3. Product description

3.1 Description

3.1.1 ECP controllers

The multifunction and multi-input ECP controllers simultaneously control multiple EC motors (or power slave units, motorized actuators) via a 0–10 V dc signal. Connected to transducers, sensors or a Modbus network, they can receive signals (pressures, temperatures, etc.) that, together with the set parameters, regulate motor speeds. A spray unit can also be connected to this control unit loop via an On/Off control relay.

3.1.2 Applications

ECP controllers are suitable for applications in HVAC/R environments with EC motors; for example, ventilated heat exchangers used in air conditioning and refrigeration systems.

3.1.3 Controls

There are two control outputs, one voltage to the EC motors and the other On/Off via the relay control to spray units.

The output regulation can be:

- **Slave proportional**: voltage output and relay control vary proportionally to the prevalent input value.
- **Master proportional**: voltage output and relay control vary to maintain the value of the prevalent input within the proportional band.
- **PID Master**: voltage output and relay control vary to keep the value of the prevalent input near the setpoint.

3.1.4 Setpoints and associated parameters

Two different regulation setpoints and two set of associated parameters are available. You can select one or the other setpoint, and its parameter set, using an On/Off input.

Within each set of parameters there is an additional setpoint and proportional band dedicated to signal regulation for slave units.

3.1.5 Inputs and outputs

The controller has two expandable analog inputs with expansion module and a relay output that can be used both to activate external alarm devices and to control external units (i.e. slave units, sprays).

Regulation may occur considering the only connected input or one of the two (the largest or the smallest). If you choose to use only one input, the other will remain visible from the display or from the Modbus protocol and can be connected, for example, to a probe.

3.1.6 Functions that can be activated with On/Off inputs

The following controls are possible via the On/Off inputs:

- start reverse mode: the output voltage decreases as the input increases
- motor heating activation
- start according to setpoint and relative set of parameters
- enabling night limit
- stop regulation signal
- motor thermal protection status reading (only with Modbus board, optional)

3.1.7 Default configurations

To facilitate installation, the ECP controller has 13 configurations that can be customized by editing a single parameter. There are configurations for Master or PID proportional control (temperature, pressure, current or voltage) and configurations for Slave proportional control (in current or in voltage).

3.1.8 Optional functions

The following are available upon request:

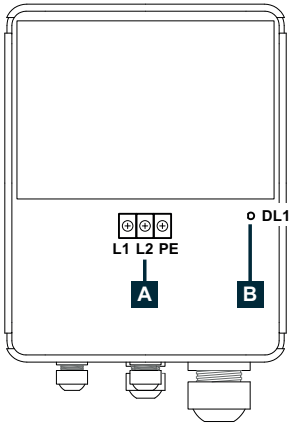
- an optional card to communicate with a supervision system via Modbus RTU RS-485 protocol

3.2 Presentation

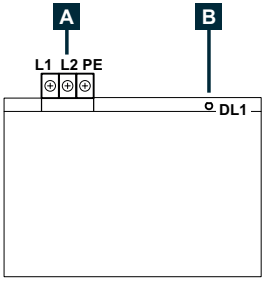
3.2.1 Power supply terminal board

The position of the power supply input terminal board depends on the model.

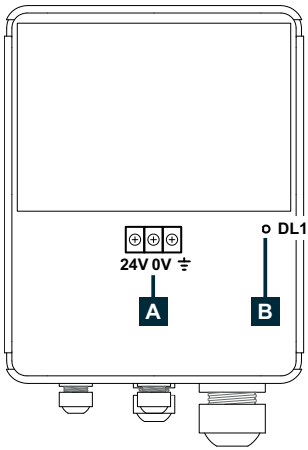
ECP 230–460 V IP55



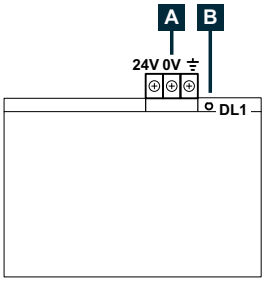
ECP 230–460 V IP00



ECP 20–24 V IP55

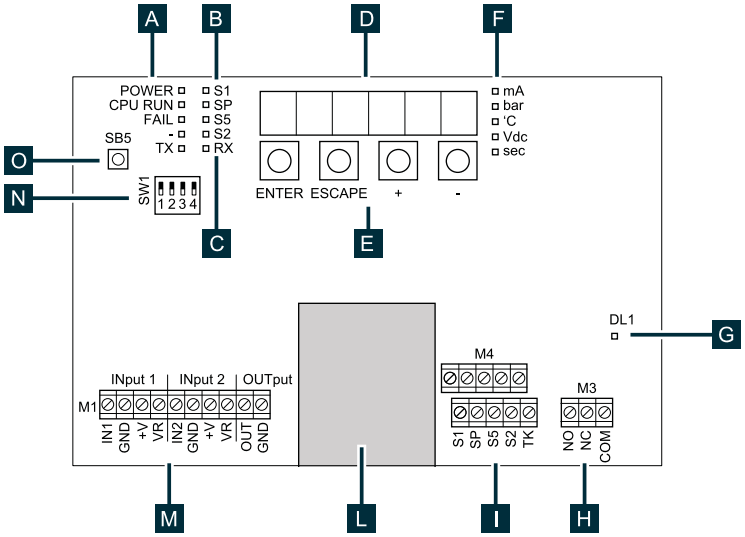


ECP 20–24 V IP00



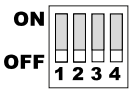
Part	Description	Reference in the manual
A	Power input terminal board.	"Power supply" on page 16
B	LED **DL1** presence of external power supply (230–460 V/20–24 V)	-

3.2.2 Main components



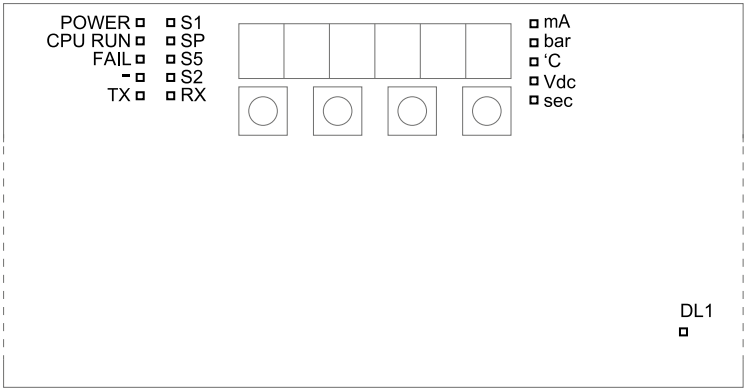
Part	Description	Reference in the manual
A	Device status LED.	"Status LED" on page 15
B	On/Off input LEDs active.	"On/Off inputs LED" on page 15
C	Modbus communication status LED (with optional Modbus card included)	"Modbus communication LED" on page 15
D	Display.	-
E	Keyboard to scroll parameters and set them.	"Programming display keyboard" on page 15
F	Unit of measure LED for the displayed value.	"Unit of measure LED" on page 15
G	LED **DL1** relay status.	"Relay status LED" on page 15
H	Terminal board M3 with relay output,	"Relay output" on page 19
I	Terminal board M4 for remote On/Off inputs or from motor overload protections.	"On/Off inputs" on page 18
L	Optional board for connection to supervisor via serial RS485-Modbus (RTU).	"Modbus card (PB1073C) - optional" on page 19
M	Terminal board M1 with analog inputs and analog regulation output.	"Analog inputs and outputs" on page 16
N	Reset button.	
O	DIP switch SW1 to turn functions on/off.	"DIP switch SW1" on page 14

3.2.3 DIP switch SW1



Switch	Function
1	Enables/disables reserved parameter editing ■ On: enables reserved parameter editing by expert users. **PArA**, **conF**, **conn** and **Pid** menus are available with all parameters editable. ■ Off: disables reserved parameter editing. Only basic parameters can be edited (visible after the "ProGra" message).
2	With regulation in PID mode, enters an area +/-2.5% on the PID proportional band around the setpoint (dead band) to avoid excessive regulation adjustments. ■ On: dead band on ■ Off: dead band off
3	Sets external overload protection alarm management for input **TK**. ■ On: with overload protection input **TK** = Off (contact open) the fan regulation will not stop, but **TK** input status can be read by the supervisor via RS485-Modbus (if applicable). Typical for installations with several fans. ■ Off: with overload protection **TK** = Off (contact open) puts regulation in stand-by and generates an alarm.
4	With Modbus card only. Defines the duration of non standard Modbus forcing received by the supervisor (Clima-Sinergy or third party). ■ On: the received control is kept until the next control that cancels/changes it or until the controller is turned off or reset. ■ Off: the received control is kept for no more than 10 minutes

3.2.4 LED overview



3.2.5 Status LED

Name	Description
POWER	Power on
CPU RUN	■ Blinking: micro controller running ■ Steady (on or off): micro-controller fault, contact SELPRO customer service
FAIL	One or more errors, check alarm message on the display
-	Non standard Modbus force control with effects on the controller

3.2.6 On/Off inputs LED

Name	Description
S1	Motor heating on/reverse mode on
SP	Setpoint 2 on ■ on: setpoint 2 on ■ off: setpoint 1 on
S5	Maximum night limit % RPM on ■ on: limit active ■ off: limit not active
S2	Regulation consent status: ■ on: regulation consent on ■ off: regulation consent off

3.2.7 Modbus communication LED

Name	Description
TX	Blinking: transmitting data.
RX	Blinking: receiving data.

3.2.8 Relay status LED

Name	Description
DL1	Alarm relay status/external unit control. ■ on: relay energized (closed between **COM**-**NO**) ■ off: relay at rest (closed between **COM**-**NC**)

3.2.9 Unit of measure LED

Name	Description
mA	The value displayed is expressed in milliamps.
bar	Value displayed expressed in bar.
'C	Value displayed expressed in degrees Celsius.
Vdc	Value displayed expressed in Vdc.
sec	Value displayed expressed in seconds.

3.2.10 Programming display keyboard

Key	Function
ENTER	Confirms the selection or saves new settings with the **ESCAPE** key.
ESCAPE	Cancels the selection. Saves the new settings with the **ENTER** key.
+	Increases the value read or scrolls the parameter list up.
-	Decreases the value read or scrolls the parameter list down.