

# UR<sup>Plus</sup> Relay Series

## Revision 1.60 Release Notes

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### Overview

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#### Summary

GE Multilin issues the UR<sup>Plus</sup> 1.60 release that introduces several product-specific and platform wide enhancements. Highlights of this release include:

- Enhanced subcycle Quadrilateral (reactance) distance comparators
- New tuned digital CCVT filter
- User configurable front panel single line diagrams
- Breaker and disconnect switch controls
- New high-density I/O module options
- Enhanced Security Features
- UR<sup>Plus</sup> Platform Enhancements

This document contains the release notes for the 1.60 release of the UR<sup>Plus</sup> Family.

- Affected product: D90<sup>Plus</sup>, C90<sup>Plus</sup>
- Date of release: November 28, 2008
- Firmware revision: 1.60
- EnerVista Setup Software revision 1.60

**If users have existing UR<sup>Plus</sup> relays installed with older version of firmware, 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 upgrading of the relays is required.**

## Products Affected

This release encompasses the following UR<sup>Plus</sup> products:

- C90<sup>Plus</sup> Controller
- D90<sup>Plus</sup> Line Distance Relay

## Software Compatability

The use of the new 1.60 firmware requires the EnverVista UR<sup>Plus</sup> Setup software to be version 1.60 and higher.

## Release details

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In the following enhancement descriptions, a revision category letter is placed to the left of the description. Refer to the Appendix at the end of this document for a description of the categories displayed.

## Security Enhancements

### N Dual – Permission Access Control

Applicable: All UR<sup>Plus</sup> products

The UR<sup>Plus</sup> products have been enhanced with added security measures to ensure explicit permission is granted from the controlling authority.

With the implementation of the Dual Permission Access Control in the UR<sup>Plus</sup>, extra measures have been taken to ensure incorrect changes are not made to the relays. With this enhancement, before the user can make any changes to the relay settings, the system operator must first 'surrender' the relay to grant the local operator the ability to make changes to the settings.

When the system operator 'surrenders' the relay, the local personnel may additionally be required to enter a 'Setting Level' password before making any changes to the relay.

This enhancement to the Security features in the UR<sup>Plus</sup> prevents legitimate users from making setting changes on the incorrect relay. This also prevents unauthorized users from making any changes to the relays settings even if the password is known.

### E Enhanced Security Audit Log

Applicable: All UR<sup>Plus</sup> products

The security log in UR<sup>Plus</sup> products has been enhanced to record the history of user commands executed by the relay in the Security Audit Log. The Security Audit Log resides in a protected area of memory that cannot be cleared by user action (either intentional or accidental) and provides a powerful tool for cybersecurity policy auditing and analysis requirements.

## Communication Enhancements

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## IEC 61850 Enhancements

Applicable: All UR<sup>Plus</sup> products

IEC 61850 Enhancements have been made to the UR<sup>Plus</sup> line, providing additional functionality to the UR<sup>Plus</sup>:

- Performance of GOOSE messaging has been enhanced with a fixed scanning rate for transmitted datasets regardless of the number of data items. The transmit latency for GOOSE messages has been improved to be consistently 2 ms or less.
- Logical nodes for XSWI (disconnect switch) and CSWI (control of switching elements) have been implemented. The D90<sup>Plus</sup> now supports two (2) XCBR and six (6) XSWI and the C90<sup>Plus</sup> supports six (6) XCBR and thirty (3) XSWI logical nodes, respectively. Individual CSWI logical nodes are provided for each XCBR and XSWI logical node.
- The control of circuit breakers and disconnect switches can now use Select-Before-Operate with enhanced security.
- The capability to map DPS (double-point-status) information in the UR<sup>Plus</sup> has been implemented.

## C90Plus Controller

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### Increased Number of control objects

Applicable: C90<sup>Plus</sup>

The C90<sup>Plus</sup> is now capable of providing individual control and monitoring of up to six (6) individual circuit breakers and up to thirty (30) individual disconnect switches. These control elements have been mapped to XCBR and XSWI

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### User-configurable Single Line Diagrams

Applicable: C90<sup>Plus</sup>

The C90<sup>Plus</sup> now features six (6) fully user configurable single line diagram display for the Graphical HMI front panel option. This allows for the C90<sup>Plus</sup> to be used as a centralized bay controller for buses with up to six individual bays.

## D90Plus Line Distance Protection

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### Enhanced Subcycle Quadrilateral Distance Elements

Applicable: D90<sup>Plus</sup>

The D90<sup>Plus</sup> Quadrilateral (reactance) distance element comparators have been enhanced to provide subcycle distance element operation for phase and ground faults for a wide variety of fault cases and system conditions. The quad distance elements now use both the traditional phasor-based distance algorithm in parallel with the new sample-based subcycle distance algorithm.

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### Tuned Digital CCVT Filter

Applicable: D90<sup>Plus</sup>

In release 1.60, a novel digital filter has been added to the input processing of voltage signals provided to the D90<sup>Plus</sup> subcycle distance elements. This filter models the transient behavior of the connected CCVT and applies a correction to each sample that numerically erases the error introduced by CCVT transients.

This allows for fast distance element operating times over the zone of protection in the presence of CCVT transients without intentional delays or reduced fault coverage, allowing operating time approaching applications using magnetic VTs.

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### User-configurable Single Line Diagrams

Applicable: D90<sup>Plus</sup>

The D90<sup>Plus</sup> now features a fully user configurable single line diagram display for the Graphical HMI front panel option.

## UR<sup>Plus</sup> Platform Enhancements

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### New High Density Digital I/O Module Options

Applicable: All UR<sup>Plus</sup> products

Two new Digital I/O modules have been developed to provide the required I/O for many large-scale bay control applications. This enhancement provides users with additional flexibility with digital I/O.

The new digital I/O modules available are:

- o Type 'E' – 23 individual externally-wetted contact inputs
- o Type 'F' – 12 Individual Form-A contact outputs

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### Ambient Temperature Monitoring

Applicable: All UR<sup>Plus</sup> products

The UR<sup>Plus</sup> products have been enhanced to include ambient temperature monitoring and alarming. With the implementation of ambient temperature monitoring and alarming, the UR<sup>Plus</sup> product family provides the ability to alarm the user in conditions where the ambient temperature exceeds predetermined hot extremes. With this enhancement, indication of air conditioning failure or improper ventilation can be communicated by UR<sup>Plus</sup> relays to the control room.

# EnerVista Setup Software Enhancements

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## Support for UR<sup>Plus</sup> release 1.60

Applicable: All UR<sup>Plus</sup> products

The EnerVista UR<sup>Plus</sup> Setup Program version 1.60 has been enhanced to support the additional features and functions that are now implemented in the UR<sup>Plus</sup> Release version 1.60.

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## Dual – Permission Access Control

Applicable: All UR<sup>Plus</sup> products

The EnerVista UR<sup>Plus</sup> Setup program has been enhanced to support added the security measures implemented in the UR<sup>Plus</sup> Release 1.60.

With the implementation of the Dual Permission Access Control in UR<sup>Plus</sup> products, extra measures have been taken to ensure incorrect changes are not made to the relays. With this enhancement, before the user can make any changes to the relay settings, the operator must first 'surrender' the relay to grant the user the ability to make changes to the settings.

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## Windows Vista Operating Environment

EnerVista UR<sup>Plus</sup> Setup version 1.60 Setup software is compatible to operate in the Windows Vista operating environment. In addition to supporting Windows Vista, version 1.60 set-up software also supports Windows XP and Windows 2000.

# EnerVista Viewpoint UR<sup>Plus</sup> Engineer

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## EnerVista Viewpoint UR<sup>Plus</sup> Engineer

EnerVista Viewpoint UR<sup>Plus</sup> Engineer version 1.60 has been introduced to support all functionality of the UR<sup>Plus</sup> release 1.60. UR<sup>Plus</sup> Engineer is a software package to allow graphical editing and real-time monitoring of both Protection FlexLogic and Automation FlexLogic in UR<sup>Plus</sup> products.

## Upgrade paths

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It is our recommendation that all customers upgrade to the latest version of UR<sup>Plus</sup> firmware to take advantage of the latest developments and feature enhancements. Firmware upgrades can be easily preformed using the EnerVista UR<sup>Plus</sup> 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.

## 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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