# What to consider if I want to upgrade obsolete GCP-3x controls to easYgen-3000XT controls

Clemens - 2024-11-25 - easYgen-3000XT

## Upgrading old obsolete GCP-31/32 to easYgen-3000XT controls




The obsolete GCP-30 Line was defined in different packages:

- GCP-31 was serving only a Generator breaker paralleled to bus or grid
- GCP-32 was serving Generator and Mains Breaker supporting AMF/ATS and Island paralleling
- Base Package BPD/BPQ to be replaced with easYgen-3200XT 8440-2082 optional an IKD1M 8440-2116 digital I/O card is required if all digital inputs were used in GCP-3x.
- GCP-31/32 xxD (D for Digital) interfaced with pot free contacts / raise and lower to AVR and Speed Governor
- GCP-31/32 xxQ, Q was the option for flexible configurable PIDs +/-20mA /+/-10V and PWM speed and voltage bias, via Logic Manager it was possible to configure as well pot.-free contacts for up &down relays. In older GCP-3x Packages called A, R or X the speed bias was fixed to +/-3V and the AVR bias was fixed to +/-5V
- GCP-31/32 Packages with Option +Scxx offered external I/Os (IKD1M) and ECU communication
- Advanced Packages GCP-31/32 XPD/XPQ+ Sxxx to be replaced with easYgen-3500XT-P1/P2 Package having additional analogous I/Os on board and LS-4 Breaker Controls support.
- There was as well a GCP-3145B-RPQ-Sc09 Rental package which can be replaced with easYgen3500XT-P2-LT-Rental 8440-2291

- There were as well plenty of customized version with order options available.

Please provide picture of individual type sticker to be able to track back what you have on site  Provide this information Industrial.support@woodward.com

## Upgrade Limitations:

- Flush mounting easYgen-3000XT cut out form factor is bigger. So back panel easYgen3100/3400XT together with a Touch Remote panel easYview could be as well an option

- The GCP-3x Line was configured with LeoPC1 Software, easYgen-3000XT is using ToolKit. It is not possible to convert LeoPC configuration files into ToolKit files.

- GCP-3x required a DPC-1 5417-557 or DPC-USB 5417-1251 configuration cable.  easYgen-3000XT requires a standard E-Net Patch cable or USB cable only. For IKD1M configuration a software tool 9927-2094_A is offered

- GCP-3x controls used CAN Cal 2.0b communication for kW and kVAr sharing. if you want to operate GCP3-x and easYgen-3x00XT controls together a Loadshare Gateway LSG is required. Keep in mind that LDSS between GCP-3X and easYgen is not supported

- Same GCP-3x CAN Bus was used to connect external Gateway GW4 to connect GCP-3x via e.g.  485 Modbus or ProfibusDP to upper Controls Systems like PMS or PLCs

  There is for all easYgen-3x000XT a software licensing P/N 10-030-825 SOFTWARE LEGACY CAN SUPPORT PACKAGE to let easYgen-3x000XT communicate with old GW4 Gateway

- GCP-3x connected via Gateway GW4 ProfibusDP can be replaced with Woodward ESEPRO 5446-1046 Rev D. This ESEPRO emulates the old GCP-3x and MFR2& 3 and LS4 Protocols.

- GCP-3x and easYgen communication protocols are not same, so doing an upgrade requires as well a change in upper Control System easYgen is connected to. easYgen's Modbus Telegram Mapper assists to create own Modbus tables similar to GCP-3x communication protocols.

- GCP-3x SB03 packages connected to CAT CCM module via RS232 datalink is not supported in easYgen.

- GCP-3xSC0x MTU MDEC communication will be available only in easYgen-3500XT-P2, There will be a a licensing option you can flash into an easYgen-3500XT-P2 Package (Software License Partnumber P/N 10-030-826  SOFTWARE LEGACY CAN AND MDEC SUPPORT PACKAGE

https://support.easygen.org/en-US/kb/articles/mtu-mdec-can-bus-communication-in-easygen-3500xt-p2-2

- GCP-31 XPD and XPQ Packages as well supported LS-4 breaker controls, paralleling T-couplers and incoming mains feeders. LS-4 communication is not supported by easYgen controls. Upgrading multiple breaker application using GCP-31 XPx and LS-4s recommendation is to look into easYgen-3500XT and LS-5 (CAN Network) or LS-6XT (redundant hot swap E-Net communication)

- ESEPRO CAN ProfibusDP gateway is emulating old MFR2/3 GCP-31/32 and LS4 protocols see article https://support.easygen.org/en-US/kb/articles/how-can-i-get-ls5-dtsc-200-easygens-on-profibusdp-esepro

## Benefit of easYgen upgrade

- Many different GCP-31/32 variants can be replaced with only few part numbers of easYgen controls offering direct 100/480V (3400XT/3500XT Versions up to 690VAC) and ../1A & ../5A sensing at class 1 accuracy for kW

- No need for external gateways as Modbus TCP and RS485 Modbus communication are integral.

- easYgen-3400XT/3500XT version having integral voltage regulation to bias an Exciter-10

- Galvanic isolated interfaces and analog inputs reducing need for external galvanic isolation

14 languages in build plus Localization Tool to generate other languages

**Supporting Documents:**

https://www.easygen.org/accessories Information about IKD1M, LSG, ESEPRO, …

- Supporting Doc terminal comparision GCP-3x easYgen-3000

  https://wss.woodward.com/manuals/Legacy/GCP-30/37554%20Terminal%20mapping%20GCP-3x%20MFR3%20easYgen-3000.pdf

- Supporting Doc N° 37635 Wiring Terminal comparison - Exchange current easYgen-3000 with an equivalent easYgen-3000XT control
  https://www.woodward.com/en/search#e=0&q=37635&o=Title,Ascending

- https://wss.woodward.com/manuals/PGC/Forms/AllItems.aspx

- https://wss.woodward.com/manuals/PGC/SW_Tools

- http://www.easYgen.org/configuration
- https://easygen.eu/legacy-product-replacement/ Replacement P/N Finder data base
- Legacy product doc server https://wss.woodward.com/manuals/Legacy/Forms/AllItems.aspx

| GCP-30 Series Genset Control | GCP-31 | | | | GCP32 | | | |
|---|---|---|---|---|---|---|---|---|
| Package | BPQ | XPQ | XPQ+SB03 | XPQ+SC10 | BPQ | XPQ | XPQ+SB03 | XPQ+SC10 |
| **Control** | | | | | | | | |
| Breaker control logic | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| Synchronization | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Isolated single-unit operation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| AMF (auto mains failure operation) | | ✓ #1 | ✓ #1 | ✓ #1 | ✓ | ✓ | ✓ | ✓ |
| Stand-by operation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Peak load op. (auto start/stop) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mains parallel operation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Open transition (break-before-make) | | | | | ✓ | ✓ | ✓ | ✓ |
| Closed transition (make-before-break) | | | | | ✓ | ✓ | ✓ | ✓ |
| Softloading | ✓ #2 | ✓ #2 | ✓ #2 | ✓ #2 | ✓ | ✓ | ✓ | ✓ |
| **Accessories** | | | | | | | | |
| Start/stop logic for Diesel/Gas engines | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| kWh counter | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Operating hours/start/maintenance counter | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Configuration via PC #3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Event recorder, real time clock | | 50 | 50 | 50 | | 50 | 50 | 50 |
| Language manager (English/German) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Protection** | | | | | | | | |
| Generator: voltage/frequency | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mains: volt./freq./phase shift | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Generator: overload/unbalanced load | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Generator: reverse/reduced power | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Generator: time-overcurrent (TOC) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Controller** | | | | | | | | |
| Discrete raise/lower: n/f & P #4 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 |
| Discrete raise/lower: V & Q #4 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 | ✓ #5 |
| Analog raise/lower: n/f & P #4 #5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Analog raise/lower: V & Q #4 #5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| PWM raise/lower: n/f & P #4 #5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mains import/export power via 20 mA | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Mains import/export power control | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Load-dependent start/stop | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Active power setpoint 0/4 to 20 mA #6 | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Load/var sharing for 14 generators | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **I/O's** | | | | | | | | |
| Magnetic/switching Pickup | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Discrete alarm inputs (configurable) | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Relay outputs (configurable) | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Analog inputs (configurable) #6 | | 7 | 7 | 7 | | 7 | 7 | 7 |
| Analog outputs 0/4 to 20 mA (configurable) | | 2 | 2 | 2 | | 2 | 2 | 2 |
| External operation mode selection via DI | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| CAN bus comm., Guidance level #7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CAN bus comm., Engine level #8 | | | | ✓ | | | | ✓ |
| RS-232 comm., Engine level #9 | | | ✓ | | | | ✓ | |
| **LS 4** - Circuit Breaker Control #10 | | ✓ | ✓ | ✓ | | | | |
| **Listings/Approvals** | | | | | | | | |
| CE Marked | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| UL/cUL Listed | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Part numbers P/N** | | | | | | | | |
| Measuring inputs 100 Vac, ../1 A (8440- | - | -1556 | - | -1806 | - | -1572 | - | - |
| Measuring inputs 100 Vac, ../5 A (8440- | -1609 | -1558 | -1562 | -1560 | - | -1574 | -1578 | -1576 |
| Measuring inputs 400 Vac, ../1 A (8440- | - | - | - | -1716 | -1612 | -1573 | - | -1664 |
| Measuring inputs 400 Vac, ../5 A (8440- | -1610 | -1559 | -1563 | -1561 | -1614 | -1575 | -1579 | -1577 |

| GCP-31 RPQ+SC09 Genset Control | |
|---|---|
| **Control** | |
| Breaker control logic | 2 |
| Synchronization | ✓ |
| Isolated single-unit operation | ✓ |
| AMF (auto mains failure operation) | ✓ |
| Stand-by operation | ✓ |
| Peak load op. (auto start/stop) | ✓ |
| Mains parallel operation | ✓ |
| Open transition (break-before-make) | ✓ |
| Closed transition (make-before-break) | ✓ |
| Softloading | ✓ |
| SYNCONpanel mode | ✓ |
| **Accessories** | |
| Start/stop logic for Diesel/Gas engines | ✓ |
| kWh counter | ✓ |
| Operating hours/start/maintenance counter | ✓ |
| Configuration via PC #1 | ✓ |
| Event recorder, real time clock | 50 |
| Language manager (English/German) | ✓ |
| **Protection** | |
| Generator: voltage/frequency | ✓ |
| Mains: volt./freq./phase shift | ✓ |
| Generator: overload/unbalanced load | ✓ |
| Generator: reverse/reduced power | ✓ |
| Generator: time-overcurrent (TOC) | ✓ |
| **Controller** | |
| Discrete raise/lower: n/f & P | ✓ #2 |
| Discrete raise/lower: V & power factor | ✓ #2 |
| Analog raise/lower: n/f & P #2 | ✓ |
| Analog raise/lower: V & Q #2 | ✓ |
| PWM raise/lower: n/f & P #2 | ✓ |
| f/V droop via DI | ✓ |
| Mains import/export power via 20 mA | ✓ |
| Mains import/export power control | ✓ |
| Load-dependent start/stop | ✓ |
| Active power setpoint 0/4 to 20 mA #3 | ✓ |
| Load/var sharing for 8 generators | ✓ |
| **I/O's** | |
| Selectable frequencies via discrete input | 2 |
| Selectable voltages via discrete inputs | 4 |
| Magnetic/switching Pickup | ✓ |
| Discrete alarm inputs (configurable) | 12 |
| Relay outputs (configurable) | 7 |
| Analog inputs (configurable) #3 | 7 |
| Analog outputs 0/4 to 20 mA (config.) | 2 |
| External operation mode selection via DI | ✓ |
| CAN bus comm., Guidance level #4 | ✓ |
| CAN bus comm., Engine level #5 | ✓ |
| **Listings/Approvals** | |
| CE Marked | ✓ |
| UL/cUL Listed | ✓ |
| **Part numbers P/N** | |
| Measuring inputs 400 Vac, ../5 A | 8440-1764 |