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*GE Power Management*

## Revision History Summary 269 and 269 Plus Relays

Firmware Revision	PC Program	Boot Code	Release Date	Beginning Serial #	Hardware Compatibility
3.2	N/A	N/A	March 8, 1991	N/A	B
3.3	N/A	N/A	April 17, 1991	N/A	B
3.4	N/A	N/A	April 29, 1991	N/A	B
3.5	N/A	N/A	June 19, 1991	N/A	B
3.6	N/A	N/A	August 12, 1991	N/A	B
3.7	N/A	N/A	September 20, 1991	N/A	B
4.0	N/A	N/A	November 12, 1991	N/A	B
5.0	C6.01 or D6.04	N/A	May 27, 1993	B5231607	B, C, D
5.0.2	C6.01 or D6.04	N/A	October 5, 1993	B5232976/B2038010	B, C, D
5.1.0	C6.01 or D6.04	N/A	May 17, 1994	B5245617/B2048573	B, C, D
5.1.1	C6.01 or D6.04	N/A	January, 23, 1995	B5250237	B, C, D
5.2.0	C6.01 or D6.04	N/A	March 28, 1995	B5251291/B2050181	B, C, D
5.2.1	C6.01 or D6.04	N/A	August 22, 1995	C5253273/C2050585	B, C, D
6.0.0	C6.01 or D6.04	N/A	January 7, 1997	C5270065/C2070013	B, C, D
6.0.1	C6.01 or D6.0.4	N/A	April 15, 1998	C5281562/C2080146	B, C, D
6.0.4	C6.01 or D6.0.4	N/A	June 23, 1998	D5282630/D2080277	B, C, D

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### **FIRMWARE REVISION: 3.2**

- Added "POWER FACTOR PROTECTION DELAY" setpoint (page 7, setpoints)
- After starting, power factor must fall between the Lead and Lag Trip setpoints for the users specified period of time before any Power Factor trips or alarms become active.

### **FIRMWARE REVISION: 3.3**

- Correction of auto reset of Inhibits such that they no longer reset latched alarms

### **FIRMWARE REVISION: 3.4**

- Added "---" for motor stopped condition and "RUN" for motor running condition on Actual Values display of three phase currents.

### **FIRMWARE REVISION: 3.5**

- Altered communications such that a Modbus "Command 04" can now read Actual values as well as Setpoints

### **FIRMWARE REVISION: 3.6**

- Added internal features for automated testing (invisible to customer).

### **FIRMWARE REVISION: 3.7**

- Added feature to allow user to read memory map using old 169 style protocol (contact factory if required, not to attempt with earlier revisions).

### **FIRMWARE REVISION: 4.0**

- Added Two Part RTD Bias feature (as opposed to straight line).
- Added new setpoint for O/L Pickup Level (service factor).

### **FIRMWARE REVISION: 5.0**

New features:

- Software security code (setpoints p.6)
- Encrypted code (setpoints p.6 - Not a setpoint - used for deciphering forgotten access code)
- RTD low temperature alarm (setpoints p.5) - Could be used to detect shorted RTD's.
- Overvoltage alarm (setpoints p.7)
- Overvoltage alarm delay (setpoints p.7)
- Overvoltage trip (setpoints p.7)\_\_\_\_\_
- Overvoltage trip delay (setpoints p.7)
- Cause of last trip (actual values p.5)
- Fahrenheit option (setpoints p.2) - If Fahrenheit option is chosen all temperature data will be displayed in °F -e.g. RTD actual values, temperature data for RTD Bias feature.
- Starts/hour timers on display (actual values p.1)
- Time between starts timer on display (actual values p.1)
- Motor load analog output full scale from 25-250% (setpoints p.5)
- Add U/B input to thermal memory for non-plus units(setpoint p.5)
- MTM PT ratio from a maximum of 120 to 255

Changes to default values/cosmetic fixes:

- Overload pickup from "%" to "x" in setpoints p.1 And p.6(Service code)
- Latch self test hardware failure and setpoint dump - to reset relay, control power must be cycled and **reset key pushed** for successful operation of relay.
- MTM undervoltage alarm delay, undervoltage trip delay, PF alarm delay, PF trip delay, and kvar alarm delay times have been changed from 3-255 sec to 1-255 sec.
- Single phase delay from 3-255 sec to 1-255 sec.
- RTD bias maximum temperature default from 190 °C to 155 °C (to better correspond to a class F insulation).

#### **FIRMWARE REVISION: B5.0.2**

- The area code at Multilin, Canada Plant has changed from (416) to (905) effective October 4, 1993. The firmware has been updated to reflect this change. The service phone number in the relay, setpoints page 6, has been updated.

#### **FIRMWARE REVISION: B5.1.0**

- Stator RTD voting is made standard on all 269s. The feature is enabled as a factory default.
- Add in service area, setpoints page 6 a setpoint that allows the short circuit instantaneous trip time to be adjusted between 30 and 55 msec.
- Add two messages in setpoints page 6, service area. One shows the self-test resistor A/D count, and the second is the adjustment made on the other RTDs in case of a shift in the count.
- Desensitize the RTD H/W fail alarm feature. this involved H/W and S/W changes.
- Registers that can be read and written to in one instruction are back to 125.
- Remove occasional setpoint dump after power on/off situation.
- G/F trip at 0.5 sec and level equals to OFF has been fixed.
- "RTD H/W FAIL" message to "RTD H/W FAIL - RTDs OFF". This makes the customer aware that in case of an RTD H/W fail, the RTD setpoints are turned to OFF and the number of stator RTDs is set to zero.

#### **FIRMWARE REVISION: B5.1.1**

- Store Statistical data to EEPROM portion of NOVRAM upon detection of a motor stop condition.

#### **FIRMWARE REVISION: B5.2.0**

- Change power fail interrupt detection from edge to transition triggered.
- Fix the cosmetic problem of the 269 Plus display and keypad hanging when the "Special External Reset" function in Setpoints, P.5 is enabled. This happens if any of the inhibit lockouts (starts/hour, time between starts, start inhibit and/or backspin timer) expires when assigned to the AUX1 relay.
- Stop storing statistical data to NOVRAM every time the motor is detected to be stopped.

#### **FIRMWARE REVISION: B5.2.1**

- Fix the cosmetic problem of the 269 display not returning to its default line and page after an inhibit lockout has expired. The display showed the cause of last trip message until current is sensed again by the 269 or the desired message to be displayed is located using the keypad.

#### **FIRMWARE REVISION: C6.0.0**

*File: [www.ge.com/edc/pm/support/269/269rhe.pdf](http://www.ge.com/edc/pm/support/269/269rhe.pdf)*

*Rev.: A1*

*Rev. Date: 20 July, 1998*

Various enhancements have been implemented into the 269PLUS. Below are highlights of the changes implemented into the software.

- Revision for this release is C6.0.0
- This revision of the 269 Plus will work only with PQM(MOD508) version 2.0 and up and MTM version E1.8 and up. If other versions of either types of meters are installed and an attempt is made to connect them to the 269 relay, a "METER FAILURE, INCOMPATIBLE REVISIONS" alarm will be issued. The meter's software must be upgraded to the latest revision
- RelayCom version 4.0 supports all 269 Plus releases including this revision C6.0.0
- Add Undercurrent Trip (level & delay) feature
- Add Mechanical Jam Alarm (level & delay) feature
- The Ground CT primary can now be programmed from 20 to 1500 if the xxx:5 option for ground CT is programmed. This is similar to the phase CT primary setpoint. This is especially useful when programming G/F Trip and Alarm levels in a residually connected system
- G/F Alarm and Trip levels are now programmed in 0.1xGF CT (or 10%) in increments of 0.1 to a max. of 1xGF CT (or 100%) when the ground CT is xxx:5
- Improve AUX1 relay timing when TRIP and AUX1 relays are assigned to operate on instantaneous Short Circuit and/or Ground Fault. AUX1 and TRIP relays now both activate in less than 50 msec.
- Add individual phase currents I1, I2, and I3 to the list of pre-trip parameters captured upon a trip
- Display "Learned Last Start Thermal Capacity Used" in A.V.P.6
- Add ability to transfer the "Learned Last Start Thermal Capacity Used" seen in A.V.P.6 to the new setpoint "Initial Start Thermal Capacity" in S.P.P.5. With this feature, the Start Inhibit feature may be enabled after only one successful start
- Add Bearing RTD (RTD#7) to the list of analog output parameters
- Add the setpoint "ARE THERE ANY RTDs CONNECTED?" to S.P.P.2. If no RTDs are connected to the relay, all RTD related setpoints and actual values in the relay are no longer shown. This feature reduces the time required to program a 269 relay
- Add Stator RTD High Alarm setpoints for all six stator RTDs. This provides additional levels of protection for early warning, high warning, and ultimate trip
- Add the RTD Type message to S.P.P.2 Temperature Data page. This is not a setpoint and cannot be changed. The message displays the RTD type the relay can accept. The RTD Type must still be specified upon ordering the relay
- Add ability to clear the pre-trip data
- Add ability to place the 269 in Test Mode. When in Test Mode, the 269 suspends all updates of Statistical and Learned Parameters seen in A.V.P.4 & 5. It allows for testing of the relay without having to lose important maintenance and protection information accumulated by the 269 over its operation time
- All Statistical Values (except for Accumulated Mwhr which is constantly updated by the meter) can be changed as setpoints. This can only be done by instruction from one of our qualified service personnel. Contact the factory for details. This feature is very useful if a relay is being replaced by a new 269 for the purpose of service or testing.
- Display the "Cause of Last Event" in addition to the "Cause of Last Trip" in A.V.P.5. This message should further assist the user in diagnosing the cause of the trip or inhibit and minimize the confusion between trips and inhibits. This message will be exactly the same as the Cause of Last Trip if the last event was a trip. If however, the last event was an inhibit lockout, the Cause of Last Event message reads: "CAUSE OF LAST EVENT, INHIBIT LOCKOUT / NO TRIP", and the Cause of Last Trip message and the pre-trip data are not affected, thus indicating to the user which was the true last event that took place in the relay.
- Add ability to program the VT Ratio from 1.0 to 255.0 in increments of 0.1
- Add ability to delay Power Factor Trip and Alarm from start by a maximum of 255 seconds
- Add ability to program the VT Secondary from 40 to 240 Volts.
- Add ability to communicate with PQM(MOD508)
- Add sign to kW and kvar values in A.V.P.7 and to pre-trip kW and kvar values in A.V.P.5

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- Add ability to program positive and negative kvar Alarm levels and delay
- Add ability to distinguish and display whether the VTs connected to the meter are wired phase to phase or phase to neutral and to display the proper voltages; ie. Vab, Vbc, Vca or Van, Vbn, Vcn respectively
- Add ability to trip on Undervoltage upon complete loss of voltage; ie. when the average voltage received from the meter is zero
- Change everywhere the word MTM is shown in the relay to the word METER to accommodate the connection of a PQM(MOD508) to the 269
- Change the Undervoltage Alarm and Trip minimum limits from a value of 75% to a value of 30%
- The +/- signs previously indicating LEAD or LAG power factor in A.V.P.7 have been changed to the word messages LEAD or LAG respectively
- The METER's Phase VT ratio setpoint can now be set from 1.0 to 255.0 in increments of 0.1
- Increase Rapid Trip setpoint level from a max. of 4.5xFLC to a max. of 6xFLC
- Display the Serial Number of the relay in S.P.P.6
- All the INHIBIT LOCKOUTs in S.P.P.4 have been assigned by factory default to the AUX1 relay. The user is advised to segregate TRIPS from INHIBITS by routing the trips to the TRIP relay (as is the case by factory default) and the INHIBITS to the AUX1 relay. The contacts of AUX1 must be wired in the control circuit to prevent the motor from being started upon an inhibit lockout. The manual shows the wiring diagrams for Contactor and Breaker applications
- The Full Load Current factory default value in S.P.P.1 is changed from 90 Amps to 10 Amps. This eliminated the possibility of using the relay without properly programming it to suit the motor and the application.
- If the FLC setpoint and presumably other setpoints are not programmed to match the system, the relay should trip on OVERLOAD immediately after the motor is started, thus ensuring that the motor is not run unprotected due to a lack of properly programming the relay.
- In the 269 Plus only, the relay's factory default address for the purpose of communications has been changed from a value of OFF to a value of 254. Similarly, for MOD266 this address has been changed from OFF to 99
- The factory default values for kW sign, kvar sign, pre-trip kW sign and pre-trip kvar sign is set to positive
- Increase the STOPPED COOL TIME maximum limit from 135 minutes to 213 minutes
- Change the relay assignments for the INHIBIT LOCKOUTS from the TRIP relay to the AUX1 relay. Care must be exercised to ensure that AUX1 contacts are wired properly in the starter control circuit so that a motor is duly blocked from starting upon an inhibit lockout. This ensures that the motor is properly blocked from starting when an inhibit occurs.
- The update time for the Analog Output has been cut in half, from a max. of 500 msec. to a max of 250 msec.
- The "K factor" used with the Unbalance Input to Thermal Memory biasing feature of the 269 is now calculated and learned based on the formula:  $K = 175 / I2LR(P.U.)$  , Where  $ILR(P.U.) = ILR(Amps) / IFLC$
- The Unbalance TRIP and ALARM delay setpoints have been factory set to 4 seconds
- Add all new setpoints and actual values and implement all other changes to the memory map
- In case of a self-test alarm, the user is now able to obtain via communications the type of self-test that occurred; i.e.. RTD, Analog to digital A/D, memory RAM, and EPROM mismatch

### **FIRMWARE REVISION: 6.0.1**

- Changed the USA Service telephone number in setpoints page 6 to the Internet homepage location.

### **FIRMWARE REVISION: 6.0.4**

- New revision D hardware which meets the new CE Low Volt Directive.
- Added the capability to program the hardware revision letter.
- Added code to linearize the Ground Fault reading when a 2000:1 CT is chosen.

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*Rev.: A1*

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