GE
Grid Solutions

UR Family

Version 7.7x

Release Notes

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Overview

This document contains the release notes for firmware and software versions 7.70, 7.71, 7.72, and 7.73 of the Universal Relay (UR) family of products.

Applicable to products: B30, B90, C30, C60, C70, D30, D60, F35, F60, G30, G60, L30, L60, L90, M60, N60, T35, T60

Date of release 7.70: 30 April 2018

Date of release 7.71: 7 December 2018

Date of release 7.72: 15 March 2019

Date of release 7.73: 23 July 2019

In the following descriptions, a category letter is placed to the left of the title. See the table at the end of this document for descriptions of the categories.

Firmware

Firmware 7.70

Summary

Improvements include the following.

- Added ability to switch between IEC 61850 Editions 1 and 2
- Bus Differential Systems – B30, B90
  - Corrected B90 firmware to prevent rejection of an IEC 61850 CID file based on the number of available direct I/Os
  - Removed B90 hardware order code mismatch self-test
- Controller Systems – C30, C60
  - Increased number of Breaker Control and Breaker Switch elements in C30, C60, and N60
- Feeder Protection Systems – F35
  - Increased maximum number of Wattmetric Ground Fault elements from 4 to 5 in F35
- Line Differential Systems – L90
  - Increased the number of direct inputs/outputs from 8 to 32 in L90
- Transformer Protection Systems – G30, T35, T60
  - Corrected firmware to prevent latching of "XFMR PCNT DIFF PKP" and "XFMR PCNT DIFF 5TH" operands for Transformer Percent Differential element
  - Changed number of Auxiliary Overvoltage elements in T60
- Common Protection and Control Elements
  - Corrected availability of VT Fuse Failure elements in L60 relay
  - Added re-trip timer to Breaker Failure element
- Common Platform Functions
  - Added support for redundant SNTP server configuration
  - Corrected firmware to activate the "Equipment Mismatch" self-test for an incompatible Process Card module (H81)
  - Changed firmware to use English strings for FlexLogic operands when using Japanese language
  - Corrected functionality of self-resetting Virtual Inputs
  - Corrected operate time accuracy for Volts per Hertz element for Inverse Curves
  - Corrected firmware to fully support IEC 61850 directory listings for subdirectories
  - Changed mapping of fault report data to IEC 61850 Fault Report logical nodes
  - Corrected defaulting of some IP address settings
  - Corrected graphical front panel firmware to prioritize the annunciator screens when used as Home Page content
  - Corrected to update the "Last Setting Change" when only a single line diagram is changed
  - Increased the maximum number of Wattmetric Ground Fault elements from 4 to 5
  - Increased the number of Breaker Control elements to six
- Cyber Security
  - Corrected Syslog reporting format to conform to RFC 5424

  - Corrected firmware so that it does not log a CyberSentry role login from the front panel as a setting change
- Communications
  - Removed use of the IEC 61850 questionable quality flag
  - Added IEC 61850 simulation mode
  - Changed ranges of IEC 61850 TxGOOSE "TIME TO LIVE" and "UPDATE TIME" settings
  - Corrected IEC 60870-5-104 counter interrogation action that uses freeze with reset qualifier
  - Corrected generation of IEC 61850 SCL files to handle percentage sign (%) in Virtual Input names
  - Improved IEC 61850 IID file robustness when retrieved over USB
- Phasor Measurement Unit (PMU) - Synchrophasors
  - Updated year in the PMU header frame to 2014

Bus Differential Systems – B30, B90

C **Corrected B90 firmware to prevent rejection of an IEC 61850 CID file based on the number of available direct I/Os**

Products: B90

Impacted firmware: 7.40 to 7.42, 7.60 to 7.61

Corrected firmware: 7.70

Workaround: If settings require use of direct I/O operands higher than 96, first configure the setting "DIRECT I/O DATA RATE" and then the remaining settings.

Description: In the impacted firmware, the B90 relay supports 96 Direct I/Os at 64 or 128 kbps and 256 at 213 kbps. An offline IEC 61850 CID file from EnerVista UR Setup software can be rejected by the B90 relay if the Direct I/O baud rate is changed to 213 kbps and direct I/O operands higher than 96 are used.

The new release corrects the issue.

GE tracking number: 770-3

G **Removed B90 hardware order code mismatch self-test**

Products: B90

Impacted firmware: 7.40 to 7.42, 7.60 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In the impacted firmware, a minor error self-test "DIF HW<->ORDER CODE" was introduced that activates if the number of feeders as determined by the software option in the order code is higher than the number of CT terminals as determined by the installed DSP modules.

In the new release, this self-test is removed to prevent incorrect messages after an upgrade.

GE tracking number: 770-10

Controller Systems – C30, C60

G **Increased number of Breaker Control and Breaker Switch elements in C30, C60, and N60**

Products: C30, C60, N60

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the number of Breaker Control and Disconnect (Breaker) Switch elements in C30, C60, and N60 are as follows.

Element	C30	C60	N60
Breaker Control	2	Up to 4*	Up to 6*
Disconnect (Breaker) Switch	8	Up to 24*	Up to 24*

* Depends on installed hardware modules

In the new release, the numbers are as follows.

Element	C30	C60	N60
Breaker Control	6	4	6
Disconnect (Breaker) Switch	24	24	24

GE tracking number: 770-31

Feeder Protection Systems – F35

G **Increased maximum number of Wattmetric Ground Fault elements from 4 to 5 in F35**

Products: F35

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the maximum number of Wattmetric Ground Fault elements in a F35 relay is four.

In the new release, the maximum number of Wattmetric Ground Fault elements is five. The number of Wattmetric Ground Fault elements is one per CT bank, provided that the order code includes at least one VT bank.

GE tracking number: 770-30

Line Differential Systems – L90

N **Increased the number of direct inputs/outputs from 8 to 32 in L90**

Products: L90

Impacted firmware: 3.00 to 7.61

Corrected firmware: 7.70

Workaround: Not applicable

Description: In previous versions, the L90 relay supports eight direct inputs/outputs for each available channel.

In the new release, an L90 relay with direct fiber inter-relay communications module supports 32 direct inputs/outputs for each available channel.

GE tracking number: 770-1

Transformer Protection Systems – G30, T35, T60

P **Corrected firmware to prevent latching of "XFMR PCNT DIFF PKP" and "XFMR PCNT DIFF 5TH" operands for Transformer Percent Differential element**

Products: G30, T35, T60

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: The “XFMR PCNT DIFF PKP” and “XFMR PCNT DIFF 5TH" operands of the Transformer Percent Differential element can remain latched after activation and are reset only by rebooting the relay.

The new release corrects the issue.

GE tracking number: 770-16

G **Changed number of Auxiliary Overvoltage elements in T60**

Products: T60

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the number of Auxiliary Overvoltage elements in a T60 relay is equal to the number of VT banks, up to a maximum of three.

In the new release, a T60 relay always has three Auxiliary Overvoltage elements provided that the order code includes at least one VT bank.

GE tracking number: 770-29

Common Protection and Control Elements

P **Corrected availability of VT Fuse Failure elements in L60 relay**

Products: L60

Impacted firmware: 7.40 to 7.42, 7.60 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: The L60 does not have available VT Fuse Failure (VTFF) elements. In a L60 relay, a VT bank can be assigned only to sources 3 and 4, for which the relay does not have any VTFF elements available.

In the new release, VTFF elements have been restored for sources 3 and 4.

GE tracking number: 770-15

P **Added re-trip timer to Breaker Failure element**

Products: B30, B90, C60, C70, D60, F60, G60, L30, L60, L90, M60, T60

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the re-trip signal is sent immediately when Breaker Failure initiates.

In the new release, a re-trip pickup timer is added per the IEEE C37.119 requirement so that the re-trip signal is sent after the time delay specified by this timer.

GE tracking number: 770-18

Common Platform Functions

N **Added support for redundant SNTP server configuration**

Products: All

Impacted firmware: 3.00 to 7.61

Corrected firmware: 7.70

Workaround: Not applicable

Description: In previous versions, the UR relay allows configuration of one Simple Network Time Protocol (SNTP) server.

In the new release, the relay supports configuration of two SNTP servers for redundancy.

GE tracking number: 770-2

G **Corrected firmware to activate the "Equipment Mismatch" self-test for an incompatible Process Card module (H81)**

Products: All with HardFiber

Impacted firmware: 7.24 to 7.61

Corrected firmware: 7.70

Workaround: In versions 7.24 to 7.42, if the Process Card hardware revision is incompatible with the firmware, the relay activates the "Module Failure 31" self-test. In versions 7.60 and 7.61, for the same conditions, the relay activates the "Diagnostic Alarm" self-test.

Description: The relay does not declare "Equipment Mismatch" if it detects a Process Card module (H81) that is incompatible with the current firmware version.

In the new release, the relay activates the "Equipment Mismatch" self-test if the hardware revision of the Process Card module is incompatible with the firmware. In this case the "Diagnostic Alarm" self-test also is active. If required, contact GE customer support for assistance.

GE tracking number: 770-4

R **Changed firmware to use English strings for FlexLogic operands when using Japanese language**

Products: All with graphical front panel using Japanese language

Impacted firmware: 7.60 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In the previous releases, the Japanese language menus include translations of the FlexLogic operands.

In the new release, the FlexLogic operands display in English, for example on the graphical front panel and on the relay's web page.

GE tracking number: 770-5

R **Corrected functionality of self-resetting Virtual Inputs**

Products: All

Impacted firmware: 7.42, 7.60 to 7.61

Corrected firmware: 7.70

Workaround: Use only latched Virtual Inputs or change only one self-resetting Virtual Input at a time.

Description: If several self-resetting Virtual Inputs are turned on at the same time from EnerVista UR Setup software or over Modbus, the relay can fail to turn on some of them. For the Virtual Inputs that were not turned on, an erroneous "Virt Ip Off" event can be recorded.

The new release corrects the issue.

GE tracking number: 770-6

P **Corrected operate time accuracy for Volts per Hertz element for Inverse Curves**

Products: G30, G60, L90, T60

Impacted firmware: 2.60 to 6.05, 7.00 to 7.61

Corrected firmware: 6.06, 7.70

Workaround: None

Description: The operate time for the Volts per Hertz element for inverse curves does not meet the specification at 1.15 times pickup setting.

The new releases correct the issue.
GE tracking number: 770-7

C **Corrected firmware to fully support IEC 61850 directory listings for subdirectories**

Products: All with the IEC 61850 software option
Impacted firmware: All to 7.61
Corrected firmware: 7.70
Workaround: None
Description: In previous versions, the relay does not support IEC 61850 directory listings for subdirectories. It is still possible to retrieve a file from a subdirectory by using the full name.
The new release corrects the issue.
GE tracking number: 770-8

C **Changed mapping of fault report data to IEC 61850 Fault Report logical nodes**

Products: All with fault report (C60, D30, D60, F35, F60, L30, L60, L90) and IEC 61850 software option
Impacted firmware: 7.40 to 7.61
Corrected firmware: 7.70
Workaround: None
Description: The relay can store up to 15 fault report files. A relay with IEC 61850 software option maps data from these fault reports to IEC 61850 fault report logical nodes (LNs) FltRFLOxy, where xy is a number between 01 and 15.
In UR firmware 7.3x, after 15 fault reports are recorded, the subsequent new fault report is mapped to FltRFLO15.
In impacted 7.4x and 7.6x versions, the relay maps the newest fault report to FltRFLO01, that is, the oldest fault report is pushed out.
In the new release, the firmware is changed to use the same mapping for IEC 61850 fault reports LNs as version 7.3x and the newest fault report is mapped to logical node FltRFLO15.
GE tracking number: 770-9

G **Corrected defaulting of some IP address settings**

Products: All
Impacted firmware: All to 7.61
Corrected firmware: 7.70
Workaround: None
Description: Some of the IP address settings do not default when resetting all settings to factory defaults with service command 20511. The command is executed under Commands > Relay Maintenance on the front panel.
The new release corrects the issue. All IP address settings default correctly when defaulting all settings.
GE tracking number: 770-11

R **Corrected graphical front panel firmware to prioritize the annunciator screens when used as Home Page content**

Products: All with the graphical front panel
Impacted firmware: 7.60 to 7.61
Corrected firmware: 7.70
Workaround: None
Description: The graphical front panel can be configured to display the Annunciator without a page number as Home Page content. It does not apply the correct priority to the annunciator screens.
The new release corrects the issue. Configuring the Home Page content to the Annunciator without a

page number displays the Annunciator pages in the sequence outlined in the Home Page section in the Settings chapter of the Instruction Manual.

GE tracking number: 770-13

R **Corrected to update the "Last Setting Change" when only a single line diagram is changed**

Products: All with the graphical front panel

Impacted firmware: 7.60 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: The relay does not update the "Last Setting Change" timestamp when only the single line diagram is modified.

The new release corrects the issue. The relay updates the "Last Setting Change" timestamp when only the single line diagram is modified.

GE tracking number: 770-25

N **Increased the maximum number of Wattmetric Ground Fault elements from 4 to 5**

Products: F35

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the maximum number of Wattmetric Ground Fault elements in the F35 is four.

In the new release, the maximum number is five.

GE tracking number: 770-27

N **Increased the number of Breaker Control elements to six**

Products: C30, C60, N60

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the number of Breaker Control elements in C60 and N60 depends on the number of CT banks and is two in C30.

In the new release, the number of Breaker Control elements in C30, C60, and N60 is increased to six and the dependency on the CT banks is removed.

GE tracking number: 770-28

Cyber Security

C **Corrected Syslog reporting format to conform to RFC 5424**

Products: All with a CyberSentry software option

Impacted firmware: 7.00 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: A relay with a CyberSentry software option supports security event reporting through the Syslog protocol. Previous versions are designed to conform to RFC 5424, but some formats and time formats are incorrect.

The new release is changed to produce a Syslog that conforms to RFC 5424. The severity of the security events also has been changed, as detailed in the UR instruction manual.

GE tracking number: 770-20

R **Corrected firmware so that it does not log a CyberSentry role login from the front panel as a setting change**

Products: All

Impacted firmware: 7.00 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In previous versions, the relay records a login from the front panel of a CyberSentry role as a settings change in the "Settings_changes.log" file.

The new release corrects the issue. A CyberSentry login from the front panel is not recorded as a settings change.

GE tracking number: 770-22

Communications

C **Removed use of the IEC 61850 questionable quality flag**

Products: All with the IEC 61850 software option

Impacted firmware: 7.30 to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In the previous releases, a relay uses the IEC 61850 questionable quality flag and turns it on in most Data Objects when a minor self-test error is present.

The new release does not use the IEC 61850 questionable quality flag to minimize incorrect interpretation of the flag as invalid by third-party tools.

GE tracking number: 770-14

C **Added IEC 61850 simulation mode**

Products: All with the IEC 61850 software option

Impacted firmware: 7.31 to 7.61

Corrected firmware: 7.70

Workaround: Not applicable

Description: The implementation of IEC 61850 GOOSE simulation publishing, and its relationship to Test mode, has been changed.

In previous versions, GOOSE simulation publishing is enabled by putting the UR into one of the Test modes (Test / Forcible, or Test-Blocked / Isolated).

In the new release, GOOSE simulation publishing is controlled independently of Test mode using new settings in **Settings > Simulation > GOOSE** or using a new IEC 61850 control.

GE tracking number: 770-17

C **Changed ranges of IEC 61850 TxGOOSE "TIME TO LIVE" and "UPDATE TIME" settings**

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.61

Corrected firmware: 7.70

Workaround: None

Description: In the new release, the following changes apply to IEC 61850 settings:

- TxGOOSE TIME TO LIVE: Range 1 to 60 seconds in steps of 1 second with a default of 60 seconds (was

1 to 300 seconds and default 300 seconds)

– TxGOOSE UPDATE TIME: Range 1 to 59 seconds in steps of 1 second with a default of 30 seconds (was 1 to 60 seconds and default 60 seconds)

If the "TxGOOSE UPDATE TIME" < "TxGOOSE TIME TO LIVE" < 60 seconds in the incoming CID file, the user configured values are used. Otherwise, the "TxGOOSE TIME TO LIVE" is set to the default of 60 seconds.

GE tracking number: 770-19

C Corrected IEC 60870-5-104 counter interrogation action that uses freeze with reset qualifier

Products: All

Impacted firmware: All to 6.05, 7.00 to 7.61

Corrected firmware: 6.06, 7.70

Workaround: None

Description: In impacted versions, sending an IEC 60870-5-104 counter interrogation command with freeze with reset qualifier causes the relay to reset both accumulated and frozen counter values.

The new releases correct the issue. After receiving an IEC 104 counter interrogation command with freeze with reset qualifier, the relay first freezes the accumulated values and then resets them.

GE tracking number: 770-21

C Corrected generation of IEC 61850 SCL files to handle percentage sign (%) in Virtual Input names

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.42, 7.60 to 7.61

Corrected firmware: 7.70

Workaround: Avoid including a percentage sign in the Virtual Input names, Contact Input names, and Contact Output names

Description: If the Virtual Input names include a percentage sign, the relay does not correctly include them in the IEC 61850 IID files that it produces. The same applies to Contact Input names and Contact Output names.

The new release corrects the issue.

GE tracking number: 770-23

C Improved IEC 61850 IID file robustness when retrieved over USB

Products: All with the IEC 61850 software option and graphical front panel

Impacted firmware: 7.60 to 7.61

Corrected firmware: 7.70

Workaround: Retrieve the SCL files over TFTP or SFTP

Description: Retrieving an IEC 61850 IID file over the USB port from a UR with a graphical front panel can result in a corrupted file.

The new release corrects the issue by increasing robustness of the USB communication to the graphical front panel.

GE tracking number: 770-24

Phasor Measurement Unit (PMU) – Synchrophasors

C Updated year in the PMU header frame to 2014

Products: All with the PMU software option

Impacted firmware: 6.00 to 6.06, 7.00 to 7.61

Corrected firmware: 7.70

Workaround: None
Description: The year in the PMU header frame is 2005 in impacted versions to 7.60 and is 2011 in version 7.61.
In the new release, the year in the PMU header frame is 2014.
GE tracking number: 770-12

Firmware 7.71

Summary

Improvements include the following.

- Common Platform Functions
  - Changed firmware to restore Ethernet communication after a reboot of a network switch for relays with optical SFP modules

Common Platform Functions

C **Changed firmware to restore Ethernet communication after a reboot of a network switch for relays with optical SFP modules**

Products: All with 9T or 9U CPU module using fiber Avago HFBR-57E5APZ SFP and a Cisco network switch

Impacted firmware: 7.00 to 7.61, 7.70

Corrected firmware: 7.62, 7.71

Workaround: None

Description: For relays using a 9T or 9U CPU module with Avago fiberoptic small form-factor pluggable ports (SFPs), the Ethernet connection over fiber is not restored after a reboot of a Cisco network switch. Unplugging and replugging the cable restores the connection. Ethernet connections from other switch vendors or using copper SFPs with RJ45 are not affected by this issue.

A corrected firmware version fixes the issue. It restores Ethernet communications after reboot of any network switch regardless of the type of SFP transceiver used.

GE tracking number: 762-1

Firmware 7.72

Summary

Improvements include the following.

- Common Platform Functions
  - Removed phasor plot from graphical front panel source phasor page

Common Platform Functions

D **Removed phasor plot from graphical front panel source phasor page**

Products: All with graphical front panel except C30

Impacted firmware: 7.60, 7.61, 7.62, 7.70, 7.71, 7.80

Corrected firmware: 7.63, 7.72

Workaround: Do not use rolling mode with source phasor page

Description: The graphical front panel displays a phasor page for each configured AC source. The page displays a phasor plot and a table with the numerical values of all currents, voltages, and symmetrical components of the respective AC source. If the source phasor page is included in the rolling mode configuration, the graphical front panel can experience an unexpected restart, without affecting protection.

In the new releases, the phasor plot is removed from the graphical front panel source phasor page. The page displays only the table with the numerical values of the currents, voltages, and symmetrical components. This change prevents the graphical front panel from experiencing an unexpected restart if the rolling mode is configured to include at least one source phasor page.

GE tracking number: 763-1

Firmware 7.73

Summary

Improvements include the following.

- Capacitor Bank Protection and Control Systems – C70
  - Changed firmware to apply consistently the "Bank Voltage Differential 1 Target" setting
  - Corrected firmware to use 87V Autoset function setting in the 87V element
- Common Protection and Control Elements
  - Corrected functioning of Breaker Restrike elements 2 and 3
  - Corrected the Initiated flag in Breaker Failure element
- Common Platform Functions
  - Changed firmware to save the state of non-volatile latches in non-volatile memory on every state change
  - Corrected firmware to display time with Daylight Savings Time on the front panel
  - Improved IEEE 1588 (PTP) time synchronization after a large step adjustment of the clock
  - Enhanced access rights for M2M role used for SSH tunnel by the D400 gateway
  - Corrected truncation of analog channel identifier in oscillography record
  - Changed firmware to publish the power-on time in the timestamps of all IEC 61850 attributes upon boot-up
  - Corrected firmware to prevent an unexpected restart in relays using IEC 61850 reports
  - Fixed reporting of timestamps in MMS and SCADA clients for contact inputs of the high-density input module (6W)
  - Improved IEEE 1588 PTP switchover time over Parallel Redundancy Protocol network
- Communications
  - Corrected firmware to prevent an unexpected restart when attempting to retrieve files over RS232
  - Corrected firmware to allow the IEC 61850 switch controller logical nodes to be used to control the position of associated circuit switch logical nodes
  - Corrected firmware to not default IEC 61850 disconnect switch data attributes DiscCSWI.Pos.ctlModel, DiscCSWI.Pos.sboTimeout, and DiscCSWI.Pos.operTimeout at start-up
  - Corrected firmware to identify link status for third Ethernet port of a 9V CPU module
  - Added scan functions for the IEC 61850 attribute Pos.stSeld in logical nodes XSWI, XCBR, CSWI
  - Enhanced the IEC 61850 MMS fdir and fopen file services

Capacitor Bank Protection and Control Systems – C70

G **Changed firmware to apply consistently the "Bank Voltage Differential 1 Target" setting**

Products: C70

Impacted firmware: 5.20 to 7.26, 7.30 to 7.72

Corrected firmware: 7.27, 7.73, 7.80 and up

Workaround: After changing this setting, confirm that it was applied correctly

Description: Sometimes the relay does not apply correctly the "Bank Voltage Differential 1 Target" setting, for example the setting is updated only the second time the setting is changed.

The new releases correct the issue. The relay applies the setting value correctly and consistently.

GE tracking number: 780-7

G **Corrected firmware to use 87V Autoset function setting in the 87V element**

Products: C70

Impacted firmware: 5.20 to 7.26, 7.30 to 7.72

Corrected firmware: 7.27, 7.73, 7.80 and up

Workaround: After changing this setting, confirm that it was applied correctly

Description: The relay applies the Current Unbalance Autoset function setting to the 87V element and not its own.

The new releases correct the issue.

GE tracking number: 727-2

Common Protection and Control Elements

P **Corrected functioning of Breaker Restrike elements 2 and 3**

Products: B30, C60, C70, D60, F35, F60, G60, L60, L90, M60, T60

Impacted firmware: 5.50 to 7.26, 7.30 to 7.72

Corrected firmware: 7.27, 7.73, 7.80 and up

Workaround: None

Description: In previous versions, only the first Breaker Restrike protection element is operational.

The new releases correct the issue. All Breaker Restrike elements are operational.

GE tracking number: 780-15

P **Corrected the Initiated flag in Breaker Failure element**

Products: B30, C60, C70, D60, F60, G60, L30, L60, L90, M60, T60

Impacted firmware: 7.70 to 7.72

Corrected firmware: 7.73, 7.80 and up

Workaround: None

Description: The Breaker Failure Initiated flag is set incorrectly by the output of the breaker failure retrip timer instead of the input of the retrip timer.

The new releases correct the issue. The breaker failure Initiated flag is corrected.

GE tracking number: 780-12

Common Platform Functions

E **Changed firmware to save the state of non-volatile latches in non-volatile memory on every state change**

Products: All

Impacted firmware: 7.00 to 7.26, 7.30 to 7.72, 7.80 to 7.81

Corrected firmware: 7.27, 7.73

Workaround: None

Description: In 7.xx versions, the state of a non-volatile (NV) latch is saved to NV memory. If the unit experiences an unexpected restart before the state of the NV latch is saved to NV memory, the latch value is not restored correctly on startup.

The new releases fix the issue. The state of the NV latch is saved to NV memory on every state change.

GE tracking number: 727-5

D **Corrected firmware to display time with Daylight Savings Time on the front panel**

Products: All

Impacted firmware: 7.00 to 7.26, 7.30 to 7.72, 7.80 to 7.81

Corrected firmware: 7.27, 7.73

Workaround: None

Description: When Daylight Saving Time (DST) is in effect, the front panel menu COMMANDS > SET DATE AND TIME > SET DATE AND TIME and the corresponding Modbus register ("Real Time Clock Set Time," Modbus address 0x41A0 in version 7.27) presented the time without DST. The event recorder timestamps do include DST.

In the new release, this issue is fixed. The LCD display menu and the associated Modbus register display the time with DST.

The following items do not include the DST:

Time of Day Timer Start Time

Time of Day Timer Stop Time

Event Recorder Last Cleared Date

Source Demand VAR Maximum Date

Source Demand WATT Maximum Date

Source Demand VA Maximum Date

Source Demand Ia Maximum Date

Source Demand Ib Maximum Date

Source Demand Ic Maximum Date

PMU Last Cleared Date

PMU One-Shot Time

Data Logger Newest Time

Data Logger Oldest Time

Oscillography Last Cleared Date

Last Settings Change Date

User Programmable Fault Report Cleared Date

Digital Counter Frozen Time Stamp

HIZ RMS Capture Time

HIZ Capture Time

GE tracking number: 727-3

C **Improved IEEE 1588 (PTP) time synchronization after a large step adjustment of the clock**

Products: All with an IEEE 1588 software option

Impacted firmware: 7.00 to 7.72

Corrected firmware: 7.73, 7.80 and up

Workaround: This issue is more likely to appear during testing or commissioning, not during normal operation of the relay

Description: A large step adjustment of the IEEE 1588 Precision Time Protocol (PTP) clock can cause the relay to take a long time to synchronize the internal clock, even though the PTP status shows that it is synchronized to the PTP signal. This issue is present when the clock time provided by the PTP is earlier than the relay's clock.

The new release corrects the issue.

GE tracking number: 773-2

C **Enhanced access rights for M2M role used for SSH tunnel by the D400 gateway**

Products: All with the CyberSentry software option

Impacted firmware: 7.60 to 7.72, 7.80

Corrected firmware: 7.73, 7.81 and up

Workaround: None

Description: The GE D400 substation gateway supports SSH secure tunnel support to the UR for Machine-to-Machine (M2M) access. The M2M role does not have Administrator and Supervisor access rights.

The new firmware changes the M2M role (m2m_user) used for SSH secure tunnel through the D400 gateway to allow Administrator and Supervisor access rights, enabling these users to perform the full range of relay functions.

GE tracking number: 781-7

R **Corrected truncation of analog channel identifier in oscillography record**

Products: All

Impacted firmware: 7.40 to 7.72

Corrected firmware: 7.73, 7.80 and up

Workaround: None

Description: An analog channel identifier of the source analog channels included automatically in the oscillography is truncated to two letters in the oscillography record.

The new releases correct the issue. No truncation occurs.

GE tracking number: 780-16

C **Changed firmware to publish the power-on time in the timestamps of all IEC 61850 attributes upon boot-up**

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.72, 7.80

Corrected firmware: 7.73, 7.81 and up

Workaround: None

Description: After the relay starts up, the timestamps of all IEC 61850 attributes are January 1, 1970.

In the new firmware, after startup the timestamps of all IEC 61850 attributes are the power-on timestamp of the relay.

GE tracking number: 781-5

B **Corrected firmware to prevent an unexpected restart in relays using IEC 61850 reports**

Products: All with an IEC 61850 software option and configured IEC 61850 report settings

Impacted firmware: 7.70, 7.71, 7.72, 7.80

Corrected firmware: 7.73, 7.81 and up

Workaround: Avoid configuring IEC 61850 reports

Description: A relay configured to send out IEC 61850 reports can experience an unexpected restart. The higher the number of reports used (buffered and unbuffered), the higher the chance of an unexpected restart.

This issue is fixed in the corrected firmware.

GE tracking number: 781-2

C **Fixed reporting of timestamps in MMS and SCADA clients for contact inputs of the high-density input module (6W)**

Products: All with high-density input module (6W) and using MMS or SCADA clients

Impacted firmware: 7.61 to 7.72, 7.80

Corrected firmware: 7.73, 7.81 and up

Workaround: None

Description: For a high-density input module (6W), the relay reports incorrect contact input timestamps to MMS and SCADA clients (DNP, IEC 60870-5-104, IEC 60870-5-103). The timestamps have the millisecond

part of the timestamp set to zero. Other input modules do not have this problem.
In the corrected firmware, the relay reports correct contact input timestamps for all types of input modules.
GE tracking number: 781-1

C **Improved IEEE 1588 PTP switchover time over Parallel Redundancy Protocol network**
Products: All with IEEE 1588 and Parallel Redundancy Protocol (PRP) software options
Impacted firmware: 7.0 to 7.26, 7.30 to 7.72, 7.80
Corrected firmware: 7.27, 7.73, 7.81 and up
Workaround: None
Description: A relay using PRP and IEEE 1588 Precision Time Protocol (PTP) time synchronization has a 60 second holdover time when switching from one port to the other.
The new firmware shortens the holdover time to three seconds.
GE tracking number: 781-3

Communications

B,C **Corrected firmware to prevent an unexpected restart when attempting to retrieve files over RS232**
Products: All
Impacted firmware: 7.30 to 7.72, 7.80 to 7.81
Corrected firmware: 7.73
Workaround: Retrieve files or write IEC 61850 SCL files over Ethernet instead of RS232
Description: Attempts to retrieve files such as event log, fault report, oscillography, and data logger from the relay over an RS232 connection or to write an IEC 61850 SCL file over RS232 can result in an unexpected restart. The likelihood increases when the EnerVista UR Setup software is installed on Windows 10. Reading or writing settings, actual values, or commands over Modbus from individual EnerVista dialog windows does not result in an unexpected restart.
In the new release, the relay does not restart unexpectedly when retrieving files over RS232 connection or when writing SCL files to the relay over RS232.
GE tracking number: 773-1

C **Corrected firmware to allow the IEC 61850 switch controller logical nodes to be used to control the position of associated circuit switch logical nodes**
Products: All with the IEC 61850 software option
Impacted firmware: 7.00 to 7.72, 7.80 to 7.81
Corrected firmware: 7.73
Workaround: Three clients issue controls directly to the Disc0XSWIx logical nodes
Description: The IEC 61850 DiscCSWIx (Switch Controller) logical nodes cannot be used to control the position of associated Disc0XSWIx (Circuit Switch) logical nodes. Even if an IEC 61850 client issues the correct control operation, the control is ignored.
The new release corrects the issue.
GE tracking number: 773-3

C **Corrected firmware to not default IEC 61850 disconnect switch data attributes DiscCSWI.Pos.ctlModel, DiscCSWI.Pos.sboTimeout, and DiscCSWI.Pos.operTimeout at start-up**
Products: All with the IEC 61850 software option
Impacted firmware: 7.70 to 7.72
Corrected firmware: 7.73, 7.80 and up
Workaround: None

Description: The relay defaults the following IEC 61850 data attributes for each disconnect switch every time it boots up:

DiscCSWI.Pos.ctlModel

DiscCSWI.Pos.sboTimeout

DiscCSWI.Pos.operTimeout

The new releases correct the issue. These disconnect switch data attributes are not defaulted every power-up. They default only when switching the IEC 61850 edition.

GE tracking number: 780-9

C Corrected firmware to identify link status for third Ethernet port of a 9V CPU module

Products: All with type 9V CPU module

Impacted firmware: 7.61, 7.70, 7.71, 7.72

Corrected firmware: 7.73, 7.80 and up

Workaround: None

Description: A 9V CPU module has three Small Factor Pluggable (SFP) connectors of RJ45 type. It has the link LED of the third Ethernet port permanently turned on, even when no link is detected.

The new releases correct the issue. The relay identifies correctly the link status for every Ethernet port in the module.

GE tracking number: 780-4

C Added scan functions for the IEC 61850 attribute Pos.stSeld in logical nodes XSWI, XCBR, CSWI

Products: All with the IEC 61850 software option

Impacted firmware: 7.00 to 7.72, 7.80 to 7.81

Corrected firmware: 7.73

Workaround: None

Description: The value of the IEC 61850 attribute Pos.stSeld in logical nodes XSWI, XCBR, CSWI is only updated when the client reads that value. If the attribute is included in a GOOSE or report data set, state changes are not detected, unless a MMS client reads the value.

In the new release, these attributes can be included in a data set for GOOSE or reports, and they reflect correctly the state changes.

GE tracking number: 773-4,

C Enhanced the IEC 61850 MMS fdir and fopen file services

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.72

Corrected firmware: 7.73, 7.80 and up

Workaround: When using relays with firmware versions other than a corrected or later firmware:

- Do not use a leading '/' delimiter in fdir and fopen requests
- Do not issue an fopen without an fclose request

Description: In the new release, the following enhancements are implemented in the IEC 61850 MMS file services.

1. In response to an fdir request with a subdirectory name in the request, the response from the relay is the following:
   a. If files are present in the directory, the relay responds with a listing of those files.
   b. If there are no files in the subdirectory, the relay responds with "file non-existent" error.

2. If the UR Data Logger COMTRADE data file is empty, none of the Data Logger COMTRADE files (DataLog.cfg, DataLog.dat) are listed in a response to an fdir request. If Data Logger data is available, the

files DataLog.cfg and DataLog.dat are listed in an fdir response.

3. A leading delimiter '/' can now be present in fdir and fopen requests. For example, "/LD/ldnameMaster/COMTRADE..." is treated the same as "LD/ldnameMaster/COMTRADE..." In previous versions, the relay does not allow a leading '/' delimiter to be present in fdir and fopen requests.

4. To prevent a client from "locking" a file by issuing an fopen request and then not issuing any fread or fclose requests, a 30 second timer is introduced for the following files: event recorder, oscillography, data logger, fault report, and user fault report files.

GE tracking number: 780-5

Software

Software 7.70

Summary

Improvements include the following (770-26).

- EnerVista UR Setup Software
  - Added ability to switch between IEC 61850 Editions 1 and 2
  - Added Actual Values > Graphical Panel window to monitor pushbuttons and LEDs on graphical front panel
  - Added support for L90 increase of the 8-bit inter-relay communication packet (8 Direct I/O) to 32-bit (32 Direct I/O)
  - Added support for redundant SNTP server configuration
  - Added support for UR 7.12K device for firmware upgrade
  - Fixed software exceptions

EnerVista UR Setup Software

C Software exceptions

Number	Description
1	Fixed issue with Oscillography printing in PDF whereby the first page with waveforms is blank
2	Fixed issue for Frequency Rate of Change element whereby Function enabled/disabled flips state when the Protection Summary window is opened
3	Implemented the feature whereby all graphical front panel related configuration is converted with a file conversion to version 7.70 or higher

Upgrade

Compatibility

The 7.72 firmware runs on the T, U, V, and W CPU modules. View the order code to determine the CPU module in the relay. For example, in C60-V03-HPH-H6H, the relay has a V CPU module.

The graphical front panel requires a T, U, V, or W CPU module that has two connector slots on the front of the module. One connector allows a basic or enhanced front panel to be connected, and the other connector allows a graphical front panel.

The 7.72 firmware release is not compatible with previous UR CPU hardware (CPU types A, B, D, E, G, H, J, K, N, and S).

The 7.72 firmware release requires EnerVista UR Setup software version 7.7x or higher. GE suggests use of the latest available version of the software.

Upgrade

If upgrading both EnerVista software and UR firmware, upgrade the software first. Upgrade takes about 25 minutes and can be done over an Ethernet connection. The USB port cannot be used for the upgrade.

To upgrade the software:

1. If a beta version of the EnerVista UR Setup software is installed, uninstall it, for example using the Windows Control Panel.
2. Download the new software from http://www.gegridsolutions.com/app/ViewFiles.aspx?prod=urfamily&type=7
   The software is a .exe file.
3. Install the new software by clicking the file.
4. Refresh the order code in EnerVista under the **Device Setup** button.

To upgrade the firmware:

1. Download the firmware from http://www.gegridsolutions.com/app/ViewFiles.aspx?prod=urfamily&type=7
   The firmware is a .bin file.
2. In the EnerVista software, navigate to **Maintenance > Update Firmware** and select the .bin file.
   For any issues, see a UR instruction manual.
   When the update finishes, the relay restarts.
3. Restart the EnerVista software, and refresh the order code in EnerVista under the **Device Setup** button.
4. Convert the existing setting file, then load the converted settings to the relay.
5. Set the device to "Programmed" under **Settings > Product Setup > Installation**.

Categories

This document uses the following categories to classify changes.

Revision categories

Code	Category	Description
N	New feature	A separate feature added to the relay. Changes to existing features even if they significantly expand the functionality are not in this category.
G	Change	A neutral change that does not add new value and is not correcting any known problem
E	Enhancement	Modification of an existing feature bringing extra value to the application
D	Changed, incomplete, or false faceplate indications	Changes to, or problems with text messages, LEDs, and user pushbuttons
R	Changed, incomplete, or false relay records	Changes to, or problems with relay records (oscillography, demand, fault reports, and so on)
C	Protocols and communications	Changes to, or problems with protocols or communication features
M	Metering	Metering out of specification or other metering problems
P	Protection out of specification	Protection operates correctly but does not meet published specifications (example: delayed trip)
U	Unavailability of protection	Protection not available in a self-demonstrating way so that corrective actions can be taken immediately
H	Hidden failure to trip	Protection does not operate when appropriate
F	False trip	Protection operates when it is not appropriate
B	Unexpected restart	Relay restarts unexpectedly

For further assistance

For product support, contact the information and call center as follows:

GE Grid Solutions
650 Markland Street
Markham, Ontario
Canada L6C 0M1
Worldwide telephone: +1 905 927 7070
Europe/Middle East/Africa telephone: +34 94 485 88 54
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