

Solid State Relays 3-Phase with Integrated Heatsink Proportional Switching Controllers Types RGC2P, RGC3P



- 2-pole and 3-pole analog switching solid state contactors
- Rated operational voltage: up to 600VAC
- Rated operational current: up to 75AAC
- Control inputs: 0-20mA, 4-20mA, 12-20mA, 0-5V, 1-5V, 0-10V
- Local setting through external potentiometer
- Switching modes: phase angle or distributed full cycles (1, 4 or 16 full cycles)
- Soft start feature with selectable ramp time up to 5 seconds
- Integrated varistor protection on output
- Monitoring for SSR and load malfunction
- EMR alarm output for alarm indication
- 100kA short circuit current rating according to UL508
- DIN or panel mount
- RoHS compliant

Product Description

This series gives the possibility to control output power of 3-phase loads with an analog control input. The RGC2P is a 2-phase switching product whilst the RGC3P switches all 3 phases.

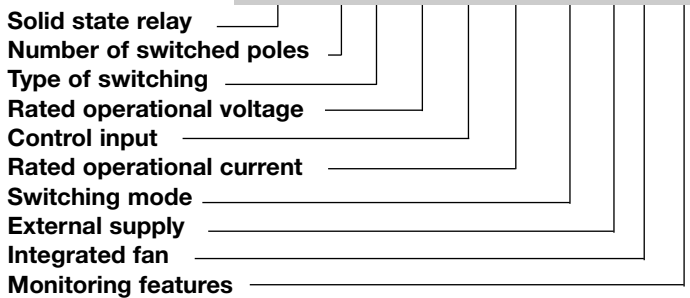
Input types cover a wide range of current and voltage ranges. Local setting by an external potentiometer is also possible. Switching modes cover phase angle control, distributed full cycle control and soft start for limiting inrush current of loads having a high temperature

coefficient, such as short wave infrared heaters.

Detection of mains loss, load loss, SSR short circuit and over-temperature is integrated in some models. Alarm condition is signalled through an EMR output and is visually indicated by the alarm LED. Additional LEDs indicate input and load status.

Specifications are at a surrounding temperature of 25°C unless otherwise specified.

Ordering Key **RGC 3 P 60 V 65 C1 D F M**



Ordering Key (Refer to page 4 for valid part numbers)

SSR with heatsink	Type of switching	Rated voltage (Ue), Blocking voltage	Control input ¹	Rated current/ pole @40°C ²	Switching mode	External supply (Us)	Features
RGC2: 2-pole switching + 1-pole direct	P: Proportional	60: 180 - 660VAC, 1200Vp	AA: 4-20mADC	20: 20AAC 25: 25AAC 30: 30AAC 40: 40AAC 65: 65AAC 75: 75AAC	E: Phase Angle	D: 24VAC/DC A: 90 - 250VAC	P: Integrated over temperature protection (OTP), mains loss with EMR alarm output F: Integrated fan M: Monitoring for Mains loss, Load loss, SSR short circuit, open circuit and OTP with EMR alarm output
RGC3: 3-pole switching			I: 0-20mADC 4-20mADC 12-20mADC		C1: 1 FC ON, 1FC OFF @ 50% input C4: 4 FC ON, 4FC OFF @ 50% input C16: 16 FC ON, 16FC OFF @ 50% input S: Soft Start S16: Soft Start + mode C16		

FC = Full Cycle

OTP = Over Temperature Protection

EMR = Electromechanical Relay

1. Input types I and V require an external supply Us

2. Refer to Derating Curves

General Specifications

	RGC..AA..	RGC..I..	RGC..V..
Latching voltage (across each pole L-T)	20V		
Operational frequency range	45 to 65Hz		
Power factor	> 0.7 @ rated voltage		
Output Power	0 to 100%		
Touch Protection	IP20		
CE marking	Yes		
Pollution degree	2 (non-conductive pollution with possibilities of condensation)		
Over-voltage category	III (fixed installations)		
LED status indication			
Control ON	Green <4mA, flashing 0.5s ON, 0.5s OFF >4mA, intensity varies with input	Green Full intensity	Green Full intensity
Supply ON	n/a	Green Flashing 0.5s ON, 0.5s OFF	Green Flashing 0.5s ON, 0.5s OFF
Load ON	n/a	Yellow ON according to load status	Yellow ON according to load status
Alarm ON	Green, flashing ³	Red, flashing ³	Red, flashing ³
Isolation			
Input & Output to Case	4000Vrms	4000Vrms	4000Vrms
Input to Output	2500Vrms	2500Vrms	2500Vrms
External supply to input Us to A1, A2, A3, A4, A5, Uf, 11, 12, 14, C1, C2	n/a	1500Vrms	1500Vrms
External supply & input to EMR Us, A1, A2, A3, A4, A5, Uf, C1, C2 to 11, 12, 14	n/a	1500Vrms	1500Vrms

3: Refer to LED Indications

Output Voltage Specifications

Operational voltage range Line to line voltage, L1/L2/L3	180-660 VAC
Permissible voltage unbalance	10% between L1/L2/L3
Blocking voltage	1200Vp
Leakage current @ rated voltage	5mAAC per pole
Internal Varistors (across each pole)	Yes

Output Specifications: RGC2

	RGC2..15	RGC2..25	RGC2..40	RGC2..75
Rated operational current per pole ⁴				
AC-51 @ Ta=25°C	15 AAC	32 AAC	50 AAC	85 AAC
AC-51 @ Ta=40°C	15 AAC	27 AAC	40 AAC	75 AAC
AC-55b @ Ta=40°C ⁵	15 AAC	27 AAC	40 AAC	75 AAC
Minimum operational current	500 mAAC	500 mAAC	1AAC	1 AAC
Number of starts	130	35	10	240
Rep. Overload Current PF = 0.7 UL508: T=40°C, tON=1s, tOFF=9s, 50cycles	61 AAC	61 AAC	107 AAC	154 AAC
Maximum transient surge current (I _{tsm}), t=10ms	600 Ap	600 Ap	1150 Ap	1750 Ap
I ² t for fusing (t=10ms), minimum	1800 A ² s	1800 A ² s	6600 A ² s	15000 A ² s
Critical dv/dt (@ T _j init = 40°C)	1000 V/us	1000 V/us	1000 V/us	1000 V/us

4: Refer to Derating Curves

5: Overload profile for AC-55b, Ie: AC-55b: $6x I_e - 0.2: 80 - x$, where x = no. of starts; for RGC2..75 overload profile is 75A: AC-55b: $240 - 0.2 : 80 - 240$

Output Specifications: RGC3

	RGC3..20	RGC3..30	RGC3..65
Rated operational current per pole ⁴			
AC-51 @ Ta=25°C	25 AAC	37 AAC	71 AAC
AC-51 @ Ta=40°C	20 AAC	30 AAC	66 AAC
AC-55b @ Ta=40°C ⁵	20 AAC	30 AAC	66 AAC
Minimum operational current	500 mAACC	1AAC	1 AAC
Number of starts	140	18	230
Rep. Overload Current PF = 0.7 UL508: T=40°C, tON=1s, tOFF=9s, 50cycles	61 AAC	107 AAC	154 AAC
Maximum transient surge current (I _{tsm}), t=10ms	600 Ap	1150 Ap	1750 Ap
I ² t for fusing (t=10ms), minimum	1800 A ² s	6600 A ² s	15000 A ² s
Critical dv/dt (@ T _j init = 40°C)	1000 V/us	1000 V/us	1000 V/us

4: Refer to Derating Curves

5: Overload profile for AC-55b, Ie: AC-55b: $6x I_e - 0.2: 80 - x$, where x = no. of starts; for RGC3..65 overload profile is 65A: AC-55b: $240 - 0.2 : 80 - 230$

Input Specifications

		RGC..AA..	RGC..I..	RGC..V..
Control input		4 - 20mADC	0 - 20mADC 4 - 20mADC 12 - 20mADC	0 - 5VDC 1 - 5VDC 0 - 10VDC 5 - 10 VDC
	RGC3P..S			
Drop out voltage	RGC3P..S	-	-	< 4VDC
External potentiometer input		n/a	n/a	10K ohms (terminal A1, A3, A5)
Maximum initialisation time		250ms	250ms	250ms
Response time (Input to Output)	RGC..E, S	2 half cycles	2 half cycles	2 half cycles
	RGC..C1, C4, C16, S16	3 half cycles	3 half cycles	3 half cycles
Input impedance		n/a	<250 ohms	100k ohms
Linearity, Output resolution		Refer to Transfer Characteristics section		
Voltage drop		< 10VDC @ 20mA	n/a	n/a
Reverse protection		Yes	Yes	Yes
Maximum allowable input current		50mA for max. 30 sec.	50mA for max. 30 sec.	n/a
Input protection vs. surges		Yes	Yes	Yes
Overvoltage protection		n/a	n/a	up to 24VDC

Note: Control input serial connection of multiple units is ONLY possible for:

1. RGC..AA versions, and
2. the versions that require an AC external supply and hence the RGC..I..AM, RGC..I..AFM, RGC..I..AP and RGC..I..AFP models