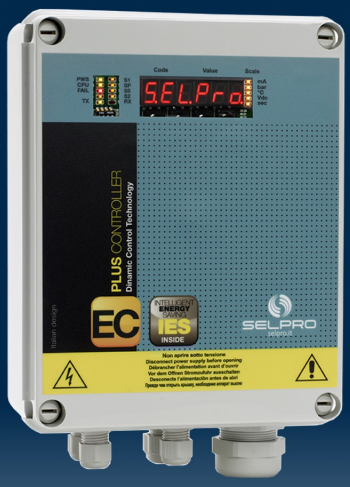
# ECP

## Digital controller with Wet & Dry system management for single-phase and three-phase EC fan motors




EC fans

Master

**ECP** is a **multifunction** digital controller designed for **precise** and **dynamic** management of EC motors in HVAC&R installations such as **dry coolers**, **remote condensers** and **fan grids**. Based on a **0–10 Vdc** control signal, it provides **smooth**, **continuous** and **optimised** proportional control, contributing to **energy savings** and reduced **component wear**.

Designed to operate in **Master** or **Slave** mode, **ECP** supports **direct** or **reverse** proportional control as well as **PID control**, ensuring **stable operating parameters** even under varying conditions. It is compatible with single-phase and three-phase EC motors, including certified **ebm-papst** and **Ziehl-Abegg** models.

The single **0–10 Vdc** control output, **short-circuit protected**, can drive up to **30 EC motors** with impedance ≥ **100 kΩ**, ensuring efficient management even in **complex systems**. The device features **two analogue inputs**, configurable as **4–20 mA**, **0–10 Vdc**, **0–5 Vdc** or **NTC 10 kΩ @ 25 °C**, with **automatic selection** of the **higher value** between the two signals.

**Operational flexibility and customisation:**

The controller provides **two analogue inputs** compatible with **0–20 mA**, **4–20 mA**, **0–10 Vdc**, **0–5 Vdc** and **NTC probes** (**–10 to +90 °C**), with **automatic selection** of the **highest value**. Two **independent parameter banks** can be configured to adapt operation to **two working conditions** (e.g. **summer/winter**, **day/night**). Auxiliary management is handled via **five on/off contacts** for functions such as **remote Start/Stop**, **TK protection**, **night limit**, **setpoint change** and **reverse mode**. The onboard **alarm relay** is **programmable** and can be characterised to switch an **adiabatic system** on and off, enabling full coordination between **ventilation** and **evaporative cooling**.

**Diagnostics and reliability:**

Optional **Modbus RTU** connectivity (via **optional plug-in module**) enables **BMS integration** and **remote monitoring** of operating parameters. Available as a **DIN-rail** version or for outdoor installation with **IP55 protection**.

## Supply voltage

Available options:

24 Vac ± 10%

230/460 Vac ± 10%

50/60 Hz:

Automatic

## Control output signal

0-10V

1-10V

Based on a **0(1)–10 Vdc** control signal, it ensures **smooth** and **optimised** proportional control, improving **energy efficiency** and reducing **motor wear**.

## Inputs

**2 Inputs**
For sensors and control signals

In master mode, the device provides two analogue inputs compatible with 4–20 mA pressure transducers, 0.5–4.5 V signals, or NTC temperature probes (–10 °C to +90 °C). In slave mode, it supports 0–10 V, 0–20 mA and 4–20 mA signals, ensuring versatile and accurate control.

0-20 mA | 4-20 mA | 0-10 V | 0-5 V | NTC -10/+90°C

## Modbus RS-485 (RTU) connection

Remote parameter monitoring and centralised supervision, facilitating BMS integration, slave via optional plug-in module.

Slave (optional Plug module)

## Control system

Proportional Master | Proportional Slave | Master PID

Supports Master proportional, Slave proportional and PID modes, operating in both direct and reverse mode. PID control provides automatic performance optimisation, keeping operating parameters stable even under varying conditions.

## Setpoints and operating profiles

**2 Setpoint**

**2 Banks**
Customisable parameters

Supports two independent setpoints and two customisable parameter banks, allowing definition of activation thresholds, dynamic speed limits, acceleration ramps and night limit management to match system requirements.

**Working parameters:**

Parameter bank for Setpoint 1 | Parameter bank for Setpoint 2

## Digital outputs

**1 Output**
Relay output

The controller includes a relay with configurable functions, enabling advanced customisation for alarm management or other auxiliary components.

## Digital inputs

**5 Inputs**
On/Off contacts

Five programmable auxiliary on/off contacts provide wide flexibility for functions such as remote Start/Stop, night speed limit, direct/reverse mode and activation of the second parameter bank.

- Remote Start/Stop
- Motor thermal contacts (TK)
- Night speed limit
- Direct/reverse mode
- Work-bank switch

## Adiabatic system management

ECP provides an on/off enable command for managing external adiabatic units

- On/Off enable command

## Options

- **Plug Modbus RTU**

## Technical specifications

| | |
|---|---|
| **Control input types** | 4–20 mA transducer, 0–5 Vdc transducer, NTC probe (–10/+90 °C) |
| **Interface** | Digital |
| **Electrical protections** | • Control input protection<br>• Mains overvoltage protection |
| **Protection ratings** | IP00 Din-rail<br>IP55 |
| **Applicable earthing systems** | Full compliance with international earthing standards IT / TT / TN |
| **Operating temperature** | -20°C / 50°C |
| **Weight (kg)** | 2,3 kg IP55<br>0,7 kg IP00 |
| **Dimensions (H×W×D) (mm)** | 254x249x107 IP55<br>120x170x70 IP00 |

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