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ENGINE PROTECTION CONTROLLERS

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



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STAND ALONE GEN-SET CONTROLLERS

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



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AUTO 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.



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PARALLELING CONTROLLER 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).
- Real-time-clock scheduling capability for generating set starting.



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REMOTE ACCESS UNITS

- Remote viewing and control panels
- Remote annunciator for alarm and status indication
- Digital outputs for alarm and status condition remoting.



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EXPANSION MODULES AND ACCESSORIES

- Communication ports
- Additional digital and analog inputs and outputs
- GPRS-GSM module.



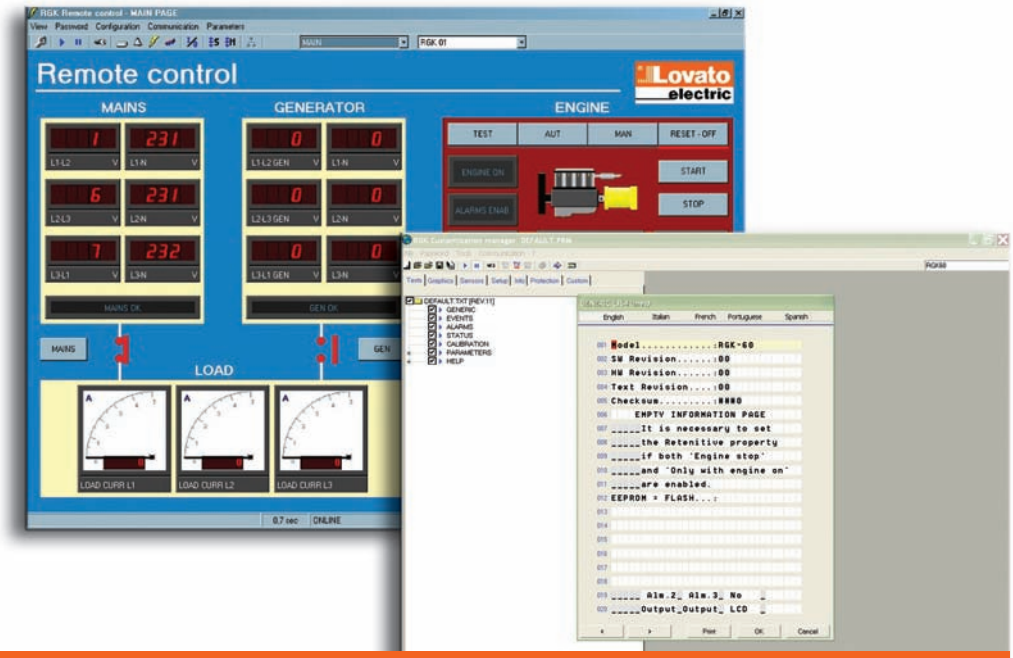
- Extensive selection of functions to satisfy all application requirements
- Power supply range 12-24VDC with each product
- Totally programmable inputs, outputs and alarms
- RS232, RS485, USB, Ethernet communication interface
- Engine control by CANbus
- Set-up and supervision software
- Modem control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

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Engine and generator controllers

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Lovato electric

Characteristics







	ENGINE PROTECTION CONTROLLERS		STAND ALONE GEN-SET CONTROLLERS			
	RGK30	**RGK20**	**RGK40**	**RGK50**	**RGK700 SA**	**RGK800 SA**
Generator voltage control	–	L-N ❻	L1-L2-L3/N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N
Current control	–	–	L1	L1-L2-L3	L1-L2-L3	L1-L2-L3-N
Rated frequency	–	50/60Hz	50/60Hz	50/60/400Hz	50/60Hz	50/60/400Hz
Digital inputs n°	4	4	6	12	7	9
Digital outputs n°	2 (Relay)	3 (SSR)	1 (Relay) + 4 (SSR)	7 (Relay)	3 (Relay) + 4 (SSR)	3 (Relay)+6(SSR)+1(SO)
Engine running inputs	"D+" and "AC"	"D+" and "AC"	"D+" and "AC"	"D+" and "AC"	"D+" and "AC"	"D+" and "AC"
Ohmic inputs for fuel-pressure-temperature	–	–	–	●	●	●
Remote control ❶	–	–	–	● ❺	●	●
CANbus interface	–	–	–	● ❷	●	●
Rated battery voltage	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC
Power supply range	9-33VDC	9-35VDC	9-35VDC	9-33VDC	8-36VDC	8-36VDC
Mains voltage control	–	–	–	–	–	–
Rated voltage range	–	10-227VAC	100-415VAC	100-480VAC	30-600VAC	30-600VAC
VT programming	–	–	●	●	●	●
Rated input current	–	–	5A	5A	5A/1A	5A/1A
TRMS voltage measurement	–	–	●	●	●	●
TRMS voltage measurement	–	–	●	●	●	●
Display	–	7 digit LCD	4-digit LCD	Graphic backlit LCD, 192x64 pixels	Graphic backlit LCD, 128x80 pixels	Graphic backlit LCD, 128x80 pixels
Engine running magnetic pick-up input	–	–	–	● ❷	●	●
Engine speed input	"W"	"W" or generator frequency	"W" or generator frequency	"W" or generator frequency or "Pick-up ❷"	"W" or generator frequency or "Pick-up"	"W" or generator frequency or "Pick-up"
Auxiliary analog input	–	–	–	–	–	●
I/O expansion	–	–	–	RGK X...	–	3 x EXP... + RGK RR
USB/Optical port on front	–	–	–	–	●	●
Wi-Fi port on front	–	–	–	–	●	●
USB port at rear	–	–	–	–	–	EXP1010
Ethernet port with Web server function	–	–	–	–	–	EXP1013
GPRS/GSM modem	–	–	–	–	–	EXP1015
RS232 serial port	–	● (TTL)	● (TTL)	●	●	EXP1011
RS485 serial port	–	–	–	● ❷	–	●
Event logging	–	–	–	–	–	EXP1030
RTC (Real Time Clock)	–	–	–	● ❷	–	●
Programmable Inputs/Outputs	–	●	●	●	●	●
Alarms n°	6	13	25	45	50	58
User alarms n°	–	1	1	8	4	8
Alarm property customising	–	●	●	●	●	●
Texts for alarms, events and parameters	–	–	–	●	●	●
Multilanguage (type) n°	–	–	–	5 (GB - I - F - P - E)❼	5 (GB - I - F - P - E)❼	5 (GB - I - F - P - E)❼
Web upload languages	–	–	–	–	●	●
Load sharing	–	–	–	–	–	–
Generator paralleling	–	–	–	–	–	–
Mains-generator synchronising (closed transition)	–	–	–	–	–	–
IEC degree of protection	IP41 ❸	IP41 ❸	IP54 ❸	IP54 ❸	IP65	IP65

❶ Remote control means: ASCII proprietary and Modbus®-RTU protocols, GSM modem management, AUTOCALL function (email and SMS sending, etc).
❷ Option board.
❸ On front. IP20 at rear.
❹ Events in volatile memory.
❺ Remote control software with RS232, RS485, MODEM or ETHERNET communications by means of TCP/IP protocol.
❻ Frequency only.
❼ Controller uploading of other mutilanguage sets.

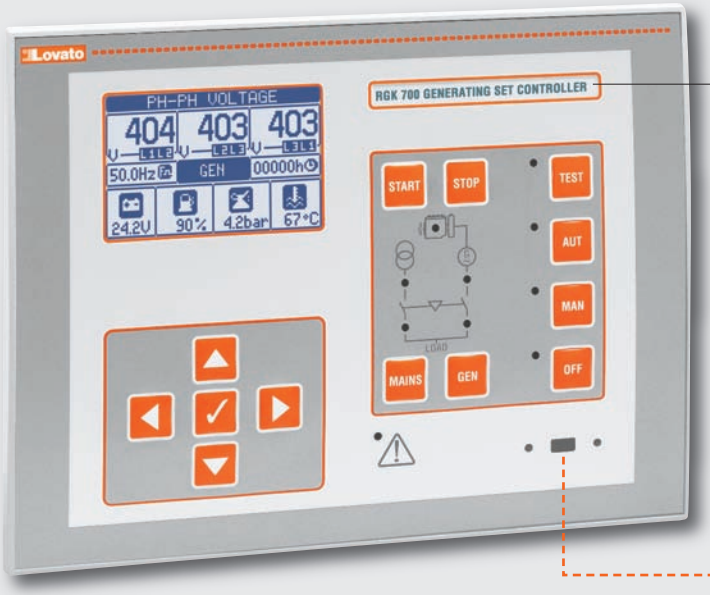







	AUTO MAINS (AMF) GEN-SET CONTROLLERS						PARALLELING / LOAD SHARING	
	RGAM10	**RGAM20**	**RGAM40 RGAM41 RGAM42**	**RGK60**	**RGK700**	**RGK800**	**RGK900**	**RGK900 SA**
	L1-L2/N	L1-L2/N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N
	–	–	L1-L2-L3	L1-L2-L3	L1-L2-L3	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N
	50/60Hz	50/60Hz	50/60/400Hz	50/60/400Hz	50/60Hz	50/60/400Hz	50/60/400Hz	50/60/400Hz
	4	6	8	12	7	9	13	13
	5 (Relay)	6 (Relay)	7 (Relay)	7 (Relay)	3 (Relay) + 4 (SSR)	3 (Relay)+6(SSR)+1(SO)	3 (Relay)+6(SSR)+1(SO)	3 (Relay)+6(SSR)+1(SO)
	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”	“D+” and “AC”
	–	–	●	●	●	●	●	●
	–	● ❺	● ❺	● ❺	●	●	●	●
	–	–	● (RGAM 42 only)	● ❷	●	●	●	●
	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC	12/24VDC
	9-35VDC	9-35VDC	9-35VDC	9-33VDC	8-36VDC	8-36VDC	8-36VDC	8-36VDC
	L1-L2/N-L3	L1-L2/N-L3	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	L1-L2-L3-N	–
	100-415VAC	100-415VAC	100-480VAC	100-480VAC	30-600VAC	30-600VAC	30-600VAC	30-600VAC
	–	●	●	●	●	●	●	●
	–	–	5A	5A	5A/1A	5A/1A	5A/1A	5A/1A
	●	●	●	●	●	●	●	●
	–	–	●	●	●	●	●	●
	4 alphanumerical character LCD	4 alphanumerical character LCD	Graphic backlit LCD, 128x64 pixels	Graphic backlit LCD, 192x64 pixels	Graphic backlit LCD, 128x80 pixels	Graphic backlit LCD, 128x80 pixels	Graphic backlit LCD, 128x112 pixels	Graphic backlit LCD, 128x112 pixels
	–	–	●	● ❷	●	●	●	●
	–	“W” or generator frequency	“W” or generator frequency or “Pick-up”	“W” or generator frequency or “Pick-up”	“W” or generator frequency or “Pick-up”	“W” or generator frequency or “Pick-up”	“W” or generator frequency or “Pick-up”	“W” or generator frequency or “Pick-up”
	–	–	–	–	–	●	●	●
	–	–	–	●	–	3 x EXP... + RGK RR	4 x EXP... + RGK RR	4 x EXP... + RGK RR
	–	–	–	–	●	●	●	●
	–	–	–	–	●	●	●	●
	–	–	–	–	–	EXP1010	EXP1010	EXP1010
	–	–	–	–	–	EXP1013	EXP1013	EXP1013
	–	–	–	–	–	EXP1015	EXP1015	EXP1015
	●	●	●	●	●	EXP1011	EXP1011	EXP1011
	–	–	● (RGAM 41 only)	● ❷	–	●	●	●
	–	● ❹	●	–	–	EXP1030	EXP1030	EXP1030
	–	–	● (RGAM 41 - RGAM 42 only)	● ❷	–	●	●	●
	●	●	●	●	●	●	●	●
	18	31	43	47	50	58	58	60
	–	4	4	8	4	8	8	8
	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●
	1 (GB)	5 (GB - I - F - P - E)	5 (GB - I - F - P - E)	5 (GB - I - F - P - E)	5 (GB - I - F - P - E) ❼	5 (GB - I - F - P - E) ❼	5 (GB - I - F - P - E) ❼	5 (GB - I - F - P - E) ❼
	–	–	–	–	●	●	●	●
	–	–	–	–	–	–	●	●
	–	–	–	–	–	–	–	●
	–	–	–	–	–	–	●	–
	IP54 ❸	IP54 ❸	IP41 ❸	IP54 ❸	IP65	IP65	IP65	IP65

A SUPERIOR CLASS!

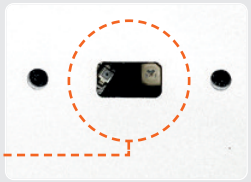


CUSTOMISING OPTION

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 to communicate with a PC, smartphone and tablet, to carry out programming, diagnostics and data download, without removing power to the electric panel.



REMOTE DISPLAYS



There are available "**mirror**" display units to remotely operate as if in front of the generating set.

ALARM-STATE REMOTE UNITS



The remote units allow to transmit, on volt-free contacts, the status and alarms of RGK 800 and RGK 900 controllers.

REMOTE ANNUNCIATOR

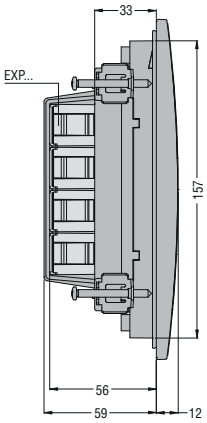


A remote display can view alarm conditions and can be operated for silencing them.

COMPACT SIZE



Trim frame profile and reduced total depth simplify installation of the controllers also in very compact electric panels.



IP65 DEGREE OF PROTECTION

The controller front and the rear seal have been designed to warrant an **IP65** protection degree. This with the **UV** film also allow outside installation.



EXPANDABILITY



Basic RGK 800 and RGK 900 controller functions can be easily extended using the 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
- Opto-isolated Profibus-DP interface
- Data logging and clock-calendar (RTC)
- GPRS/GSM modem

CANBUS COMMUNICATION PORT

All models are standard equipped with CAN-J1939 communication port.



EXPANDABILITY
An extensive selection of modules is available to increase the controller functionity.

GPRS/GSM MODEM
Among the expansion modules, there is a GPRS/GSM modem, automatically configured by genset controller.

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 minimum detail aesthetics.

GPRS/GSM MODEM



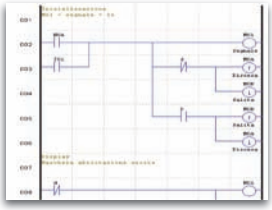
Once a data-enabled SIM card is inserted, the controller can send SMS and **email messages** with alarm and event conditions as well as the latest logged data or data files to a FTP server.

OPTO-ISOLATED ETHERNET INTERFACE WITH WEB SERVER FUNCTION



Web Browsing of the single controller connected in Ethernet by EXP10 13 expansion module.

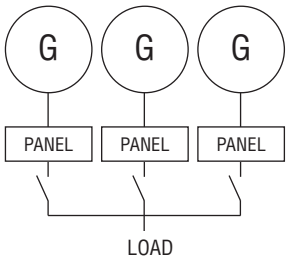
PLC FUNCTION



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

PARALLELING
The RGK 900 and RGK 900 SA 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 paralleling connection of two or more generators sharing in this way the load on more than one source.

ISLAND MODE APPLICATION



SUPERVISION SOFTWARE



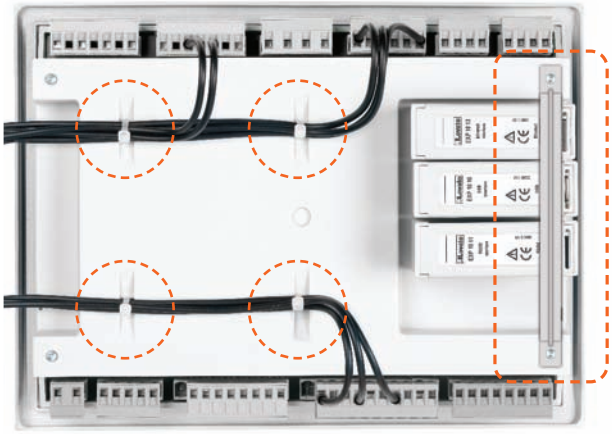
It can be used by the customer to control the generator status:
- Graphic display of all measurements
- Viewing the event log
- Overall view of alarm status
- Input-output status
- Connection remote control
- Capability to simultaneously supervise more than one generator
- Automatic function to send SMS and emails.

FIXING SYSTEM



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

CABLING AND EXPANSION 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 standard supplied to keep the expansion modules in place when installed in applications with strong vibrations.



Engine protection controllers



RGK 20



RGK 30

Order code	Description	Qty per pkg	Wt
		n°	[kg]
RGK 20	12/24VDC, built-in power supply key switch, with TTL programming port	1	0.270
RGK 30	12/24VDC for external start-stop key switch	1	0.160

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.

ADDITIONAL FEATURES
- Quick set-up with PC software (TTL/RS232 serial port).

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

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

Stand alone genset controllers



RGK 40



RGK 50



RGK 700SA - RGK 800SA



EXP 10...



RGK X...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
RGK 40	12/24VDC, built-in power key switch, with TTL programming port	1	0.400
RGK 50	12/24VDC, graphic LCD display, with RS232 port	1	0.750
RGK 700SA	12/24VDC, graphic LCD, RS232 serial port and USB/optical and Wi-Fi point programming port on front	1	❶
RGK 800SA	12/24VDC, graphic LCD, RS485 serial port and USB/optical and Wi-Fi point programming port on front. Expandible with EXP... expansion modules	1	❶

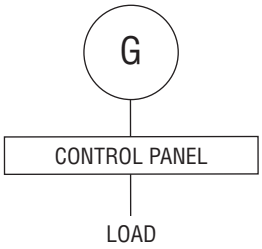
❶ Consult Customer Service; see contact details on inside front cover.

Programmable functions and properties.

Characteristics	RGK 50	RGK 700SA	RGK 800SA
Inputs	12	7	9
Relay outputs	7	3	3
Protected static outputs	–	4	7

Order code	Description
EXPANSION MODULES FOR RGK 800SA Inputs and outputs.	
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
Communication ports.	
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Ethernet interface with Web server function
EXP10 14	Opto-isolate Profibus-DP interface
EXP10 15	GPRS/GSM modem
EXPANSION BOARD FOR RGK 50.	
RGK X01	Option board (clock calendar, RS485 port and 2 digital outputs)
RGK X21	Option board (pick-up function, 2 digital outputs and 4 digital inputs)
RGK X22	Option board (4 relay outputs)
RGK X23	Option board for CANbus J1939 interface

STAND ALONE APPLICATION



General characteristics for RGK 40

OPERATOR INTERFACE
- 1 ON-OFF power supply key selector switch
- 1 semi-automatic engine START button
- 2 programming key buttons
- 4 digit LED display (V, A, kVA, Hours, Vbatt, Hz)
- 6 LED indicators for measurements/readings
- 2 LED indicators for genset status indication
- 1 LED indicator for glow plug pre-heating
- 8 LED indicators s for alarm status
- Local and remote starting.

INPUTS/OUTPUTS

Programmable functions:
- VAC inputs: Generator L1-L2-L3/N
- Digital inputs: 5 negative and 1 positive
- Digital outputs: 1 relay and 4 static
- Programmable properties for inputs, outputs and alarms.

ADDITIONAL FEATURES
- Quick set-up with PC software (TTL/RS232 port)
- UL Listed, for USA and Canada (File E93601), as Auxiliary Devices - Generator controller.

General characteristics for RGK 50 - RGK 700SA - RGK 800SA
- VAC inputs: Generator L1-L2-L3-N
- Single, two and three phase voltage control, with or without neutral
- Rated measurement voltage values:
  - 480VAC for RGK 50
  - 600VAC (UL/CSA) for RGK 700SA and RGK 800SA
- Voltage measurement range:
  - 50-620VAC for RGK 50
  - 30-720VAC for RGK 700SA and RGK 800SA
- Frequency measurement range 45-65Hz or 360-440Hz
- VT programming
- Current measurement input (3 PH): 0.05-6A
- Graphic LCD:
  - 192x64 pixels for RGK 50;
  - 128x80 pixels for RGK 700SA and RGK 800SA
- 2 engine running inputs: “D+” and “AC”
- 1 engine speed input: “W”
- 3 analog ohmic inputs for pressure, oil, engine temperature and fuel level control
- Alarm, event and parameter text in 5 languages
- Alarm text customisable (8 alarms)
- Event log
- Modbus®-RTU and Modbus®-ASCII protocols
- Set-up and remote control software available
- UL Listed, for USA and Canada (File E93601), as Auxiliary Devices - Generator controller for RGK 50.

General characteristics for RGK 700SA - RGK 800SA only
- 1 USB/optical port on front for programming
- 1 CANbus/J1939 port
- 1 engine speed input: Magnetic “Pick-up”
- 1 built-in alarm remoting port
- 1 communication port:
  - RS232 for RGK 700SA
  - RS485 for RGK 800SA
- Modbus®-TCP communication protocols
- Boolean logic for inputs, outputs and internal status
- IEC degree of protection: IP65 on front.

General characteristics for RGK 800SA only
- Current measurement input (3 PH+N): 0.05-6A
- 1 programmable analog input
- Non-volatile memory for event storage
- Clock-calendar (RTC).

MAIN FUNCTIONS FOR RGK 50-RGK 700SA-RGK 800SA
- Menus for quick selection of rated parameter settings for RGK 700SA and RGK 800SA only
- “Autocall” function for automatic sending of emails and/or SMS at predefined events/alarms
- Generator controls: Phase sequence, phase loss, maximum and minimum voltage and frequency, voltage asymmetry
- Maintenance programming
- Current leakage control towards earth/ground for RGK 800SA only.

Automatic mains failure (AMF) genset controllers



RGAM 10



RGAM 20



RGAM 4...



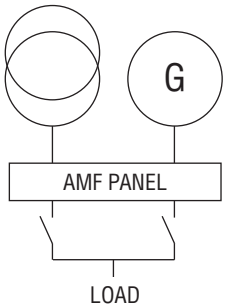
RGK 60

new



RGK 700 - RGK 800

AMF - AUTOMATIC MAINS FAILURE - FUNCTION



Order code	Description	Qty per pkg	Wt
		n°	[kg]
RGAM 10	12/24VDC, 4 character display, with RS232 communication port for set-up only	1	0.480
RGAM 20	12/24VDC, 4 character display, with RS232 communication port	1	0.460
RGAM 40	12/24VDC, graphic LCD, with RS232 communication port	1	0.830
RGAM 41	12/24VDC, graphic LCD, with RTC, RS232 and RS485 communication ports	1	0.840
RGAM 42	12/24VDC, graphic LCD, with RTC, RS232 and CANbus communication ports	1	0.840
RGK 60	12/24VDC, graphic LCD, with RS232 communication port	1	0.750
RGK 700	12/24VDC, graphic LCD, with RS232 port and USB/optical and Wi-Fi point programming port on front	1	❶
RGK 800	12/24VDC, graphic LCD with RS485 port and USB/optical and Wi-Fi point programming port. Expandible with EXP... expansion modules	1	❶

❶ Consult Customer Service for details; see contact details on inside front cover.

Programmable functions and properties.

Characteristic	RGAM4...	RGK 60	RGK 700	RGK 800
Inputs	8	12	7	9
Relay outputs	7	7	3	3
Protected static outputs	–	–	4	7

Order code	Description
EXPANSION MODULES FOR RGK 800... Inputs and outputs.	
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
Communication ports.	
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Ethernet interface with Web server function
EXP10 14	Opto-isolated Profibus-DP interface
EXP10 15	GPRS/GSM modem
EXPANSION BOARDS FOR RGK 60.	
RGK X01	Expansion board (calendar clock, RS485 port and 2 digital outputs)
RGK X21	Expansion board (magnetic pick-up function, 2 digital outputs and 4 digital inputs)
RGK X22	Expansion board (4 relay outputs)
RGK X23	Expansion board for CANbus J1939 interface

new

General characteristics for RGAM 10 - RGAM 20

OPERATOR INTERFACE
- Generator voltage and frequency
- Battery voltage
- Engine speed (RGAM 20 only)
- Operating hours (retentive memory storage)
- Alphanumeric display for alarm and parameter text
- Mains and generator supervision: minimum-maximum voltage and frequency, phase sequence, phase loss (mains only), voltage asymmetry (mains only).

INPUTS/OUTPUTS

Programmable functions:
- VAC inputs: Mains L1-L2/N-L3 rete; generator L1-L2/N
- 4 digital inputs and 5 relay outputs for RGAM 10
- 6 digital inputs and 6 relay outputs for RGAM 20
- Programmable properties for inputs, outputs and alarms

ADDITIONAL FEATURES
- Fast configuration with set-up and remote control software by RS232 port
- Modem connnection with “Autocall” function for automatic sending for email and SMS messages at predefined events for RGAM 20 only
- UL Listed, for USA and Canada (File E93601), as Auxiliary Devices - Generator controllers.

General characteristics for RGAM 4... - RGK 60 - RGK 700 - RGK 800
- VAC inputs: Mains and generator L1-L2-L3-N
- Voltage control for one, two and three phase systems with or without neutral
- Measurement rated voltage:
  - 480VAC for RGAM 4... and RGK 60
  - 600VAC (UL/CSA) for RGK 700 and RGK 800
- Voltage measurement range:
  - 50-620VAC for RGAM 4... and RGK 60
  - 30-720VAC for RGK 700 and RGK 800
- Frequency measurement range 45-65Hz or 360-440Hz
- Programmable VT ratio
- Current measurement input (3 PH): 0.05-6A
- Graphic LCD:
  - 128x64 pixels for RGAM 4...
  - 192x64 pixels for RGK 60
  - 128x80 pixels for RGK 700 and RGK 800
- 2 engine running inputs: “D+” e “AC”
- 1 engine speed input: “W”
- 3 analog ohmic inputs for oil pressure, engine temperture and fuel level control
- Alarm, event and parameter text in 5 languages
- Alarm text customisable (8 alarms)
- Event log
- Modbus®-RTU and Modbus®-ASCII communication protocols
- Set-up and remote control software available
- UL Listed, for USA and Canada (File E93601), as Auxiliary Devices - Generator controllers for RGAM 4... and RGKM 60 only.

General characteristics for RGK 700-RGK 800 only
- 1 USB/optical port for programming on front
- 1 CANbus/J1939 port
- 1 engine speed input: “Magnetic Pick-up”
- 1 built-in alarm remoting port
- 1 communication port: RS232 for RGK 700; RS485 for RGK 800
- Modbus®-TCP communication protocol
- Boolean logic for inputs, outputs and internal status
- IEC degree of protection: IP65 on front.

General characteristics for RGK 800 only
- Current measurement input (3 PH+N): 0.05-6A
- 1 programmable analog input
- Non-volatile memory for events
- Clock-calendar (RTC).

MAIN FUNCTION FOR RGK 60-RGK 700-RGK 800
- Menus for quick selection of rated parameter settings for RGK 700 and RGK 800 only
- “Autocall” function for automatic sending of emails and/or SMS at predefined events/alarms
- Generator controls: Phase sequence, phase loss, maximum and minimum voltage and frequency, voltage asymmetry
- Programmed maintenance
- Current leakage control towards earth/ground for RGK 800 only.

Paralleling controllers for mains-generator and generator-generator



RGK 900SA - RGK 900

Order code	Description	Qty per pkg	Wt
		n°	[kg]
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... expansion modules	1	❶
AMF (Automatic Mains Failure) controller.			
RGK 900	Mains-generator paralleling control. 12/24VDC, graphic LCD, with RS485 port, USB/optical and Wi-Fi point programming port on front. Expandable with EXP... expansion modules	1	❶
Mains-ATS (Automatic Transfer Switching) controller.			
RGK 900 MC	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. Expandable with EXP... expansion modules	1	❶

❶ Consult Customer Service; see contact details on inside front cover.



EXP 10...

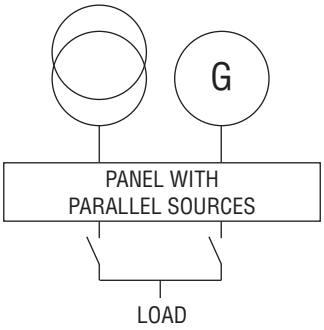
Order code	Description
EXPANSION MODULES FOR RGK 900... Inputs and outputs.	
EXP10 00	4 opto-isolated digital inputs
EXP10 01	4 opto-isolated static outputs
EXP10 02	2 digital inputs and 2 static outputs, opto-isolated
EXP10 03	2 relay outputs rated 5A 250VAC
EXP10 04	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V
EXP10 05	2 opto-isolated static outputs 0/4-20mA or 0-10V or 0...±5V
Communication ports.	
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Ethernet interface with Web server function
EXP10 14	Opto-isolated Profibus-DP interface
EXP10 15	GPRS/GSM modem

General characteristics
- 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 or 360-440Hz
- Programmable VT ratio
- Current measurement input (3 PH+N): 0.05-6A
- Fourth CT for neutral measurement or earth/ground leakage detection
- Graphic LCD, 128x112 pixels with backlight
- 13 digital inputs
- 3 relay outputs rated 8A 250VAC
- 6 static outputs rated 2A, protected
- 1 static output 50mA
- 2 engine running inputs: “D+” and “AC”
- 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 (governor) / voltage regulator (AVR)
- Alarm, event and parameter text in 5 languages (upload by Web)
- Alarm text customisable (8 alarms)
- Event log
- Modbus®-RTU, Modbus®-ASCII and Modbus®-TCP communication protocols
- Boolean logic for inputs, outputs and internal status
- Set-up and remote control software available
- IEC degree of protection: IP65 on front
- Built-in buzzer
- Multi-level passwords
- Sleep function (power saving mode)
- Synchronising and load sharing.

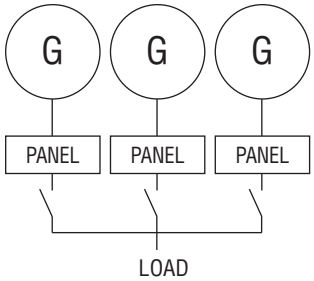
MAIN FUNCTIONS
- Menus for quick selection of rated parameter settings for RGK 700SA and RGK 800SA only
- “Autocall” function for automatic sending of emails and/or SMS at predefined events/alarms
- Generator controls: Phase sequence, phase loss, maximum and minimum voltage and frequency, voltage asymmetry
- Mains controls: Phase sequence, phase loss, maximum and minimum voltage and frequency, voltage asymmetry for RGK 900 only
- Programmed maintenance at various intervals
- Current leakage control towards earth/ground
- Mains-generator synchronising (closed transition)
- Mains-generator load sharing with peak control of one of the 2 sources
- Paralleling supervision of generators (island mode with load sharing)
- Generating set start scheduling.

Certifications and compliance
Certifications obtained: cULus pending completion at time of catalogue printing.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.

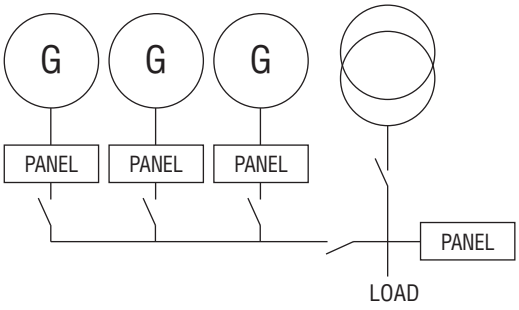
MAINS-GENERATOR PARALLELING APPLICATION



ISLAND MODE APPLICATION



ATS AND PARALLELING APPLICATION OF MAINS WITH MULTIPLE GENSETS



Remote access devices



RGK 800 RD



RGK RA

Order code	Description	Qty per pkg	Wt
		n°	[kg]
RGK 800 RD SA	Remote display panel for RGK 800SA, 12/24VDC, IP65 protection degree	1	❶
RGK 800 RD	Remote display panel for RGK 800, 12/24VDC, IP65 protection degree	1	❶
RGK 900 RD SA	Remote display panel for RGK 900SA, 12/24VDC, IP65 protection degree	1	❶
RGK 900 RD	Remote display panel for RGK 900, 12/24VDC, IP65 protection degree	1	❶
RGK RA	Remote annunciator, graphic LCD, touch screen 128x112 pixels, IP65 protection	1	❶

❶ Consult Customer Service; see contact details on inside front cover.

Remote panel general characteristics
Display panels for remote controller supervision and viewing.
The user operates the remote panel as if directly in front of the generating set.

Operational characteristics
– 12/24VDC auxiliary supply
– Serial interface ports:
  • RS485
  • CANbus.

Remote annunciator general characteristics
Alarm conditions can be viewed on the remote display and alarm silencing can also be activated.

Expansion modules



EXP 10...



RGK X...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXPANSION MODULES FOR RGK 800... AND RGK 900... Inputs and outputs.			
EXP10 00	4 opto-isolated digital inputs	1	0.060
EXP10 01	4 opto-isolated static outputs	1	0.054
EXP10 02	2 digital inputs and 2 static outputs, opto-isolated	1	0.058
EXP10 03	2 relay outputs rated 5A 250VAC	1	0.050
EXP10 04	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V	1	0.056
EXP10 05	2 opto-isolated static outputs 0/4-20mA or 0-10V or 0...±5V	1	0.064
Communication ports.			
EXP10 11	Opto-isolated RS232 interface	1	0.040
EXP10 12	Opto-isolated RS485 interface	1	0.050
EXP10 13	Opto-isolated Ethernet interface with Web server function	1	0.060
EXP10 14	Opto-isolated interface	1	0.080
Other functionality.			
EXP10 15	GPRS/GSM modem	1	0.080
EXPANSION BOARDS FOR RGK 50 AND RGK 60.			
RGK X01	Expansion board (calendar-clock, RS485 port and 2 digital outputs)	1	0.050
RGK X21	Expansion board (magnetic pick-up function, 2 digital outputs and 4 digital inputs)	1	0.090
RGK X22	Expansion board (4 relay outputs	1	0.110
RGK X23	Expansion board for CANbus J1939 interface	1	0.100

General characteristics
The expansion modules and boards do not require particular settings and extend the controller functionality.

EXP...
Plug-in modules to fit on the rear of RGK 800... and RGK 900... types

RGK X...
Boards for RGK 50 and RGK 60 types to plug in the apposite slots available through the rear; a maximum of only two can be installed.

Alarm-state relay unit



RGK RR

Order code	Description	Qty per pkg	Wt
		n°	[kg]
RGK RR	Remote unit for alarms/status, 12/24VDC, 12 relay outpus, pulse input, CANbus communication port	1	❶

Communication devices for RGK 700..., RGK 800... and RGK 900...



CX 01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX 01	PC↔controllor connecting cable with USB/optical connector for programming, data download, diagonistics and firmware upgrade	1	0.090
CX 02	PC ↔ controllor Wi-Fi connecting device for programming, data download, diagnotics and firware upgrade	1	0.090
CX 03	GSM quad-band antenna (800/900/1800/1900MHz) for EXP10 15 expansion module	1	0.090

Software and accessories



RGK SW10 - RGK SW20



51 C4

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Software for RGK 20, RGK 40, RGK 50, RGAM 10, RGAM 20, RGAM 4..., RGK 60, RGK 700..., RGK 800... and RGK 900... controllers.			
RGK SW10	Parameter set-up software	1	0.246
RGK SW20	Supervision and remote control software (includes RGKSW 10 software)	1	0.400
Accessories.			
51 C2	PC ↔ controller connecting cable, 1.8m/2yd long	1	0.090
51 C3	PC ↔ GSM modem connecting cable, 1.8/2yd long❶	1	0.210
51 C4	PC ↔ controller RS232/RS485 connecting cable, 1.8m/2yd long	1	0.147
51 C5	Controller ↔ analog modem connecting cable, 1.8m/2yd long❶	1	0.111
51 C7	Controller ↔ GSM modem connecting cable, 1.8/2yd long❶	1	0.101
51 C11	PC ↔ TTL/RS232 communication port connecting cable, 2.8m/3yd long	1	0.090
4 PX1	RS232/RS485 converter drive, galvanically isolated, 220-240VAC power supply (110-120VAC on request) ❷	1	0.600

❶ Consult Customer Service; see contact details on inside front cover.
❷ RS232/RS485 opto-isolated converter drive, 38,400 Baud rate maximum, automatic or manual TRANSMIT line supervision, 220-240VAC ±10% (110-120VAC supply on request).

General characteristics
Communication and connection devices for generating set controllers RGK 700..., RGK 800... and RGK 900... for:
- Personal computer
- Smartphone
- Tablet
- Modem
- Bus drives.

RGK RR
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 relays rated 5A 250VAC(in AC1 IEC) (4 changeover (SPDT) and 8 N/O (SPST) contacts)
- 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 800 and RGK 900 controllers:
  - CANbus: 30m/33yd (high speed)
  - Inputs/Outputs: 1,000m/1,094yd (low speed).

CX 01
The USB/optical connector, complete with cable, allows to connect RGK 700..., RGK 800... and RGK 900... 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.

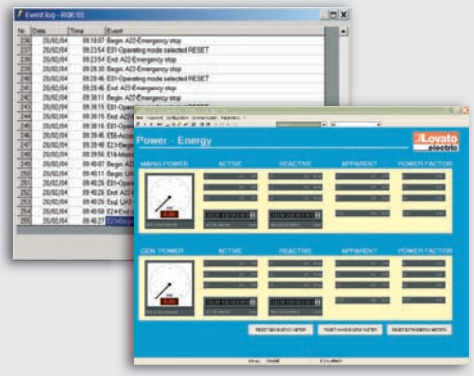
The PC identifies the connection as a standard USB.

CX 02
By a Wi-Fi connection, RGK 700..., RGK 800... and RGK 900... controllers can be viewed by PC, smartphone and tablet without any need for cabling and to carry out:
- Parameter programming
- Data and event download
- Diagnostics.

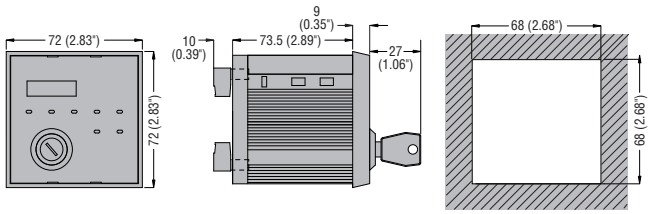
CX 03
Compatible with the major part of worldwide mobile networks thanks to the available frequencies at 800/900/1800/1900MHz.

For overall dimensions, wiring schemes and technical characteristics, consult Customer Service; see contact details on insider front cover.

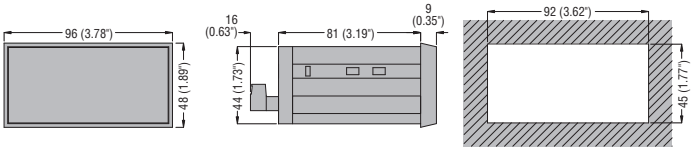
Example of remote control software RGK SW... viewing



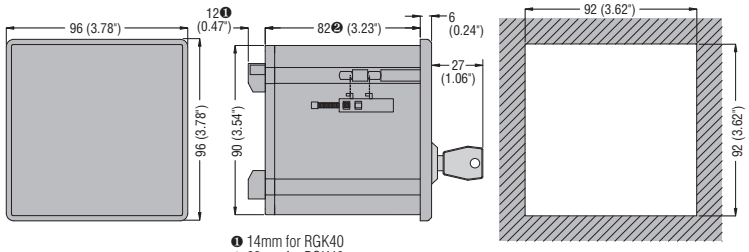
ENGINE PROTECTION CONTROLLER **RGK 20**



RGK 30

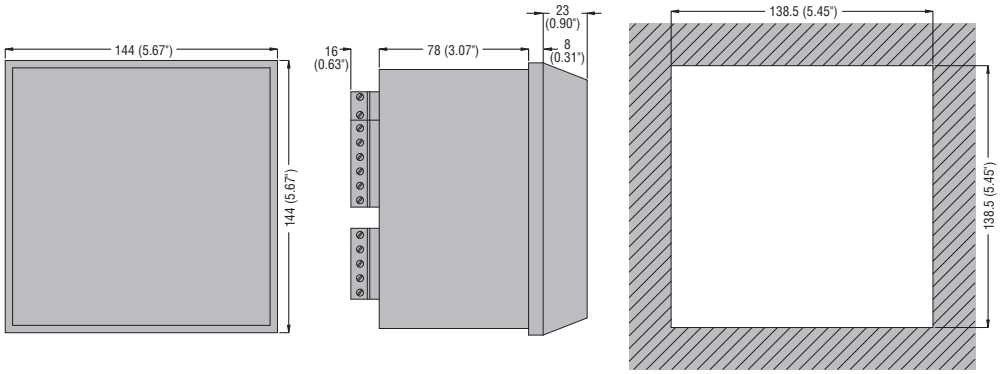


STAND-ALONE CONTROLLERS **RGK 40-RGAM 10-RGAM 20**

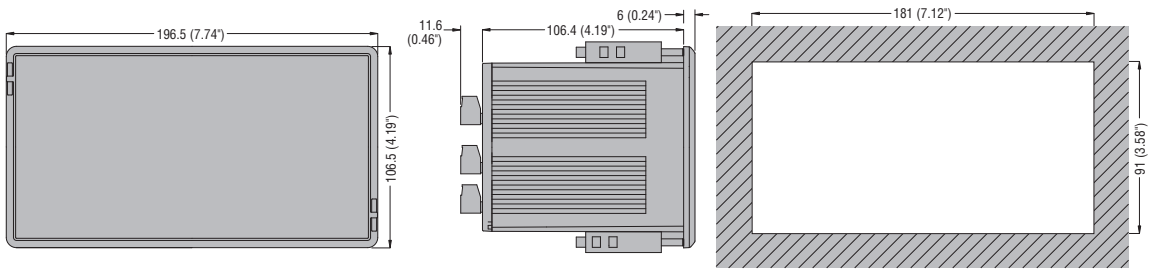


❶ 14mm for RGK40
❷ 62mm for RGK40

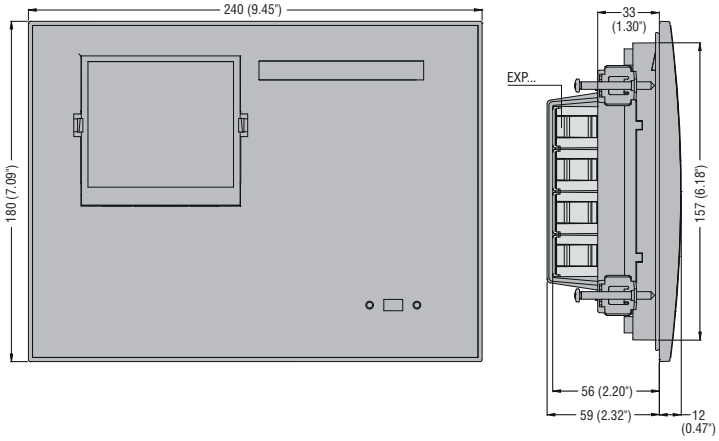
AMF CONTROLLERS **RGAM 40 - RGAM 41 - RGAM 42**



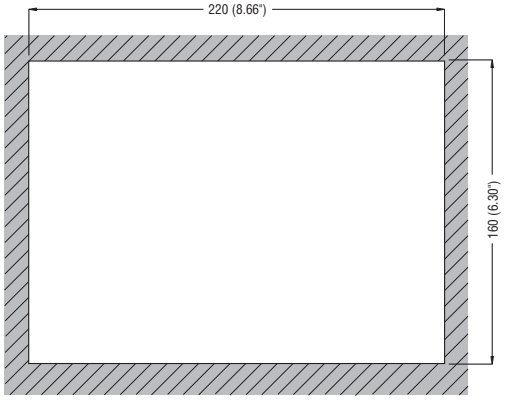
RGK 50 - RGK 60



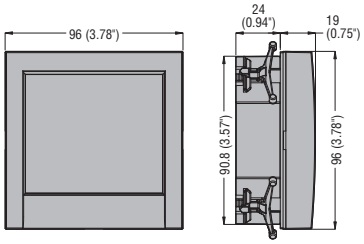
AMF CONTROLLER **RGK 700... - RGK 800... - RGK 900...**



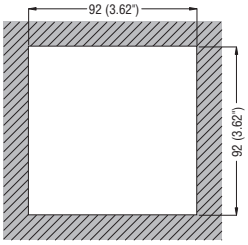
Cutout



REMOTE DISPLAY **RGK RA**



Cutout



ALARM-STATE RELAY UNIT **RGK RR**

