



### Product Description

Designed for easy and trouble free installation, the AX-FC-EVS Series of speed controllers provide an economic means of regulation for voltage controllable single phase ac motors . The AX-FC-EVS Series have suitably rated integral fuses and comply with the relevant CE directives. The units offer remote control via 0-10Vdc or 0-20mA signal and are suitable for direct connection to BMS Controllers or transmitters

### Features

- Electronic Speed Control
- 1.5A, 3A, 5A and 10A Models
- Suitable for 230Vac 50/60Hz Motors
- Integral Fuse
- Analogue input signal
- Wall Mount

### Product Specifications

<b>Inputs:</b>	230Vac 1 phase 50/60Hz			
<b>Control Type:</b>	0-10Vdc @ >90KOhm impedance or 0-20mA @ 250ohm impedance			
<b>On/Off switch:</b>	Mounted on side			
<b>Minimum Speed:</b>	Adjustable via Trim Pot			
<b>Ratings:</b>	<b>Current</b>	<b>Fusing</b>		
EVS1	0.1 to 1.5A	FF 3.15A	(5 x 20mm)	
EVS3	0.1 to 3A	FF 5A	(5 x 20mm)	
EVS6	0.5 to 6A	FF 10A	(5 x 20mm)	
EVS10	0.5 to 10A	FF 16A	(16 x 32mm)	
<b>Ambient Temp:</b>	0-35°C (N.B. unit is rated at 30 deg C)			
<b>Dimensions:</b>	180 x 115 x 82mm			
<b>Weight:</b>	EVS1	EVS3	EVS6	EVS10
Kgs	0.69	0.74	0.90	0.90
<b>Protection:</b>	IP54			
<b>CE Certificates:</b>	EMC 89/336/CEE and 92/31/CEE LVD 73/23/CEE			
<b>Country of Origin:</b>	EU			

### Order Codes

<b>AX-FC-EVS1</b>	Electronic Speed Controller 1.5Amp
<b>AX-FC-EVS3</b>	Electronic Speed Controller 3.0Amp
<b>AX-FC-EVS6</b>	Electronic Speed Controller 6.0Amp
<b>AX-FC-EVS10</b>	Electronic Speed Controller 10.0Amp

### Installation:

Installation must only be carried out by a fully trained electrician and must be in accordance with local regulations. Disconnect or otherwise completely turn OFF the electricity supply before installation. It is the installers responsibility to ensure that installation is carried out in a safe manner and that the final installation complies with all relevant standards.

**N.B. Always mount the unit vertically on a flat surface**

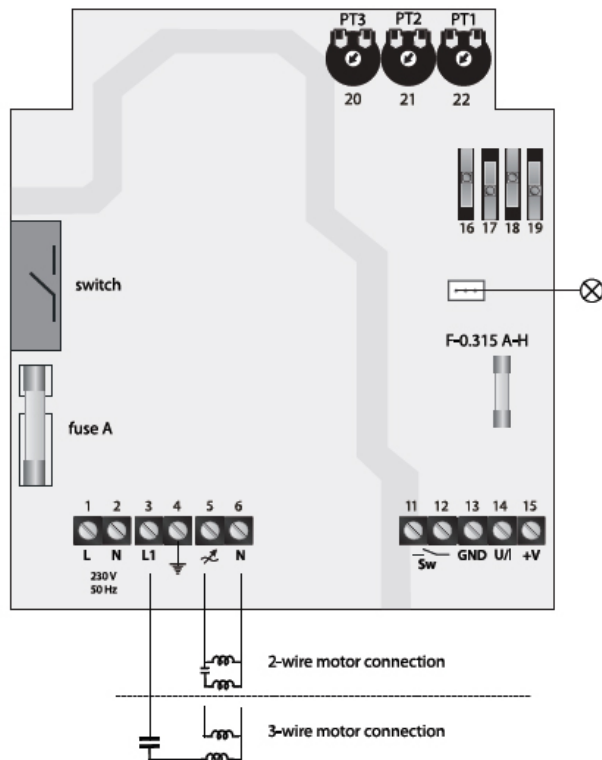
### Motor compatibility

Speed controllers can only be connected to motors having appropriate characteristics. Motors must be voltage controllable, asynchronous, squirrel caged, Class 'F' wound, direct driven, with standard or external, high resistance rotors. They should be air cooled with a frame size sufficient to dissipate the additional heat generated when running at low speed/low airflow. It is recommended that motors have internal thermal protection. Speed controllers operate most efficiently with conventional split capacitor or shaded pole motors. Six or eight pole motors are suitable but four pole motors are preferred as they have a greater control range. Two pole motors can be used but are difficult to control at low speeds (below 600 rpm) and can cause start-up problems at low voltages. **If there is any doubt regarding a motor's compatibility with electronic speed controllers, contact the fan or motor manufacturer for guidance.** The FC-EVS speed controllers are suitable for use on two or three wire motors.

### Selection Criteria

Motors must be well loaded for optimum speed control, so choose one that is just big enough for the application. The motor load must be at least 75% of the nominal power of the motor at maximum speed. Choose a speed controller with a maximum current that is just larger than the nominal motor running current, i.e. if motor rating is 2.95 amps, select a controller with a maximum current of 3 amps. Several motors can be connected to one speed controller, so long as the controller's maximum current is not exceeded. Although rare, some motors can have a higher current consumption, when run at lower voltages, than the motor's nominal current at design voltage. The highest current should be used when selecting the speed controller.


### Wiring diagram



#### High voltage:

1. L: mains supply 230Vac / 50Hz – INPUT
2. N: neutral – INPUT
3. L1: 230 Vac not regulated output to motor (after fuse) – OUTPUT
4. Earth terminal (only for 3, 6 & 10 A)
5. M- regulated output to motor – OUTPUT
6. N – neutral – OUTPUT

#### Low voltage:

11. On/off switch
  12. On/off switch
  13. GND – ground
  14. U - control signal 0÷10Vdc (input impedance 90 kOhm)  
I - 0÷20mA (input impedance 250 Ohm)
  15. +V – low voltage power supply: 12 Vdc / 1mA for external trimmer
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16. switch down = 0-10 V  
switch up = 10-0 V (select increase or decrease input voltage to control speed)
  17. switch down = disable off-level  
switch up = enable off-level
  18. switch down = disable kickstart  
switch up = enable kickstart
  19. switch down = 0-20 mA  
switch up = 0-10 V (select current/voltage)

#### Example shows:

16. up = 10-0 V
17. down = disable off-level
18. up = enable kickstart
19. down = 0-20 mA

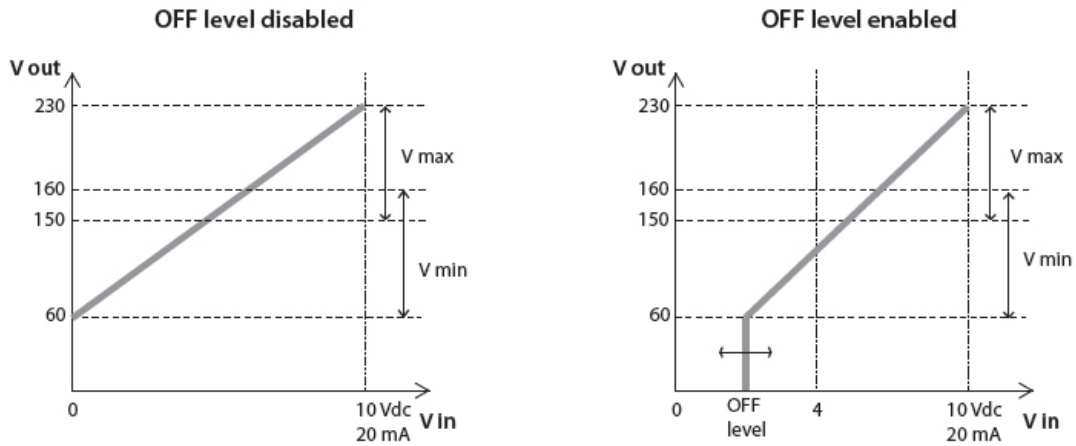


20. Off level adjustment trimmer: 0-4 V or 10-6 V (depending on switch 16 – Fig.).
21. Minimum speed adjustment trimmer range: 60-160 V
22. Maximum speed adjustment trimmer range: 165-230 V



LED green: normal operation.  
LED blinking: standby (input signal < off level).

**Operation**

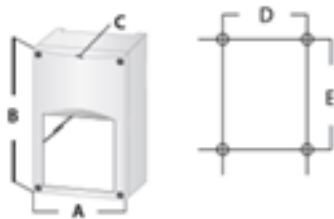


**Calculation formula**

$$V_{out} = ((V_{in}/10)*(V_{max}-V_{min}))+V_{min}$$

$$V_{out} = (((V_{in}-OFF-level)/(10-OFF-level))*(V_{max}-V_{min}))+V_{min}$$

**Dimensions & fixing**



order code	A	B	C	D	E	net weight	gross weight
EVS-0-15-DT	115	180	85	98	140	575 g	690 g
EVS-0-30-DT	115	180	85	98	140	625 g	740 g
EVS-0-60-DT	115	180	85	98	140	785 g	900 g
EVS-0100-DT	115	180	85	98	140	785 g	900 g



**PWM converter**

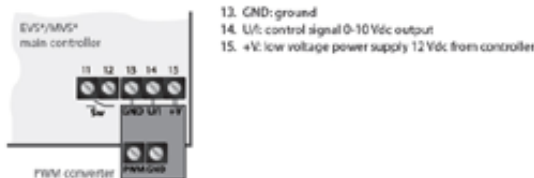
This PWM converter is designed as a 'plug-in' for EVS\*/MVS\* controllers to convert a PWM signal to an analogue 0-10V signal. It is to be screwed directly into the terminal blocks of the main controller.

**Characteristics**

Input signal:  
 < 24 V amplitude  
 < 56 - 2000 Hz  
 < duty cycle 1-100 %

Input duty cycle	Output voltage
0%	0V
10%	1V
20%	2V
...	...
100%	10V

**Connection**



**Dimensions**



order code	A	B	C	D	net weight	gross weight
CNVT-PWM-010V	15	22	9	6	3,0g	3,5 g