RG series: 1-phase solid state switching solutions

Switches
The RG series is the latest addition to the range of Solid State Relays (SSRs) and Solid State Contactors (SSCs) offered by Carlo Gavazzi. With this series, Carlo Gavazzi continues to distinguish itself as a leader in Solid State Switching by introducing the first SSR and SSC in the smallest DIN dimension of 17.5mm.

The RG series adapts an innovative thermal efficient design which translates to compact solutions available throughout the RG range. Panel space savings up to 25% is possible with RG SSRs and SSCs. Apart from solutions for AC output and DC output switching, the RG series includes variants, introduced hereafter, which integrate other functions than just the switching function associated with SSRs and SSCs.

Manufacturing of the RG series is done in an ISO9001 facility which is also certified for ISO14001.

Solid State Relays
RG51 series
SSRs within this series do not have integrated heatsink for thermal dissipation. Size and design of the heatsink, if required, is determined by the end user.

Solid State Contactors
RG1 and RGH1 series
The RGC1 and RGH1 series are complete, ready to use solutions, that have a factory installed heatsink. Product has an associated rating at specific working temperatures eliminating the need for end user to calculate necessary heatsinking for safe operation of the Solid State Switch.
Features

Long lifetime
Thermal stress on the semiconductor is eliminated with the introduction of wire bonding. SSR lifetime is increased by 2 to 3 times as compared to other SSRs using only die solder technology.

Protection against overvoltages
The integrated varistor across the output of the solid state switch provides adequate protection against uncontrolled overvoltages. There is no need to connect this externally for conformance to the surge immunity test according to EN 61000-4-5.

Terminals correctly sized to handle large cables
Box clamp variants provide robust connections for easy and fast connection of power cables up to 25mm² / AWG3.

High $I^2t$ for short circuit protection with MCBs
The $I^2t$ specification in the RG range goes up to 18,000A²s in only 17.5mm product width. The RG with 18,000A’s is the ideal solution when protection of the SSR against short circuits with economic, easily accessible, Miniature Circuit Breakers is desired.

100kArms Short Circuit Current Rating (SCCR)
Industrial Control Panels designed according to UL508A need to have a SCCR marking based on the lowest SCCR of the components used inside the panel. With 100kArms SCCR for the RG series, Carlo Gavazzi SSRs are no limitation to panel builders needing a high SCCR marking on their panels.

Configuration flexibility
Various connection configurations are available in the RG series. Layout configurations are available either in E-type (Contactor configuration) or U-type (SSR configuration). Control terminals connection is available either through screw or through spring loaded pluggable terminals.
Carlo Gavazzi Automation Components. Specifications are subject to change without notice. Illustrations are for example only.

**Product Range Overview**

**AC Output Switching - RGS1, RGC1, RGH1 series**
This series encompasses 1-phase solid state switching solutions for resistive loads as well as for motor loads. The RGS series is the slimmest SSR in the market and is available in a product width of only 17.5mm with operational voltage up to 600VAC and operational current up to 90AAC. The RGC and RGH series are ready to use solutions with ratings starting from 20AAC @ 40°C in a product width of 17.5mm going up to 85AAC in a product width of 70mm.

**DC Output Switching - RGS1D, RGC1D series**
This series of 1-phase solid state DC switches is primarily intended for switching of strings in photovoltaic panels and hence operational ratings go up to 1000VDC, 25ADC.

**Protection against overheating - RGC..P series**
Solid state switch overtemperature protection is an optional feature available with the RGC series that protects the SSR against damage from overheating. Thyristor operating temperature is continuously monitored. In case of overheating the output is immediately switched off. Alarm condition is signalled through a transistor output and is also visible by a red LED on the front plate of the unit. The alarm condition is automatically cleared as soon as the overheating condition is no longer present.

**Integrated fuse protection - RGC1F series**
The RGC1F is equipped with an easily accessible onboard semiconductor fuse that protects the SSR in case of short circuits. The RGC1FS is a more elaborate version that is additionally able to detect load and SSR malfunction and hence is able to detect mains loss, load loss, SSR open circuit and SSR short circuit conditions.

**Load current monitoring - RGS1S, RGC1S series**
The RG Current Sensing series is an intelligent device which is able to detect variations in the load current by means of integrated current measurement. In case of variations >16.67% (1/6) from current set point, a partial load failure alarm is issued without inhibiting the output of the SSR. Apart from this condition, the RG Current Sensing is also able to detect mains loss, total load failure, SSR over temperature, SSR open circuit and SSR short circuit conditions.
Applications

Plastic and rubber
A fully solid state solution with integrated protection against over voltages on the power lines is:
- a guarantee for process and machine reliability
- permits reduction in maintenance and downtime costs

Food and beverage
The RG series is RoHS compliant and does not include mercury or other restricted substances. It can operate in a relative non-condensing humidity of 95% making it the ideal solution for use in ovens and coffee machines. The RG series provides:
- environmental friendly solutions
- high number of ON/OFF switches without compromising lifetime

HVAC
The click clack sound of a mechanical contactor is a nuisance in areas frequented by people. The RG series, being fully solid state, does not have any moving parts making this the ideal product for switching of heaters in such environments. Benefits of SSRs include:
- silent operation
- long operating lifetime

Packaging and wrapping
Ready to use solutions, that is solutions with integrated heatsink, make it easy for end users to select the product needed for the specific application since a current rating is available at each possible operating temperature. Ready to use solutions are very compact solutions that promote:
- panel space saving
- eliminates possibilities of incorrect heatsink sizes and hence SSR overheating

Semiconductor
The RG series is fully compliant to the Industrial Electro Magnetic Compatibility immunity standards without the need to add additional external components. Versions with high surge current capability also enable protection coordination with other means than semiconductor fuses. The RG series:
- allows protection coordination with Miniature Circuit Breakers
- is fully complaint to EMC immunity limits
In most cases, when utilizing a solid state relay, a heatsink is required for heat dissipation. The size and shape of the heatsink is dictated by the specific application and is not always to be fitted in standard sized industrial control panels.

The RGS series does not have integrated heatsink and hence allows end users to design and adapt their own heatsinking solutions. Different heatsinks on which the RGS can be fitted are available from Carlo Gavazzi.

All variants in the RGS series are available in a platform with a product width of 17.5mm.

**RGS series**
- 17.5mm product width
- Ratings up to 600VAC, 90AAC
- Zero cross or Instant ON (Random) switching
- \( I^2t \) up to 18,000A²s
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Integrated varistor across output
- Motor ratings up to 4kW (400VAC), 15HP (600VAC)
- 100kArms short circuit current rating acc. to UL508
- ‘E’ type or ‘U’ type configuration
- Box clamps for 25mm² / AWG 3 power cables
- Spring loaded control plug option

**Mounting of RGS**

Identical mounting hole spacing specifications
In most cases, when utilising a solid state relay, a heatsink is required for heat dissipation. The size and shape of the heatsink is dictated by the specific application and is not always to be fitted in standard sized industrial control panels.

The RGS series does not have integrated heatsink and hence allows end users to design and adapt their own heatsinking solutions. Different heatsinks on which the RGS can be fitted are available from Carlo Gavazzi.

All variants in the RGS series are available in a platform with a product width of 17.5mm.

**RGS series**
- 17.5mm product width
- Ratings up to 600VAC, 90AAC
- Zero cross or Instant ON (Random) switching
- $I^2t$ up to 18,000A²s
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Integrated varistor across output
- Motor ratings up to 4kW (400VAC), 15HP (600VAC)
- 100kArms short circuit current rating acc. to UL508
- ‘E’ type or ‘U’ type configuration
- Box clamps for 25mm² / AWG 3 power cables
- Spring loaded control plug option

**Mounting of RGS**
- Identical mounting hole spacing specifications

**Options**

### DIN mounting
RGS1 solid state relay can be DIN mounted by means of the RGS1DIN accessory. RGS1 rating up to 12AAC @ 40°C (104°F) when mounted on RGS1DIN

### RGS Power Pack
A pack with maximum 11 RGS1.. on heatsink with integrated overheat protection. Rating per SSR goes up to 30AAC @ 40°C (104°F)

### Thermal pads
An alternative to thermal paste: RGHT is a pack of 10 thermal pads. Suffix ‘HT’, hence RGS...HT, for factory mounted thermal pad

### Heatsinks
A number of heatsinks are available for mounting the RGS on different heatsinks than those offered in the RGC series. The smallest heatsink in the range is a low profile 17.5mm heatsink, the RHS37A

---

**Selection guide**

### RGS..E

<table>
<thead>
<tr>
<th>Rated voltage, Blocking voltage, Switching mode</th>
<th>Connection Control/ power</th>
<th>Control voltage</th>
<th>25AAC (525A s) 17.5mm</th>
<th>50AAC (1800A s) 17.5mm</th>
<th>75AAC (3200A s) 17.5mm</th>
<th>90AAC (6600A s) 17.5mm</th>
<th>90AAC (18000A s) 17.5mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>230VAC, 800Vp ZC</td>
<td>x / Screw</td>
<td>3 - 32VDC</td>
<td>RGS1A23D025:KE RGS1A23D50:KE RGS1A23D75KKE</td>
<td>- - -</td>
<td>- - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>RGS1A23A25:KE RGS1A23A50:KE RGS1A23A75KKE</td>
<td>- - -</td>
<td>- - -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600VAC, 1200Vp ZC</td>
<td>x / Screw</td>
<td>4 - 32VDC</td>
<td>RGS1A60D025:KE RGS1A60D050:KE RGS1A60D75KKE</td>
<td>RGS1A60D90:KE RGS1A60D92:KE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>RGS1A60A25:KE RGS1A60A50:KE RGS1A60A75KKE</td>
<td>RGS1A60A90:KE RGS1A60A92:KE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600VAC, 1600Vp ZC</td>
<td>x / Box</td>
<td>4 - 32VDC</td>
<td>- RGS1A60D050:GE - - -</td>
<td>RGS1A60D92:GE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>- RGS1A60A50KGE - - -</td>
<td>RGS1A60A92KGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600VAC, 1200Vp IO</td>
<td>Screw / Screw</td>
<td>4 - 32VDC</td>
<td>- RGS1A66D05KKKE - RGS1A66D091KKE</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>- RGS1A66A051KKE - RGS1A66A091KKE</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### RGS..U

<table>
<thead>
<tr>
<th>Rated voltage, Blocking voltage, Switching mode</th>
<th>Connection Control/ power</th>
<th>Control voltage</th>
<th>20AAC (525A s) 17.5mm</th>
<th>30AAC (1800A s) 17.5mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>230VAC, 800Vp ZC</td>
<td>Screw / Box</td>
<td>3 - 32VDC</td>
<td>RGS1A23D20KGU RGS1A23D30KGU</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>RGS1A23A20KGU RGS1A23A30KGU</td>
<td>- -</td>
</tr>
<tr>
<td>600VAC, 1200Vp ZC</td>
<td>Screw / Box</td>
<td>4 - 32VDC</td>
<td>RGS1A60D20KGU RGS1A60D30KGU</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 - 275VAC</td>
<td>RGS1A60A20KGU RGS1A60A30KGU</td>
<td>- -</td>
</tr>
<tr>
<td>600VAC, 1200Vp IO</td>
<td>Screw / Box</td>
<td>4 - 32VDC</td>
<td>RGS1B66D20KGU RGS1B66D30KGU</td>
<td>- -</td>
</tr>
</tbody>
</table>

x = control connection type, x = ‘K’ for screw, x = ‘M’ for spring
ZC = Zero Cross Switching, IO = Instant On Switching

Further details are available on online datasheets at www.productselection.net
Unlike the RGS series, the RGC and RGH have integrated heatsink and hence are referred to as ready to use solutions since end users do not need to calculate and mount the solid state switch on an additional heatsink.

Because of this, each variant in the RGC and RGH series has an associated current rating at a specific working ambient temperature that is determined by the size of the heatsink of that particular model. The physical sizes and hence ratings in the RGC and RGH series are dictated by the size of the heatsink.

The smallest product in the RGC and RGH range is a product with 17.5mm width and associated rating goes up to 25AAC @ 40°C. Product width in the RGC, RGH range goes up to 70mm extending the series to a maximum rating of 85AAC @ 40°C.

### AC output Solid State Contactors

#### RGC series
- 1200Vp blocking voltage; \(i^2t\) up to 18,000A²s
- Current ratings at 40°C (104°F) up to:
  - 25AAC (17.5mm), 30AAC (22.5mm), 43AAC (35mm), 65AAC (70mm), 85AAC (70mm with fan)
- Operational voltage up to 600VAC
- Zero cross or Instant ON (Random) switching
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Integrated varistor across output
- Motor ratings up to 4.4kW (400VAC), 1.5HP (600VAC)
- 100kArms short circuit current rating acc. to UL508
- 'E' type or 'U' type configuration
- Spring loaded control plug option
- Optional overtemperature protection

#### RGH series
- 1600Vp blocking voltage; \(i^2t\) up to 6,600A²s
- Current ratings at 40°C (104°F) up to:
  - 23AAC (17.5mm), 30AAC (22.5mm), 40AAC (35mm), 65AAC (70mm)
- Operational voltage up to 690VAC**
- Zero cross switching
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Integrated varistor across output**
- Motor ratings up to 4.4kW (400VAC), 15HP (600VAC)
- 100kArms short circuit current rating acc. to UL508
- 'E' type or 'U' type configuration
- Spring loaded control plug option

* GL applies only to RGC..15, RGC..20, RGC..25, RGC..30
** 690V version CE marking only and no varistor
The smallest product in the RGC and RGH range is a heatsink. The physical sizes and hence ratings in temperature that is determined by the size of the heatsink of that particular model. Because of this, each variant in the RGC and RGH series has since end users do not need to calculate and mount the solid heatsink and hence are referred to as ready to use solutions extending the series to a maximum rating of 85AAC @ 40 oC.

RGC series
- Optional overtemperature protection
- Spring loaded control plug option
- Motor ratings up to 4.4kW (400VAC), 15HP (600VAC)
- Integrated varistor across output
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Zero cross or Instant ON (Random) switching

AC output Solid State Contactors
- 65AAC (70mm), 85AAC (70mm with fan)
- 25AAC (17.5mm), 30AAC (22.5mm), 43AAC (35mm),
- 690V version CE marking only and no varistor
- GL applies only to RGC..15, RGC..20, RGC..25, RGC..30
- ‘E’ type or ‘U’ type configuration
- 100kArms short circuit current rating acc. to UL508
- Motor ratings up to 4.4kW (400VAC), 15HP (600VAC)
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Zero cross switching
- Operational voltage up to 690VAC **
- 1600Vp blocking voltage; I²t up to 6,600A²s

RGH series
- 23AAC (17.5mm), 30AAC (22.5mm), 40AAC (35mm),
- * E-type or ‘U’ type configuration
- 'E' type or 'U' type configuration
- 100kArms short circuit current rating acc. to UL508
- Motor ratings up to 4.4kW (400VAC), 15HP (600VAC)
- Control range: 4-32VDC, 20-275VAC (24-190VDC)
- Zero cross switching
- Operational voltage up to 690VAC **
- 1600Vp blocking voltage; I²t up to 6,600A²s

Integrated over temperature protection

Further details are available on online datasheets at www.productselection.net
RGC1S, RGS1S

The RG Current Sensing (CS) series is able to detect variations in the load current thanks to its integrated current measurement. The load current to be used as a reference is set and recorded through a TEACH procedure which can be done either locally or remotely.

During operation, the actual load current is compared to the set point and if a deviation >16.67% (1/6) is observed an alarm is issued to signal a partial load failure. This feature allows 6 loads to be connected to one solid state switch and have a detection of load failure in case only one of the loads fail.

Upon issue of the partial load failure alarm, the output of the solid state switch is not inhibited and so the remaining loads connected to the RGC1S or RGS1S can be switched as dictated by the specific process.

Plug and play

RGC1S series
- Integrated heat sink
- Partial load failure detection 1/6
- Ratings up to 600VAC, 85AAC @ 40°C (104°F)
- IP up to 18,000A for 2 seconds
- 4-32VDC control voltage range
- Integrated varistor for overvoltage protection
- 100kArms short circuit current rating acc. to UL508

RGS1S series
- Product width 22.5mm, Heat sink not integrated
- Partial load failure detection 1/6
- Ratings up to 600VAC, 90AAC, 18,000A for 2 seconds
- 4-32VDC control voltage range
- Integrated varistor for overvoltage protection
- 100kArms short circuit current rating acc. to UL508
The RG Current Sensing (CS) series is able to detect variations in the load current thanks to its integrated current measurement. The load current to be used as a reference is set and recorded through a TEACH procedure which can be done either locally or remotely.

During operation, the actual load current is compared to the set point and if a deviation >16.67% (1/6) is observed an alarm is issued to signal a partial load failure. This feature allows 6 loads to be connected to one solid state switch and have a detection of load failure in case only one of the loads fail.

Upon issue of the partial load failure alarm, the output of the solid state switch is not inhibited and so the remaining loads connected to the RGC1S or RGS1S can be switched as dictated by the specific process.

**Plug and play**
- **RGC1S series**
  - Integrated heasink
  - Partial load failure detection 1/6
  - Ratings up to 600VAC, 85AAC @ 40°C (104°F)
  - I²t up to 18,000A 2s
  - 4-32VDC control voltage range
  - Integrated varistor for overvoltage protection
  - 100kArms short circuit current rating acc. to UL508

- **RGS1S series**
  - Product width 22.5mm, Heatsink not integrated
  - Partial load failure detection 1/6
  - Ratings up to 600VAC, 90AAC, 18,000A 2s
  - 4-32VDC control voltage range
  - Integrated varistor for overvoltage protection
  - 100kArms short circuit current rating acc. to UL508

**Mounting of the RGS1S on a heatsink**

With the RGC1S, RGS1S it is possible to detect a load failure even when multiple loads are connected to one SSR. A maximum of 6 loads can be connected to the RGC1S or RGS1S. In case of a failure of 1 heater, whereby current will deviate from setpoint by 1/6 (16.67%), a partial load failure alarm is issued. The other 5 heaters will continue to be controlled as required by the specific process in the presence of a partial load failure alarm.

**User interface**

**Visual alarm indication**
- **Locked TEACH** 1 flash
- **Open SSR / Open heater** 2 flashes
- **SSR Overtemperature** 3 flashes
- **SSR short circuit** 4 flashes
- **No TEACH setpoint** 50%
- **Partial load failure** 100%

**Selection guide**

**RGC1S series**

<table>
<thead>
<tr>
<th>Rated voltage, Blocking voltage, Switching mode</th>
<th>23AAC (525A s) 25AAC (1800A s) 25AAC (18000A s) 30AAC (18000A s) 30AAC (6600A s) 43AAC (18000A s) 65AAC (18000A s) 85AAC (18000A s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm short</td>
<td>22.5mm short</td>
</tr>
<tr>
<td>22.5mm short</td>
<td>22.5mm short</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>RGC1560D20GKEP</td>
<td>RGC1560D25GKEP</td>
</tr>
<tr>
<td>RGC1560D30GKEP</td>
<td>RGC1560D31GKEP</td>
</tr>
<tr>
<td>RGC1560D41GGEP</td>
<td>RGC1560D61GGEP</td>
</tr>
<tr>
<td>RGC1560D90GEP</td>
<td>RGC1560D61GUP</td>
</tr>
<tr>
<td>RGC1560D61GFUP</td>
<td>-</td>
</tr>
<tr>
<td>RGC1560D61GGEP</td>
<td>-</td>
</tr>
</tbody>
</table>

**RGS1S series**

<table>
<thead>
<tr>
<th>Rated voltage, Blocking voltage, Switching mode</th>
<th>23AAC (525A s) 30AAC (1800A s) 30AAC (6600A s) 65AAC (18000A s) 90AAC (18000A s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>22.5mm</td>
<td>22.5mm</td>
</tr>
<tr>
<td>RGC1560D20GKEP</td>
<td>RGC1560D30GKEP</td>
</tr>
<tr>
<td>RGC1560D31GKEP</td>
<td>RGC1560D61GGEP</td>
</tr>
<tr>
<td>RGC1560D90GEP</td>
<td>RGC1560D61GFUP</td>
</tr>
<tr>
<td>RGC1560D61GGEP</td>
<td>-</td>
</tr>
</tbody>
</table>

**GK** = box clamps for control terminals, screws for power terminals | **GG** = box clamps for control terminals, box clamps for power terminals

Further details are available on online datasheets at [www.productselection.net](http://www.productselection.net)
The RGC1F is a series of solid state contactors which integrate protection by means of an on-board semiconductor fuse. The fuse is easily accessible through the front panel of the device. The series consists of two versions, the RGC1FA and the RGC1FS.

The RGC1FA is a version including just the solid state switch and the integrated fuse for protection of the SSR in case of short circuit conditions.

The RGC1FS is a more sophisticated version that apart from the integrated fuse provides also additional monitoring for load status, fuse failure, and SSR malfunction. Alarm status is visible by means of an LED and is also available through an alarm output for remote signalling.

Fit and forget

RGC1F series
- Integrated heatsink
- 35mm product width
- Zero cross switching
- Ratings up to 600VAC, 40AAC @ 40°C (104°F)
- 4.5-32VDC control voltage range
- Integrated varistor for overvoltage protection
- 100kArms short circuit current rating acc. to UL508
- Monitoring for load and SSR malfunction (RGC1FS)

The RGC1FS series: 4 functions at 1 go

- **Switch**
  Solid state switch with integrated heatsink

- **Protection**
  Integrated fuse holder and fast acting semiconductor fuse for protection against short circuit currents up to 100kArms

- **Monitoring**
  Monitoring and detection of open fuse, load loss, solid state switch malfunction

- **Alarm**
  Visual indication through a red LED on the front facia and normally closed alarm output
Space saving with integrated solutions

Fuse and fuse holder

40A Solid State Contactor:
RGC1A60D40KGE

40A Solid State Contactor with integrated fuse
in 35mm product width: RGC1FA60D40GGE

Easy accessible fuse

1. Preparation for opening fuse holder.
2. Opening or closing the fuse holder.
3. Removal or insertion of fuse.
4. Pressing downwards the fuse-holding clip to insert or remove the fuse

Selection guide

<table>
<thead>
<tr>
<th>Options</th>
<th>Rated voltage, Blocking voltage, Switching mode</th>
<th>Control voltage</th>
<th>20AAC 35mm</th>
<th>30AAC 35mm</th>
<th>40AAC 35mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuse</td>
<td>230VAC, 800Vp ZC</td>
<td>3 - 32VDC</td>
<td>RGC1FA23D20GGE</td>
<td>RGC1FA23D30GGE</td>
<td>RGC1FA23D40GGE</td>
</tr>
<tr>
<td>Fuse</td>
<td>600VAC, 1200Vp ZC</td>
<td>4.5 - 32VDC</td>
<td>RGC1FA60D20GGE</td>
<td>RGC1FA60D30GGE</td>
<td>RGC1FA60D40GGE</td>
</tr>
<tr>
<td>Fuse + Monitoring</td>
<td>230VAC, 800Vp ZC</td>
<td>3 - 32VDC</td>
<td>RGC1FS23D20GGE</td>
<td>RGC1FS23D30GGE</td>
<td>RGC1FS23D40GGE</td>
</tr>
<tr>
<td>Fuse + Monitoring</td>
<td>600VAC, 1200Vp ZC</td>
<td>4.5 - 32VDC</td>
<td>RGC1FS60D20GGE</td>
<td>RGC1FS60D30GGE</td>
<td>RGC1FS60D40GGE</td>
</tr>
</tbody>
</table>

Further details are available on online datasheets at www.productselection.net

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.
Slimline RG

RGS1D, RGC1D

Apart from switching of AC loads, the RG series caters also for switching of DC loads with the RGS1D and RGC1D series.

The RGC1D is offered with integrated heatsink whilst the RGS1D is suitable for panel mounting or for mounting on heatsinks which are specific to the particular application in which the solid state relay is to be used.

Switching is done through an IGBT power semiconductor which is protected by an integrated free-wheeling diode. Ratings extend to 1000VDC, 25ADC. Maximum operational temperature goes up to +80°C (+176°F).

DC output Solid State Switches

RGS1D series
- Without integrated heatsink
- Product width 17.5mm
- Output operational voltage up to 1000VDC
- Operational current up to 25ADC
- 4.5 - 32VDC control voltage range

RGC1D series
- Integrated heatsink
- Product width 17.5mm
- Operational voltage up to 1000VDC
- Operational current up to 15ADC @ 40°C (104°F)
- 4.5 - 32VDC control voltage range

- Repeatable and reliable
  The RG solutions are fully solid state. Lifetime is not compromised by contact arcing. The need for frequent replacements is hence eliminated

- Efficient heat dissipation
  This series of DC switching solid state switches boasts of high thermal efficiency thanks to the power assembly processes adopted in the RG series

- Space saving
  Product width of the RGS1D and RGC1D is only 17.5mm. This enables compact control panel designs
Applications

Switching of photovoltaic strings
The 1000VDC rating makes the RGS1D and the RGC1D the ideal solid state switch for the switching of strings in photovoltaic panels. A photovoltaic installation is a long term investment that can only be sustained by a using reliable equipment which ensures minimum downtimes. Unlike electromechanical solutions, the RG series is a fully solid state solution offering a much longer lifetime. Carlo Gavazzi product offering covers also monitoring and smart control systems as well as surge protectors for such applications.

Ask for more information about EOS-Array Control Systems and L-Guard series of Surge protectors from a Carlo Gavazzi representative.

Ambient heating in train cabins
In train applications it is common to have DC voltages which can go well over 600VDC. The 1000VDC operational voltage associated with the RGS1D and RGC1D enables this solid state switch to be used to control DC loads used for space heating in such applications. Working temperature requirements are covered by the wide operating range of the RGC1D, RGS1D.

Selection guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Output voltage range</th>
<th>Control voltage</th>
<th>Connection control / power</th>
<th>15ADC 17.5mm</th>
<th>25ADC 17.5mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>No heatsink</td>
<td>24 - 1000VDC</td>
<td>4.5 - 32VDC</td>
<td>Screw / Screw</td>
<td>RGS1D1000D15KKE</td>
<td>RGS1D1000D25KKE</td>
</tr>
<tr>
<td>With integrated heatsink</td>
<td>24 - 1000VDC</td>
<td>4.5 - 32VDC</td>
<td>Screw / Screw</td>
<td>RGC1D1000D15KKE</td>
<td>-</td>
</tr>
</tbody>
</table>

Further details are available on online datasheets at www.productselection.net
OUR SALES NETWORK IN EUROPE

AUSTRIA - Carlo Gavazzi GmbH
Kettenzogasse 374, A-1230 Wien
Tel: +43 1 888 4112
Fax: +43 1 889 10 53
office@carlogavazzi.at

BELGIUM - Carlo Gavazzi NV/SA
Mechelensteenweg 311, B-1800 Vilvoorde
Tel: +32 3 2 257 4120
Fax: +32 3 2 257 41 25
sales@carlogavazzi.be

DENMARK - Carlo Gavazzi Handel A/S
Over Hadsøvej 40, DK-8370 Hadsøn
Tel: +45 89 60 6100
Fax: +45 86 98 15 30
handel@carlogavazzi.dk

FINLAND - Carlo Gavazzi OY AB
Patoksantie 2-4, FI-00661 Helsinki
Tel: +358 9 756 2000
Fax: +358 9 756 20010
myynti@gavazzi.fi

FRANCE - Carlo Gavazzi Sarl
Zac de Paris Nord II, 69, rue de la Belle Etale, F-99550 Roissy CDG Cedex
Tel: +33 1 49 38 98 60
Fax: +33 1 48 63 27 43
french.team@carlogavazzi.fr

GERMANY - Carlo Gavazzi GmbH
Pfnorstr. 10-14
D-64293 Darmstadt
Tel: +49 6151 81000
Fax: +49 6151 81 00 40
info@gavazzi.de

GREAT BRITAIN - Carlo Gavazzi UK Ltd
Springlake Industrial Estate, Deadbrook Lane, Hartham GU12 4UH, GB-Aldershot
Tel: +44 1 252 339600
Fax: +44 1 252 326 799
sales@carlogavazzi.co.uk

ITALY - Carlo Gavazzi SpA
Via Milano 13, I-20020 Lainate
Tel: +39 02 931 761
Fax: +39 02 931 763 01
info@gavazziacbu.it

NETHERLANDS - Carlo Gavazzi BV
Wijkmeerweg 23, NL-4946 NT Beverwijk
Tel: +31 251 22 9143
Fax: +31 251 22 60 55
info@carlogavazzi.nl

NORWAY - Carlo Gavazzi AS
Melkeveien 13, N-3919 Porsgrunn
Tel: +47 35 93 0800
Fax: +47 35 93 08 01
post@gavazzi.no

PORTUGAL - Carlo Gavazzi Lda
Rua dos Jerónimos 38B, P-1400-212 Lisboa
Tel: +351 21 361 7060
Fax: +351 21 362 13 73
carlogavazzi@carlogavazzi.pt

SPAIN - Carlo Gavazzi SA
Avda. Iparaguirre, 80-82, E-48940 Laso (Bizkaia)
Tel: +34 94 480 4037
Fax: +34 94 480 10 61
gavazzi@gavazzi.es

SWEDEN - Carlo Gavazzi AB
V:ya Kyrkogatan 1, S-652 24 Karlstad
Tel: +46 54 85 1125
Fax: +46 54 85 11 77
info@carlogavazzi.se

SWITZERLAND - Carlo Gavazzi AG
Verkauf Schweiz/Vente Suisse
Sumpfstrasse 6312, CH-632 Steinhausen
Tel: +41 41 747 4535
Fax: +41 41 740 45 40
info@carlogavazzi.ch

OUR SALES NETWORK IN THE AMERICAS

USA - Carlo Gavazzi Inc.
750 Hastings Lane,
USA-Buffalo Grove, IL 60089,
Tel: +1 847 465 6100
Fax: +1 847 465 7373
sales@carlogavazzi.com

CANADA - Carlo Gavazzi Inc.
2660 Meadowvale Boulevard,
Cdn-Mississauga Ontario L5N 6M6,
Tel: +1 905 542 0979
Fax: +1 905 542 22 48
gavazzi@carlogavazzi.com

MEXICO - Carlo Gavazzi Mexico S.A. de C.V
Calle la Montana no. 28, Fracc. Los Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: +52 55 5373 7042
mexicausal@carlogavazzi.com

BRAZIL - Carlo Gavazzi Automação Ltda Avenida Br. Luis Antônio, 3057
B. J. Paulista CEP 01401-000 São Paulo
Tel: +55 11 3052 0832
Fax: +55 11 3057 7553
info@carlogavazzi.com.br

OUR SALES NETWORK IN ASIA AND PACIFIC

SINGAPORE - Carlo Gavazzi Automation
Singapore Pte Ltd.
61 Tai Seng Avenue #05-06 UE Print Media Hub
Singapore 534167
Tel: +65 67 466 990
Fax: +65 67 461 980

THAILAND - Carlo Gavazzi Automation
(Thailand) Co., Ltd.
Bang Kajao Industrial Estate, Tungpradit Rd.
Bang Na, Bangkok 10260
Tel: +66 2 268 7690
Fax: +66 2 268 7770

MALAYSIA - Carlo Gavazzi Automation (M) SDN BHD
D12/06G, Block D12,
Puat Perangungan Dua 1, Jalan PJU 1A/46, 47301 Petaling Jaya,
Selangor, Malaysia.
Tel: +60 3 7842 7299
Fax: +60 3 7842 7399

gavazzi@carlogavazzi.com

THAILAND - Carlo Gavazzi Automation
(Thailand) Co., Ltd.
Bang Kajao Industrial Estate, Tungpradit Rd.
Bang Na, Bangkok 10260
Tel: +66 2 268 7690
Fax: +66 2 268 7770

CHINA - Carlo Gavazzi Automation
(China) Co. Ltd
Unit 2308, 23/F., Newsbuilding, Block 1, 1002
Middle Shennan Zhong Road, Shenzhen, China
Tel: +86 755 83699500
Fax: +86 755 83699300

HONG KONG - Carlo Gavazzi Automation
Hong Kong Ltd
Unit 3 12/F Crown Industrial Bldg., 106 How Ming St., Kwun Tong,
Kowloon, Hong Kong
Tel: +852 23041128
Fax: +852 23443689

OUR COMPETENCE CENTRES AND PRODUCTION SITES

Carlo Gavazzi Industri A/S
Hadsen - DENMARK

Carlo Gavazzi Automation
(Kunshan) Co., Ltd.
Kunshan - CHINA

Carlo Gavazzi Ltd
Zejtun - MALTA

Carlo Gavazzi Controls SpA
Belluno - ITALY

UAB Carlo Gavazzi Industri Kaunas
Kaunas - LITHUANIA

HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13 - I 20020
Lainate (MI) - ITALY
Tel: +39 02 931 761
info@gavazziautomation.com

Printed on 100% recycled paper
made from bamboo
 reduces paper consumption by
 100%