

## UR Family

# Version 6.05

## Release Notes

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This document outlines changes made for release 6.05 for the Universal Relay (UR) family of products.

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### Summary

Improvements in version 6.05 include the following.

- Common Platform Elements
  - LEDs of user programmable pushbuttons to signal correctly when LED tests in progress
  - IEC 61850 double point status (DPS) out of order configuration issue corrected
  - Customer Support Information webpage and links have been updated
  - URinfo.txt file corrections
  - CPU high-utilization monitor enhanced
  - Changes to the DSP setting buffer prevents nuisance alarms
  - Improvement to DSP checksum diagnostic
  - Improvement to DSP internal diagnostic timestamp
  - Improvement to DSP Interrupt diagnostic
- Common Protection and Control Elements
  - Phase Overvoltage element operating time corrected
  - Volts per Hz element operating time corrected at low frequencies
  - In UR devices with HardFiber, changes to Phase IOC operands prevent them from remaining latched when the IOC function is disabled
  - UR setting group elements have been changed not to reset when power cycling the relay
- Communications
  - UR FlexElements have been changed to properly operate when programmed to use IEC 61850 GOOSE analogs inputs
  - Corrected GOOSE analogs metering and recording
  - Corrected IEC 61850 GOOSE input analogs to use RxGoose PU Base
  - Client connection to IEC 61850 buffered and unbuffered report control block releases randomly on disconnection
- Controller Systems – C30, C60

- Oscillography time alignment issues when the same signal is used as event trigger and digital channel
- Cybersecurity
  - Security audit trail changed to prevent corrupted records when relay is power cycle
  - Session monitor password protection is removed from "FACTORY\_EVENT.TXT" and "SETTING\_CHANGES.LOG"
- Events and Records
  - Increased accuracy of fault locator element
  - Changes to the fault locator element prevent relay issue
- Generator Protection Systems – G30, G60
  - G60 overfrequency DPO events have been changed to correctly trigger when frequency elements drop out
- Line Differential Systems – L30, L60, L90
  - In L30 and L90 devices with HardFiber, the CT Fail Detector element #2 has been changed to use the setting value from the correct timer
- PMU – Synchrophasor
  - Corrected PMU angle measurements for certain configurations
  - PMU phasor angles corrected for UR devices communicating to HardFiber Brick when more than one PMU is enabled
  - UR PMU frequency and ROCOF functions have been corrected
  - PMU elements ensure stable readings regardless the source assignment and configuration
- Transformer Protection Systems – T35, T60
  - Transformer 2nd harmonic metering corrections in FlexElements

Firmware version: 6.05

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

Date of release: 24 August 2016

Upgrade requirement: Optional. If users have existing UR devices installed with older version of firmware (version 4.0x or higher), they can download and install this new firmware to benefit from the enhancements described in this release note. If the user does not require these new features and enhancements, no upgrade is required. The 6.05 firmware requires EnerVista UR Setup software to be version 6.0x or higher.

For information purposes, this document also includes the previous release notes for versions 6.0x.

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.

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## Firmware 6.05 changes

### Common Platform Elements

#### **C LEDs of user programmable pushbuttons to signal correctly when LED tests in progress**

Products: All

Impacted firmware: All to 6.04

Corrected firmware: 6.05

Workaround: None

Description: Each programmable pushbutton on a UR front-panel has an LED that lights when the pushbutton is pressed.

Previous firmware versions allow these LEDs to light up randomly when running an LED test command.

With release 6.05, all pushbutton LEDs light simultaneously and steadily when an LED test is performed.

GE tracking number: 605-02

#### **C IEC 61850 double point status (DPS) out of order configuration issue corrected**

Products: All with IEC 61850 software option

Impacted firmware: All to 6.04, 7.0x to 7.24

Corrected firmware: 6.05, 7.25

Workaround: None

Description: IEC 61850 double point status operand bits are incorrect if configured out of order.

The new releases fix the issue.

GE tracking number: 725-12

#### **G Customer Support Information webpage and links have been updated**

Products: All

Impacted firmware: All to 6.04, 7.0x to 7.1x

Corrected firmware: 6.05, 7.20

Workaround: None

Description: The customer service webpage information is updated to

Address: 650 Markland St.

Markham, Ontario

Canada L6C 0M1

Phone: (905) 927-7070

Fax: (905) 927-5096

Email: [multilin.tech@ge.com](mailto:multilin.tech@ge.com)

Internet: <http://www.gedigitalenergy.com/multilin/index.htm>

GE tracking numbers: 720-29

#### **R URinfo.txt file corrections**

Products: All

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.32

Workaround: None

Description: Incorrect serial number, firmware boot version, and CPU module serial number are being retrieved from the relay settings file, for example the URinfo.txt file.

In the new releases, the boot revision, serial number and CPU module serial number are corrected in the urinfo.txt file retrieved by the EnerVista UR Setup software.

GE tracking numbers: 725-20

**E CPU high-utilization monitor enhanced**

Products: All

Impacted firmware: All to 6.04, 7.0x to 7.24

Corrected firmware: 6.05, 7.25, 7.31

Workaround: None

Description: The CPU utilization monitor available on the UR webpage has been enhanced with four counters to provide a trend.

GE tracking numbers: 605-8

**R Changes to the DSP setting buffer prevents nuisance alarms**

Products: All

Impacted firmware: 5.70 to 6.04

Corrected firmware: 6.05

Workaround: None

Description: The internal DSP register used to calculate the checksum of the setting buffer is corrected to 0 during initialization. Some previous versions had an incorrect initial value, thus the configuration of sources (for example, enabling the source) incorrectly triggers Module Failure 07.

Release 6.05 fixes the issue.

GE tracking numbers: 605-11

**E Improvement to DSP checksum diagnostic**

Products: All

Impacted firmware: All after 5.20

Corrected firmware: 6.05, 7.26

Workaround: None

Description: Improvements applied to increase relay dependability.

GE tracking numbers: 605-13

**E Improvement to DSP internal diagnostic timestamp**

Products: All

Impacted firmware: All after 5.70

Corrected firmware: 6.05, 7.26

Workaround: None

Description: Improvements applied to time stamp of internal diagnostic events.

GE tracking numbers: 605-14

**E Improvement to DSP Interrupt diagnostic**

Products: All

Impacted firmware: All after 5.70

Corrected firmware: 6.05

Workaround: None

Description: Improvements applied to increase relay dependability.

GE tracking numbers: 605-15

## Common Protection and Control Elements

### **P Phase Overvoltage element operating time corrected**

Products: C60, C70, D30, D60, F60, G30, G60, L30, L60, L90, M60, N60, T60

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.32

Workaround: None

Description: The Phase Overvoltage operate time is too slow, not meeting specifications. The reason for the slower operation is the incorrect number of security counts used.

The new releases fix the issue. The Phase Overvoltage element now operates in less than 30 ms at 1.1 x pickup, which is one cycle faster than before the fix and meets specifications.

GE tracking numbers: 725-6

### **P Volts per Hz element operating time corrected at low frequencies**

Products: G30, G60, T60

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.26, 7.32

Workaround: None

Description: The Volts per Hertz element operates faster than expected if the operating curve is set to definite time at low voltages and frequencies (tested at 14% of pickup). The operate time is correct when V/Hz is 25% above nominal voltage/frequency.

The new releases fix this issue.

GE tracking numbers: 725-5

### **P In UR devices with HardFiber, changes to Phase IOC operands prevent them from remaining latched when the IOC function is disabled**

Products: C70, D60, and L90 with HardFiber

Impacted firmware: 5.60 to 6.04

Corrected firmware: 6.05

Workaround: None

Description: Operands of Phase IOC elements can be set to latch, self-reset, or disabled via user settings. If the operand is latched due to a fault event, disabling the Phase IOC element must reset the operand.

Existing firmware versions allow this operand to remain latched when the respective element is disabled.

This release fixes the issue.

GE tracking numbers: 605-5

### **P UR setting group elements have been changed not to reset when power cycling the relay**

Products: All

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30

Corrected firmware: 6.05, 7.25, 7.31

Workaround: None

Description: Default settings in UR relays make "setting group #1" always active. When configuration is changed to enable another setting group (for example, Setting group #3) and the setting group element is in "Blocked" state, then the active setting group may reset to default (group #1) after power cycling the relay.

GE tracking numbers: 605-9

## Communications

### **C UR FlexElements have been changed to properly operate when programmed to use IEC 61850 GOOSE analogs inputs**

Product: All with IEC 61850 software option

Impacted firmware: All to 6.04

Corrected firmware: 6.05, 5.72

Workaround: None

Description: The UR FlexElements are universal comparators that can calculate net difference or monitor UR actual analog values.

Previous FW version can allow FlexElements to improperly apply the unit base value when IEC 61850 GOOSE analog are set as the FlexElement's input, which can lead to an incorrect operation of the FlexElement.

If analog GOOSE inputs are not being used or your relay's firmware version matches the corrected or later releases, no action is required.

GE tracking numbers: 572-6

### **R Corrected GOOSE analogs metering and recording**

Products: All with IEC 61850 software option

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.32

Workaround: None

Description: In the new releases, the presentation of the GOOSE analogs in oscillography and data logger is changed to per unit, to be consistent with FlexElements and other FlexAnalog. GOOSE analogs now are presented in PU units in all types of logs.

GE tracking numbers: 725-19

### **C Corrected IEC 61850 GOOSE input analogs to use RxGoose PU Base**

Products: All with IEC 61850 software option

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.32

Workaround: None

Description: The base per unit of FlexElements or DCmA output is incorrect if configured to GOOSE analog inputs, causing incorrect operation.

The new releases fix this issue to use received Analog Goose per unit base.

GE tracking numbers: 725-9

### **C Client connection to IEC 61850 buffered and unbuffered report control block releases randomly on disconnection**

Products: All with IEC 61850 software option

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.26, 7.32

Workaround: None

Description: When an IEC 61850 client loses connection to buffered or unbuffered report control blocks (BRCB or URCB), the connection is reserved for limited time to allow for recovery. When this time expires, the connection is released to allow other clients connect. Releasing the client connection is now enforced to 2 minutes, where it was previously random between 2 and 10 minutes.

GE tracking numbers: 725-10

## Controller Systems – C30, C60

- R Oscilloscopy time alignment issues when the same signal is used as event trigger and digital channel**  
Products: C30  
Impacted firmware: 6.02  
Corrected firmware: 6.05  
Workaround: None  
Description: The oscilloscopy element allows users to configure, among other settings, the event trigger and up to 64 digital channels. When the same digital operand is configured to both settings, the oscilloscopy shows time misalignment between trigger and the actual digital signal.  
Release 6.05 fixes the issue.  
GE tracking numbers: 605-01

## Cybersecurity

- R Security audit trail changed to prevent corrupted records when relay is power cycled**  
Products: All  
Impacted firmware: All to 6.04  
Corrected firmware: 6.05  
Workaround: None  
Description: The Security Audit Trail functionality records some of the relay settings when a setting change is performed. The computer MAC address and name are captured to identify the communication session that changed the settings. The recorded settings are logged in the file "factory\_event.txt". If power is cycled while these settings are stored, the settings in flash memory can be corrupted resulting in defaulting all settings.  
Release 6.05 fixes the issue.  
GE tracking numbers: 605-3
- C Session monitor password protection is removed from "FACTORY\_EVENT.TXT" and "SETTING\_CHANGES.LOG"**  
Products: All  
Impacted firmware: All to 6.04, 7.0x to 7.23  
Corrected firmware: 6.05, 7.24  
Workaround: None  
Description: Password protection is removed from "FACTORY\_EVENT.TXT" and "SETTING\_CHANGES.LOG" security log files with the CyberSentry option, to allow Gateways (D400) without SSH port forwarding capabilities to write MODBUS operations and enable access to these security log files.  
GE tracking numbers: 724-3

## Events and Records

- R Increased accuracy of fault locator element**  
Products: C60, D30, D60, F35, F60, L30, L60, L90  
Impacted firmware: All to 6.04  
Corrected firmware: 6.05, 7.26  
Workaround: None  
Description: Accuracy of the Fault Report and fault locator elements has been improved by applying more

filtering to the fault location results and by continuing calculation during evolving faults. Prior to the changes, fault location accuracy did not meet specification.

GE tracking numbers: 605-4

#### **R Changes to the fault locator element prevent relay issue**

Products: C70, D30, D60, F35, F60, L30, L60, L90

Impacted firmware: All to 6.04, 7.0x to 7.23

Corrected firmware: 6.05

Workaround: None

Description: The fault locator element in some UR relays can cause the relay to fail due to insufficient memory stack size.

Release 6.05 fixes this issue.

GE tracking numbers: 605-10

## Generator Protection Systems – G30, G60

#### **P G60 overfrequency DPO events have been changed to correctly trigger when frequency elements drop out**

Products: G60

Impacted firmware: All to 6.04

Corrected firmware: 6.05

Workaround: None

Description: G60 overfrequency drop out “DPO” events were triggered by the Overfrequency OP operands and not from the overfrequency DPO operands.

Release 6.05 fixes the issue.

GE tracking numbers: 605-7

## Line Differential Systems – L30, L60, L90

#### **P In L30 and L90 devices with HardFiber, the CT Fail Detector element #2 has been changed to use the setting value from the correct timer**

Products: L30 and L90 with HardFiber

Impacted firmware: All to 6.04

Corrected firmware: 6.05

Workaround: None

Description: The second instance of the CT Fail Detector element “CT Fail 2” uses the timer value of the first instance “CT Fail 1.”

Release 6.05 fixes the issue.

GE tracking numbers: 605-6

## PMU - Synchrophasor

### **P Corrected PMU angle measurements for certain configurations**

Products: All with PMU software option - C60, D60, F60, G60, L30, L90, N60, T60

Impacted firmware: All to 6.04, 7.0x to 7.31

Corrected firmware: 6.05, 7.32

Workaround: None

Description: Particular arrangements of sources can lead to PMU angle measurements to be off by three to five degrees. For example, assigning source 4 to PMU2 does this, and assigning a PMU to the second signal source when the first signal source is not used also does this.

The new releases fix the issue. Phase angles are consistent amongst all PMUs regardless of source used.

GE tracking numbers: 732-37

### **M PMU phasor angles corrected for UR devices communicating to HardFiber Brick when more than one PMU is enabled**

Products: All with PMU software option and Process Bus Card - C60, D60, F60, G60, L30, L90, N60, T60

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.26, 7.32

Workaround: None

Description: Phase angles of other than the first enabled PMU are off by 30 degrees if more than one PMU is used in a UR communicating to a HardFiber Brick.

The new releases fix the issue.

GE tracking numbers: 725-27

### **M UR PMU frequency and ROCOF functions have been corrected**

Products: All with PMU software option - C60, D60, F60, G60, L30, L90, N60, T60

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.31

Corrected firmware: 6.05, 7.25, 7.32

Workaround: None

Description: Current and voltage cutoff levels have been corrected in PMU frequency and ROCOF functions.

The new releases fix the issue.

GE tracking numbers: 725-14

### **M PMU elements ensure stable readings regardless the source assignment and configuration**

Products: C60, D60, F60, G60, L30, L90, N60, T60

Impacted firmware: All to 6.04

Corrected firmware: 6.05

Workaround: Ensure source one is used when source two is assigned to PMU elements

Description: Particular arrangements of sources can lead to unstable PMU readings. For example, When PMU is assigned the second source of a DSP and the first source of the DSP is unused, then the PMU metering is not stable.

Release 6.05 fixes the issue.

GE tracking numbers: 605-12

## Transformer Protection Systems – T35, T60

### **M Transformer 2nd harmonic metering corrections in FlexElements**

Products: T35, T60

Impacted firmware: All to 6.04, 7.0x to 7.24, 7.30, 7.31

Corrected firmware: 6.05, 7.25, 7.26, 7.32

Workaround: None

Description: When 2nd harmonic differential harmonics magnitudes Xfmr harm2 Iad, Ibd, and Icd are used as an input to FlexElements, the FlexElement metering value does not read correctly and shows a higher value.

The new releases use per unit correction factors to fix the issue.

GE tracking numbers: 725-21