



The key factor in the management of ventilated heat exchangers

ECpro is the **new-generation control system** for the advanced management of **fan banks** equipped with **EC motors** and complex **adiabatic systems**.

Thanks to **expandable modules**, it can manage additional machine components and customized functions, offering maximum flexibility and scalability.

With its innovative and evolved interface, **ECpro** simplifies usability and supports the transition toward **high-efficiency digital solutions**, ready for **machine learning** and **digital connectivity**, fully aligned with the principles of the **Ecodesign Regulation (EU) 2024/1834**.



EC fans



Master
& Slave



ECPro is the most advanced solution for **ventilated heat exchanger** management, designed to meet the most sophisticated requirements of the **HVAC** sector. Its **specialized architecture** and **advanced software** ensure precise and uniform control over connected devices, in particular the **EC electronic fans** used in **HVAC&R** systems.

Based on more than **40 years of experience** in the industry, it is the **benchmark** for reliable **EC motor management** of **axial, radial** and **centrifugal fans**. It offers a **robust, versatile** and **fully configurable platform**, with over **16 predefined configurations** and numerous **customizable parameters**. Thanks to its high flexibility, it easily adapts to any type of system, including the most **complex configurations**. Settings can be easily saved and transferred, simplifying the management of multiple solutions and ventilating systems.

- **Automatic addressing and configuration:** automatically detects connected EC motors, assigning addresses without the need for manual intervention, reducing the risk of errors and configuration time.
- **Optimized for HVAC applications:** thanks to advanced algorithms, ECPro guarantees high performance in ventilated heat exchangers, ensuring seamless integration into **Wet & Dry systems**.
- **Operational flexibility:** advanced software allows high customization, adapting to the specific needs of each system.
- **Modular expandability:** designed to grow over time, it supports software upgrades and the integration of additional modules without compromising existing functionality.
- **Extensive compatibility:** compatible with the main **Modbus protocols**, ensuring seamless integration with EC motors from leading manufacturers. Manufacturer-approved functional and technical tests ensure reliable and efficient control.
- **Remote management:** thanks to compatibility with **Modbus RTU, Modbus TCP/IP** and **BACnet**, the system is ready for remote monitoring and control.
- **Optimized energy efficiency:** advanced control functions ensure that fans operate in the zone of maximum efficiency, reducing energy consumption and maximizing overall system performance with **4 independent PIDs**.

Thanks to its high adaptability, **ECPro** is the ideal solution for **HVAC machine builders** and **specialist technicians**. It ensures precise and customized control, enhancing the performance and functionality of advanced systems.

Work configurations

16 Customizable Configurations

ECpro has 16 dedicated programs with configurable master and slave modes, customizable reading scales and precise parametric conversions optimized for the most common refrigerant gases.



Setpoints and operating profiles

4 Setpoints

It offers advanced management with two independent operating profiles, each with dedicated setpoints and dynamic **Floating Set Points** to adapt to operating conditions. The three **0-10V analogue outputs**, configurable for **PI control**, allow precise and flexible fan speed control, with customizable **thresholds**, **two speed jumps** and special modes (**Spray**, **Heat Pump**, **night limit**).

This configuration guarantees maximum precision, operational safety and versatility in multi-circuit HVAC applications.

2 operating profiles with customizable parameters



Inputs

6 Inputs For sensors and signal commands

Equipped with 6 fully configurable analogue inputs, compatible with standard signals (**0-5 V**, **0-10 V**, **0-20 mA**, **4-20 mA**) and temperature sensors (**NTC**, **PTC**, **PT1000**), ensuring versatility and accuracy in handling different HVAC applications.

Analogue outputs

3 Independent Outputs

It has 3 independent analogue outputs, configurable in **Direct or Reverse** mode, with selectable range (**0-10 V** or **1-10 V**). These outputs can be associated with the three of four independent setpoints of the banks or used directly to adjust the speed of the motors, guaranteeing precision and maximum operating flexibility.

Digital Input

6 Configurable On/Off inputs

There are **6 fully programmable ON/OFF digital inputs**, configurable with open or closed active status, ideal for activating advanced HVAC system functions. Maximum operational flexibility and complete system control.

- Heat pump
- Remote Start/Stop
- Direct/Reverse Mode
- Fixed spray speed
- Night limit
- Winter mode
- Low-power fan mode activation
- Use IN 2
- Switch operating profiles
- Cooling washing mode
- Thermal stop

Digital Output

4 Relays Outputs

There are **4 configurable On/Off outputs** available via **changeover relays**, with selectable rest state (NO or NC) and programmable activation delay. They are ideal for controlling special functions and signaling critical events or alarms within the HVAC system.

- Error
- Error + Stop
- Error + Stop + Zero speed
- Warning
- Spray ON
- Safe slave status
- Threshold comparator 1
- Threshold comparator 2
- Ec fan moving
- Cooling washing ON

Motor Command Settings

Customizable Command

Advanced and customizable set of settings for **EC motor control**, with configurable parameters. Advanced options to adapt operation to the system's operational needs, guaranteeing continuity, protection and reduction of mechanical and energy stress.

- Cut-off / Min limit
- RPM Max limit
- Heat pump speed
- Acceleration/deceleration ramp
- Spray speed
- 2 Configurable RPM speed jumps
- Emergency management communication
- Speed limit at night (time or logical input)

EC Motor Management

6 integrated Protocols

ECPro provides complete and optimized management of **EC motors**, ensuring full compatibility with the major manufacturers' **protocols** (with the possibility of integrating others on request) and offering access to **advanced features** to maximize efficiency and operational reliability.

Ebm Papst

Ziehl Abegg

Hidria

Nicotra

Dunli

Selpro Modulo

+

Automatic Addressing



It automatically detects the connected EC motors, assigning addresses and programming the fans according to the selected protocol, without the need for manual intervention. This simplifies installation, reduces errors and optimizes set-up time.

Cable Break Detection



Automatic detection of any breaks and/or interruptions in communication cable connections.

Fan Blade Unlocking



Automatic release of the fan impeller in the presence of ice or snow accumulation, ensuring operational continuity even in critical environmental conditions.

Low capacity

Precise regulation of fan power with active management of individual EC motors to ensure maximum efficiency at low loads.

Automatic Cleaning

Cyclic activation of the exchanger coil cleaning functions in both Wet and Dry mode.

Winter Mode

Programmed motor start-up to prevent condensation and ensure optimum performance.



These functions must be provided for in the manufacturer's protocol

Monitoring & Control

RPM monitoring

Real-time monitoring of motor speed for accurate control.

Power Consumption

Monitoring the overall power (Watts) of the system and individual EC motors.

Motor Temperature

Temperature control of each EC motor to prevent overheating and increase reliability.

Alarms & Warnings

Detection and logging of critical alarms and alerts including vibration when available, with event histories.

Operating Hours & Predictive Maintenance

Counting the operating hours of each motor for predictive maintenance planning and optimization of service interventions.

Configuration Saving

2 Configurable Memories

It allows two customized configurations ('Customer' and 'End Customer') to be saved, with quick recall and no operational interruptions. Basic settings remain available at all times, facilitating maintenance, updates and ensuring security, reliability and business continuity.

Level Comparators

2 Independent Comparators

ECpro includes 2 independent and fully configurable level comparators for accurate monitoring of analogue signals and automatic activation of fans or relays.

Window Mode

It allows a **precise range** (upper and lower threshold) to be defined for **accurate control** of environmental parameters, **automatically activating** fans or relays when the **monitored** signal enters or leaves the set range.

Adjustable Thresholds

It allows **tailor-made operating limits** to be set to adapt the system to the specific needs of the plant.

Special Features



Dual Bank Split System

It manages two independent sets of fans and batteries, on the same system, working completely independently to control two separate circuits.



Dual Circuit Management of 2 fluids

It manages special machines with two circuits but only one ventilation system, optimizing regulation according to the configurations set on the controller for more precise and efficient management.



Bridge Central Interface

It centralizes **EC motor data** and manages communication with the **BMS**, reducing **polling times** and optimizing information transmission. The bridge function improves the efficiency of supervision and ensures more responsive and reliable control of the system.



Digital scroll Emerson Copeland

It integrates a dedicated algorithm, optimized for refrigeration systems with **Copeland Digital Scroll** compressors, which stabilizes refrigerant pressure and eliminates fluid fluctuations by dynamically adapting fan speed.



Safeguard Plant safety

It automatically shuts down the system in the presence of critical conditions, such as **overtemperature**, **overpressure** or damaging events, safeguarding motors and plant.



Fail safe Emergency Management

It ensures operational continuity and system safety by automatically activating **emergency modes** in the event of faults, anomalies or communication problems with EC motors, thanks to **three levels of protection** between BMS and controller, controller and fans, and fans themselves.



Protection Access Levels

ECpro features **three password-protected access levels**, allowing specific functions and menu sections to be enabled or restricted. This structure makes it possible to differentiate permissions between users, technicians, and manufacturers, ensuring secure management of critical configurations and preventing unauthorized changes to the system.



Test

Functional Testing

A dedicated function for functional system testing, allowing manual activation of commands to verify correct operation without needing the system to be running. This feature is ideal for preliminary checks, **quick diagnostics**, and installation setup.

Event Logger & Clock



Event Logger

Errors, Alarms, Warnings



RTC

Real time clock

Event logger for controller errors and warnings, fan errors, input On/Off state changes, output On/Off status, controller power-on and shutdown events, and timed logging of the controller's operating status.

With its internal timekeeping system, **ECpro** maintains accurate timestamps even in the absence of main power, ensuring continuity and precision in event recording during power interruptions.

Expansions



Expansions

Modules

ECpro is designed to adapt to complex HVAC systems with **expansion modules** that extend inputs, outputs and communication capabilities.

Integration is simple and secure, with **automatic address configuration** and customization of control logic for immediate and efficient installation.

ON/OFF Expansion

It expands ECpro's capabilities with **12 inputs** and **12 digital ON/OFF outputs** and **3 analogue 0–10 V inputs** and also provides **2 Modbus RTU RS485 lines** with configurable address for monitoring and control.

It allows multiple modules to be connected in series, further expanding the functionality of the system according to system requirements.

Modulo

The **patented auxiliary device** by Selpro that simplifies **Modbus** and transforms any system with **EC motors** into a fully digital solution. It converts analog signals into Modbus commands, enabling immediate installation, **automatic configuration**, and **smart data collection** — bringing truly accessible digital control to everyone.

Communication expansions

ECpro supports **Modbus RTU** for stable communication with industrial devices, while the **Modbus TCP/IP** and **BACnet TCP/IP** expansions enable Ethernet-based integration with BMS and advanced automation systems. This flexibility ensures maximum compatibility and scalability for modern HVAC installations.



Modbus TCP/IP



Bacnet TCP/IP



Custom Expansions

ECpro supports the integration of customised digital and analogue modules, expanding inputs, outputs and communication lines.

Upload, download and cloning of settings



I²C plug

I2C Communication

ECpro integrates an **I2C connection** via **USB-C** for fast and intuitive management of configurations and alarms. The plug-and-play interface enables loading and saving of system settings, alarm backup, and configuration cloning between devices, streamlining setup, maintenance, and diagnostics with maximum efficiency.

Communication Lines

COM 1

RS-485 Modbus RTU with option of isolated or non-isolated for EC fan control via Modbus

COM 2

RS-485 Modbus RTU isolated dedicated to BMS

COM 3

RS-485 Modbus RTU non-isolated for connection with remote display or remote control

COM 4

RS-485 Modbus RTU non-isolated for ON/OFF expansions and adiabatic controller

COM 5

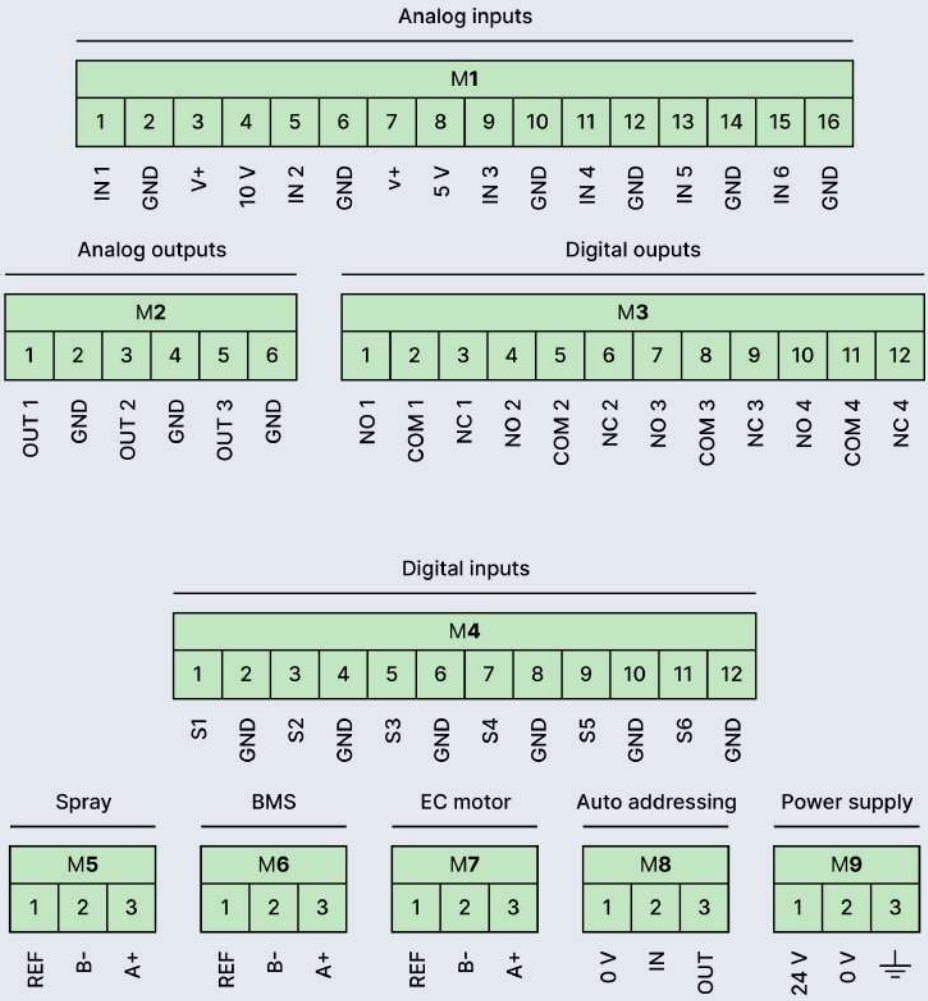
RS-485 Modbus RTU dedicated to connectivity

Hybrid and remote display



ECPro's **hybrid display** combines a **touchscreen** with **physical keys** in a user-friendly interface designed to simplify the configuration and monitoring of HVAC systems.

It enables real-time control of operating parameters, alarms, and settings, offering intuitive graphical views, fast navigation, and multilingual access. It can be installed on-board or used as a remote unit, easily fitting electrical panels or machine enclosures, and includes **multi-level authentication** to ensure safe and controlled operation.



Technical Features

Power Supply	24 Vca ±10% 50/60Hz
Analog Inputs	6 configurable analog inputs 0–5 V, 0–10 V, 0–20 mA, 4–20 mA, NTC (10K@25 °C), PTC KTY81/210 (2K@25 °C), PT1000 class B
Digital Inputs	6 digital On/Off inputs (dry contact), each configurable as active-open or active-closed
Analog Outputs	3 independent analog outputs 0–10 V or 1–10 V, maximum current 20 mA
ON/OFF outputs (Programmable and independent)	4 relays with changeover contact 250 Vac 3A ca
Communication Line	COM1 RS-485 Modbus RTU with possibility of isolated or non-isolated for EC fan control via Modbus
	COM2 RS-485 Modbus RTU isolated for BMS
	COM3 RS-485 Modbus RTU non-isolated for remote display or remote control (CN2)
	COM4 RS-485 Modbus RTU non-isolated for ON/OFF expansions and adiabatic controller
	COM5 RS-485 Modbus RTU dedicated to connectivity
Enclosure specification	Material PC/ABS self-extinguishing UL94-V0, grey color
Connections	Removable 3.5 mm pitch terminals
Input protection	Low-energy 30 Vdc surge protection
Output protection	Low-energy 30 Vdc surge protection, with current limitation in case of overload and/or short circuit
Certifications	CE / UKCA
Directives	2014/30/UE 2014/35/UE



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