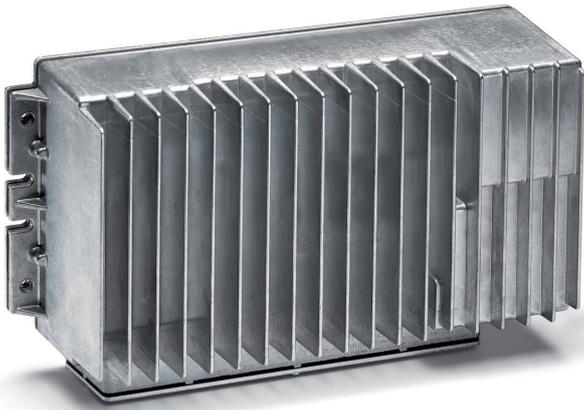


# EC Controller



**Intelligent Control**  
Maximum comfort with  
low energy consumption

**Save 15% CO<sub>2</sub>\***

OJ Air2  
compatible

HVAC CONTROLS AND POWER

## OJ EC Controller energy-optimised sinusoidal technology

The new EC Controller from OJ Electronics has been developed with the focus on energy efficiency in the control of EC motors in ventilation systems.

The OJ EC Controller meets the tougher requirements on energy efficiency made by both the market and the authorities, resulting in significant reductions in CO<sub>2</sub> emissions and greatly improving the economy of your ventilation system.

The OJ EC Controller is based on sinusoidal technology, providing the most energy efficient, quiet and robust control of EC motors. Utilising its comprehensive application knowledge, OJ Electronics has designed the new EC Controller specifically for air handling units and ventilation systems.

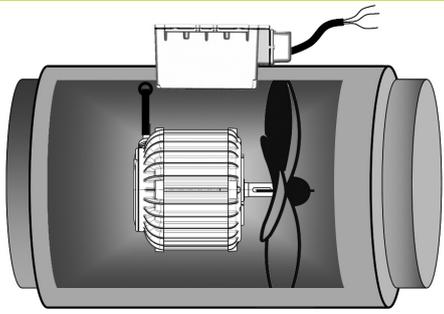
### EC CONTROLLER

– cost-effective throughout the value chain.

OJ Electronics has specialised in electronic controls for ventilation systems for many years.

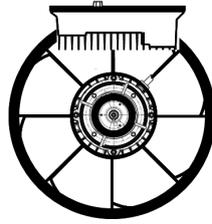
We have now combined the experience gained with the very latest technology to design the new EC Controller, assuring its cost-effectiveness throughout the value chain. Operating costs are significantly reduced thanks to energy-efficient, sinusoidal technology and superior reliability. Savings can thus be achieved year after year. Investment costs are also reduced as the EC Controller was designed with the focus on minimising costs throughout the value chain.

There is, for example, no need to equip the EC motor with expensive sensors and the EC Controller is designed for quick and easy installation during AHU manufacture as a Plug & Play solution. The wide range of models extends from 0.8 kW to as much as 6.5 kW, giving our customers major benefits.

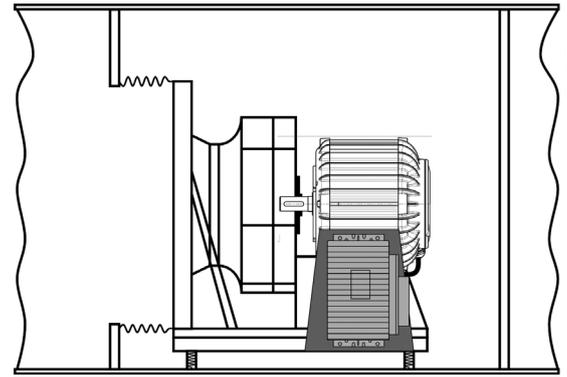


Duct fan

BR982A01A

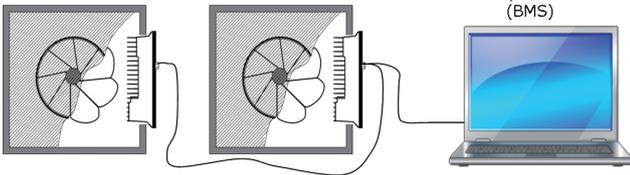


BR982A02A



Fan plug-in

BR982A04A



BMS supervisor

BR982A03A

### ENERGY-EFFICIENT SINUSOIDAL FOC TECHNOLOGY

*Maximum efficiency in interaction between motor and controls*

The EC Controller utilises the latest and most energy-efficient form of control for EC motors. Sinusoidal field oriented control (FOC) ensures that the magnet fields within the motor are optimally controlled at all times. All the magnetic energy is utilised to generate rotation and nothing is lost through friction in the bearings. The technology ensures that the EC motor operates with least possible energy consumption throughout its operating range. Compared to other control forms, e.g. trapezoidal, the overall efficiency of motor and controls can be improved by 3-10%.

Sinusoidal current delivers smooth torque and ensures quiet operation.

### OPTIMISATION OF VENTILATION SYSTEMS

*Ideal properties for energy-efficient control of fans*

OJ Electronics has utilised its extensive application knowledge to create this unique EC Controller, whose wide range of features makes it ideal for fan control purposes.

The EC Controller is installed in the ventilation air flow itself and is therefore designed to meet all environmental requirements on ventilation ducts. The electronics are unaffected by heat, cold, moisture, dust and vibration as they are enclosed in a sturdy aluminium housing. The EC Controller takes up very little space when mounted on the motor frame of the fan. The built-in EMC filter saves time during installation, and requirements on use in domestic and industrial applications are of course met.

### SYSTEM FLEXIBILITY

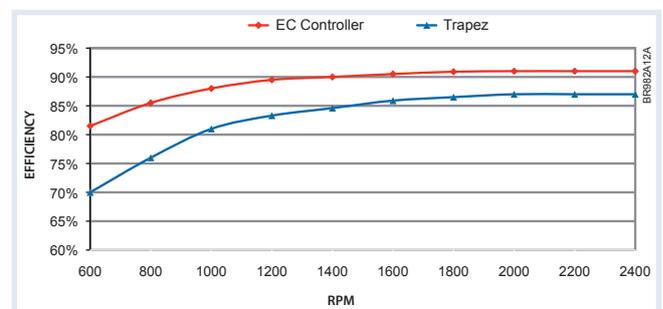
*Flexibility in the design of air handling units and systems*

The EC Controller is available in several motor-dependent models and in two different application-adapted series. The OJ Air2EC series is a fully integrated Plug & Play solution for air handling units with OJ Air2 controls. The OJ EC series is designed for traditional systems controlled by a 0-10 V signal or for more advanced ventilation systems with Modbus control. Several fans can be controlled via a shared bus, looped on direct from the EC Controller. The simplified wiring significantly reduces installation costs. By connecting a hand terminal, fan operation can be adjusted and monitored quickly and easily from a simple, user-friendly menu.

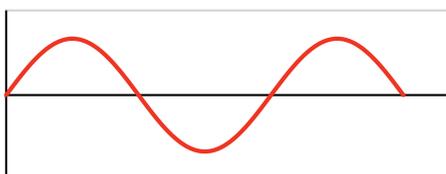
### DEPENDABLE AND RELIABLE

*Trouble-free operation 24 hours a day, 365 days a year.*

Thanks to its protective features and intelligent alarm management, the EC Controller is extremely robust and resilient. Its operational reliability increases ventilation system uptime, ensures better comfort for users and minimises service costs.

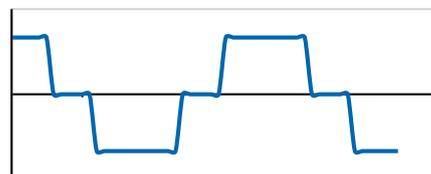


Sinusoidal

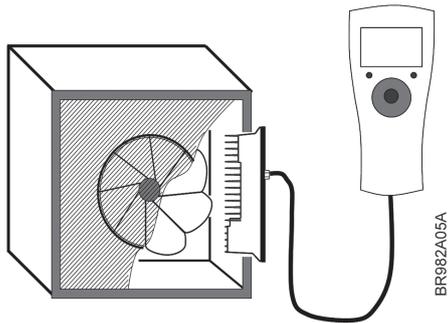


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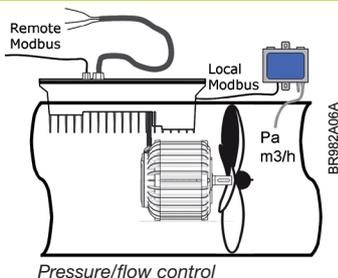
Trapez



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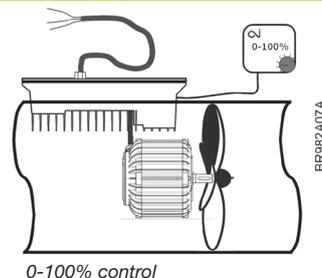


Box fan

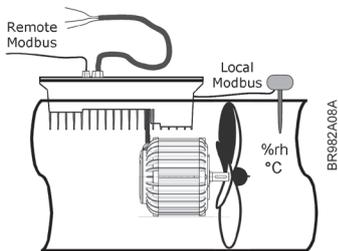


Pressure/flow control

Optional

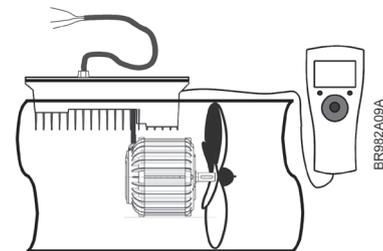


0-100% control



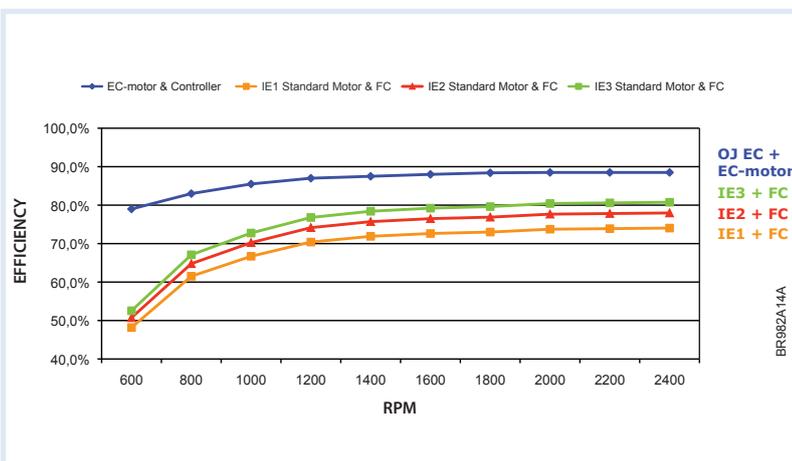
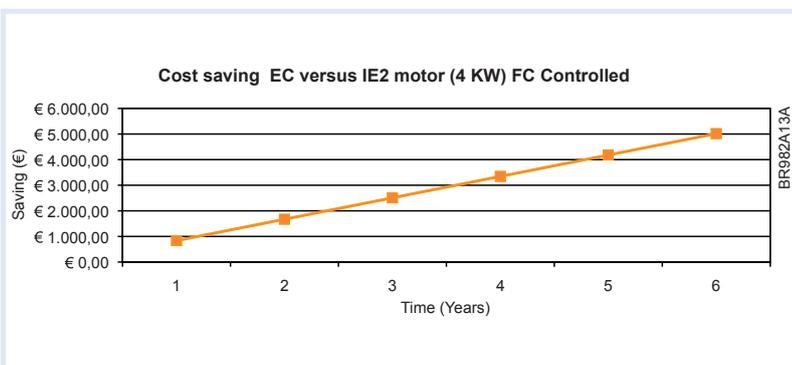
Humidity/temperature control

Optional

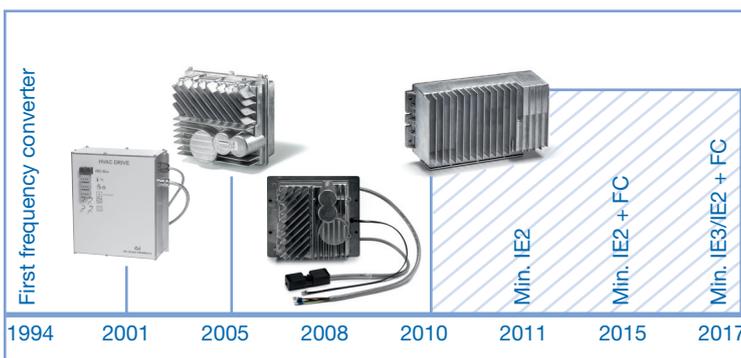


Control via hand terminal

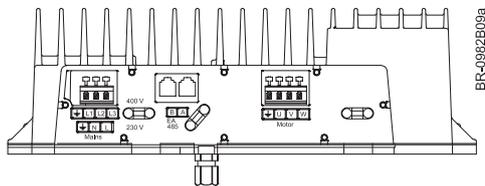
## TECHNICAL FEATURES



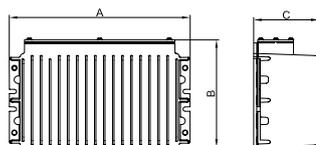
- Energy-optimised, sinusoidal technology
- OJ Air2 compatibility
- 0-10 V and Modbus control in a single model
- Ventilation duct installation
- Built-in EMC filter f. domestic/industrial appl.
- Fire protection, min. 1 hour's operation at 70°C
- Several fans on shared Modbus
- Operation and monitoring via hand terminal
- Remote control via potentiometer
- Adjustment via hand terminal
- Robust alu. housing with IP54 ingress rating
- Intelligent alarm management
- Protection against mains voltage interruptions
- Protection against 400 V on single-phase model
- Sensor-free motor control
- No wearing parts, e.g. blower
- Flying start in both directions
- Braking function
- Min. and max. speed settings
- Logging of temperature and operating data
- Quick and easy cable connection
- Mounting on motor frame



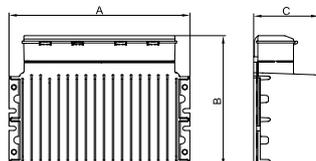
**MOTOR CONTROLS FROM OJ ELECTRONICS**  
 OJ Electronics has developed and manufactured OEM motor controls since 1994. Frequency converters with built-in pressure transmitter were introduced in 2001, while a model designed to be fitted directly on the motor itself was launched in 2005. Designed on the basis of our many years' experience, the EC Controller is a further development of this theme in which we have integrated the very latest, state-of-the-art digital signal management, creating a unique, top-quality solution for the ventilation sector.



Terminal connection

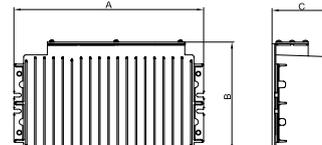


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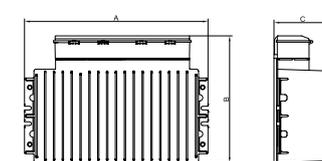


BR08W0210  
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Dimensions 0,8 - 2,4 kW



BR04W0402  
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BR04W0402  
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Dimensions 4,0 - 6,5 kW

## INSTALLATION

To ensure sufficient cooling of the EC Controller, active ventilation must always be provided for the cooling fins to allow the removal of surplus heat.

All external electrical connections can be safely and reliably made via the spring-loaded terminals of the OJ EC Controller.

### OJ Air2EC Controller features:

2 x RJ12 sockets for Modbus and hand terminal connection.

### OJ EC Controller features:

- 2 x terminal connectors for Modbus connection
- 1 x RJ12 Modbus socket for external sensor input
- 1 x RJ12 socket for hand terminal connection
- 1 x analogue input for speed (0-10 V DC)
- 1 x digital input for start/stop of EC
- 1 x digital input for alarm reset
- 1 x digital input for fire protection
- 1 x digital output for alarm signal from EC

## PRODUCT PROGRAMME

TYPE	PRODUCT
OJ-EC-1080D	EC Controller 0.8 kW / 1x230 V
OJ-EC-1115D	EC Controller 1.1 kW / 1x230 V
OJ-EC-3160D	EC Controller 1.6 kW / 3x400 V
OJ-EC-3240D	EC Controller 2.4 kW / 3x400 V
OJ-EC-3400D	EC Controller 4.0 kW / 3x400 V
OJ-EC-3650D	EC Controller 6.5 kW / 3x400 V

## PRODUCT PROGRAMME

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OJ-Air2EC-3400D	EC Controller 4.0 kW / 3x400 V
OJ-Air2EC-3650D	EC Controller 6.5 kW / 3x400 V

Measurements (mm)		A	B	C
OJ Air2 EC	0,8 - 2,4 kW	305	185	110
OJ Air2 EC	4,0 - 6,5 kW	351	200	110
OJ EC	0,8 - 2,4 kW	305	227	110
OJ EC	4,0 - 6,5 kW	351	242	110

### TECHNICAL DATA – SIZES 0.8 KW - 1.15 KW

Supply voltage	1 x 230 V AC / -10/+15% / 50/60 Hz
Weight	4900 g

### TECHNICAL DATA – SIZES 1.6 KW - 2.4 KW

Supply voltage	3 x 400 V AC / -10/+15% / 50/60 Hz
Weight	4900 g

### TECHNICAL DATA – SIZES 4.0 KW - 6.5 KW

Supply voltage	3 x 400 V AC / -10/+15% / 50/60 Hz
Weight	6400 g

### TECHNICAL DATA – COMMON FOR ALL SIZES

Modbus protocol (OJ-Air2EC only):	38.4 kbaud
Modbus cable dimension (OJ-Air2EC only):	MPFK6S or similar
Modbus protocol (OJ-EC only):	9.6-115.2 kbaud
Digital input (OJ-EC only):	3 x internal pull-up
Analogue input (OJ-EC only):	1 x 0-10 V DC
Digital output (OJ-EC only):	1 x relay output 24 V AC / 1 Amp
Voltage output (OJ-EC only):	1 x +10 V DC stabilised
Max. prefuse:	16 Amp
Electrical connection:	max. 1.5 mm <sup>2</sup> , spring-loaded terminals
Modbus connection (OJ-EC only):	2 x terminal connectors
Ambient temperature, operation:	-40°C / +40°C
Dimensions:	see dimensioned drawing above
Enclosure:	aluminium, IP54

### CE MARKING

OJ-EC complies with the requirements of the following standards:

Product approval	CE
EMC	EN 61800-3
Low Voltage Directive (LVD)	EN 61800-2
Corrosion resistance	EN/ISO12944-2: 1998 category C4