Extensive selection of functions to satisfy all application requirements
- Power supply range 12-24VDC for each single product
- Totally programmable inputs, outputs and alarms
- RS232, RS485, USB, Ethernet communication interface
- Engine control by CANbus
- Setup and supervision software
- Modem control for sending alarm messages and emails.

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- Starting with or without power key switch
- Programmable inputs and outputs
- Front LED indicators for engine alarm conditions and diagnostics.

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- Generator voltage and current control
- Engine protection
- Programmable inputs and outputs
- Programmable alarm properties.

AUTOMATIC MAINS FAILURE (AMF) GEN-SET CONTROLLERS
- Automatic starting of generator and load switching to stand-by emergency source in case of mains failure
- Supervision in “open transition” for contactors, motorised circuit breakers and motorised changeover switches
- Engine protection
- Programmable inputs, outputs and alarms.

PARALLELING CONTROLLERS FOR MAINS-GENERATOR AND GENERATOR-GENERATOR
- Mains-generator “closed transition” synchronising
- Mains-generator load sharing with source peak demand control
- Generator paralleling supervision (island mode with load sharing).

REMOTE UNITS
- Remote viewing and control panels
- Remote annunciator for alarm and status indication
- Digital outputs for alarm and status condition remotely.

COMMUNICATION DEVICES, ACCESSORIES AND SOFTWARE
- Communication interfaces
- Additional digital and analog inputs and outputs
- GPRS-GSM module
- Setup and supervision software
- APP.
### Engine Protection Controllers

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<td>3 (SSR)</td>
<td>5 (SSR)</td>
<td>6 (SSR)</td>
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<td>3 (Relay) + 4 (SSR) + 1 (SO)</td>
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<td>IP40</td>
<td>IP40, IP65 with optional gasket seal</td>
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*Frequency only.
*Controller uploading of multilanguage sets.

More details and specifications can be found in the full document.
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<th>RGK 900SA</th>
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<td>50/60Hz</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
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<td><strong>Digital inputs</strong></td>
<td>n+ 4 neg.+1 pos. (emergency)</td>
<td>6 neg.+1 pos. (emergency)</td>
<td>8 neg.+1 pos. (emergency)</td>
<td>8 neg.+1 pos. (emergency)</td>
<td>12 neg.+1 pos. (emergency)</td>
<td>12 neg.+1 pos. (emergency)</td>
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<tr>
<td><strong>Digital outputs</strong></td>
<td>n+ 6 (SSR)</td>
<td>3 (Relay) + 4 (SSR)</td>
<td>3 (Relay) + 6 (SSR) + 1(SO)</td>
<td>3 (Relay) + 6 (SSR) + 1(SO)</td>
<td>3 (Relay) + 6 (SSR) + 1(SO)</td>
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<td><strong>Omnim inputs for fuel-pressure-temperature</strong></td>
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<td>12×48VDC</td>
<td>12×48VDC</td>
<td>12×48VDC</td>
<td>12×48VDC</td>
<td>12×48VDC</td>
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<td>RGK 610</td>
<td>RGK 610</td>
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<td>RGK 601</td>
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<tr>
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<td>“W” or generator frequency or “Pick-up”</td>
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<tr>
<td><strong>Generator paralleling</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Mains-generator synchronising (closed transition)</strong></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>IEC front degree of protection</strong></td>
<td>IP40, IP65 with optional gasket seal</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td><strong>Certifications</strong></td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
<td>cULus, EAC</td>
</tr>
</tbody>
</table>
ENGINE AND GENERATOR CONTROLLERS
RGK 700 - 750 - 800 - 900

A SUPERIOR CLASS!

- **CUSTOMISING OPTION**
  There is a customising slot available on the front to show controller brand name, logo, trademark, part number, brief indication or wording, etc.

- **PROGRAMMING OPTICAL PORT**
  The optical port on the panel front, using a standard USB or Wi-Fi point, allows communication with a PC, smartphone and tablet, to carry out programming, diagnostics and data download, without removing power to the electric panel.

- **COMPACT SIZE**
  Slim frame profile and reduced total depth simplify installation of the controllers in very compact electric panels.

- **IP65 DEGREE OF PROTECTION**
  The controller front and the internal display frame seal have been designed to warrant an IP65 protection degree. This with the UV film also allow outdoor installation.

- **CABLING AND EXPANSION MODULE FIXING SYSTEM**
  The controller rear has 4 fitting slots to secure cables connected to the terminals with cable ties, in an orderly way inside the electric panel. In addition, a plastic retainer is supplied as standard to keep the expansion modules in place when installed in applications with strong vibrations.

- **EXPANDABILITY**
  Basic RGK 750, RGK 800 and RGK 900 controller functions can be easily extended using up to 4 EXP series expansion modules:
  - Digital and analog inputs and outputs
  - Opto-isolated static outputs
  - Relay outputs
  - Opto-isolated RS232 interface
  - Opto-isolated RS485 interface
  - Opto-isolated Ethernet interface with Web server function
  - GPRS/GSM modem.

- **INSTALLATION**
  The fixing with metal screws guarantees excellent adhesion over time.

- **EXPANDABILITY**
  Basic RGK 750, RGK 800 and RGK 900 controller functions can be easily extended using up to 4 EXP series expansion modules:
  - Digital and analog inputs and outputs
  - Opto-isolated static outputs
  - Relay outputs
  - Opto-isolated RS232 interface
  - Opto-isolated RS485 interface
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  - GPRS/GSM modem.

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  - Relay outputs
  - Opto-isolated RS232 interface
  - Opto-isolated RS485 interface
  - Opto-isolated Ethernet interface with Web server function
  - GPRS/GSM modem.

- **EXPANDABILITY**
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  - Opto-isolated Ethernet interface with Web server function
  - GPRS/GSM modem.

- **EXPANDABILITY**
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  - Relay outputs
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  - Opto-isolated RS485 interface
  - Opto-isolated Ethernet interface with Web server function
  - GPRS/GSM modem.

- **EXPANDABILITY**
  Basic RGK 750, RGK 800 and RGK 900 controller functions can be easily extended using up to 4 EXP series expansion modules:
  - Digital and analog inputs and outputs
  - Opto-isolated static outputs
  - Relay outputs
  - Opto-isolated RS232 interface
  - Opto-isolated RS485 interface
  - Opto-isolated Ethernet interface with Web server function
  - GPRS/GSM modem.
Engine and generator controllers
RGK 700 - 750 - 800 - 900

- **GPRS/GSM MODEM**
  Once a data-enabled SIM card is inserted, RGK 750 - RGK 800 - RGK 900 controllers can send SMS and email messages with alarm and event conditions as well as the latest logged events to a FTP server.

- **OPTO-ISOLATED ETHERNET INTERFACE WITH WEB SERVER FUNCTION**
  - **Web Browsing** of the single controller connected in Ethernet by EXP10 13 expansion module.

- **CANBUS COMMUNICATION PORT**
  Most models are standard equipped with CAN-J1939 communication port.

- **PLC FUNCTION**
  Capability to combine together internal status of controllers with signals incoming from the field to activate outputs and generate alarms.

- **LOAD MANAGEMENT**
  There are different methods of controlling the load conditions; each controller has special parameters functions as follows:
  - RGK 700 - RGK 750 - RGK 800 types: load shedding and dummy load modes
  - RGK 900 types: base-load and peak shaving modes.

- **PARALLELING**
  RGK 900 and RGK 900SA controllers can control the switching between the mains and generators without having to switch off the power supply to the load. In addition, they can control the parallel connection of two or more generators sharing in this way the load on more than one source. The RGK 900MC can control and synchronise mains parallel operation with a power bus composed by a series of generating sets.

- **EXPANDABILITY**
  An extensive selection of modules is available to increase the controller functionality.

- **REMOTE UNITS**
  - **Remote display panels**
    There are “mirror” display units available to remotely operate as if in front of the generating set.
  - **Remote annunciator**
    A remote display can view alarm conditions and can be operated for silencing them.
  - **Alarm-state relay unit**
    The relay unit allows to transmit, on voltage-free contacts, the status and alarms of RGK... controllers.

- **SUPERVISION SOFTWARE**
  Synergy is web-based and provides for an easy and efficient way to monitor and control electrical installations as well as field equipment.

- **CLOUD SOLUTION**
  The supervision software is ready as Synergy solution as well, so that the user does not have to install any package on its own servers.

- **CONFIGURATION AND REMOTE CONTROL SOFTWARE**
  Xpress is a parameter configuration and remote monitoring software shared by the entire latest generation of RGK gen-set controllers with communication port.

- **MAINTENANCE**
  Maintenance supervision at programmed intervals.

- **STREAMLINE DESIGN**
  The controller has an ergonomic design and, at the same time, particular care has been given to details.
<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Qty</th>
<th>Wt per pkg</th>
<th>n°</th>
<th>[kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGK 30</td>
<td>12/24VDC, for external start-stop key switch, 96x48mm/3.78x1.89&quot;</td>
<td>1</td>
<td>0.160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RGK 20</td>
<td>12/24VDC, LCD display, built-in power supply key switch, with TTL programming port, 72x72mm/2.83x2.83&quot;</td>
<td>1</td>
<td>0.270</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General characteristics for RGK 30**

**OPERATOR INTERFACE**
- 2 programming key buttons
- 1 LED indicator for engine status
- 1 LED indicator for glow plug pre-heating
- 5 LED indicators for alarm status
- Remote starting only.

**INPUTS/OUTPUTS**
- Digital inputs: 3 negative and 1 positive (start/stop by remote key switch)
- Digital outputs: 2 relay (1 programmable).

**Certifications and compliance**
Certifications obtained: UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices-Generator controllers; EAC.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, EN 55011, UL 508, CSA C22.2 n° 14.

**General characteristics for RGK 20**

**OPERATOR INTERFACE**
- 1 ON-OFF power supply key selector switch
- 1 semi-automatic engine START button
- 2 programmable key buttons
- 7 digit LCD display (Hours, Hz, VBatt)
- 1 LED indicator for engine status
- 1 LED indicator for glow plug pre-heating
- 5 LED indicators for alarm status
- Local or remote starting.

**INPUTS/OUTPUTS**
Programmable functions:
- Generator frequency input
- Digital inputs: 3 negative and 1 positive
- Digital outputs: 3 static (1 programmable)
- Inputs, outputs and alarms, all with programmable properties.

**Certifications and compliance**
Certifications obtained: UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices-Generator controllers; EAC.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.
Stand alone gen-set controllers

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Qty per pkg</th>
<th>Wt (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGK 400SA</td>
<td>12/24VDC, icon LCD display, 5 inputs, 5 outputs</td>
<td>1</td>
<td>0.410</td>
</tr>
<tr>
<td>RGK 420SA</td>
<td>12/24VDC, icon LCD display, built-in 3 position key switch, 5 inputs, 5 outputs</td>
<td>1</td>
<td>0.430</td>
</tr>
<tr>
<td>RGK 600SA</td>
<td>12/24VDC, graphic LCD display, w/Pick-up speed input, 4 inputs, 6 outputs</td>
<td>1</td>
<td>0.450</td>
</tr>
<tr>
<td>RGK 601SA</td>
<td>12/24VDC, graphic LCD display, CANbus port, 4 inputs, 6 outputs</td>
<td>1</td>
<td>0.530</td>
</tr>
<tr>
<td>RGK 700SA</td>
<td>12/24VDC, graphic LCD display, RS232 serial port, CANbus port, 6 inputs, 7 outputs</td>
<td>1</td>
<td>0.900</td>
</tr>
<tr>
<td>RGK 800SA</td>
<td>12/24VDC, graphic LCD display, RS485 serial port, CANbus port, Expandable with EXP... modules, 8 inputs, 10 outputs</td>
<td>1</td>
<td>0.980</td>
</tr>
</tbody>
</table>

Programmable functions and properties

<table>
<thead>
<tr>
<th>Character</th>
<th>RGK 4...SA</th>
<th>RGK 6...SA</th>
<th>RGK 700SA</th>
<th>RGK 800SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Relay outputs</td>
<td>–</td>
<td>–</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Protected static outputs</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Resistive/Digital inputs</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

General characteristics for RGK 800SA - RGK 420SA
- Key with 6 positions (OFF, local start, remote start), removable in OFF and remote start position (for RGK 420SA)
- Power supply: 7...33VDC
- VAC inputs: Generator L1-L2-L3-N
- Single, and two and three phase voltage control
- Rated measurement voltage range: 100...480V/LL (3PH+N)
- Programmable VT range
- Frequency measurement range: 45...65Hz
- Current input: 1PH, 5A or 1A
- Display: LCD with icons (52x35mm/2.05x1.38”)
- Programming port: IR with support of CX01 (USB) and CX02 (Wi-Fi) dongles
- NFC technology for parameter setup
- Poversonave mode
- Inputs: 5 negative + 1 positive for emergency
- Outputs: 5 positive, 2A, protected
- Common pin dedicated to EV and START outputs to be used with emergency push button
- Engine running detection: “D+”, Hz
- Engine speed inputs: “W” or Magnetic “Pick-up”
- 1 analog othmic input for oil pressure, engine temperature or fuel level control
- Alarm and parameter text in 5 languages
- Customisable alarm text (2 alarms)
- Operating temperature: -30...+60°C
- Parameter configuration by NFC technology with NFC app
- Compatible with Synergy, Synergy+, and Xpress software.

General characteristics for RGK 600SA - RGK 601SA
- Power supply: 7...33VDC
- VAC inputs: Generator L1-L2-L3-N
- Single, two and three phase voltage control
- Rated measurement voltage range:
  - 100...480VAC for RGK 600SA and RGK 601SA
  - 30...600VAC for RGK 700SA and RGK 800SA
- Programmable VT ratio
- Frequency measurement range: 45...65Hz
- Current input: 3PH, 5A or 1A
- LCD: 128x60 pixels with backlight
- Programming port: IR with support of CX01 (USB) and CX02 (Wi-Fi) dongles
- Common pin dedicated to EV and START outputs to be used with emergency push button
- Engine running detection: “D+”, Hz
- Engine speed inputs: “W” or Magnetic “Pick-up” (RGK 601SA only)
- 1 CANbus-J1939 port (RGK 600SA only)
- 3 analog othmic inputs for oil pressure, engine temperature and fuel level control
- 1 built-in alarm remote port
- Non-volatile memory for event storage
- Alarm, event and parameter text in 5 languages
- Customisable alarm text (8 alarms)
- Operating temperature: -30...+70°C
- Modbus-RTU and Modbus-ASCII protocols
- Compatible with Synergy, Synergy+, and Xpress software.

For RGK 700SA - RGK 800SA only
- PLC logic for inputs, outputs and internal status
- 1 communication port: RS232 for RGK 700SA & RS485 for RGK 800SA
- Degree of protection: IEC IP65 on front; suitable for use with UL/CSA Type 4X outdoor enclosure installation.

Certification and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices - Generator controllers; EAC. Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.
### Automatic mains failure (AMF) gen-set controllers

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Qty per pkg</th>
<th>Wt (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGK 600</td>
<td>12/24VDC, graphic LCD display, w/Pick-up speed input, 4 inputs, 6 outputs</td>
<td>1</td>
<td>0.540</td>
</tr>
<tr>
<td>RGK 601</td>
<td>12/24VDC, graphic LCD display, CANbus port, 4 inputs, 6 outputs</td>
<td>1</td>
<td>0.540</td>
</tr>
<tr>
<td>RGK 610</td>
<td>12/24VDC, graphic LCD display, CANbus port, 4 inputs, 6 outputs, expandable with EXP...modules</td>
<td>1</td>
<td>0.600</td>
</tr>
<tr>
<td>RGK 700</td>
<td>12/24VDC, graphic LCD display, RS232 serial port, CANbus port, 6 inputs, 7 outputs</td>
<td>1</td>
<td>0.880</td>
</tr>
<tr>
<td>RGK 750</td>
<td>12/24VDC, graphic LCD display, RS485 serial port, CANbus port, 8 inputs, 10 outputs, expandable with EXP...modules</td>
<td>1</td>
<td>0.960</td>
</tr>
<tr>
<td>RGK 800</td>
<td>12/24VDC, graphic LCD display, RS485 display, TP100 or 0-10V or 0...±5V</td>
<td>1</td>
<td>0.960</td>
</tr>
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</table>

**Programmable functions and properties**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>RGK 600</th>
<th>RGK 601</th>
<th>RGK 700</th>
<th>RGK 750</th>
<th>RGK 800</th>
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</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Relay outputs</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Protected static outputs</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Resistive/ Digital inputs</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

#### General characteristics for RGK 600 - RGK 601 - RGK 700 - RGK 750 - RGK 800

- Power supply: 7...33VDC
- VAC inputs: Mains and generator L1-L2-L3-N
- Voltage control for one, two and three phase systems with or without neutral
- Rated measurement voltage: 480VAC for RGK 600, RGK 601, RGK 610 and RGK 750
  - 600VAC for RGK 700 and RGK 800
- Rated measurement voltage range: 100...480VAC for RGK 600, RGK 601, RGK 610 and RGK 750
- 30...600VAC for RGK 700 and RGK 800
- Frequency measurement range: 45-65Hz
- Programmable VT ratio
- Current measurement range (3 Ph): 0.050...6A or 0.050...1.2A
- Graphic LCD: 128x80 pixels with backlight
- 1 USB/optical and Wi-Fi port on front for programming
- Engine running detection: “D+”, generator voltage and frequency
- Engine speed inputs: “W” or Magnetic “Pick-up” (RGK 601 excluded)
- 1 CANbus-J1939 port (RGK 600 and RGK 610 excluded)
- 3 analog ohmic inputs for oil pressure, engine temperature and fuel level control
- 1 built-in alarm remote port
- Non-volatile memory for event storage
- Alarm, event and parameter text in 5 languages
- Alarm text customizable (8 alarms)
- Event log
- Modbus-RTU and Modbus-ASCII communication protocols (RGK 600 and RGK 601 excluded)
- Compatible with Synergy, Synergy Plus and Xpress software
- 1 slot for EXP modules for RGK 610
- 2 slots for EXP modules for RGK 750
- 3 slots for EXP modules for RGK 800.

For RGK 700 - RGK 750 - RGK 800 only

- PLC logic for inputs, outputs and internal status
- Degree of protection: IEC IP65 on front.

For RGK 700 - RGK 800 only

- 1 communication port: RS232 for RGK 700; RS485 for RGK 800
- Degree of protection: IEC IP66 on front; suitable for use with UL/CeA Type 4X outdoor enclosure installation.

For RGK 800 only

- Neutral current measurement range: 0.050...6A or 0.050...1.2A
- 400Hz frequency support
- 1 programmable analog input
- Modbus-TCP communication protocol
- Current leakage control towards earth/ground
- Clock-calendar (RTC).

**Certifications and compliance**

Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices - Generator controllers except for RGK 750; EAC (except for RGK 750).

Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.

**EXP series expansion modules**

See Section 30, page 2.

**AMF (AUTOMATIC MAINS FAILURE) APPLICATION**

![AMF Panel](image)

### Engine and generator controllers

**ACCESSORY FOR RGK 600, RGK 601 AND RGK 610**

| EXP80 01 | IP65 housing gasket |
| EXPANSION MODULES FOR RGK 610, RGK 750 AND RGK 800 Communications interfaces. |
| EXP10 10 | Opto-isolated USB interface |
| EXP11 10 | Opto-isolated RS232 interface |
| EXP12 12 | Opto-isolated RS485 interface |
| EXP 42T | 6 digital inputs, PCB tropicalized |
| EXP 43T | 4 digital input and 2 static outputs, PCB tropicalized |

**EXPANSION MODULES FOR RGK 800**

| EXP10 00 | 4 opto-isolated digital inputs |
| EXP10 01 | 4 opto-isolated static outputs |
| EXP10 02 | 2 digital inputs and 2 static outputs, opto-isolated |
| EXP10 03 | 2 relay outputs rated 5A 250VAC |
| EXP10 04 | 2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V |
| EXP10 05 | 2 opto-isolated analog outputs 0/4-20mA or 0-10V or 0...±5V |
| EXP10 08 | 2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC |
| EXP10 40 | 2 digital/resistive inputs, 2 static outputs |
| EXP10 41 | 2 thermocouple inputs, 2 static outputs |
| Communications interfaces. |
| EXP10 13 | Ethernet interface with Web server function |
| EXP10 15 | GPRS/GSM modem |
Paralleling controllers for mains-generator and generator-generator

RGK 900SA - RGK 900

**RGK 900SA** - **RGK 900**

**Order code** | **Description** | **Qty** | **Wt**
---|---|---|---
**Stand-alone controller.**

| RGK 900SA | Paralleling control among generating sets. 12/24VDC, graphic LCD, RS485 port and USB/optical and Wi-Fi point programming port on front. Expandable with EXP... modules | 1 | 1.040 |

**RGK 900** - Mains-generator paralleling control. 12/24VDC, graphic LCD, with RS485 port and USB/optical and Wi-Fi point programming port on front. Expandable with EXP... modules

| RGK 900MC | Control of mains, automatic transfer switching (ATS), and paralleling on multiple generators controlled by RGK 900SA. 12/24VDC, graphic LCD, with RS485 port and USB/optical and Wi-Fi point programming port on front. Expandable with EXP... modules | 1 | 1.040 |

**EXPANSION MODULES FOR RGK 900...**

**Inputs and outputs.**

| EXP10 00 | 4 opto-isolated digital inputs | 1 | |
| EXP10 01 | 4 opto-isolated static outputs | 1 | |
| EXP10 02 | 2 digital inputs and 2 static outputs, opto-isolated | 1 | |
| EXP10 03 | 2 relay outputs rated 5A 250VAC | 1 | |
| EXP10 04 | 2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V | 1 | |
| EXP10 05 | 2 opto-isolated static outputs 0/4-20mA or 0-10V or 0...±5V | 1 | |
| EXP10 08 | 2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC | 1 | |
| EXP10 40 | 2 digital/resistive inputs, 2 static outputs | 1 | |
| EXP10 41 | 1 thermocouple input, 2 static outputs | 1 | |

**Communications interfaces.**

| EXP10 42T | 6 digital inputs, PCB tropicalized | 1 | |
| EXP10 43T | 4 digital input and 2 static outputs, PCB tropicalized | 1 | |

**Certifications and compliance**

- UL Listed for USA and Canada (cULus - File E958601), as Auxiliary Devices, Generator controllers; EAC.

**General characteristics**

- Power supply: 7...36VDC
- VAC inputs: Mains L1-L2-L3-N for RGK 900 only
- VAC inputs: Generator L1-L2-L3-N
- Voltage measurement rated value: 600VAC (UL/CSA)
- Voltage measurement range: 30-720VAC
- Frequency measurement range: 45...65Hz and 360...440Hz
- Programmable VT ratio
- Current measurement input (3 PH+N): 0.05-6A or 0.05...1.2A
- Fourth CT for neutral measurement or earth/ground leakage detection
- Graphic LCD, 128x112 pixels with backlight
- 13 digital inputs
- 3 relay outputs rated 5A 250VAC
- 6 static outputs rated 2A, protected
- 1 static output 50mA
- Engine running detection: “D+” generator voltage and frequency
- 1 engine speed input: “W” or “Magnetic Pick-up”
- 3 analog ohmic inputs for oil pressure, engine temperature and fuel level control
- 1 programmable analog input
- 2 analog outputs for engine speed control (generator) / voltage regulator (AVR)
- Alarm-event-parameter text in 5 languages (Web upload)
- Alarm text customisable (16 alarms)
- Event log
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- Boolean logic for inputs, outputs and internal status
- Compatible with Synergy, Synergy+ and Xpress software
- Degree of protection: IP65 on front; suitable for use with UL/CSA Type 4X outdoor enclosure installation
- Built-in buzzer
- Multi-level passwords
- Sleep function (power saving mode)
- Synchronising and load sharing.

**MAIN FUNCTIONS**

- Menus for quick selection of rated parameter settings
- “Autocall” function for automatic sending of emails and/or SMS at predefined events/alarms
- Mains (for RGK 900 only) / Generator controls: Phase sequence, phase loss, max and min voltage and frequency, voltage asymmetry
- Programmable maintenance at various intervals
- Current leakage control towards earth/ground
- Mains-generator synchronising (ATS closed transition)
- Mains in base-load with generator in peak shaving
- Paralleling supervision of generators (island mode)
- Generating set start scheduling.

**Certifications obtained:**
- UL Listed for USA and Canada (cULus - File E958601), as Auxiliary Devices, Generator controllers; EAC.

**Synergy, Synergy+ and Xpress software**

**See Section 29.**

**RGK 900** is designed for mains-generator synchronising applications, such as:

- Single generator in maintained parallel with the mains in “base-load” mode (generator power supplied at a steady rate)
- Single generator in maintained parallel with the mains, in peak-shaving mode (import-export – mains power is limited to constant value and load peaks during heavy demand for power are supplied by generator)
- Single generator in AMF with temporary parallel with the mains (for emergency, with AMF in closed transition).

**RGK 900SA** is designed for applications with load sharing on an isolated bus, without mains:

- Parallel among generators working together in island mode on power bus with load shared among them
- Generators connected together to maintain the power reserve (total power available minus load power) within a preset range, switching on and off of generators according to a priority level.

Combination of RGK 900SA and RGK 900MC units is designed for load govern with multiple generators in parallel on power bus and mains. In these circumstances, the RGK 900MC unit controls, in base-load or peak-shaving mode, the mains and power bus composed by multiple generators, each controlled by an RGK 900SA.
### Engine and generator controllers

#### Remote units

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Qty per pkg</th>
<th>Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGK 800RD SA</td>
<td>Remote display panel for RGK 800SA, 12/24VDC, IP65 protection degree</td>
<td>1</td>
<td>0.820</td>
</tr>
<tr>
<td>RGK 800RD</td>
<td>Remote display panel for RGK 800, 12/24VDC, IP65 protection degree</td>
<td>1</td>
<td>0.820</td>
</tr>
<tr>
<td>RGK 900RD SA</td>
<td>Remote display panel for RGK 900SA, 12/24VDC, IP65 protection degree</td>
<td>1</td>
<td>0.980</td>
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<tr>
<td>RGK 900RD</td>
<td>Remote display panel for RGK 900, 12/24VDC, IP65 protection degree</td>
<td>1</td>
<td>0.980</td>
</tr>
<tr>
<td>RGK RA</td>
<td>Remote display unit for RGK 7... RGK 8... RGK 9... graphic LCD, touch screen 128x112 pixels, IP54 protection</td>
<td>1</td>
<td>0.360</td>
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</tbody>
</table>

#### Alarm-status relay unit

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>RGK RR</td>
<td>Alarms-status relay unit 12/24VDC, 12 relay outputs, pulse input, CANbus communication port</td>
<td>1</td>
<td>0.420</td>
</tr>
</tbody>
</table>

**Remote display panel RGK...RD characteristics**

For remote controller supervision and viewing, the user operates the remote display panel as if directly in front of the generating set.

- 12/24VDC battery power supply
- Graphic LCD with backlight:
  - 128x80 pixels for RGK 800...
  - 128x112 pixels for RGK 900...
- 13 function and setting keys
- 10 indication LEDs for operating modes and status
- Built-in buzzer
- 4 digital inputs
- 2 digital outputs
- Conductor cross section: 0.2...2.5mm² (24...12 AWG)
- Tightening torque: 0.56Nm (4.5lbin)
- Front degree of protection: IEC IP54; UL/CSA Type 1.
- Opto-isolated RS485 interface port

**Remote display unit RGK RA characteristics**

Alarm conditions can be viewed on the remote display and alarm silencing can also be activated.

- Dual 100-240VAC / 12-24VDC power supply
- Touch screen 120x112 pixel backlight graphic LCD
- Built-in buzzer
- Static (SSR) output for global alarm signalling
- Opto-isolated RS485 interface port
- Conductor cross section: 0.2...2.5mm² (24...12 AWG)
- Tightening torque: 0.56Nm (4.5lbin)
- Front degree of protection: IEC IP54; UL Type 1.

**Alarm-status relay unit characteristics**

External relay expansion unit for alarm and status remoting.

Fixing on 35mm DIN rail (IEC/EN 60715).

- Communication with RGK... controllers by CANbus or pulse inputs:
  - 12 relay outputs of which 5 with changeover (SPDT) contact rated 5A 250VAC / 300 and 7 N/O (SPST) contact rated 2.5A 250VAC / C300
  - 12/24VDC power supply
  - Up to 2 RGK RR units can be connected in cascade for a total of 24 relays
  - Maximum installation distance from the RGK 6... and RGK 700... RGK 900 controllers:
    - CANbus: 30m/33yd (high speed)
    - Inputs/Outputs: 1.000m/1,094yd (low speed)
  - Conductor cross section: 0.2...2.5mm² (24...12 AWG)
  - Tightening torque: 0.56Nm/4.5lbin.

**Certifications and compliance**

Certifications obtained: UL Listed, for USA and Canada (cULus – File E93601), as Auxiliary Devices, Generator controllers remote and relay units; EAC.

Comply with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC 61000-6-3, UL508, CSA C22.2 n° 14.

For wiring schemes and technical characteristics, refer to technical instructions in Downloads of local or global website or consult Technical support; see contact details on inside front cover.
### Communication devices for RGK 4... - RGK 6... - RGK 7... - RGK 8... - RGK 9...

<table>
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<tbody>
<tr>
<td>CX 01</td>
<td>USB/optical dongle with PC-&lt;controller connecting cable for programming, data download, diagnostics and firmware upgrade</td>
<td>1</td>
<td>0.090</td>
</tr>
<tr>
<td>CX 02</td>
<td>Wi-Fi dongle for PC-&lt;controller programming, data download, diagnostics, project upload/download and controller cloning</td>
<td>1</td>
<td>0.090</td>
</tr>
<tr>
<td>CX 03</td>
<td>GSM/GPRS penta-band antenna (850/900/1800/1900/2100MHz) for EXP10 1S expansion module for RGK 800... - RGK 900...</td>
<td>1</td>
<td>0.090</td>
</tr>
</tbody>
</table>

### General characteristics
Communication and connection devices for generator set controllers RGK 4... - RGK 6... - RGK 7... - RGK 8... - RGK 9... for personal computers, smartphones, tablets, modems, bus drives.

**CX 01**
The USB/optical connector, complete with cable, allows to connect RGK 4... - RGK 6... - RGK 7... - RGK 8... - RGK 9... controllers to a PC without having to disconnect the power supply from the electric panel and to carry out parameter programming, data and event download, diagnostics and firmware upgrade.

The PC identifies the connection as a standard USB.

**CX 02**
By Wi-Fi connection, RGK 4... - RGK 6... - RGK 7... - RGK 8... - RGK 9... controllers can be viewed by PC, smartphone and tablet with no need for cabling and to carry out parameter programming, data and event download, diagnostics project upload/download and controller cloning.

**CX 03**
Antenna compatible with the major part of worldwide mobile networks thanks to the available frequencies at 850/900/1800/1900/2100MHz.

IP67 IEC protection degree.

Fixing by Ø10mm/0.39” drilling.

Cable length 2.5m/7.23yd.

For wiring schemes and technical characteristics, refer to technical instructions in Downloads of local or global website or consult Technical support; see contact details on inside front cover.

### Accessories

<table>
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<tbody>
<tr>
<td>CX 01</td>
<td>Connecting cables.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CX 02</td>
<td>Connectors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CX 03</td>
<td>Gateway.</td>
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<tbody>
<tr>
<td>S1 C2</td>
<td>For PC-&lt;controller, 1.8m/2yd long</td>
<td>1</td>
<td>0.090</td>
</tr>
<tr>
<td>S1 C3</td>
<td>For PC-&lt;GSM modem, 1.8/2yd long</td>
<td>1</td>
<td>0.210</td>
</tr>
<tr>
<td>S1 C4</td>
<td>For PC-&lt;RS232/RS485, converter drive, 1.8m/2yd long</td>
<td>1</td>
<td>0.147</td>
</tr>
</tbody>
</table>

**General characteristics**
For general characteristics of converters and gateway see section 30.
Supervision and Energy management software

The Synergy™ and Synergy™ softwares provides for the remote control and supervision of the RGK... controllers. See details given in Section 29.

Its structure and applications are based on MS SQL relational database management system. Consulting is made through popular programs for Internet browsing available across different platforms and operating systems. It is a highly versatile system, simultaneously accessible to a large number of users/workstations via intranets, VPN or Internet.

Parameter configuration and remote control software

The Xpress™ is a parameter configuration and remote monitoring software shared by the entire latest generation of RGK gen-set controllers with communication port. It can be installed in the Windows® environment and connect individually (one node at a time) to the RGK gen-set controller connected to the network.

- Supports connection via CX01 (USB) or CX02 (Wi-Fi) dongle, USB, RS232, RS485, Ethernet and modem
- Product configuration:
  - Parameter setting
  - Project file management
- Product firmware upgrade (via CX01)
- Remote control:
  - Monitoring of main measurements
  - Sending commands to products
  - Reading alarms and events memory.
See details given in Section 29.

APP for smartphone and tablets

The Xpress (Setup And Maintenance 1) application allows the user to program the controller, view alarm conditions, send commands, read measurements, download statistical data and events and send retrieved data by email. The connection is made by Wi-Fi with a smartphone or tablet using CX02 dongle. It is iOS and Android compatible. For more details, see Section 29 or consult Technical support; see contact details on inside front cover.

NFC App for RGK 4...SA, with integrated NFC technology, allows remote parameter configuration. The parameters can be saved in a file for archive purposes. It is Android compatible. For more details, see Section 29 or consult Technical support; see contact details on inside front cover.