The RGCP-3400 is delivered as a fully-wired, factory tested turn-key assembly that easily interfaces with a PLC-based SCADA system. The space-conscious design greatly simplifies switchgear construction and provides peace of mind in critical applications, where even a momentary loss of the on-site power system may result in substantial monetary loss or risk to life or security hazards.

At the heart of the RGCP is a pair of Woodward easYgen-3400 series genset controllers, each housed in a robust metal enclosure. Specially designed firmware allows the two controls to operate in tandem in a primary/standby configuration. Should the CPU of the primary unit fail, control is automatically transferred to the stand-by unit and “bump-less” genset control is resumed; there is negligible effect on generator stability or load sharing during the transfer, even during start-up and synchronization. Manual transfer between primary and standby controls is also possible through a key switch, for making fail-safe check, firmware upgrades, or “hot-swapping” controllers for any reason. The RGCP can be used on an isolated generator or can load share with up to 32 RGCP (or easYgen-3400/3500) equipped gensets in islanded or utility parallel operation. Communication and load sharing between RGCP’s in a system can be done over a redundant fiber optic ring network topology; any single break in the ring will not affect the network integrity. The RGCP is also compatible with LS-5 circuit breaker controls, for synchronization and control of up to 16 utility or tie breakers in complex distribution systems. Each RGCP can be used with up to 2 remote panels (RP-3000) for genset control and visualization. Terminal blocks are provided for end user connection of redundant power supplies.

**FEATURES**

- Fully wired compact turn-key assembly with outside terminal blocks for wiring like a single easYgen-3400
- Unique bias tracking firmware, for bump-less transfer to the backup controller even while the generator is fully loaded and paralleled with other generators
- CT shorting blocks for “hot-swap” of a controller without having to stop the generator
- Automatic detection of primary/stand-by controller status and loss of redundancy. Local annunciation through LEDs and remote indication through potential free contacts
- Parameter alignment monitoring between primary and stand-by controller and mismatch alarm
- Available load share communication line redundancy with fiber optic ring
- Up to 2 remote panels (RP-3000) realizable for genset control and visualization
- Manual switch-over capability for commissioning, maintenance, and troubleshooting
- Full connectivity of up to 32 Generators and 16 LS-5 circuit breaker control devices in one application
- Operation modes: Auto, Stop, Manual, and Load/No Load test modes via RP-3000 or discrete inputs
- Breaker control: Slip frequency / phase matching synchronization, open-close control, breaker monitoring
- Load transfer features: open / closed transition, interchange, soft loading / soft unloading, mains parallel
- Remote control via interface and discrete/analog inputs for adjusting speed, frequency, voltage, power, reactive power, and power factor set points
- Multi-lingual capability: English, German, Spanish, French, Italian, Portuguese, Japanese, Chinese, Russian, Turkish, Polish, Slovenian, Finnish, Swedish
- For mission critical applications
- Pre-Wired, factory tested turn-key assembly
- Based on the proven easYgen-3400 series hardware
- “Bump-less” transfer between primary/stand-by controllers
- “Hot-Swap” capability for online maintenance or replacement
- Manual key switch for commissioning, maintenance, and troubleshooting
- Available Redundant fiber optic ring communication
- Provision for redundant power supply
- Simple installation and commissioning
- Easy interface with PLC based control systems
- Load sharing and load-dependent start/stop for up to 32 units
- Compatible with LS-5 circuit breaker controls for complex distribution systems
- ABS and LR marine societies component approvals
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24 Vdc (+/- 10%)</td>
</tr>
<tr>
<td>Intrinsic consumption</td>
<td>max. 42 W</td>
</tr>
<tr>
<td>Ambient temperature (operation)</td>
<td>-40 to 60 °C / -40 to 140 °F</td>
</tr>
<tr>
<td>Ambient temperature (storage)</td>
<td>-30 to 80 °C / -22 to 176 °F</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>95%, non-condensing</td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td></td>
</tr>
<tr>
<td>100 VAC [1]</td>
<td>Rated (V&lt;sub&gt;rated&lt;/sub&gt;)</td>
</tr>
<tr>
<td></td>
<td>Max. value (V&lt;sub&gt;max&lt;/sub&gt;)</td>
</tr>
<tr>
<td>and 400 VAC [4]</td>
<td>Rated (V&lt;sub&gt;rated&lt;/sub&gt;)</td>
</tr>
<tr>
<td></td>
<td>Max. value (V&lt;sub&gt;max&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Rated surge volt.(V&lt;sub&gt;surge&lt;/sub&gt;)</td>
<td>2.5 kV</td>
</tr>
<tr>
<td><strong>Linear measuring range</strong></td>
<td></td>
</tr>
<tr>
<td>and 100 VAC [1]</td>
<td>Primary</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>Measuring frequency</td>
<td>50/60 Hz (40 to 85 Hz)</td>
</tr>
<tr>
<td>High Impedance Input</td>
<td>Resistance per path: [1] 0.025 MΩ, [4] 1.0 MΩ</td>
</tr>
<tr>
<td>Max. power consumption per path</td>
<td>&lt; 0.3 W</td>
</tr>
<tr>
<td><strong>Current (Isolated)</strong></td>
<td>Rated (I&lt;sub&gt;rated&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Linear measuring range</td>
<td>[1] I&lt;sub&gt;gen&lt;/sub&gt; = 3.0×I&lt;sub&gt;rated&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>[4] I&lt;sub&gt;mains&lt;/sub&gt;/ground = 1.5×I&lt;sub&gt;rated&lt;/sub&gt;</td>
</tr>
<tr>
<td>Setting range</td>
<td>[1] 1 to 32,000 A</td>
</tr>
<tr>
<td>Rated short-time current (1 s)</td>
<td>[1] 50×I&lt;sub&gt;rated&lt;/sub&gt;, [4] 10×I&lt;sub&gt;rated&lt;/sub&gt;</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td></td>
</tr>
<tr>
<td>Setting range</td>
<td>0.5 to 99,999.9 kW/kvar</td>
</tr>
<tr>
<td><strong>Discrete inputs</strong></td>
<td></td>
</tr>
<tr>
<td>Input range</td>
<td>12/24 Vdc (8 to 40 Vdc)</td>
</tr>
<tr>
<td>Input resistance</td>
<td>&lt; 1.85 VA</td>
</tr>
<tr>
<td>Relay resistance</td>
<td>隔离</td>
</tr>
<tr>
<td>Contact material</td>
<td>AgCdO</td>
</tr>
<tr>
<td>Load (GP)</td>
<td>2.00 A @ @250 Vac</td>
</tr>
<tr>
<td></td>
<td>2.00 A @ @24 Vdc / 0.36 A @ @125 Vdc / 0.18 A @ @250 Vac</td>
</tr>
<tr>
<td>Pilot duty (PD)</td>
<td>1.00 A @ @24 Vdc / 0.22 A @ @125 Vdc / 0.10 A @ @250 Vac</td>
</tr>
<tr>
<td><strong>Analog inputs (none isolated)</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>freely scalable</td>
</tr>
<tr>
<td>Resolution</td>
<td>0 to 20 mA</td>
</tr>
<tr>
<td><strong>Analog outputs (isolated)</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>11 Bit</td>
</tr>
<tr>
<td>Resolution</td>
<td>11/12 Bit (depending on analog output)</td>
</tr>
<tr>
<td>Insulation voltage (continuously)</td>
<td>± 10 V / ± 20 mA / PWM</td>
</tr>
<tr>
<td>Insulation test voltage (1s)</td>
<td>± 100 VAC</td>
</tr>
<tr>
<td>Internal resistance</td>
<td>≤ 1 kΩs</td>
</tr>
<tr>
<td>Maximum load</td>
<td>500 Ohms</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Back Panel Mounted Turn Key Metal Cabinet</td>
</tr>
<tr>
<td>Dimensions</td>
<td>WxHxD closed</td>
</tr>
<tr>
<td></td>
<td>WxHxD swing gate open</td>
</tr>
<tr>
<td>Connection</td>
<td>Screw/plug terminals 2.5 mm²</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 21 kg</td>
</tr>
<tr>
<td><strong>Disturbance test (CE)</strong></td>
<td>tested according to applicable EN guidelines</td>
</tr>
<tr>
<td><strong>Listings</strong></td>
<td>Component Listing per UL, cUL</td>
</tr>
<tr>
<td>Marine</td>
<td>LR (Component Type Approval), ABS (Component Type Approval)</td>
</tr>
</tbody>
</table>

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**DIMENSIONS**

**Wall mount housing**

![Front View closed position](image1)

![Left Side View closed position](image2)

... and with open swing frame:

WxHxD = 587 x 650 x 609
TERMINAL DIAGRAM

- **Short Circuit**
  - Jumpers Primary
  - Jumpers Back-up
- **EKS**
  - Redundant
  - Load share
- **Optionally:**
  - CAN-3 Load share

### RELATED PRODUCTS

- **Genset Controller easYgen-3400**
  (Product Specification # 37523): P/N 8440-2113 & 8440-2188
- **Circuit Breaker Controller LS-511/521**
  (Product Specification # 37522)
- **Remote Panel RP-3000**
  (Product Specification # 37446)
- **CANbus to Fiber Optic Converter**
  (Application Note # 37598): DL-CAN P/N 8445-1049 and DL-CAN-R P/N 8445-1048
- **Engine Speed Control actiVgen**
  (Product Specification # 03419): P/N 8440-2108
- **ToolKit** (Product Specification # 03366)
- **I/O Expansion Board IKD1**
  (Product Specification # 37171)
- **Profibus Gateway (Application Note # 37577):**
  ESEPRO P/N 8445-1046
- **Ethernet (Modbus/TCP) Gateway**
  (Application Note # 37576): ESENET P/N 8445-1044
- **Remote Access Gateway**
  (Application Note# 37611) with HMS Netbiter EasyConnect EC350
FEATURES OVERVIEW

<table>
<thead>
<tr>
<th>Series</th>
<th>RGCP-3400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>SU</td>
</tr>
<tr>
<td>Package</td>
<td>MU</td>
</tr>
</tbody>
</table>

### Measuring
- Generator voltage (3-phase/4-wire)
- Generator current (3x true r.m.s.)
- Mains voltage (3-phase/4-wire)
- Mains or ground current (1x true r.m.s.)
- Busbar voltage (1-phase/2-wire)

### Control
- Breaker control logic (open and closed transition)
- Number of supported Woodward LS-5 units
- Automatic, Manual, Stop, and test operating modes
- Single (AMF), multiple-unit (islanded) or mains parallel operation (up to 32 units)
- GCB and MCB synchronization (slipping / phase matching)
- GGB (Generator group breaker) control
- Import / export control at the utility interconnect (kW and kvar)
- Automatic gen-set sequencing (LDSS)
- n.f. V_p, Q, and PF remote control via analog input or interface
- Load/var sharing for up to 32 gensets
- Configurable load and unload ramp rates
- Freely configurable PID controllers

### Redundancy & Diagnostic Features
- Unique bias tracking firmware
- Parameter settings alignment check
- Alarms alignment check
- Loss of redundancy alarm
- Manual key switch and status indication
- Graphical overview of genset, bus bar, and utility with trending (with RP-3000XT)
- Event recorder entries with real time clock (battery backup)

### Protection
- ANSI
  - Generator: voltage / frequency
    - 59 / 27 / 81O / 81U
  - Generator: overload, reverse/reduced power
    - 32 / 32R / 32F
  - Generator: unbalanced load
    - 46
  - Generator: instantaneous overcurrent
    - 50
  - Generator: time-overcurrent (IEC 235 compliant)
    - 51 / 51V
  - Generator: ground fault (measured ground current)
    - 50G
  - Generator: power factor
    - 55
  - Generator: rotation field
    -
  - Engine: overspeed / underspeed
    - 12 / 14
  - Engine: speed / frequency mismatch
    -
  - Engine: auxiliary excitation failure
    -
  - Engine: Cylinder temperature
    -
  - Mains: voltage / frequency
    - 59 / 27 / 81O / 81U
  - Mains: phase shift / rotation field / df/dt (ROCOF) / Q(U)
    - 76

### I/Os
- Fiber Optic gateway for communication ring
- CAN bus communication interfaces
- RS-232/485 Modbus RTU Slave interface(s)
- Speed input: magnetic / switching Pickup
- Discrete alarm inputs (configurable)
  - 12 (8)
  - 12 (8)
  - max. 11
  - max. 11
- External discrete inputs / outputs via CANopen
  - 32 / 32
  - 32 / 32
- Analog inputs: 0 - 20 mA
  - 3
  - 3
- Analog outputs: +/- 10V, +/- 20mA, PWM: configurable
  - 2
  - 2
- External analog inputs / outputs via CANopen
  - 16 / 4
  - 16 / 4

### Listings/Approvals
- UL / cUL (Component Listing)
- LR & ABS Marine (Component Approval)
- CE Marked (Complete Cabinet)

### Part Numbers
- RGCP-3400 with 5 A CT inputs
  - 9900-1022
  - 9900-1028
- RGCP-3400 with 1 A CT inputs
  - 9900-1029
  - 9900-1030
- Optional Remote Panel
  - 8446-1057

*) SU = Single Unit: without Fiber Optic gateway (retrofit prepared)
  MU = Multi Unit: with Fiber Optic gateway implemented