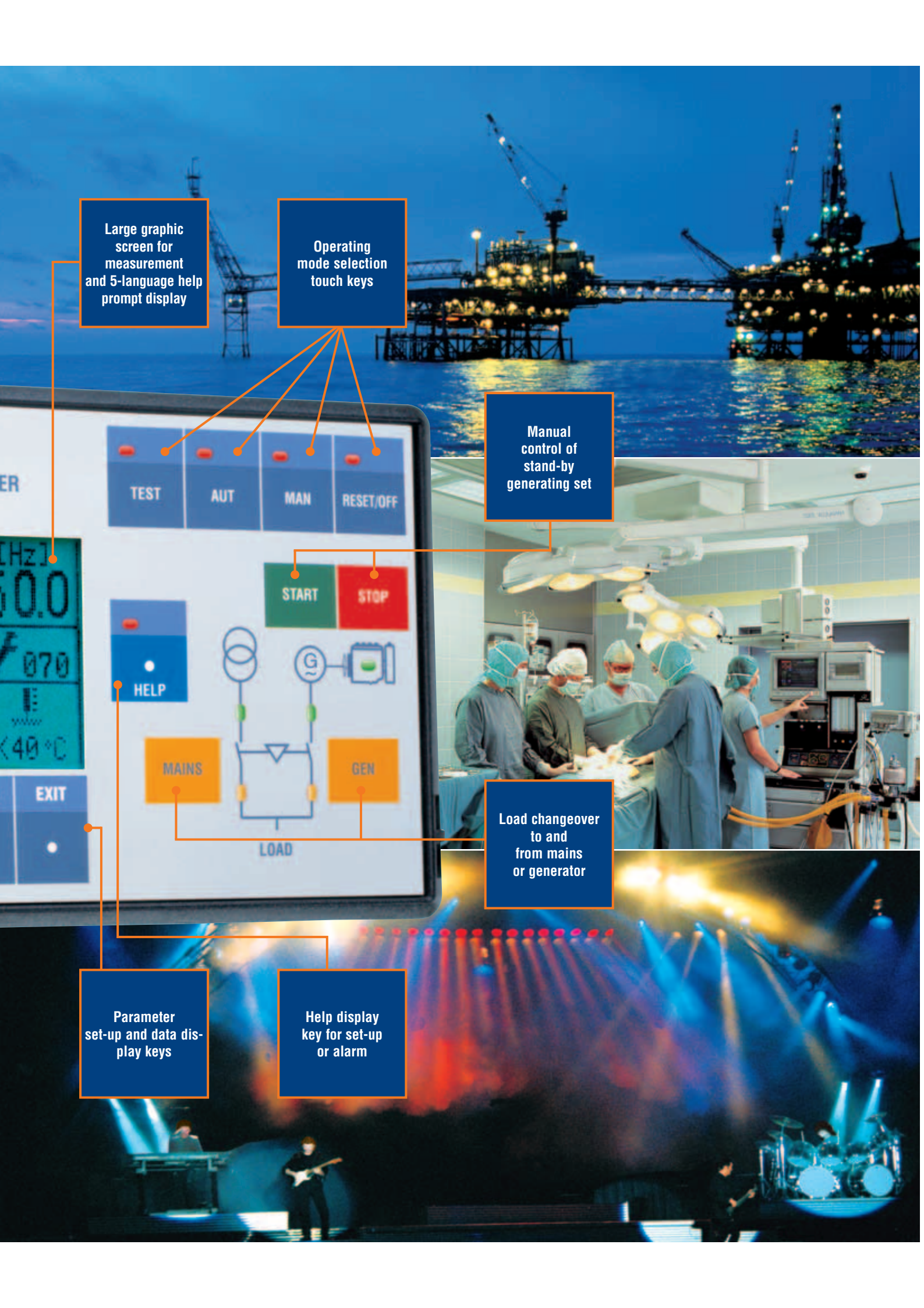




## Generating set controller RGK 60



Large graphic screen for measurement and 5-language help prompt display

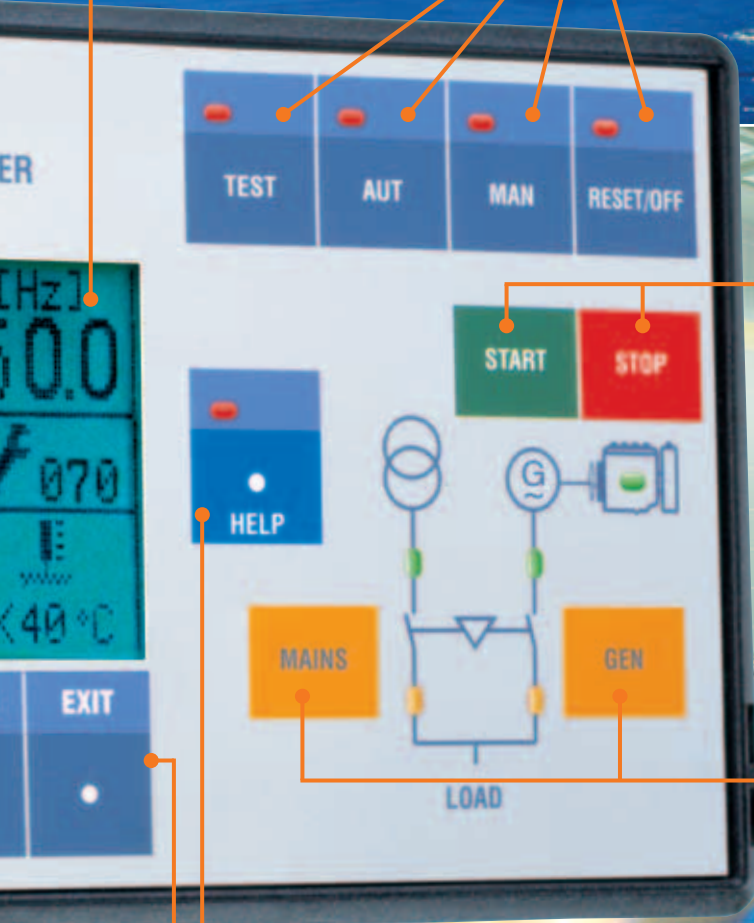
Operating mode selection touch keys

Manual control of stand-by generating set

Load changeover to and from mains or generator

Parameter set-up and data display keys

Help display key for set-up or alarm



# RGK - TOTAL CONTROL

Comfort and safety  
24 hours a day

The RGK 60 is a microprocessor module for the control of generating sets. It is a complete metering system with excellent measurement technology. The main goal of this new unit has been the elimination of the communication barriers between man and machine. The use of a large display screen and supervision software dedicated to rationally interact with the operator has consented to reach this intent.

## Viewable measurements

- Battery voltage
- Phase, line and system mains voltage values
- Phase, line and system generator voltage values
- Phase current
- Active, reactive and apparent power values

## Main set-up menu

```
----- USER'S MENU -----
M01 - Utility (Language)
M02 - General
M03 - Battery
M04 - Motor starting
M05 - Motor control
M06 - MAINS control
M07 - GEN control
M08 - Generator protection
M09 - Test e Maintenance
M10 - Communication port
M11 - Miscellaneous
M12 - Programmable input
M13 - Programmable output
M14 - Expansion input
M15 - Expansion output
M16 - Alarm table
```

## Global view of measurement system

```
L1-N...: 230V  I1...: 122.0A
L2-N...: 231V  I2...: 120.3A
L3-N...: 230V  I3...: 118.8A
pf1...: 0.85  Pa1...: 23.85kW
pf2...: 0.85  Pa2...: 23.89kW
pf3...: 0.86  Pa3...: 23.22kW
pf-tot: 0.85  Pa-tot: 70.97kW
f:50.0Hz Speed:1500rpm W:1498rpm
```



## Option cards

Option card RGK X01 with:

- Clock calendar with energy back-up capacitor
- Opto-isolated RS485 port
- 1 relay output
- 1 static output.

Option card RGK X21 with:

- Magnetic pick-up sensor input
- 4 programmable inputs
- 2 programmable relays outputs.

Option card RGK X22 with:

- 4 programmable relay outputs.

## Set-up software

It allows an easy and fast parameters setting via PC. RGK SW10 can also be used to:

- Write additional help text
- Set curve characteristics of oil pressure, temperature, etc.
- Insert personalised logo on LCD display.
- Describe the generating set technical characteristics on blank pages available.

## Remote control communication software

It enables the remote supervision of one or more RGK 60 units through RS485 or RS232 port with external modem, GSM-modem or RS232-ETHERNET converter.

The RGK SW20 software (which includes RGK SW10 software) consents to:

- Set parameters
- Converge all data and information of the RGK 60 units, connected through the RS485 network, on to a central personal computer (PC)
- Display data by means of graphic, analog and digital instrument drawings, bar graphs and pages with all measurement details

## General characteristics

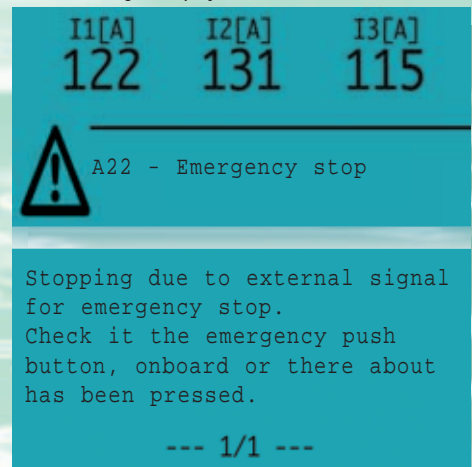
- Active-reactive energy meters
- Power factor per phase
- Mains and generator frequency
- Engine speed (rpm)
- Oil pressure
- Water temperature
- Fuel level
- Engine running hour counter
- Hours remaining before next maintenance
- Total number of starting attempts
- Percentage of successful starting attempts.

- Large graphic back-lit display, 192x64 pixel
- Three-phase mains-generator voltage control range: 50 to 620VAC (VT input)
- Three-phase current control range: 0.02 to 6A (CT input)
- 12 digital inputs
- 7 relay outputs
- 1 "W" engine speed measuring input
- 3 analog inputs for pressure, temperature and fuel level monitoring
- 32 different functions assignable to the programmable inputs
- 75 different functions assignable to the programmable outputs
- 45 basic alarms

- 8 programmable user alarms
- 10 programmable properties assignable to each alarm
- Alarms with customisable texts
- Non-volatile energy meters
- RS232 port for set-up, remote control, normal or GSM modem connection
- Single device for either 12V or 24VDC battery
- Fast set-up via keypad or PC
- User friendly via interactive interface
- Context sensitive on-line help prompts
- Choice of text language
- Icon detail and alarm viewing
- Event log for alarms, status and events
- Operating data recording
- Safety copy of parameters in flash memory
- Customisable page for information concerning the application.



Alarm messages display



Help text

- Configure data-logger
- Display event-log (alarms, events, etc.)
- Customise display page, with type and number of required instruments
- Access to set-up parameters, protected by password
- Read, edit and save on disk the set-up parameters
- Configure the program in different languages
- Make automatic calls via modem.

Note: RGK 60 is provided with proprietary LOVATO Electric and standard Mod-Bus RTU communication protocols.

The automatic call ("Autocall") function enables the RGK 60 unit to automatically connect itself to the remote PC, through normal or GSM modem, at any alarm event. The GSM modem thereby enables to transmit event messages by SMS (cellular telephone system) or e-mail.

## Remote control by means of cellular phone

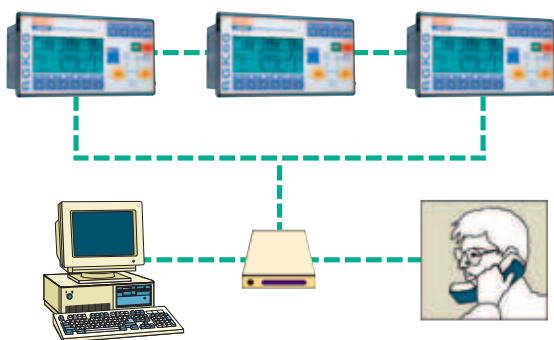
RGK 60 comprises features that allow the following SMS commands sending:

- To change operating mode (RESET/OFF-MAN-AUT-TEST)
- To start and stop the generator
- To switch the load from Mains to Gen and vice versa
- To receive RGK 60 data (status, measurements, etc.)
- To receive information about fuel level (litres or gallons).

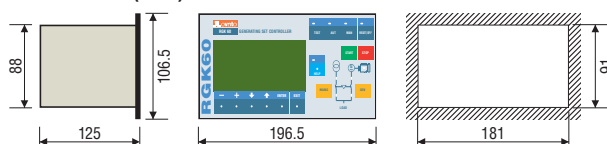
## TECHNICAL CHARACTERISTICS

<b>Power supply</b>	
Battery rated voltage	12 or 24VDC indifferently
Voltage range	9 to 33VDC
Minimum voltage at starting	6.7VDC
Maximum current consumption	
Without backlight	320mA at 12VDC and 160mA at 24VDC
With 65% backlight adjustment (default)	410mA at 12VDC and 205mA at 24VDC
With 100% backlight adjustment	470mA at 12VDC and 235mA at 24VDC
Maximum power consumption	5.7W
Maximum power dissipation	5.7W
Stand-by current	150mA at 12VDC and 75mA at 24VDC
Immunity time for microbreakings	200ms
<b>Digital inputs</b>	
Input type	Negative
Current input	≤10mA
Input "low" voltage	≤1.5V (typical 2.9V)
Input "high" voltage	≥5.3V (typical 4.3V)
Input delay	≥50ms
<b>Speed input "W"</b>	
Input type	AC coupling
Voltage range	5 to 50Vpp
Frequency range	40 to 2000Hz
<b>Speed input "Pick-up" (optional card)</b>	
Input voltage	0.85 - 150Vpp
Input impedance	20 - 60kΩ
Input frequency	20 - 10000Hz
UL rating	2.00Vpp - 84Vpp
<b>Engine running input (500rpm) for permanent magnet alternator</b>	
Voltage range	0 to 40VAC
<b>Engine running input (500rpm) for pre-excited alternator</b>	
Voltage range	0 to 40VDC
Maximum input current	12mA
Maximum voltage at +D terminal	12 or 24VDC (battery voltage)
Pre-excitation current	170mA 12VDC - 130mA 24VDC
<b>Relay output 4.1 - 4.2 / 4.3 - 4.4 terminals (voltage free)</b>	
Contact type	1 NC for mains + 1 NO for generator
Rated voltage	250VAC (440VAC max)
Rated current at 250VAC	8A AC1 (2A AC15)
<b>Relay output 5.3 - 5.4 - 5.5 terminals (voltage free)</b>	
Contact type	1 changeover
Rated voltage	250VAC max
Rated current at 250VAC	8A AC1 (2A AC15)
<b>Relay output 6.2 / 6.3 / 6.4 / 6.5 terminals (+ battery voltage output)</b>	
Contact type	1 NO each and one common terminal
Rated voltage	30VDC
Rated current at 30VDC	5A (DC1)
Max current on relays common terminal 12ADC	

<b>Analog inputs</b>	
Pressure sensor current	20mA max
Temperature sensor current	7mA max
Level sensor current	10mA max
Analog ground voltage	-0.5 to +0.5V
<b>Voltage inputs</b>	
Maximum rated voltage Ue	480VAC L-L (277VAC L-N)
Voltage range	50 to 620V L-L (358VAC L-N)
Frequency range	45 to 65Hz
Measuring method	True RMS
Measuring input impedance	>1.1MΩ L-L (>570kΩ L-N)
Wiring mode	1, 2 or 3 phases, with or without neutral
<b>Current inputs</b>	
Rated current Ie	5A
Current range	0.02 to 6A
Measuring method	True RMS
Overload capacity permanent	+20% Ie
Overload peak	50A for 1 second
Power consumption	<0.3VA
<b>Measuring accuracy</b>	
Voltage	±0.2% full scale ±1digit
Current	±0.5% full scale ±1digit
Apparent power	±0.5% full scale ±1digit
Active power	±1.7% full scale ±1digit (cosφ 0.7-1) ±2% full scale ±1digit (cosφ 0.3-0.7)
Reactive power	±1.4% full scale ±1digit (sineφ 0.7-1) ±1% full scale ±1digit (sineφ 0.3-0.7)
<b>Additional errors</b>	
Relative umidity	±1digit 60% to 90% R.H.
Temperature	±1digit -20° ... +60°C
<b>Ambient operating conditions</b>	
Operating temperature	-20 ... +60°C
Storage temperature	-30 ... +80°C
Relative humidity	<90%
Maximum pollution degree	3
<b>Connections</b>	
Terminal type	Plug-in/removable
Cable cross section (min - max)	0.2 to 2.5 mm <sup>2</sup> (24/12 AWG)
Tightening torque	0.5 Nm (4.5 lbin)
<b>Housing</b>	
Version	Flush mount
Material	Thermoplastic
Degree of protection	IP54 on front (IP64 with seal)
<b>Certifications and compliance</b>	
Certifications obtained: cULus	
Compliant to standards: IEC/EN 61000-6-2, CISPR 11, EN 55011, IEC/EN 61010-1 and UL 508/C22.2 n°14 95.	



### Dimensions (mm)



## ORDER CODES

Order Code	Description	Quantity per package n°	Weight kg
<b>RGK 60</b>	Gen-set controller	1	0.750
<b>RGK X01</b>	Option card (clock calendar, with back-up, isolated RS485 port, and 2 digital programmable outputs)	1	0.050
<b>RGK X21</b>	Option card with pick-up sensor input, 4 programmable inputs and 2 programmable relay outputs	1	0.090
<b>RGK X22</b>	Option card with 4 programmable relay outputs	1	0.110
<b>RGK SW10</b>	Set-up software c/w connecting cable	1	0.091
<b>RGK SW20</b>	Remote control communication software (includes RGK SW10 software) c/w connecting cables	1	0.091

# LOVATO Electric control solutions

## Contactors



## Push buttons and selectors



## Automatic battery chargers



## Automatic transfer switches

