



## UR Universal Relay Series Revision 3.48 release note

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## Overview

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### Summary

This document contains the release notes for the 3.48 release of the UR Universal Relay series.

- Affected products: UR Universal Relay series
- Date of release: July 7, 2006
- Firmware revision: 3.48

### Description

The version 3.48 release is compatible with EnerVista version 3.4x and UR-series relays operating with version 3.4x and lower hardware. The following relay models are covered by this note:

- B30 Bus Differential Relay
- C30 Controller
- C60 Breaker Management Relay
- D30 Line Distance Relay
- D60 Line Distance Relay
- F35 Multiple Feeder Management Relay
- F60 Feeder Management Relay
- G60 Generator Management Relay
- L90 Line Differential Relay
- M60 Motor Relay
- T35 Transformer Management Relay
- T60 Transformer Management Relay

## Release details

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In the following change descriptions, a revision category letter is placed to the left of the description. Refer to the appendix at the end of this document for additional details.

### Modified features

#### **E Cold load pickup: blocking feature of the cold load pickup element modified**

Products affected: F60 relay

The 3.48 release provides additional flexibility to the blocking signal of the cold load pickup element. In addition to stopping the element and resetting the previously asserted **CLD LOAD OP** operand, the blocking feature now applies a reset to the outage timer. This modification helps to avoid situations when removal of the previously set blocking signal might cause the undesirable assertion of the **CLD LOAD OP** operand caused by the outage timer timing-out despite the cold load pickup element blocking.

#### **C Communications: improvements to remote input and direct input default states**

Applicable to: all UR-series relays

The operation of the remote and direct inputs has been improved to prevent the status of the remote and direct inputs from toggling from the "ON" state to its default "OFF" for 1/8th of a cycle when the sending relay goes "Offline". This toggling of the remote and digital input state did not occur if the default state of the input was set to "OFF".

#### **C Communications: L90 two-terminal peer-to-peer communications improved**

Products affected: L90 relay

The L90 peer-to-peer communications has been improved to ensure that the local relay will be able to establish a PFLL LOCK on a two-terminal system after power has been cycled on the remote relay. In the previous revision, the local L90 would occasionally to not be able to establish the PFLL LOCK upon cycling power on the remote relay. This issue did not affect operation in a three-terminal configuration.

#### **R Fault report: units for fault and pre-fault magnitude and angle added**

Products affected: C60, D30, D60, F60, and L90 relays

The fault report feature was enhanced to add units for the voltage and current magnitude and angle to the fault report text files.

#### **P FlexElements™: error handling large values in FlexElements™ fixed**

Products affected: UR-series platform

In previous releases, FlexAnalog data points exceeding 31 bits in magnitude (or 2,147,483,648) could be falsely represented in the internal logic of the FlexElement™ protection element. This issue has been resolved for the 3.48 release.

#### **E Internal enhancement: CT/VT module diagnostics**

Products affected: UR-series platform

The UR-series relays have been enhanced to provide additional security by adding the ability of detecting failed cells within the CT/VT processing core and taking appropriate action to ensure that no maloperation occurs.

When this problem is detected, the relay will create a “DSP ERROR” event, and display a “HARDWARE FAILURE” message on the front panel. The relay will be taken offline, thus suspending operation of the device and its trip contacts. Please consult the factory for details should this occur.

#### **G Internal enhancement: enhanced CT/VT module data and program integrity**

Products affected: UR-series platform

The UR-series relays have been enhanced to provide additional security by ensuring that the settings used by the CT/VT module for calculations are correct and have not been corrupted. If the main processor determines that CT/VT settings are not as expected, it will reload the proper settings, thereby preventing the chance of a protection element maloperating due to using invalid data. In the event that the CPU detects this occurrence, it will display a message on the front panel stating “Settings Change” or “PM Checksum”, as well as recording a “DSP ERROR” event in the event record.

#### **R Overfrequency: delay in the operate state of the overfrequency protection element corrected**

Products affected: F60, G60, and T60 relays

The operation of the overfrequency element was improved to correct a ½ cycle delay that would appear in the assertion and dropping out of the operate (OP) flag when the pickup or reset delay was set to 0.

#### **H Stator ground: stator ground protection element failure to trip fixed**

Products affected: G60 relay

The operation of the stator ground protection element has been corrected to resolve an issue that would cause the element to fail to trip under valid system conditions after control power to the relay has been cycled. In the previous versions that this occurred in, after control power was cycled, changing any of the settings for the stator ground protection element would allow it to operate properly.

#### **P Synchrocheck: per-unit discrepancy corrected**

Products affected: C60, D30, D60, F60, G60, L90

The synchrocheck element has been improved to use the correct per unit value when the element has been configured to operate using phase-to-phase voltages. Under certain combinations of settings, the synchrocheck element would use the phase-to-ground per unit value instead of the phase-to-phase value. This issue did not affect relays configured to operate using phase-to-ground voltages.

#### **P Transformer differential: inaccurate phase angle compensation for some combination of transformer settings**

Products affected: T35 and T60 relays

The operation of the transformer differential element has been improved to properly calculate the differential and restraint currents for a relay configured to protect transformers that are grounded “Not Within Zone” and have a phase compensation between -60 to -180° or -240 to 0°. In the previous version, the relay calculated the two signals with a degree of error out of specification that could adversely affect the performance of the protection element during external faults. The degree of error in the calculations varied depending on different setting permutations applied; please contact the factory for analysis of the errors under specific transformer configuration. This issue did not affect relays that were configured to have grounding “Within Zone”.

## Upgrade paths

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It is our recommendation that all customers upgrade to the latest version of UR-series firmware to take advantage of the latest developments and feature enhancements. Firmware upgrades can be easily performed using the EnerVista UR Setup software. This software can also convert settings files from an older version to the latest version and provides a difference report once the conversion has been completed. This Difference Report identifies new settings and additional information to assist the user during the upgrade.

### Upgrade path for revisions below version 4.00

For UR-series versions below 4.00, an upgrade package must be obtained from GE Multilin to upgrade the relay CPU and CT/VT modules to revision 4.xx.

### Benefits of revision 4.00 and above:

The benefits of revision 4.00 and above are as follows:

- Exceeds new IEEE C37.90 requirements
  - Transient immunity (2 to 4 kV)
- Supports many new features and functionality
  - IEC 61850 communications protocol
  - 100 Mb Ethernet
  - IRIG-B repeater
  - Isolated RS485 and IRIG-B
  - Synchrophasors in the D60, F60, L90, and N60 relays (revisions 5.2x and above)
  - Support for breaker-and-a-half transmission line protection (D60 and L90 relays)

## Appendix

### Change categories

This document uses the following categories to classify the changes.

**Table 1: Revision categories**

Code	Category	Comments
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 bring any 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, etc.)
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 could be taken immediately
H	Hidden failure to trip	Protection may not operate when it should
F	False trip	Protection may operate when it should not
B	Unexpected restart	Relay restarts unexpectedly

The revision category letter is placed to the left of the change description.

### GE Multilin technical support

GE Multilin contact information and call center for product support is shown below:

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