

# pH CONTROL

## Mod. pHCBp/EV (PLC on-board)

This bench top unit consists of a stirred reactor that is fed with an acid solution by a metering pump. Controlling the flow rate of another metering pump that sends basic solution into the reactor will enable to control the pH inside the reactor.

The on-board PLC includes a PID algorithm block and is able to manage the unit through an Ethernet communications module. This module allows the PLC to work together with an operator panel for the information exchange. The panel has several graphic pages, with the unit synoptic diagram, the open and closed control loop main parameters, and the graphic of the system response according to the working situations.

### TRAINING PROGRAM:

This unit enables to develop and analyze the following subjects:

- Proportional, Integral and Derivative control
- Setup of controllers
- Response and characteristics of the process
- Determining dead time
- Tuning the controller
- Calibrating a pH-meter

### TECHNICAL SPECIFICATIONS:

- Framework of AISI 304 stainless steel
- pH transmitter with range of 0-14 pH and 4-20 mA output
- 2 metering pumps with 4-20 mA input
- 2 tanks of AISI 316 stainless steel with capacity of 13 litres
- Tank of AISI 316 stainless steel with capacity of 26 litres
- Reactor of AISI 316 stainless steel with variable-speed (0-600 rpm) stirrer and capacity of 3 litres
- Piping and valves of AISI 316 stainless steel
- Switchboard of painted carbon steel with synoptic, ELCB and measuring terminals for input and output signals of the controller
- Industrial PLC placed in the electrical board, including the PID control block and Ethernet communications module. It is included the standard IEC 1131 61131 programming software.



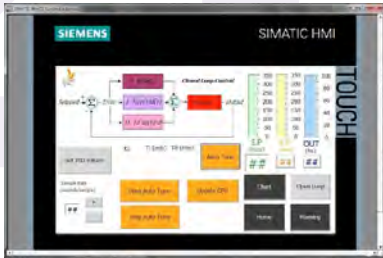
- Operator Panel, 7" TFT touchscreen display, 16 million colors, 800 x 480 pixels, with RJ45 PROFINET ports; the H.M.I (Human Machine Interface) industrial supervision software is included.

**Power Supply:** 230 Vac 50 Hz single-phase - 0.5 kVA  
(Other voltage and frequency on request)

**Dimensions:** 850 x 600 x 750 mm

**Net Weight:** 50 kg

Examples of the operator panel graphic pages:



**REQUIRED**

**UTILITIES (PROVIDED BY THE CUSTOMER)**

- Compressed air (female valve of 1/4"): 4 Nm<sup>3</sup>/h @ 6 bar max.
- Tap water (valve with 1/2" hose connector): 1000 l/h @ 2 bar max.
- Water drain

**ACCESSORIES (NOT INCLUDED)**

- Personal Computer running Windows 7 Professional (32 bit)

**SUPPLIED WITH**

**THEORETICAL-EXPERIMENTAL HANDBOOK**



**OPTIONAL**

**TWO-PEN RECORDER**

(it must be installed before shipment, not as upgrade)