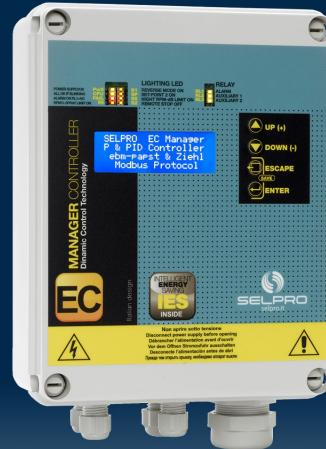


Digital Modbus controller with advanced Wet & Dry system management for single-phase and three-phase EC fan motors

 EC fans

 Master & Slave



EC-Manager is an advanced **electronic controller**, designed for **precise** and **dynamic** control of **EC motors** in HVAC&R applications such as **dry coolers**, **condensers**, **fan grids** and **air handling units**. Based on **Modbus RTU** communication, it ensures **continuous** and **uniform** control, **intelligent monitoring** and full integration with **BMS systems**.

It is **approved** by the main EC motor manufacturers, including **ebm-papst** and **Ziehl-Abegg**, ensuring full **compatibility** and **interoperability**. **Communication protocols** are always available and can be easily enabled via **switches**, simplifying **installation**, **commissioning** and **service**.

It manages up to **32 EC fans** across **247 addresses**, with direct **speed control** via **Modbus** and/or **0–10 Vdc analogue command**. Control is **quiet**, **progressive** and **optimised**, contributing to **energy savings** and **acoustic comfort**.

Operational flexibility and customisation:

It offers selectable operating modes including **Master PID**, **Master proportional** and **Slave proportional**, as well as **13 predefined configurations** for quick adaptation to different applications. It is possible to manage **2 independent setpoints** and **2 customisable parameter banks**, allowing tailored **limits**, **thresholds** and **dynamic behaviours**.

Intelligent management of adiabatic systems:

ECM is designed for advanced control of **wet & dry dry coolers**, activating **evaporative cooling** based on **temperature**, **humidity** or **scheduled time windows**, ensuring **efficient** and **coordinated** operation between **ventilation** and the **water-based system**.

Advanced diagnostics and reliability:

It includes an **event logger** with internal **real-time clock (RTC)** for **traceability** of **errors**, **states** and **operational transitions**. Available as a **DIN-rail** version or for outdoor installation with **IP55 protection**, it is designed to operate in **harsh environments** thanks to protection against **overvoltage**, **overload** and **EMC interference**.

EC-Manager is the complete solution for **efficient**, **reliable** and **intelligent** control of **EC motors** and **advanced cooling systems**.

Supply voltage

Available options:

50/60 Hz:

24 Vac

± 10%

230/460 Vac

± 10%

Automatic

Control output signal



0-10V



1-10V



Modbus

It manages up to **32 EC fans**, with direct **speed control** via **Modbus** and/or **0-10 Vdc analogue command**.

Inputs

3

Inputs

For sensors and control signals

The device provides **2 configurable analogue inputs** compatible with **4-20 mA** transducers, **0.5-4.5 V** signals and **NTC probes** (-10° / $+90^\circ\text{C}$); in **Slave mode**, it also accepts **0-10 V** and **0-20 mA**. An additional **analogue input** is provided for **special functions for reading and/or remote control**.

0-20 mA

4-20 mA

0-10 V

0-5 V

NTC $-15/+90^\circ\text{C}$

Modbus RS-485 (RTU) connection

The controller has a **dedicated input** for integration with **BMS systems** via **Modbus RTU slave connection**.

Slave

Control system



Proportional Master



Proportional Slave



Master PID

It supports **Master proportional**, **Slave proportional** and **PID** modes, operating in both **direct** and **reverse** mode, ensuring maximum **application flexibility**. **PID control** ensures **automatic optimisation**, keeping **operating parameters** constant even under varying conditions.

Setpoints and operating profiles

2

Setpoint

ECM provides **13 predefined configurations** for quick adaptation to different applications. It is possible to manage **2 independent setpoints** and **2 customisable parameter banks**, allowing tailored **limits**, thresholds and **dynamic behaviours**.

Working parameters:

2

Banks

Customisable parameters

Parameter bank for Setpoint 1

Parameter bank for Setpoint 2

Digital outputs

3 Outputs

Relay output

The controller is equipped with **three relays** with **configurable functions**, enabling advanced **customisation** for **alarm management** or for other **auxiliary components** such as **adiabatic system management**.

Digital inputs

6 Inputs

On/Off contacts

It features **6 programmable on/off contacts** with operating functions such as **remote Start/Stop**, **setpoint change**, **night limit**, **reverse mode**, **TK management** and **spray activation**.

Remote Start/Stop

Motor thermal contacts (TK)

Night speed limit

Direct/reverse mode

Work-bank switch

Fixed speed with spray

Auxiliary control outputs and adiabatic system management

Designed for advanced control of **adiabatic systems**, thanks to **1 programmable 0–10 Vdc output**, which can be used both to drive **slave devices** and for **proportional regulation** of the **adiabatic system**. It also provides an **on/off enable command** via **relay**, which can be activated based on **temperature**, **time bands** or defined **environmental thresholds**.

Proportional output 0(1)–10 Vdc

On/Off enable command

Certifications

Approved by the main EC motor manufacturers, including **ebm-papst** and **Ziehl-Abegg**, ensuring full **compatibility** and **interoperability**. **Communication protocols** are always available and can be easily enabled via **switches**, simplifying **installation**, **commissioning** and **service**.



Technical specifications

| | |
|------------------------------------|--|
| Control input types | 4–20 mA transducer, 0–5 Vdc transducer, NTC probe (-15 to +90 °C) |
| Interface | Digital |
| Electrical protections | <ul style="list-style-type: none"> Control input protection Mains overvoltage protection |
| Protection ratings | IP00 Din-rail IP55 |
| Applicable earthing systems | Full compliance with international earthing standards IT / TT / TN |
| Operating temperature | -20°C / 50°C |
| Weight (kg) | 1 kg IP00 2,2 kg IP55 |
| Dimensions (HxWxD) (mm) | 127x170x85 IP00 254x249x107 IP55 |



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