

# Solid State Relays 3-Phase with Integrated Heatsink Types RGC2, RGC3



- 2-pole & 3-pole AC switching solid state contactors
- Product width up to 70mm
- Rated operational voltage: up to 600VAC
- Rated operational current: up to 75AAC
- Control voltages: 5-32VDC, 20-275VAC (24-190 VDC)
- Up to 15,000A<sup>2</sup>s for I<sup>2</sup>t
- Motor ratings up to 11kW @ 400VAC, 25HP @ 600VAC
- Integrated varistor protection on output
- Optional monitoring for SSR and load malfunction (RGC..M)<sup>1</sup>
- EMR alarm output and auxiliary output (RGC..M)
- Controlled fan operation for versions with integrated fan
- UL, cUL Listing
- 100kA Short Circuit Current Rating according to UL508
- DIN or panel mount
- RoHS compliant

1: RGC..M is suitable only for resistive loads

## Product Description

This product is intended to replace mechanical contactors especially when switching is frequent. The smallest product width in the RGC2, RGC3 range is 54mm (3xDIN) and goes up to 70mm.

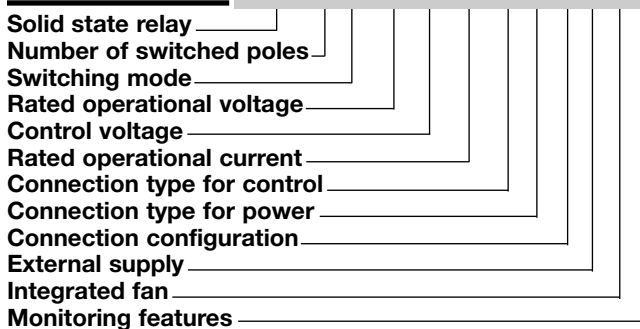
2-pole and 3-pole switching options are available. Switch ON occurs at the voltage zero cross and switch OFF occurs at the current zero cross. Apart from resistive and slightly inductive loads, the RGC is certified for motor switching with associated motor ratings. Varistors are integrated for output overvoltage protection. A green LED gives indication of control voltage presence.

Fan operation is controlled for the versions which have an integrated fan.

Detection of SSR overheat, mains loss, SSR malfunction and load loss is possible with the RGC..M versions. An EMR alarm output is available for remote signaling. An additional feature with the RGC..M is the electronic auxiliary output. The RGC..M has additional LEDs for load status and alarm status indication.

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

## Ordering Key **RGC 3 A 60 D 65 G G E D F M**



## Ordering Key (refer to page 2 for available part nos.)

SSR with heatsink	Rated voltage (Ue) <sup>4</sup> , Blocking voltage	Control voltage <sup>5</sup> (Uc)	Rated current/pole @40°C <sup>2</sup>	Connection control	Connection power	Connection configuration	External supply (Us)	Features
RGC2A: 2-pole switching + 1-pole direct, ZC <sup>3</sup>	22: 42-242VAC, 800Vp	D: 5 - 32VDC	20: 20AAC 25: 25AAC 30: 30AAC 40: 40AAC	K: Screw G: Box Clamp	K: Screw G: Box Clamp	E: Contactor	D: 24VDC A: 90-250VAC	F: Integrated fan with over temperature protection (OTP) & EMR alarm output
RGC3A: 3-pole switching, ZC	60: 42-660VAC, 1200Vp	A: 20-275VAC, 24-190VDC	65: 65AAC 75: 75AAC					M: Monitoring for Mains loss, Load loss, SSR short circuit, open circuit and over-temperature with EMR alarm output and auxiliary output <sup>1</sup> (suitable only for resistive loads)

2. Refer to Current Derating curves

3. ZC= Zero Cross Switching

4. Operating voltage for RGC..M starts from 90VAC

5. AC control range for RGC..A.. is limited to 20-275VAC only

## Selection Guide: RGC2

Rated output voltage, U <sub>e</sub>	Control voltage, U <sub>c</sub>	Features	External supply, U <sub>s</sub>	Connection control / power	Rated operational current @ 40°C (I <sup>2</sup> t value)		
					25 AAC /pole (1,800A <sup>2</sup> s)	40 AAC /pole (6,600A <sup>2</sup> s)	75 AAC /pole (15,000A <sup>2</sup> s)
220VAC ZC	5-32VDC	-	-	Screw/Screw	RGC2A22D25KKE	-	-
	20-275VAC, 24-190VDC	-	-	Screw/Screw	RGC2A22A25KKE	-	-
600VAC ZC	5-32VDC	-	-	Screw/Screw	RGC2A60D25KKE	-	-
		-	-	Screw/Box	-	RGC2A60D40KGE	-
		OTP	24VDC	Box/Box	-	-	RGC2A60D75GGEDF
	20-275VAC, 24-190VDC	-	-	Screw/Screw	RGC2A60A25KKE	-	-
		-	-	Screw/Box	-	RGC2A60A40KGE	-
	20-275VAC	OTP	90-250VAC	Box/Box	-	-	RGC2A60A75GGGEAF

## Selection Guide: RGC2..M

Rated output voltage, U <sub>e</sub>	Control voltage, U <sub>c</sub>	Features	External supply, U <sub>s</sub>	Connection control / power	Rated operational current @ 40°C (I <sup>2</sup> t value)		
					25 AAC /pole (1,800A <sup>2</sup> s)	40 AAC /pole (6,600A <sup>2</sup> s)	75 AAC /pole (15,000A <sup>2</sup> s)
600VAC, ZC	5-32VDC	Monitoring	24VDC	Box/Screw	RGC2A60D25GKEDM	-	-
		Monitoring	24VDC	Box/Box	-	RGC2A60D40GGEDM	RGC2A60D75GGEDFM
		Monitoring	90-250VAC	Box/Screw	RGC2A60D25GKEAM	-	-
		Monitoring	90-250VAC	Box/Box	-	RGC2A60D40GGGEAM	RGC2A60D75GGGEAFM
	20-275VAC	Monitoring	90-250VAC	Box/Screw	RGC2A60A25GKEAM	-	-
		Monitoring	90-250VAC	Box/Box	-	RGC2A60A40GGGEAM	RGC2A60A75GGGEAFM

## Selection Guide: RGC3

Rated output voltage, U <sub>e</sub>	Control voltage, U <sub>c</sub>	Features	External supply, U <sub>s</sub>	Connection control / power	Rated operational current @ 40°C (I <sup>2</sup> t value)				
					20 AAC /pole (1,800A <sup>2</sup> s)	25 AAC /pole (1,800A <sup>2</sup> s)	30 AAC /pole (6,600A <sup>2</sup> s)	40 AAC /pole (6,600A <sup>2</sup> s)	65 AAC /pole (15,000A <sup>2</sup> s)
220VAC, ZC	5-32VDC	-	-	Screw/ Screw	RGC3A22D20KKE	-	-	-	-
	20-275VAC 24-190VDC	-	-	Screw/ Screw	RGC3A22A20KKE	-	-	-	-
600VAC, ZC	5-32VDC	-	-	Screw/ Screw	RGC3A60D20KKE	RGC3A60D25KKE	-	-	-
		-	-	Screw/Box	-	-	RGC3A60D30KGE	-	-
		OTP	24VDC	Box/Box	-	-	-	RGC3A60D40GGEDF	RGC3A60D65GGEDF
	20-275VAC 24-190VDC	OTP	90-250VAC	Box/Box	-	-	-	-	RGC3A60D65GGGEAF
		-	-	Screw/ Screw	RGC3A60A20KKE	RGC3A60A25KKE	-	-	-
	20-275VAC	OTP	90-250VAC	Box/Box	-	-	-	RGC3A60A40GGGEAF	RGC3A60A65GGGEAF

## Selection Guide: RGC3..M

Rated output voltage, U <sub>e</sub>	Control voltage, U <sub>c</sub>	Features	External supply, U <sub>s</sub>	Connection control / power	Rated operational current @ 40°C (I <sup>2</sup> t value)			
					20 AAC /pole (1,800A <sup>2</sup> s)	25 AAC /pole (1,800A <sup>2</sup> s)	30 AAC /pole (6,600A <sup>2</sup> s)	65 AAC /pole (15,000A <sup>2</sup> s)
600VAC, ZC	5-32VDC	Monitoring	24VDC	Box/Screw	RGC3A60D20GKEDM	RGC3A60D25GKEDM	-	-
		Monitoring	24VDC	Box/Box	-	-	RGC3A60D30GGEDM	RGC3A60D65GGEDFM
		Monitoring	90-250VAC	Box/Screw	RGC3A60D20GKEAM	RGC3A60D25GKEAM	-	-
		Monitoring	90-250VAC	Box/Box	-	-	RGC3A60D30GGGEAM	RGC3A60D65GGGEAFM
	20-275VAC	Monitoring	90-250VAC	Box/Screw	RGC3A60A20GKEAM	RGC3A60A25GKEAM	-	-
		Monitoring	90-250VAC	Box/Box	-	-	RGC3A60A30GGGEAM	RGC3A60A65GGGEAFM

## General Specifications

		RGC	RGC..M
Latching voltage (across each pole L-T)		<20V	<20V
Operational frequency range		45 to 65Hz	45 to 65Hz
Power factor		>0.5 at rated voltage	>0.5 at rated voltage
CE marking		Yes	Yes
Touch protection		IP20	IP20
LED status indication			
	Control ON	Green, full intensity	Green, full intensity
	Supply ON		Green, half intensity
	Load ON		Yellow, full intensity
	Alarm ON	Red, full intensity ( <b>RGC..F</b> )	Red, flashing <sup>6</sup>
Pollution degree		2 (non-conductive pollution with possibilities of condensation)	2 (non-conductive pollution with possibilities of condensation)
Over-voltage category		III (fixed installations)	III (fixed installations)
Isolation			
	Input & Output to Case	4000Vrms	4000Vrms
	Input to Output	4000Vrms	2500Vrms

6: Refer to Red LED Alarm Indications

## Output Voltage Specifications

		RGC	RGC..22	RGC..60
Operational voltage range, U <sub>e</sub>			42-220VAC, -15%/+10% on max	42-600VAC, -15%/+10% on max
		RGC..M	90-220VAC, -15%/+10% on max	90-600VAC, -15%/+10% on max
Blocking voltage			800Vp	1200Vp
Internal varistors (across each pole)			275V	625V

## Output Specifications: RGC2

	RGC2..25	RGC2..40	RGC2..75
Rated operational current per pole <sup>7</sup>			
AC-51 @ Ta=25°C	32 AAC	50 AAC	85 AAC
AC-51 @ Ta=40°C	27 AAC	40 AAC	75 AAC
AC-53a @ Ta=40°C	11.5 AAC	16.5 AAC	28 AAC
No. of motor starts <sup>8</sup>			
(x: 6, Tx:6s, F:50%) @ 40°C	30	30	30
Minimum operational current	250 mAAC	400 mAAC	500 mAAC
RGC..F, M	1.2AAC	1.2AAC	1.2AAC
Maximum off-state leakage current	5 mAAC	5 mAAC	5 mAAC
Rep. overload current			
(Motor rating) UL508: Ta=40°C, t <sub>ON</sub> =1s, t <sub>OFF</sub> =9s, 50 cycles	61 AAC	107 AAC	154 AAC
Maximum transient surge current			
(I <sub>TSM</sub> ), t=10ms	600 Ap	1150 Ap	1750 Ap
I <sup>2</sup> t for fusing (t=10ms) Minimum	1800 A <sup>2</sup> s	6600 A <sup>2</sup> s	15000 A <sup>2</sup> s
Critical dv/dt (@ T <sub>j</sub> init = 40°C)	1000 V/us	1000 V/us	1000 V/us

7: Refer to Derating Curves

8: Overload cycle definition, x: multiple of AC-53a, Tx: duration of current surge, F: duty cycle

## Output Specifications: RGC3

	RGC3..20	RGC3..25	RGC3..30	RGC3..40	RGC3..65
Rated operational current per pole <sup>7</sup>					
AC-51 @ Ta=25°C	25 AAC	32 AAC	37 AAC	42 AAC	71 AAC
AC-51 @ Ta=40°C	20 AAC	28 AAC	30 AAC	42 AAC	66 AAC
AC-53a @ Ta=40°C	10 AAC	11 AAC	14 AAC	17 AAC	25 AAC
No. of motor starts <sup>8</sup> (x: 6, Tx:6s, F:50%) @ 40°C	30	30	30	30	30
Minimum operational current RGC..F, M	250mAAC 1.2AAC	250mAAC 1.2AAC	400mAAC 1.2AAC	400mAAC 1.2AAC	500mAAC 1.2AAC
Maximum Off-state leakage current	5mAAC	5mAAC	5mAAC	5mAAC	5mAAC
Rep. overload current (Motor rating) UL508: Ta=40°C, t <sub>ON</sub> =1s, t <sub>OFF</sub> =9s, 50 cycles	61 AAC	84 AAC	107 AAC	107 AAC	154 AAC
Maximum transient surge current (I <sub>TSM</sub> ), t=10ms	600 Ap	600 Ap	1150 Ap	1150 Ap	1750 Ap
I <sup>2</sup> t for fusing (t=10ms) Minimum	1800 A <sup>2</sup> s	1800 A <sup>2</sup> s	6600 A <sup>2</sup> s	6600 A <sup>2</sup> s	15000 A <sup>2</sup> s
Critical dv/dt (@ T <sub>j</sub> init = 40°C)	1000 V/us	1000 V/us	1000 V/us	1000 V/us	1000 V/us

7: Refer to Current Derating curves

8: Overload cycle definition, x: multiple of AC-53a, Tx: duration of current surge, F: duty cycle

## Motor Ratings: HP (UL508) / kW (EN/IEC 60947-4-2) @ 40°C

	115VAC	230VAC	400VAC	480VAC	600VAC
<b>RGC2..25</b>	1½HP / 1.1kW	3HP / 3.0kW	5HP / 5.5kW	7½HP / 5.5kW	10HP / 9.0kW
<b>RGC2..40</b>	3HP / 1.5kW	5HP / 4.0kW	10HP / 7.5kW	10HP / 9.0kW	15HP / 11.0kW
<b>RGC2..75</b>	5HP / 3.0kW	10HP / 7.5kW	15HP / 11.0kW	20HP / 15.0kW	25HP / 22.0kW
<b>RGC3..20</b>	1HP / 0.75kW	3HP / 2.2kW	5HP / 4.0kW	7½HP / 5.5kW	10HP / 7.5kW
<b>RGC3..25</b>	2HP / 1.1kW	3HP / 2.2kW	7½HP / 4.0kW	10HP / 5.5kW	10HP / 7.5kW
<b>RGC3..30</b>	2HP / 1.5kW	5HP / 3.0kW	10HP / 5.5kW	10HP / 7.5kW	15HP / 11.0kW
<b>RGC3..40</b>	2HP / 1.5kW	5HP / 4.0kW	10HP / 7.5kW	10HP / 9.0kW	15HP / 11.0kW
<b>RGC3..65</b>	3HP / 3.0kW	10HP / 5.5kW	15HP / 11.0kW	20HP / 15.0kW	25HP / 20.0kW

## Control Specifications (A1, A2)

	RG..D..	RG..A..
Control voltage range, U <sub>c</sub>	5 - 32 VDC	20-275 VAC, 24 (-10%) -190 VDC
Pick-up voltage	4.8 VDC	20 VAC/DC
Drop-out voltage	1.0 VDC	5 VAC/DC
Maximum reverse voltage	32 VDC	-
Maximum response time	0.5 cycle + 500us @ 24 VDC	2 cycles @ 230VAC/110VDC
Input current @ 40°C	see diagrams below	see diagrams below