



## Analogue multi-input Master & Slave controller for single-phase asynchronous fan motors



AC AC fans

Single-phase

Master & Slave

**ESY** is a multifunction **analogue controller** designed to operate in **Master** or **Slave mode**, with proportional control output via **mains-balanced phase-cut control**. It is ideal for speed control of **single-phase asynchronous motors (Class F)** installed on **axial, radial or centrifugal fans**, ensuring **precise** and **efficient** operation in **air conditioning, refrigeration, heating, ventilation, destratification, forced-air heating and air handling** systems.

Available in **8 A, 12 A, 16 A** and **20 A** versions, **ESY** provides **continuous modulation** of the **AC voltage** from **0% to 100%**, based on the difference between the **control signal** and the configured **setpoint**, within predefined **operating limits (minimum/maximum values or cut-off thresholds)**.

It is equipped with **three analogue inputs** for **Master mode** (**two inputs** for **4–20 mA** or **0–5 Vdc** pressure transducers, **one input** for an **NTC 10 kΩ @ 25 °C** probe) and **one 0–10 Vdc analogue input** for **Slave mode**, enabling **flexible** and **customised** management of the **fan system**. Active-signal selection is **automatic**: the controller always detects and uses the signal with the **highest value**, with no **programming** required.

The controller can operate with a **single** or **dual setpoint**, thanks to an **optional plug** that enables the **second setpoint**. Switching between the two setpoints is performed via a dedicated **on/off contact** on the board, making it easier to adapt unit behaviour to different **operating conditions**.

The **reverse function** is also integrated, enabling **heat pump** operation as well as switching to **full power (100% output)** in the event of **loss of the control signal**, ensuring **operational continuity** even in **emergency situations**.

For more complex applications, **ESY** provides a **0–10 V** or **PWM output**, useful for driving **slave devices** and supporting synchronisation of multiple units in **centralised** or **distributed architectures**.

From a safety standpoint, **ESY** includes **control input protection**, **overvoltage protection** up to **275 Vac**, full **galvanic isolation** between the **mains** and the **signal circuits**, a **Class B EMC filter**, and full compatibility with the main **earthing systems (IT, TT, TN)**.

Thanks to its **versatile architecture** and **functional completeness**, **ESY** is a **reliable** and **high-performance** solution for controlling **fan arrays**.

### Rated current (RMS)

at 50 °C ambient temperature



### Supply voltage

Available options:

230 Vac ± 15%

50/60 Hz:

Manual

## Control principle



### Phase-cut control

Single-phase phase-cut control, mains-synchronised and line-balanced

## Inputs

4

### Inputs

For sensors and control signals

The device features **3 analogue inputs** for **Master mode** (2 × 4–20 mA or 0–5 Vdc signals from **pressure transducers** and 1 input for an **NTC 10 kΩ** probe) and 1 × 0–10 Vdc input for **Slave mode**, for **flexible** management of the **fan system**.

4–20 mA

0–5 V

0–10 V

NTC +10/+60°C

## Control system



### Proportional Master



### Proportional Slave

## Setpoint

1

### Setpoint

Optional 2nd

It includes the possibility to operate with a single or dual setpoint (via optional plug), adapting controller behaviour to different system conditions.

#### Operating parameters:

Setpoint 1

Setpoint 2

Cut/Off min

Min speed limit

Max speed limit

Reverse operation

## Digital inputs

1

### Input

On/Off

The available on/off contact can be used to activate the second setpoint (optional plug). This feature provides greater flexibility in system management.

Switch setpoint 1/2

## Auxiliary control outputs

ESY provides a 0–10 V or PWM output, useful for driving slave devices, supporting synchronisation of multiple controllers according to a centralised, modular logic.

0–10 Vdc output

PWM output

## Options

Optional 2nd setpoint plug

## Technical specifications

<b>Control input types</b>	4–20 mA transducer, 0.5–4.5 Vdc transducer, NTC probe (+10/+60 °C)
<b>Number of motor connection outputs</b>	1
<b>Interface</b>	Analogue
<b>Electrical protections</b>	<ul style="list-style-type: none"><li>• Control input protection</li><li>• Mains overvoltage protection</li></ul>
<b>Protection ratings</b>	IP55
<b>Applicable earthing systems</b>	Full compliance with international earthing standards IT / TT / TN
<b>Operating temperature</b>	-20°C / 50°C
<b>Weight (kg)</b>	<ul style="list-style-type: none"><li>• 8A/12A 1,5 kg</li><li>• 16A/20A 1,9 kg</li></ul>
<b>Dimensions H × W × D (mm)</b>	<ul style="list-style-type: none"><li>• 8A/12A 200x162x95</li><li>• 16A/20A 240x152x115</li></ul>