3 Phase FANs Speed Controller

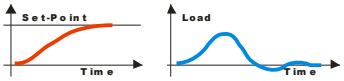
RGM

Regolatore di Tensione VAC
VAC Stepless Controller
Regolateur de Vitesse VAC
VAC Spannungs-regelgeräte
Regulador de Velocidad VAC

Dynamic-CONTROL-Technology

PID 5

- td Derivative time action
- ti Integral time action
- d Derivative action
- I Integral action
- P Proportional action



AIR-Energy Software

RGM300

The RGM300 regulators are multifunction three-phase power units driven by a latest-generation extended range (-40/85 °C) microprocessor, for the phase-cutting regulation (SCR) of AC voltage.
The given AC voltage variation allows controlling the speed of three-phase asynchronous motors, applied to machines whose motor torque-speed characteristic is quadratic, such as motors connected to fans, pumps, agitators.
The AC voltage regulation requires the use of motors suitable for phase-cutting control (class F or H and defluxed), since they must be able to stand an increase of the internal temperature, due to the same VAC phase-cutting.
By controlling the system with an SCR, the magnetic resonance caused by VAC regulation generates acoustic peaks (extra-dB) in the motors

Applications

When applied on motors of **AXIAL** and **CENTRIFUGAL** fans, the RGM300 regulator allows the airflow stepless modulation in direct or reverse proportion to the received control signal, which can be in mA-Vdc-kohm (NTC); with two or more control signals connected, the regulator select the higher (std. selection) in value
The regulation of the AC output voltage varies from 0% to 100% of the AC mains voltage (RPM%).
The RGM300 regulator can be used in Air-Conditioning, Refrigeration, Ventilation, Heating, Destratification, Heat Ventilation, Air Extraction and Air Handling systems, in the following applications:
- Manual Speed Regulator: driven through an external **0-10Vdc** or **4-20mA** control signal (manual potentiometer), for the control of Ventilation systems where the airflow rate (mc/h– RPM%) is adjusted manually;
- Automatic Speed Regulator: driven by a remote regulation system through **0-10Vdc**, **4-20mA** or **PWM** (PMM-triac) control signals, to control Temperature, Pressure (Air Cooled Heat Exchangers of Remote Condensers, Dry Coolers, Air Heater), Airflow differential Pressure (Laminar Flow Systems, Hood Extractor Fans).

Operating MODE

MASTER (Controller Mode): the VAC output varies in direct/inverse proportion to the control signal in mA-Vdc-kohm (NTC), in order to maintain the value measured by the connected transducer/sensor within the proportional band (Pb) and the selected and active Set Point (selection through SP1 or SP2 with contact SP).
SLAVE (Power Unit): the VAC output varies in direct/inverse proportion to the control signal.

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FAN speed Control Solutions

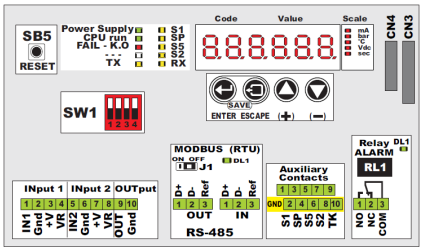
ELECTRICAL DATA

Power Supply	400Vac - 15% / +20% 50/60Hz aut.sel. - 230Vac / 480 / 600 Vac (on request)							
Rated Current (RMS @ 50°C)	**12A**	**18A**	**20A**	**28A**	**32A**	**40A**	**60A**	**90A**
Protection Case	IP 55 in GW-plast 120°C for outdoor installation (standard) – IP00 (optional)							
EMC Compliance	Applications for PDS Systems (Regulator with connected fans – Residential, Commercial % Light Industrial Filter)							
LHC Compliance (EN 61000-3-2 & 3-12)	The regulator does NOT have any internal filter for the suppression of harmonic distortions caused by regulation							

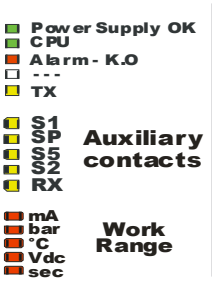
Control Circuit Power	10 VA	
Thermally Dissipated Power	4 W/Amp	
°C/UR% Work Environment	-20 / 50°C	85% non condensing

Environmental Pollution	High pollution
Insulation Characteristics	4000 Vac
Ageing Characteristics	60.000 h

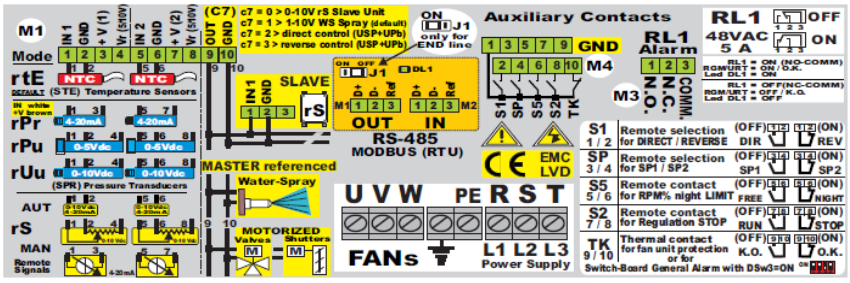
Components Placement



LED signals



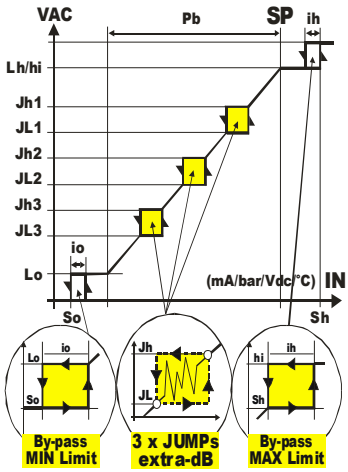
Control Signals & Auxiliary Contacts Connection



Selectable regulation modes			
Control Mode	**Probe**	**Range**	**Code**
Factory selection	**NTC**	**-20…90°C**	**rtE-01**
MASTER	**4…20mA**	**4…20mA**	**rPr420**
		0…15bar	**rPr015**
		0…25 bar	**rPr025**
		0…30 bar	**rPr030**
		0…45 bar	**rPr045**
	0…5V=	**0…5V=**	**rUu-05**
		0…30 bar	**rPu030**
		0…45 bar	**rPu045**
	0…10V=	**0…10V=**	**rUu010**
SLAVE	**0…20mA**	**4…20mA**	**rS-020**
	0…10V=	**0…10V=**	**rS-010**

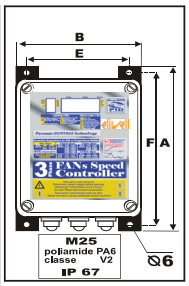
N°	DOUBLE-SET Regulation Parameters	Code
2	Fans Set-Point (SP1 & SP2)	SP
2	Fans Proportional Band	Pb
2	Set-Point for Auxiliary Output	USP
2	Proportional Band for Auxiliary Output	UPb
2	Cut-Off Limit	So
2	Minimum Limit	Lo
2	Maximum Daily Limit	hi
2	Maximum Night Limit	Lh
6	JUMP extra-dB Frequencies	Jh/JL
1	Setting for Cos-phi Motor adjust	C5
2	Input value for by-pass MIN limit (Cut-Off)	So
2	Input value for by-pass MAX limit (Overspeed)	Sh
2	Acceleration / Deceleration (Starter)	dE
1	Programmable Vdc Control Output	C7
3	Setting P. & I. & D. working parameters (PID)	Cg
2	Setting Integral & Derivative timing champions	Ct
247	Selection for MODBUS addresses	Ad

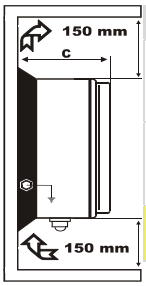
Function Diagram



Mechanical Dimensions

Model	Amp	A	B	C	E	F
RGM 312	12 A	285	201	130	153	255
RGM 318	18 A	285	201	160	173	255
RGM 320	20 A	350	235	181	185	320
RGM 326	28 A	350	235	204	185	320
RGM 332	32 A	415	315	178	273	385
RGM340	40 A	415	315	178	273	385
RGM 360	60 A	460	315	228	260	410
RGM 390	90 A	590	408	290	378	530





Output Control Signals

Available auxiliary Power Supply	24V – 40 mA	
	10V – 20 mA	
	5V – 10 mA	
Programmable Vdc Control Signal	0-10Vdc	SLAVE Unit
	10-0Vdc	
	1-10Vdc	Spray UR%
RS-485 (on request) MODBUS (RTU std.)	Connection to Supervising-System	

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