WOODWARD

Application Note 51199
(Revision NEW)

Original Instructions

EGCP-2 Differences

General Precautions

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.

Revisions

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Proper Use

Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.

Translated Publications

If the cover of this publication states "Translation of the Original Instructions" please note:

The original source of this publication may have been updated since this translation was made. Be sure to check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, to verify whether this translation is up to date. Out-of-date translations are marked with ⚠. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Warnings and Notices

Important Definitions

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- **DANGER**—Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**—Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**—Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

⚠WARNING

Overspeed / Overtemperature / Overpressure

The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.

The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.

⚠WARNING

Personal Protective Equipment

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- **Eye Protection**
- **Hearing Protection**
- **Hard Hat**
- **Gloves**
- **Safety Boots**
- **Respirator**

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

⚠WARNING

Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

⚠WARNING

Automotive Applications

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

NOTICE

Battery Charging Device

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

Electrostatic Discharge Awareness

NOTICE

Electrostatic Precautions

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- **Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).**
- **Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.**
- **Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.**

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual *82715*, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
   - Do not touch any part of the PCB except the edges.
   - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
   - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

EGCP-2 Differences

Description of Changes

Old EGCP-2 Part Numbers	Description	Installation Manual	Set Builder Manual	Servlink & HMI Manual	Security Levels Manual
8406-115	150–300 Vac PT	26076	26086	26099	26108
8406-116	50–150 Vac PT	26076	26086	26099	26108

New EGCP-2 Part Numbers	Description	Installation & Operation Manual	Application Manual	Communications Manual	Security Levels Manual
8406-120	150–300 Vac PT	26174	26175	26181	26108
8406-121	50–150 Vac PT	26174	26175	26181	26108

Hardware Changes

The only change to the hardware package is an improvement to the back cover, which now has a notched-out area around the CT input (terminals 89 through 94) to make it easier to install the CT wires. Existing stock will be used before the new back cover is introduced.

Additional Software Features

1. Voltage Trim
- The EGCP-2 will now control the generator voltage to the Voltage Reference setpoint when:
  - Single unit, isolated
  - Multiple unit, only unit running, isolated

2. Pre-Alarms for
- Low Oil Pressure
- High Water Temperature

3. Sanity Checks
- Performs Sanity Check on Power Cycle.
- Added Alarm Display when Sanity Check fails.

4. Manual Operation
- The Run with Load input will activate the Generator Breaker Trip Relay once the generator is stable. This action allows the breaker to be closed manually. When in Manual mode, full engine and generator protection will now be provided.

5. Remote Faults 1 and 2 Enable Delay
- Added configuration to Enable or Disable the delay for these inputs.

6. Process Configuration
- You can now configure the Process Reference to be shown with units of mA, V, kW, MW, kVA, MVA, kVR, MVR, PF, °C, °F, PSI, kPA, and BAR. Once configured, it will be possible to set a reference using the same units being displayed.

7. Auto Sequencing Delay

- This additional delay allows all units time to synchronize to the Bus before the Master unit starts to sequence units off. This delay time begins when the Master unit closes its generator breaker and is in addition to the minimum generator load delay.

8. Modbus additions and changes

a. Added Boolean Write (BW) address
- 00024 - Auto Sequencing Enable/Disable
- 00037 Cool-Down Override

b. Added Boolean Reads (BR) addresses
- 10063 – Load Surge Status
- 10064 – Mains Under Volt Alarm Status
- 10065 – Mains Over Volt Alarm Status
- 10066 – Mains Over Freq Alarm Status
- 10067 – Mains Under Freq Alarm Status
- 10068 – Not Used
- 10069 – Generator Output Stable
- 10070 – Generator Sense Configuration
- 10073 – High H2O Temp Pre-Alarm Status
- 10075 – Low Oil Press Pre-Alarm Status

c. Incremented Analog Read (AR) addresses 30054 to 30071 by one
- 30054 – Not Used in new controls
- 30055 is now what 30054 used to be, and so on to 30071

d. Added Analog Reads (BR) addresses
- 30215 – Actual Baseload Reference
- 30216 – Actual Process Reference
- 30229 – Actual PF Reference
- 30230 – Actual VAR Reference
- 30250 - Network Address Setpoint
- 30253 – AC Frequency Setpoint Value
- 30254 – Rated RPM Setpoint Value
- 30255 – Rated KW Setpoint Value
- 30256 – Rated KVA Setpoint Value
- 30257 – Rated KVAR Setpoint Value
- 30267 – Operating Mode Setpoint Value
- 30268 – Number of Units Setpoint Value
- 30269 – Preglow Time Setpoint Value
- 30270 – Crank Time Setpoint Value
- 30271 – Crank Cutout Setpoint Value
- 30272 – Crank Delay Setpoint Value
- 30273 – Crank Repeats Setpoint Value
- 30276 – Idle Time Setpoint Value
- 30277 – Cooldown Time Setpoint Value
- 30280 – Sync Mode Setpoint Value
- 30291 – Sync Timeout Setpoint Value
- 30294 – Load Control Mode Setpoint Value
- 30300 – Base Load Reference Setpoint Value
- 30303 – Load Time Setpoint Value
- 30304 – Unload Time Setpoint Value
- 30305 – Raise Load Rate Setpoint Value
- 30306 – Lower Load Rate Setpoint Value
- 30311 – KVA Switch Low Setpoint Value
- 30312 – KVA Switch High Setpoint Value
- 30315 – Voltage Ramp Time Setpoint Value
- 30318 – KVAR Reference Setpoint Value
- 30319 – Power Factor Reference Setpoint Value
- 30321 – Process Action Setpoint Value
- 30328 – Process Reference Setpoint Value
- 30329 – Process Raise Rate Setpoint Value

30330 – Process Lower Rate Setpoint Value
30334 – Fast Transfer Delay Setpoint Value
30335 – Mains Stable Delay Setpoint Value
30336 – Gen Stable Delay Setpoint Value
30342 – Loss of Mains Action Delay Setpoint Value
30344 – Max Gen Load Setpoint Value
30345 – Next Genset Delay Setpoint Value
30346 – Rated Load Delay Setpoint Value
30347 – Max Start Time Setpoint Value
30348 – Min Gen Load Setpoint Value
30349 – Reduced Load Delay Setpoint Value
30350 – Max Stop Time Setpoint Value

e. Added Analog Write (AW) addresses

40002 – Remote Process Control Reference
40003 – Remote Baseload Reference
40005 – Remote PF Reference
40007 – Remote VAR Reference
40250 - Network Address Setpoint Command
40253 – AC Frequency Setpoint Command
40254 – Rated RPM Setpoint Command
40255 – Rated KW Setpoint Command
40256 – Rated KVA Setpoint Command
40257 – Rated KVAR Setpoint Command
40267 – Operating Mode Setpoint Command
40268 – Number of Units Setpoint Command
40269 – Preglow Time Setpoint Command
40270 – Crank Time Setpoint Command
40271 – Crank Cutout Setpoint Command
40272 – Crank Delay Setpoint Command
40273 – Crank Repeats Setpoint Command
40276 – Idle Time Setpoint Command
40277 – Cooldown Time Setpoint Command
40280 – Sync Mode Setpoint Command
40291 – Sync Timeout Setpoint Command
40294 – Load Control Mode Setpoint Command
40300 – Base Load Reference Setpoint Command
40303 – Load Time Setpoint Command
40304 – Unload Time Setpoint Command
40305 – Raise Load Rate Setpoint Command
40306 – Lower Load Rate Setpoint Command
40311 – KVA Switch Low Setpoint Command
40312 – KVA Switch High Setpoint Command
40315 – Voltage Ramp Time Setpoint Command
40318 – KVAR Reference Setpoint Command
40319 – Power Factor Reference Setpoint Command
40321 – Process Action Setpoint Command
40328 – Process Reference Setpoint Command
40329 – Process Raise Rate Setpoint Command
40330 – Process Lower Rate Setpoint Command
40334 – Fast Transfer Delay Setpoint Command
40335 – Mains Stable Delay Setpoint Command
40336 – Gen Stable Delay Setpoint Command
40342 – Loss of Mains Action Delay Setpoint Command
40344 – Max Gen Load Setpoint Command
40345 – Next Genset Delay Setpoint Command
40346 – Rated Load Delay Setpoint Command
40347 – Max Start Time Setpoint Command
40348 – Min Gen Load Setpoint Command

40349 – Reduced Load Delay Setpoint Command
40350 – Max Stop Time Setpoint Command

Changes to Existing Features

1. Dead Bus Closure Time
- Will now close to a dead bus in less than 1 second after the generator is stable.

2. Master Flag Transfer
- Master Flag will now be passed in less than 5 seconds.

3. Overcurrent Alarm
- The Overcurrent alarm was changed so that Amp-Seconds start to accumulate after the generator reaches the Overcurrent Level. The present system starts to accumulate Amp-Seconds after the generator reaches Rated Current.

4. Loss of Excitation
- Is now called Reverse KVAR. The name was changed to more accurately reflect the protection provided.
- Added a Reverse KVAR Delay time of 0.1 to 5.0 seconds.

5. Reverse Power
- The Reverse Power Level setting now provides an Instant trip. The Minimum Reverse Power Level setting still provides a delayed trip.

6. Oil Pressure High Limit
- Changed from 120 to 150.

Compatibility with Existing Controls

The new EGCP-2 control will operate with all existing EGCP-2 and EGCP-1 controls.

The Analog Read (AR) Modbus address changes (30054 to 30071) are different between new and old controls.

Replacing the 8406-115 or 8406-116 controls in applications that are using the old Modbus addresses may create an incompatibility for an HMI or PLC already configured to use the old addresses. Since not all the addresses changed, it is possible that the new control software might still work with the old HMI or PLC program. In order to provide backward compatibility, old part numbers 8406-115 and 8406-116 are still available.

Setpoint Files (.spt)

The .spt files from existing 8406-115 or 8406-116 controls will NOT work in the new software. After converting an EGCP-2 control, all Configuration items will return to the default values and must be changed through the Keypad on the EGCP-2.

Watch Window Professional Software

Watch Window Professional software allows you to configure the EGCP-2 over a Servlink connection. The Watch Window Professional software is not included with the EGCP-2 panel. The software (part number 8928-800) must be purchased separately.

Communications manual 26181 (Chapter 5) gives details on how this tool can save you time and money.

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 51199.

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