RSGD 75mm

Three phase AC motor soft starter

Description

RSGD is an extremely compact and easy to use 3-phase soft starter for AC induction motors rated up to 100Arms.
The starting parameters can be easily set-up through 3 knobs.
The integrated motor overload protection (Class 10) and Modbus communication result in a higher installation flexibility.

Benefits

- **Easy to use.** The RSGD is equipped with a self-learning algorithm that automatically adjusts the start parameters to optimise the motor starts and stops.
- **Fast installation and set-up.** Only 3 settings are required (FLC, ramp-up and ramp-down).
- **Compact dimensions.** 100 Arms in 75mm wide housing.
- **Integrated protection.** Diagnostic functions provide additional protection. RSGD is also equipped with an overload protection (Class 10).
- **Torque control during ramp-down.** Smoother deceleration of the load.
- **Complete monitoring.** The RSGD is equipped with a Modbus/RTU communication port by 2-wire RS485 connection.
- **Guided model selection.** Easy to use selection tool to select the appropriate soft starter model depending on the application type.

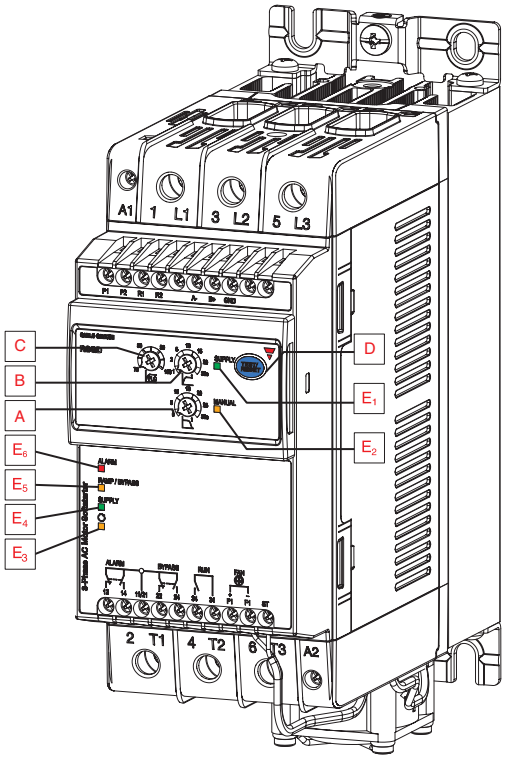
Applications

RSGD soft starters are the ideal solution for 3-phase fixed speed AC induction motor applications where there is the need to reduce the starting current and/or minimise stresses on the motor during start and stop.
The RSGD offers a number of integrated diagnostic functions that can replace additional components inside the electrical panel.
Typical applications include: compressors, pumps and fans.

Main functions

- Soft starting and soft stopping of AC motors.
- Integrated electronic overload protection (Class 10).
- Serial communication (Modbus) over RS485.

Structure



Element	Component	Function
A	Ramp-down time selector	Sets the desired motor stopping time.
B	Ramp-up time selector	Sets the desired motor starting time.
C	FLC knob selector	Sets the maximum allowed current during motor start and protects the motor against overheating (acc. to overload Trip Class 10).
D	Test/Reset	• Simulate overload alarm. • Reset alarms. • Set alarm recovery mode. • Enable/disable phase sequence protection.
E_1/E_4	LED indicators	Supply. Indicates that the RSGD supply is ON.
E_2	LED indicators	Manual. Indicates the alarm reset mode.
E_3	LED indicators	Phase sequence. Indicates if the wrong phase sequence protection is enabled (LED OFF) or disabled (LED ON).
E_5	LED indicators	Ramping/bypass. Indicates whether RSGD is in ramping (flashing) or bypass (fully ON).
E_6	LED indicators	Alarm. Indicates that the RSGD is in alarm. The number of flashes indicates the alarm type.

Mode of operation

The RSGD series of soft starters works on two distinct self-learning algorithms depending on the ramp-up time settings.

Ramp-up	Mode of operation
1 or 2 seconds	• When the ramp-up knob is in position 1 or 2, the RSGD will follow a self learning current limit algorithm. • As soon as A1-A2 (or ST for RSGD60 models) control voltage signal is applied, the RSGD will start to ramp-up the motor. • At the very first start the current limit will be 4 x FLC setting. • In the subsequent starts, the RSGD will automatically adjust the current limit setting to maintain the motor start time as close as possible to the ramp-up time setting.
≥ 5 seconds	• When the ramp-up knob is in position 5 or above, the RSGD will follow a self-learning current ramp algorithm. • The RSGD will start with a set of default parameters for starting torque. • Depending on the ramp-up time setting, the RSGD will apply a current ramp algorithm to start the motor as close as possible to the set ramp-up time. • During the motor start, the current will be limited to a maximum of 3.5 x FLC setting. • In the subsequent starts, the RSGD will continue to adjust the starting parameters of initial torque and current ramp to ensure that the motor is started as close as possible to the set ramp-up time.

Ramp-down	Mode of operation
1 to 30 seconds	• During ramp-down, the RSGD works on a torque control algorithm for smoother stopping of the motor. • As soon as the control voltage signal A1-A2 (or ST for RSGD 60 models) is removed, the RSGD will slow down the motor gradually according to the ramp-down setting. • The power semiconductors will be switched OFF as soon as the time (as per ramp-down setting) has elapsed unless there is a risk of exceeding the maximum temperature on the semiconductors. In such a case the RSGD will leave the motor to coast to stop.
0 seconds	• If the ramp-down knob is set to 0, the RSGD will leave the motor to coast to stop (no ramp-down).

Features

General

Material	PA66
Assembly	DIN or panel
Protection grade	IP10
Weight	About 2.3 Kg
Overvoltage category	Cat. III

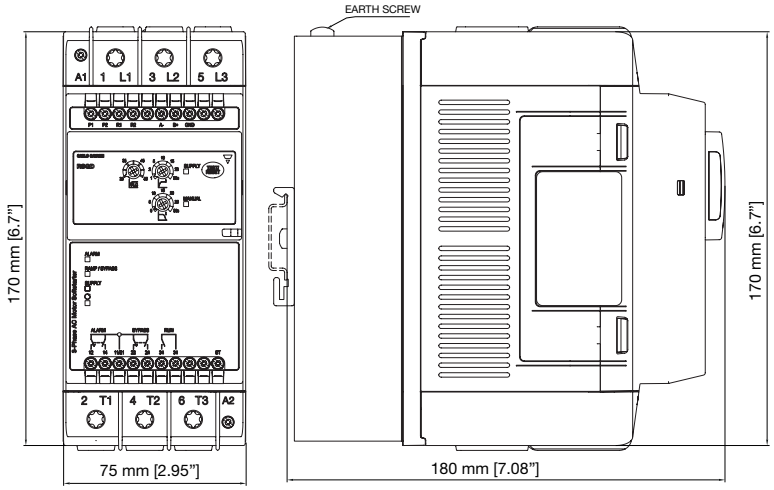


Fig. 1 *RSGD 55 to 85 (DIN rail mount version)*

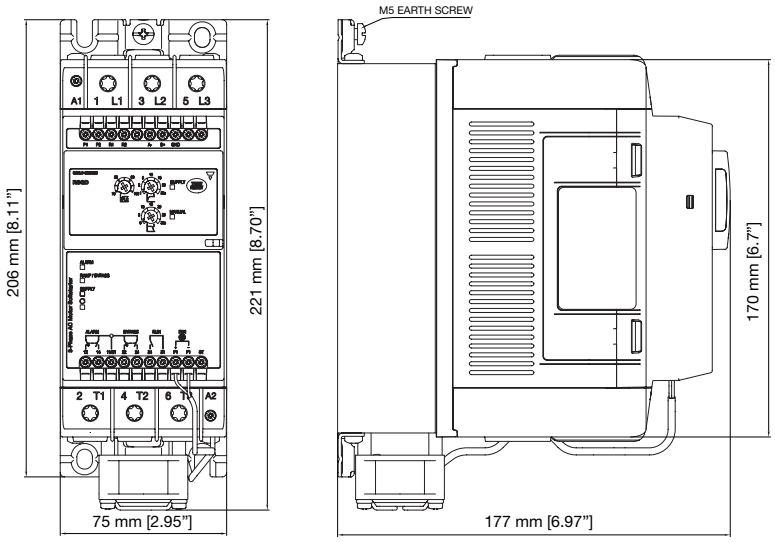


Fig. 2 *RSGD 100 (panel mount version)*

Settings

Ramp-up time	1 - 30 s
Ramp-down time	0 - 30 s
Initial torque	Automatically determined by RSGD
FLC range settings	RSGD 55: 25 - 55 RSGD 70: 40 - 70 RSGD 85: 55 - 85 RSGD 100: 70 - 100

Power Supply

	RSGD40	RSGD60
Operational voltage range	187 - 440 VACrms	187 - 660 VACrms
Supply current at Idle	< 30 mArms	
Blocking voltage	1200 Vp	1600 Vp
Rated AC frequency	50/60 Hz (+/- 10%)	
Rated insulation voltage	600 VAC	690 VAC
Dielectric withstand voltage: **Supply to input** **Supply to heatsink**	 2.5 kVrms 2.5 kVrms	
Integrated varistor	Yes (across controlled phases)	

Environmental

Working temperature	-20°C to +60°C (-4°F to +140°F). Note: for temperatures > 40°C derating applies.
Storage tempreature	-40°C to +80°C (-40°F to +176°F).
Relative humidity	< 95% non-condensing @ 40°C.
Pollution degree	2
Installation category	III
Installation altitude	1000 m
Vibration **Frequency 1** **Frequency 2**	Acc. to IEC/EN 60068-2-6 2 [+3/-0] Hz to 25 Hz displacement +/- 1.6 mm 10 Hz to 55 Hz @ 2g (19.96m/s^2) @ constant displacement

Compatibility and conformity

Standard compliance	IEC/EN 60947-4-2
Approvals	

Electromagnetic compatibility (EMC) - immunity	
Electrostatic discharge (ESD)	8 kV air discharge, 4 kV contact.
Radiated radio frequency	10 V/m, from 80 MHz to 1 GHz (PC1) 10 V/m, from 1.4 to 2 GHz (PC1) 3 V/m, from 2 to 2.7 GHz (PC1)
Electrical fast transient (burst)	Output: 4 kV, 5 kHz (PC2) AC input: 2 kV, 5 kHz (PC2) DC input: 2 kV, 5 kHz (PC2) Signal and control: 1 kV, 5 kHz (PC2)
Conducted radio frequency	10 V/m, from 0.15 to 80 MHz
Electrical surge	Output, line to line: 1 kV (PC2) Output, line to earth: 2 kV (PC2) AC input, line to line: 1 kV (PC2) AC input, line to earth: 2 kV (PC2) DC input, line to line: 0.5 kV (PC2) DC input, line to earth: 1 kV (PC2) Signal and control, line to earth: 1 kV (PC2)
Voltage dips	0% for 10 ms and 20 ms (PC2) 40% for 200 ms (PC2) 70% for 500 ms (PC2) 80% for 5000 ms (PC3) 0% for 5000 ms (PC3)

Electromagnetic compatibility (EMC) - emissions	
Radio interference field emission (radiated)	Class A (Industrial): from 30 to 1000 MHz
Radio interference voltage emissions (conducted)	Class A (Industrial): from 0.15 to 30 MHz

Note: the tests were done using a screened cable for the communication lines.
PC2 (performance criteria 2): during the test, degradation of performance or partial loss of function is allowed. However, when the test is complete, the product should return operating as intended.

Inputs

	RSGD40..E0V	RSGD40..F0V	RSGD60..FFV	RSGD60..GGV
Control voltage (Uc)	A1 - A2: 110 - 400 VAC +10%, -15%	A1 - A2: 24 VAC/VDC +10%, -10%	ST: 24 VAC/VDC +10%, -15%	ST: 100 - 240 VAC +10%, -15%
Control voltage range (Uc)	93.5 - 440 VAC	21.6 - 26.4 VAC/DC	21.6 - 26.4 VAC/DC	85 - 264 VAC
Maximum pick-up voltage	80 VAC	20.4 VAC/DC	20.4 VAC/DC	80 VAC
Minimum drop out voltage	20 VAC	5 VAC/DC	5 VAC/DC	20 VAC
Supply voltage range (Us)	-	-	A1 - A2: 24 VAC/DC +10%, -10%	A1 - A2: 100 - 240 VAC +10%, -15%
Rated AC frequency	45 - 66 Hz	45 - 66 Hz (applies to 24 VAC supply)		45 - 66 Hz
Rated insulation voltage (Ui)	500 VAC			
Dielectric strength: **Dielectric withstand voltage** **Rated impulse withstand voltage**	2 kVrms 4 kVrms			
Control input current	0.5 - 5 mArms	0.4 - 1 mArms	0.5 - 1.5 mArms	0.4 - 3 mArms
Input to output response time	200 ms	200 ms	1.5 s	200 ms
Integrated varistor	Yes			

Note 1: for the Canadian application, the control terminals A1, A2 (or A1, A2, ST for RSGD60 versions) of the RSGD devices shall be supplied by a secondary circuit where power is limited by a transformer, rectifier, voltage divider, or similar device that derives power from a primary circuit, and where the short-circuit limit between conductors of the secondary circuit or between conductors and ground is 1500VA or less. The short-circuit volt ampere limit is the product of the open circuit voltage and the short circuit ampere.
Note 2: RSGD60 soft starters require a separate 100 - 240V, 50/60Hz single phase control source. Output connections (L1, L2, L3, T1, T2, T3) are not galvanically isolated from the external supply connections (A1, A2, ST).

Outputs

	RSGD..55	RSGD..70	RSGD..85	RSGD..100
Overload cycle @ 40°C surrounding temperature (acc. to EN/IEC 60947-4-2)	AC53b : 3 - 12 : 348			
Maximum number of starts/hr @ rated overload cycle @ 40°C surrounding temperature	10			
Maximum number of starts/hr (with fan) @ rated overload cycle @ 40°C surrounding temperature	-	-	-	10
Rated operational current @ 40°C	55 Arms	70 Arms	85 Arms	100 Arms
Rated operational current @ 50°C	50 Arms	64 Arms	78 Arms	88.5 Arms
Rated operational current @ 60°C	46 Arms	59 Arms	71 Arms	77 Arms
Minimum load current	5 Arms			

Note: the overload cycle describes the switching capability of the soft starter at a surrounding temperature of 40°C as described in EN/IEC 60947-4-2. An overload cycle AC53b:3-12:348 means that the soft starter can handle a starting current of 3x Ie for 12 seconds followed by an OFF time of 348 seconds.

Auxiliary relays

Number of output relays	3
Function of relays	Alarm, bypassed (top of ramp), run.
Rated operational voltage	250 VAC/30 VDC
Rated insulation voltage	250 VAC
Dielectric withstand voltage	2.5 kV
Overvoltage category	II
Type of control circuit	Electromechanical relay
Number of contacts	Alarm and bypassed: 2 Run: 1
Type of contacts	Alarm and bypassed: changeover (NO, NC) Run: normally open (NO)
Type of current	AC / DC
Rated operational current	3 Arms @ 250 VAC, 3 Arms @ 30 VDC

RS485

Type	Bi-directional (static and dynamic variables and parameters)
Functions	Configuration of device Start/Stop Modification of set-point parameters Monitoring of measured variables
Connection	2-wires Note: to reduce the noise use a shielded cable and connect the shield to GND terminal and to the ground at the same point.
Address	Default : 1 Selectable via software: range 1 - 247
Protocol	MODBUS (RTU)
Factory defined data format	Data bits: 8 Parity: none Stop bit: 1 Selectable via software: parity: none, odd, even
Baud rate	Default: 9.6k bits/s Selectable via software: 9.6k, 19.2k, 38.4k bits/s

Performance

Current / power ratings: kW and HP @ 40°C

Model	IEC Rated Current	220 - 240 VAC	380 - 415 VAC	440 - 480 VAC	550 - 600 VAC
RSGD..55	55 Arms	15 kW / 20 HP	30 kW / 30 HP	30 kW / 40 HP	45 kW / 50 HP
RSGD..70	70 Arms	20 kW / 25 HP	37 kW / 40 HP	45 kW / 50 HP	55 kW / 60 HP
RSGD..85	85 Arms	22 kW / 30 HP	45 kW / 50 HP	45 kW / 60 HP	55 kW / 75 HP
RSGD..100	100 Arms	30 kW / 30 HP	55 kW / 50 HP	55 kW / 75 HP	75 kW / 100 HP

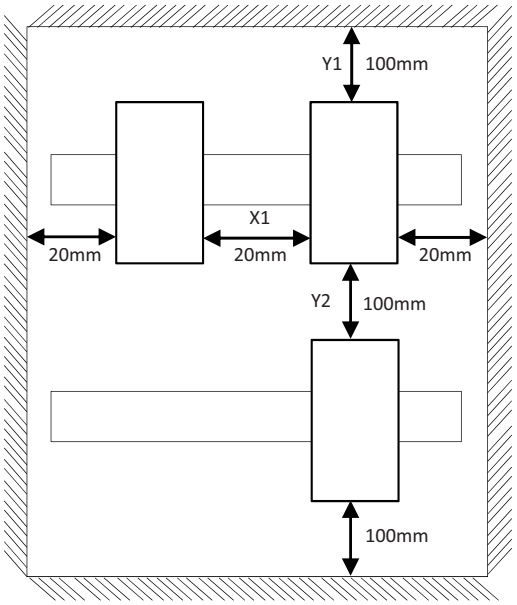
Ratings:
kW rating according to: IEC/EN 60947-4-2
HP rating according to: UL508

Starts per hour

The table below indicates the maximum number of starts/hr that can be done by the different RSGD models at different operating currents with a surrounding temperature of 40°C.

Model	Operational current					
	25 Arms	45 Arms	55 Arms	70 Arms	85 Arms	100 Arms
RSGD..55	25	13	10	-	-	-
RSGD..70	30	16	13	10	-	-
RSGD..85	40	21	17	12	10	-
RSGD..100	40	22	18	14	12	10

Current derating by spacing



X1	Y1, Y2	% current derating
20 mm	100 mm	0 %
10 mm	100 mm	10 %
0 mm	100 mm	20 %

Note: the above derating needs to consider the derating by temperature as well if the surrounding temperature is > 40°C.

Current derating by temperature

Model	% derating factor (%d.f.) with surrounding temperature > 40°C
RSGD..55	0.8 % / °C
RSGD..70	0.7 % / °C
RSGD..85	0.8 % / °C
RSGD..100	1.15 % / °C

To find the permissible operational current at a specific temperature >40°C apply the following formula:

$Ie_{derated} = Ie * (1 - ((T_{surrounding}$ °C - 40°C)*%d.f.)/100)

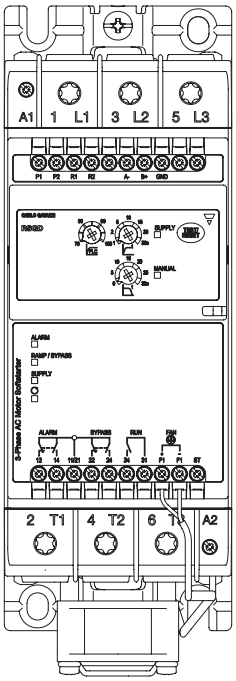
Example:
$T_{surrounding}$ = 50°C

Model: RSGD40100E0VX311C

$Ie_{derated}$ = 100 * (1 - ((50°C - 40°C) * 1.15)/100) = 88.5 Arms

Connection Diagrams

Terminal markings



Marking	RSGD40	RSGD60
1 L1, 3 L2, 5 L3	Line connections	
2 T1, 4 T2, 6 T3	Load connections	
A1, A2	Control voltage	Supply voltage
ST	-	Control voltage
11, 12, 14	Alarm indication (changeover relay)	
21, 22, 24	Top of ramp indication (changeover relay)	
31, 34	Run relay (normally open, NO)	
R1, R2	Remote reset of alarms	
P1, P2	PTC input	
A - , B + , GND	Modbus connections	
F1+, F1- *	Fan connection	
Note:	For the 24VDC (RSGD40..F0, RSGD60..FF) models, connect A1 to the positive (+) and A2 to the negative (-) terminal. * Only for RSGD..100 models	

Diagrams

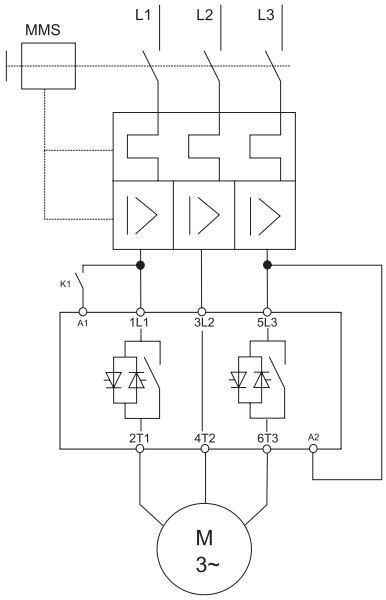


Fig. 3 *RSGD40E0*

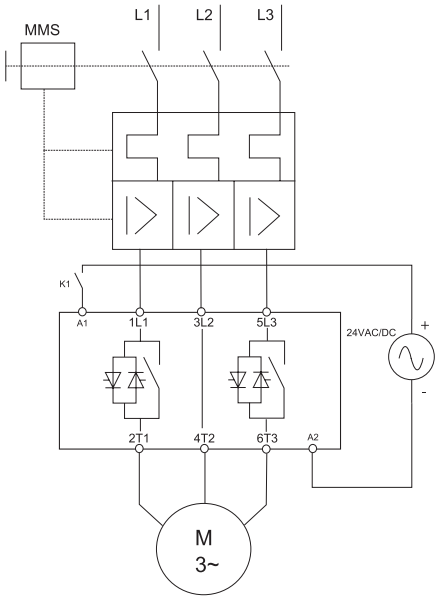


Fig. 4 *RSGD40F0*

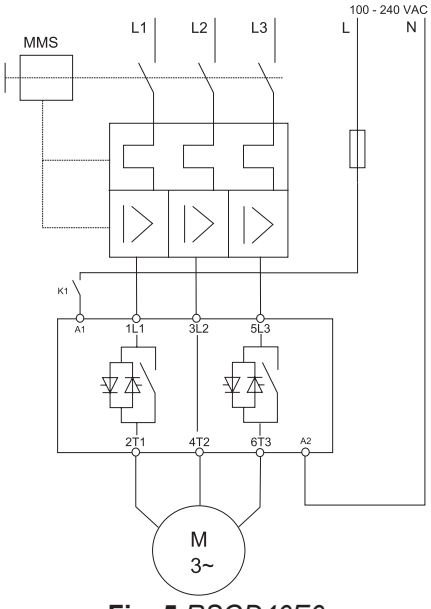


Fig. 5 *RSGD40E0*

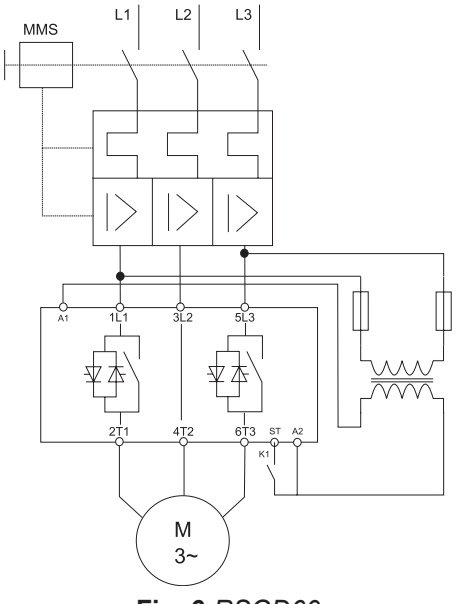


Fig. 6 *RSGD60*

Specifications

Line conductors 1 L1, 3 L2, 5 L3, 2 T1, 4 T2, 6 T3 (acc. to EN60947-1)	
Rigid (solid or stranded)	2 x (10 - 50 mm^2)
Flexible with end sleeve (ferrule)	2 x (10 - 50 mm^2)
UL/cUL rated data Rigid (solid or stranded)	2 x (AWG 8 - 1/0)
Terminal screws	M8
Maximum tightening torque	12 Nm (106 lb.in) with torx TT40 bit
Stripping length	20.0 mm

Secondary conductors A1, A2 (acc. to EN60998)	
Flexible	0.5 - 1.5 mm^2
Rigid (solid or stranded)	0.5 - 2.5 mm^2
Flexible with end sleeve (ferrule)	0.5 - 1.5 mm^2
UL/cUL rated data Rigid (solid or stranded)	AWG 10 - 18
Terminal screws	M3
Maximum tightening torque	0.6 Nm (5.3 lb.in) with posidrive bit 0
Stripping length	6.0 mm

Auxiliary conductors	
Rigid (solid or stranded)	0.5 - 2.5 mm^2
Flexible with end sleeve (ferrule)	0.05 - 1.5 mm^2
UL/cUL rated data Rigid (solid or stranded)	AWG 30 - 32
Terminal screws	M3
Maximum tightening torque	0.45 Nm (4.0 lb.in)
Stripping length	6.0 mm

Use 75°C copper (Cu) conductors.

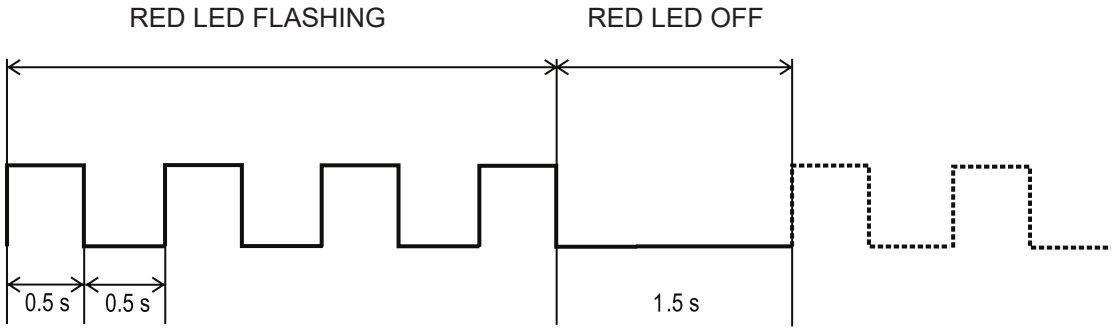
Troubleshooting

LED and relay status indications

State	Supply (green LED)	Ramp/By-pass (yellow LED)	Alarm (red LED)	Manual (yellow LED)	Relay contact position		
					Alarm (11, 12, 14)	Bypass (21, 22, 24)	Run (31, 34)
Idle	ON	OFF	OFF	OFF/ON	11, 12	21, 22	Open
Ramping	ON	Flashing	OFF	OFF/ON	11, 12	21, 22	Closed
Bypass	ON	ON	OFF	OFF/ON	11, 12	21, 24	Closed
Alarm (Auto-recovery)	ON	OFF	Flashing	OFF	11, 14	21, 22	Open
Alarm (Manual recovery)	ON	OFF	Flashing	ON	11, 14	21, 22	Open
Internal fault	ON	OFF	ON	OFF/ON	11, 14	21, 22	Open

Alarms

The RSGD includes a number of diagnostics and protection features each of which is signalled through a flashing sequence on the red LED.



Number of flashes	2
Alarm	Wrong phase sequence
Alarm description	If the connection to the soft starter is not done in the correct sequence (L1, L2, L3), the RSGD will trigger the wrong phase sequence alarm and the motor will not be started.
Alarm recovery period	N/A
Consecutive alarms for hard reset	1
Action to recover alarm	User intervention is required to change the wiring sequence to recover alarm. Note: the phase sequence monitoring can be disabled. To disable the alarm, press the Test/Reset button for 10 seconds when the RSGD is in IDLE state. The yellow LED will turn ON. ATTENTION: in this mode, if the wiring is not in the correct sequence, the motor will rotate in the reverse direction.
Troubleshooting	• Check that wiring on L1, L2, L3 is in the correct sequence. • If you need to reverse the motor, make sure that the phase sequence LED is ON (phase sequence protection disabled).

Number of flashes	3
Alarm	Line voltage out of range
Alarm description	At every power-up the RSGD automatically detects the supply voltage level and determines whether it is working on a 220, 400, 480* or 600* V supply. The under- or over- voltage alarm level is then set at a level of -20% and + 20% (from the measured supply voltage level) respectively. If the supply voltage level is out of these limits for more than 5 seconds then the line voltage out of range alarm will be triggered. * Applies to RSGD60 models. Note: for RSGD60 over-voltage alarm level (for the case of a 600V supply) is 675V (600V + 11%).
Alarm recovery period	5 minutes (If manual reset mode is applied, alarm can be reset by pressing the Test/Reset button).
Consecutive alarms for hard reset	4
Action to recover alarm	The alarm will self-recover (in auto-recovery mode) after 5 minutes from when the supply voltage is within limits.
Troubleshooting	• Check supply voltage level across L1, L2, L3 terminals. • Make sure that you are not using a RSGD40 model on a supply voltage > 440 VAC.

Number of flashes	4
Alarm	Phase loss (motor side)
Alarm description	If any of the phases on the load (motor) side becomes open the RSGD will trip after 5 seconds to protect the motor from running/ starting on 2 phases. Note: this alarm will also be triggered when a current unbalance of > 20% is detected on any of the three line currents for a minimum of 5 secs. Additionally if a SCR and/or bypass relay is open (damaged) the same alarm will be triggered.
Alarm recovery period	5 minutes (If manual reset mode is applied, alarm can be reset by pressing the Test/ Reset button).
Consecutive alarms for hard reset	4
Action to recover alarm	Check connections on the output side of the soft starter and on the motor terminals. The alarm will self-recover (in Auto-recovery mode) after 5 minutes.
Troubleshooting	• Check for any loose connections on the T1, T2, T3 side of the soft starter. • Check for any loose connections on the motor terminals. • Check motor windings.

Number of flashes	5
Alarm	Locked rotor
Alarm description	If a current ≥ 8xFLC setting for 100 msec is detected, the RSGD will issue the locked rotor alarm.
Alarm recovery period	5 minutes (If manual reset mode is applied, alarm can be reset by pressing the Test/ Reset button).
Consecutive alarms for hard reset	4
Action to recover alarm	The alarm will self-recover (in Auto-recovery mode) after 5 minutes.
Troubleshooting	• Check that FLC setting is not smaller than motor name plate current. • Check that the RSGD model is suitably rated for the motor. • Check motor windings resistance to check if motor is damaged.

Number of flashes	7
Alarm	Over-temperature
Alarm description	The RSGD constantly measures the heatsink and thyristors (SCRs) temperature. If the maximum internal temperature is exceeded (for a minimum of 0.5 sec) an over-temperature alarm is triggered. This condition can be triggered by too many starts per hour, an over-load condition during starting and/or stopping or a high surrounding temperature.
Alarm recovery period	Depends on the cooling period. (If MANUAL reset mode is applied, alarm can be reset by pressing the Test/ Reset button). The RSGD will only recover if the internal temperature is within safe limits.
Consecutive alarms for hard reset	4
Action to recover alarm	The alarm will self-recover (in Auto-recovery mode) - the recovery period will depend on the cooling time required by RSGD. The higher the surrounding temperature, the longer the cooling period.
Troubleshooting	• Check that the specified number of starts/hr are not exceeded. • Check that the surrounding temperature around the soft starter is within limits.

Number of flashes	8
Alarm	Overload
Alarm description	The overload alarm can be triggered in case of the following conditions: Measured current > 1.05 x FLC during transition from ramp-up to bypass. High resistance (> 1000 ohm) at P1, P2 terminals. Load current > FLC. Trip time will vary according to Trip Class 10.
Alarm recovery period	Depends on the cooling period. (If manual reset mode is applied, alarm can be reset by pressing the Test/Reset button). The RSGD will only recover if the internal temperature is within safe limits.
Consecutive alarms for hard reset	4
Action to recover alarm	The alarm will recover automatically after 5 minutes. If manual reset mode is enabled, press Test/Reset button. Note: allow enough time for the motor to cool before attempting the next start.
Troubleshooting	• Check that the P1, P2 terminals are shorted (unless PTC is used). • Make sure that the FLC setting is according to the current on the motor name plate. • Check for any blockages in the load. • If overload alarm occurs during ramp-up try to set a shorter ramp-up time or increase the FLC setting.

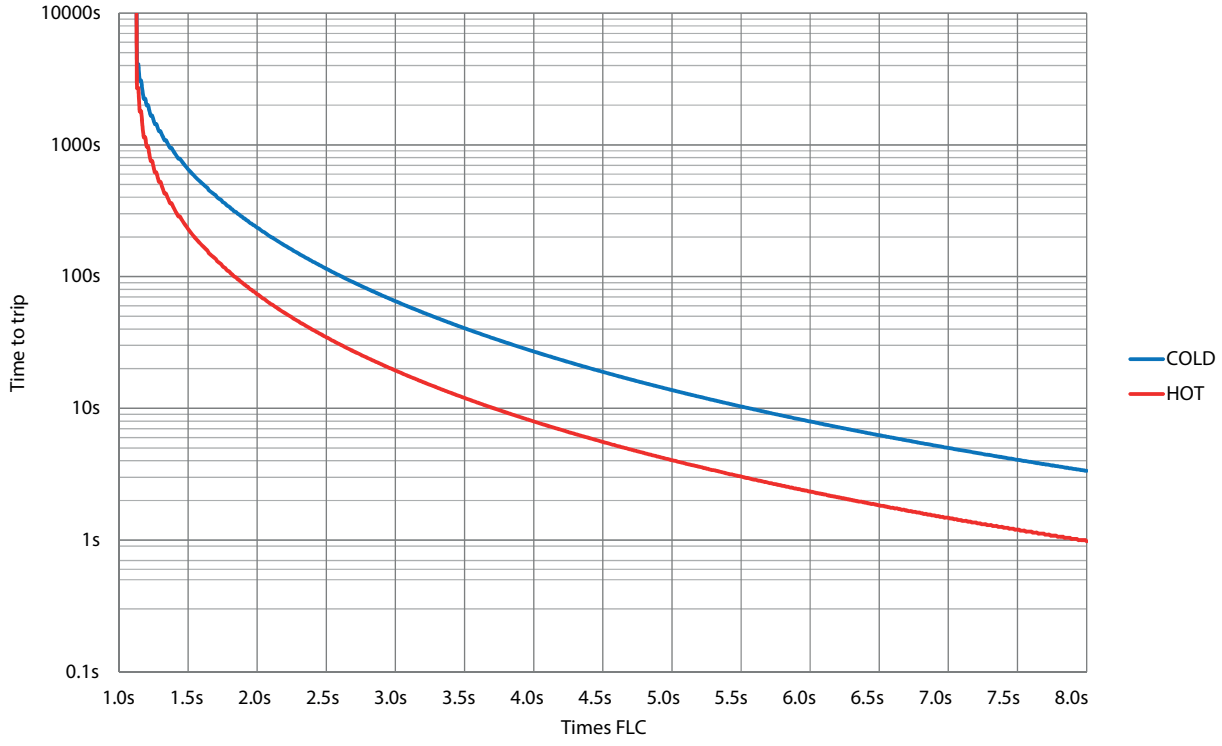


Fig. 7 *RSGD 75mm Class 10 motor overload trip profile*

PTC resistance - P1, P2 connection		
< 500Ω	No Trip	Normal running
> 1000Ω	Trip	Overload alarm (8 flashes) & alarm relay activated
< 300Ω	Reset	

Number of flashes	9
Alarm	Supply voltage unbalance
Alarm description	The RSGD measures the voltages on all the three phases and if there is a difference of more than 20% for ≥ 5sec between any of the phases, the RSGD will trigger the voltage unbalance alarm.
Alarm recovery period	5 minutes
Consecutive alarms for hard reset	4
Action to recover alarm	The alarm will recover automatically after 5 minutes. If manual reset mode is enabled, press Test/Reset button.
Troubleshooting	• Check supply voltage level across L1, L2, L3 terminals. • Check connections on the L1, L2, L3 terminals.

Number of flashes	10
Alarm	Shorted thyristor (SCR)
Alarm description	In case the RSGD detects that there is a damaged (shorted) thyristor (SCR) on any of the three phases, the soft starter will trip.
Alarm recovery period	-
Consecutive alarms for hard reset	1
Action to recover alarm	Note: this alarm is not resettable and it is suggested to replace the unit and contact a Carlo Gavazzi representative should this alarm occur.
Troubleshooting	• Check resistance across L1-T1 and L3-T3 to check for any short. • If any of the SCRs is damaged, replace the soft starter.

Number of flashes	Fully ON
Alarm	Internal fault
Alarm description	In case there is an internal fault in the RSGD circuitry, the Red LED will remain continuously ON.
Alarm recovery period	-
Consecutive alarms for hard reset	1
Action to recover alarm	Note: this alarm is not resettable and it is suggested to replace the unit and contact a Carlo Gavazzi representative should this alarm occur.
Troubleshooting	• Check resistance across L1 - T1 and L3 - T3 to check for any short. • If any of the SCRs is damaged, replace the soft starter.

Remote reset of alarms (R1, R2)	To reset alarms via the R1-R2 terminals you need to: Make sure that the alarm reset mode is set to MANUAL (MANUAL LED ON). To set the alarm reset mode to MANUAL press the Test/Reset button for 5 seconds when the RSGD is in IDLE mode. When RSGD is in alarm mode, short the terminals R1, R2 for 1 second. This will clear the alarm and RSGD will go to IDLE state. Note: do not apply voltage on R1, R2 terminals as this might damage the soft starter.

Short circuit protection

Type 1 protection implies that after a short circuit, the device under test will no longer be in a functioning state. The product variants listed in the table hereunder are suitable for use on a circuit capable of delivering not more than 5,000* symmetrical Amperes, 400 or 600 Volts maximum when protected by fuses. Tests at 5,000 A* were performed with Class RK5 fuses, fast acting; please refer to the table below for maximum allowed ampere rating of the fuse. Use fuses only.
* For RSGD 70 to RSGD 100 models 10,000 symmetrical Amperes apply.

Time delay fuses (UL 508)

Item No.	Max. fuse size [A]	Current [kA]	Class	Max. voltage [VAC]
RSGD..55	60	5	RK5	600
RSGD..70	100	10		
RSGD..85				
RSGD..100				

Manual motor starters

Item No.	Model No.	Current [kA]	Max. voltage [VAC]
RSGD..55	GMS63H-63	10	400
RSGD..70	GMS63H-75		
RSGD..85	GMS63H-100		
RSGD..100	GMS63H-100		

Note: products protected with manual motor starters must be wired with a minimum length of 1.5m of Cu wire conductor with a maximum cross-sectional area of 16mm^2 for 55A devices and 50mm^2 for higher currents. The length includes the conductors from the voltage source to the manual motor starter to the soft starter and from the soft starter to the load.

References

Further reading

Information	Where to find it
RSGD 75mm instruction manual	http://www.productselection.net/MANUALS/UK/mc_il_rsgd_75mm.pdf
Modbus communication protocol	http://www.productselection.net/MANUALS/UK/mc_rsgd_modbus_manual.pdf
Declaration of conformity	http://www.productselection.net/MANUALS/UK/mc_doc_rsxd_75mm.pdf
UL certificate	http://www.productselection.net/MANUALS/UK/mc_rsxd_75mm_ul_cert.pdf
CCC certificate	http://www.productselection.net/MANUALS/UK/mc_rsxd_75mm_ccc_cert.pdf
CAD drawings	http://www.productselection.net/DXF/MC_RSGD_75mm.zip

Selection guide and typical application settings

Category	Type	Trip Class	Ramp-up setting [s]	Ramp-down setting [s]
Compressors	Scroll compressor	5	1	0
	Screw compressor	5	2 to 5	0
	Piston compressor	5	2	0
	Centrifugal compressor	10	10	0
Pumps	Hydraulic pump	5	2	0
	Centrifugal pump (start time <10sec)	5	5 to 10	10
	Centrifugal pump (start time >10sec)	10	10 to 20	15
	Piston pump	10	5 to 10	0
Fans	Centrifugal fan (<0.5m diameter)	10	5 to 10	0
	Centrifugal fan (>0.5m diameter)	20	15 to 30	0
	Vacuum blowers	10	5 to 10	0
Feeders	Screw feeder	10	2 to 10	0
	Auger	10	5 to 10	0
Rotating machinery	Agitators	10	5 to 15	0
	Mixers	10	5 to 10	0
	Saws (<0.5m diameter)	10	5 to 10	5
	Saws (>0.5m diameter)	20	15 to 30	10
	Grinder	20	15 to 30	0
	Crusher	30	20 to 30	0
	Conveyors	10	5 to 10	5

Motor FLC [A]	Power kW @ 400V	HP Rating @ 400V	Trip class 5	Trip class 10	Trip class 20	Trip class 30
22	11	15	RSGD4055 . .	RSGD4055 . .	RSGD4055 . .	RSGD4055 . .
30	15	20	RSGD4055 . .	RSGD4055 . .	RSGD4055 . .	RSGD4070 . .
37	18.5	25	RSGD4055 . .	RSGD4055 . .	RSGD4070 . .	RSGD4085 . .
45	22	30	RSGD4055 . .	RSGD4055 . .	RSGD4085 . .	RSGD40100 . .
55	30	40	RSGD4055 . .	RSGD4055 . .	RSGD40100 . .	-
70	37	50	RSGD4070 . .	RSGD4070 . .	-	-
85	45	60	RSGD4085 . .	RSGD4085 . .	-	-
100	55	75	RSGD40100 . .	RSGD40100 . .	-	-

- - Contact Carlo Gavazzi representative for further information.
- . . Option “E0”: 110 - 400 VAC or option “F0”: 24 VAC/DC.

Motor FLC [A]	Power kW @ 575V	HP Rating @ 575V	Trip class 5	Trip class 10	Trip class 20	Trip class 30
22	15	20	RSGD6055 . .	RSGD6055 . .	RSGD6055 . .	RSGD6055 . .
27	18.5	25	RSGD6055 . .	RSGD6055 . .	RSGD6055 . .	RSGD6055 . .
32	22	30	RSGD6055 . .	RSGD6055 . .	RSGD6070 . .	RSGD6070 . .
41	30	40	RSGD6055 . .	RSGD6055 . .	RSGD6085 . .	RSGD6085 . .
52	37	50	RSGD6055 . .	RSGD6055 . .	RSGD60100 . .	-
62	45	60	RSGD6070 . .	RSGD6070 . .	-	-
77	55	75	RSGD6085 . .	RSGD6085 . .	-	-
100	75	100	RSGD60100 . .	RSGD60100 . .	-	-

- - Contact Carlo Gavazzi representative for further information.
- . . Option “GG”: 100 - 240 VAC or option “FF”: 24 VAC/DC.

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Manual motor starters	GMS-63 □ -63	□: S: standard H: high breaking capacity
Finger guards	RFCG X6	6 pcs per box
Cooling fan	RFAN-75-40 12 X1	For RSGD 100 only

Order code

RSG D □ □ □ V X31 □ C

Enter the code entering the corresponding option instead of □

Code	Option	Description	Notes
R	-		
S	-		
G	-		
D	-		
□	40	220 – 400 VAC +10% -15% operational voltage (Ue)	
	60	220 – 600 VAC +10% -15% operational voltage (Ue)	
□	55	55 Arms rated operational current (Ie @ 40°C)	
	70	70 Arms rated operational current (Ie @ 40°C)	
	85	85 Arms rated operational current (Ie @ 40°C)	
	100	100 Arms rated operational current (Ie @ 40°C)	
□	E0	110 - 400 VAC +10% -15% control voltage (Uc) internally supplied	RSGD40 only
	F0	24 VAC/DC +10% -10% control voltage (Uc) internally supplied	
	FF	24 VAC/DC +10% -10% control/supply voltage	RSGD60 only
	GG	100 - 240 VAC +10% -15% control/supply voltage	
V	-		
X	-		
3	-		
1	-		
□	0	No fan	
	1	With fan	RSGD 100 only
C	-		