. Elevator module has cabin call switches as inputs to PLCs and their indications as PLC outputs. Floor call switches also act as PLC inputs and lift arrival indication LEDs act as PLC outputs.



## Conveyor Operation

This module represents basic conveyor operation with start and stop overrides. Conveyor Motor ON is used as an PLC output whereas conveyor start / Stop and sensor signals are used as PLC inputs.