



# *fcs* series

Range of phase-proportioning  
controls

## Speed controllers

**CAREL**

Technology & Evolution

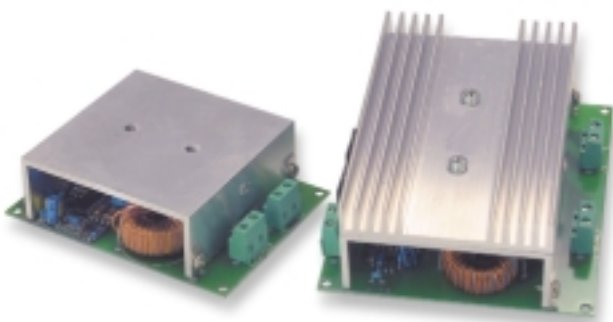
The FCS units are electronic voltage regulators that use the phase-cutting principle to regulate the output voltage supplied to the load, according to an input control signal. They are used to control asynchronous axial electric motors (low capacity and class H, specific for phase-cutting control), such as fans, pumps, mixers, stirrers, etc.

The FCS regulators have been designed to be managed by an electronic control module (which operates as MASTER), which supplies a proportional 0÷10Vdc signal for the correct management of the speed controller.

For air-conditioning and refrigeration applications in particular, Carel has developed the FCM controller that integrates all the typical functions (cooling/heating control, minimum and maximum speed, cut off, speed up, defrost etc.) required for the correct operation of the electric motors. Otherwise, the FCS control signal can be connected directly to the pCO, pCO<sup>2</sup> (0÷10Vdc) and µChiller (PWM, pulse width modulation) series of controllers.

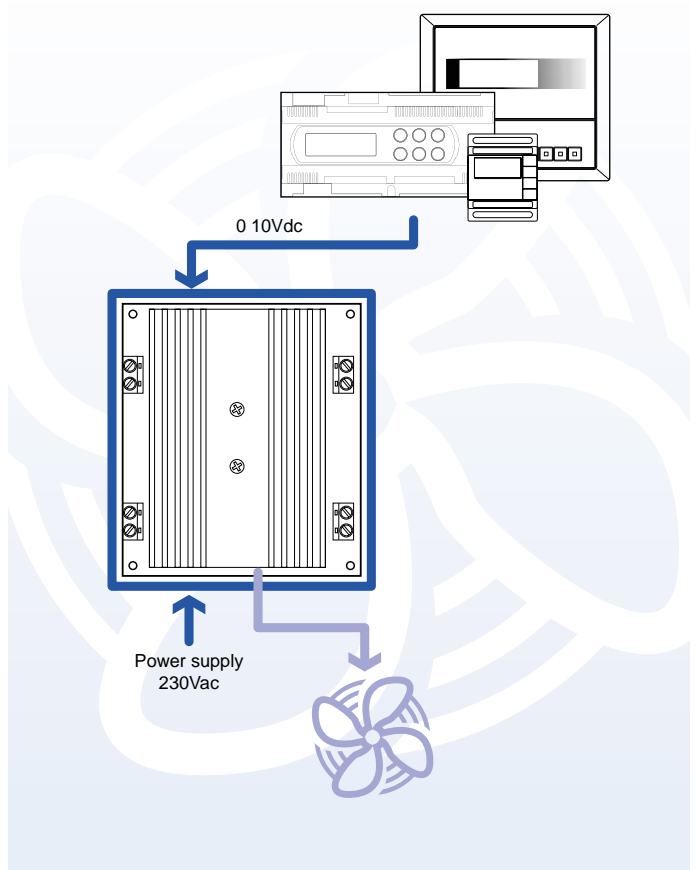


## fcs series



### FCS single-phase

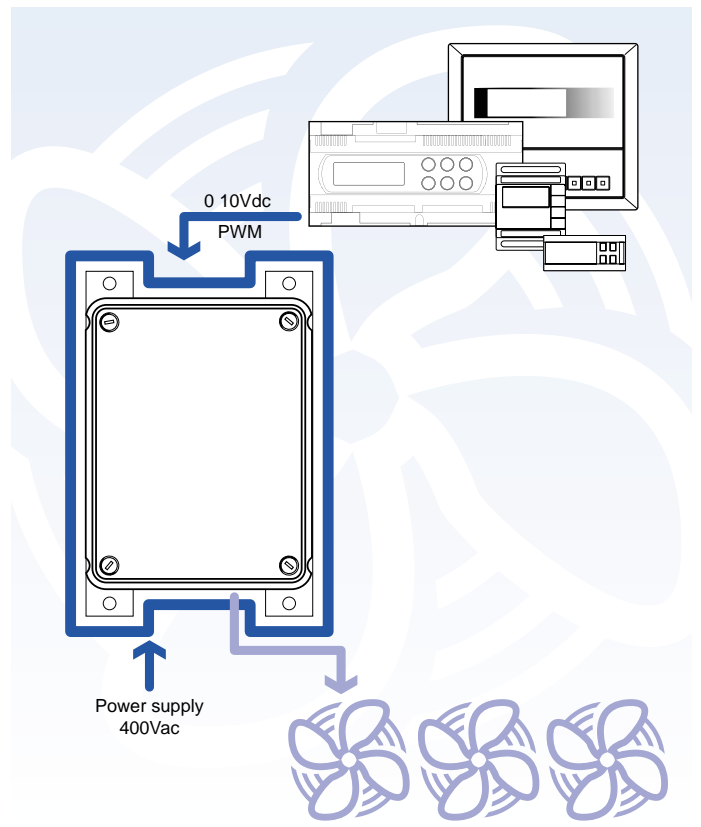
The single-phase series can be controlled by a 0÷10Vdc control signal from evolved controls, such as the FCM, pCO and pCO<sup>2</sup>. The range, with IP20 index of protection for installation inside the panel, allows the control of motors with power consumption from 2 to 12A.





## FCS three-phase IP55

The three-phase IP55 series, suitable for external installation, can be controlled by a 0÷10Vdc analogic signal for the connection with evolved controllers such as the FCM, pCO and pCO<sup>2</sup>, or by a PWM (pulse width modulation) signal from the μChiller series. The range, which allows the control of motors with power consumption from 6 to 40A, is fitted with a control board for distributing the power to the load, in linear or quadratic mode, and includes the cut-off, threshold, minimum and maximum speed functions, using the trimmers on the board itself.

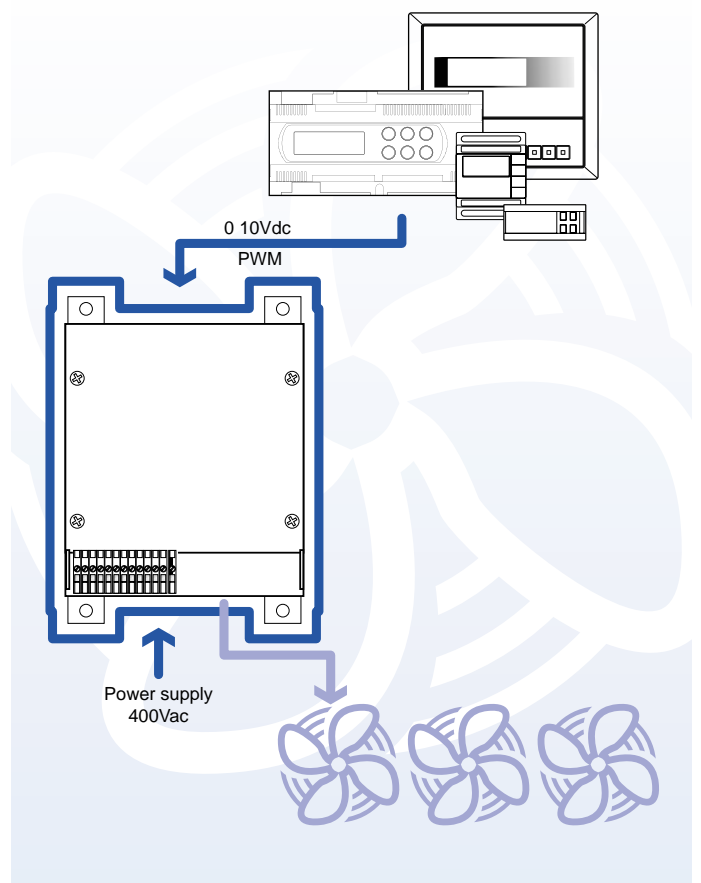


...the right speed!

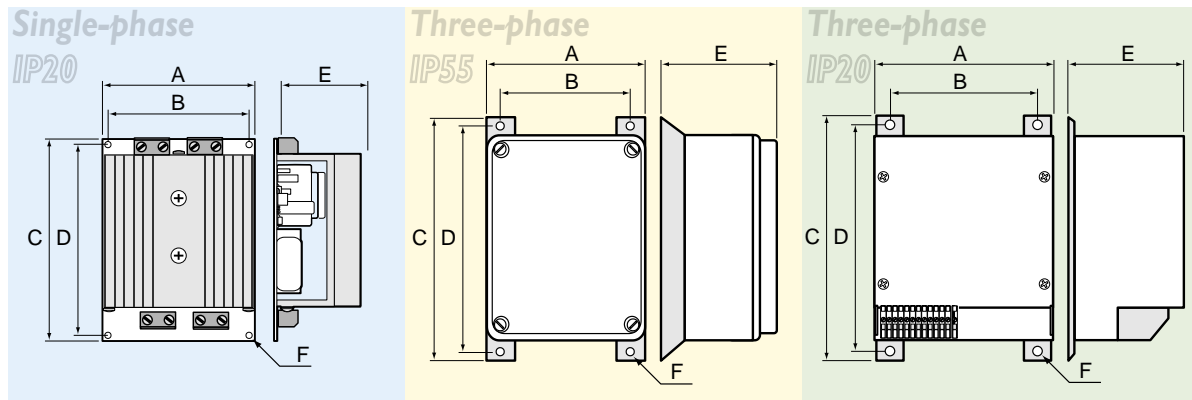


## FCS three-phase IP20

The IP20 range, for installation inside the panel, can be controlled by a 0÷10 Vdc analogic signal for the connection with evolved controllers such as the FCM, pCO and pCO<sup>2</sup>, or by a PWM (pulse width modulation) signal from the μChiller series. It allows the control of motors with power consumption from 12 to 40A, and is fitted with a control board for distributing the power to the load, in linear or quadratic mode, and includes the cut-off, threshold, minimum and maximum speed functions, using the trimmers on the board itself.



## Dimensions (mm)



	Model	A	B	C	D	E	F
Single-phase IP20	FCS1022300	82	75	107	100	32	4
	FCS1042300	82	75	107	100	32	4
	FCS1062300	82	75	107	100	47	4
	FCS1082300	107	100	123	115	47	4
	FCS1122300	107	100	123	115	65	4
Three-phase IP55	FCS3064000	158	133	225	200	115	7
	FCS3124000	205	180	280	255	130	7
	FCS3204000	198	174	280	255	158	7
	FCS3404000	245	219	340	315	200	7
Three-phase IP20	FCS3124010	170	144	265	250	115	7
	FCS3204010	198	174	265	250	140	7
	FCS3404010	198	174	265	250	175	7

	Model	Rated Current	Derating between 40 and 50°C	Dissipated power
Single-phase IP20	FCS1022300	02A	02A	3,2W
	FCS1042300	04A	3,5A	5,4W
	FCS1062300	06A	5A	7,6W
	FCS1082300	08A	7A	9,8W
	FCS1122300	12A	10A	14,4W
Three-phase IP55	FCS3064000	06A	5A	35W
	FCS3124000	12A	10A	65W
	FCS3204000	20A	16A	128W
	FCS3404000	40A	32A	238W
Three-phase IP20	FCS3124010	12A	10A	65W
	FCS3204010	20A	16A	128W
	FCS3404010	40A	32A	250W

The peak current corresponds to 3 times the rated current. Three-phase 230Vac versions are available upon request.

## Technical specifications

	Single-phase model	Three-phase model
Power supply:	230Vac 10 $\pm$ -15%	400Vac 10 $\pm$ -15%
Frequency:	50/60Hz	50/60Hz
Control signal:	0 $\pm$ 10Vdc	0 $\pm$ 10Vdc/PWM
Input signal impedance:	180K $\Omega$	10K $\Omega$
Operating temperature:	-10 $\pm$ 50°C (*)	-10 $\pm$ 50°C (*)
Storage temperature:	-20 $\pm$ 70°C (*)	-20 $\pm$ 70°C (*)
Casing index of protection:	IP 20	IP 55/IP20

All the models are CE marked and comply with the European Directives 73/23/EEC, 89/336/EEC and successive amendments, based on the EN 55014-1, EN 55014-2 and EN60730-1 standards. Carel reserves the right to modify or change its products without prior notice.

