PLC FAULTS DIAGNOSIS UNIT

Supplied with loop calibrator 4-20mA

ref. PLC-DIAG

PLC-DIAG is a setup for producing faults at different points on an automation wiring frame. Fault searches are produced around a Schneider® type M221 programmable logic controller (PLC). The faults are selected by the instructor using the switches located under a rear flap of the setup. For user safety, the circuit voltage does not exceed 24VAC. Students can take measurements or perform tests in complete safety, regardless of the fault type.
Power supply 230VAC by 3m cable and mains plug 2P+E safely behind a panel.
Setup supplied wired and fully operational. Supporting material on CD includes the teaching file with Student/Instructor practical works and examples of PLC programs.

EDUCATIONAL OBJECTIVES

- ***To understand the wiring of a programmable logic controller (PLC)***
- ***To load a program into a PLC with Ethernet connection.***
- ***To simulate the most frequent faults on an automation installation with analogue signal.***
- ***To analyse and interpret the results***

TEACHING RESOURCES WITH PRACTICAL WORKS

Practical works

- Identification of the different components and production of electrical diagrams.
- Loading a PLC program on USB and Ethernet with SoMachine basic software.
- Viewing of the PLC input/output states on the SoMachine basic software.
- Finding the different faults on the circuit using measuring devices.

DESCRIPTION OF THE FAULTS

- Switches 1 to 4:
  Fault creation on 4 INPUTS of the PLC
- Switches 5 to 8:
  Fault creation on 4 OUTPUTS of the PLC
- Switch 9:
  Fault creation on the signal 4-20mA at the PLC input.
- Switch 10:
  Fault creation on the signal 0-10V at the PLC output.

Composition of the system

- 1 frame on wheels (two with brake) with dimensions H1800 x 800 x 700mm
- 1 melamine shelf 750x400mm
- 1 wiring frame equipped with:
  - 1 two-pole fuse protection device
  - 1 PLC Schneider® M221-14I /100 relays, Ethernet with analogue card 4-20mA.
  - 2 contactors
  - 1 analog Input / Output interface box (4-20mA / 0 to 10V) to PLC
- 1 PVC panel including:
  - 1 emergency stop button
  - 1 On/Off button with indicator
  - 2 On pushbuttons
  - 1 Off pushbutton
  - 3 white indicators - 3 green indicators - 1 red indicator
  - 1 emergency stop for the instructor.

  All the connections of the indicators and pushbuttons are made to industrial terminals flush with the panel. Students can then very easily, using probes, read the voltage or check the circuits.
- 1 unit closed with flap containing:
  - 10 switches for creating faults (see faults description)
  - 1 main switch
  - 1 RC thermal-magnetic circuit-breaker 30mA-16A
  - 1 bipolar circuit breaker protection for 24Vac circuit
  - 1 key operated switch with indicator for applying power to the wiring frame
- 1 loop calibrator 4-20mA (supplied) for generating at the PLC input a signal of 4-20mA.