GE Digital Energy

UR Universal Relay Series

Revision 5.61 Release Notes

GE Publication Number: GER-4320A

Overview

Summary

GE Multilin issues the UR 5.61 release that introduces new improvements for general and protection functions in the UR Family. Highlights of this release include:

- L90 protection functions and alarm operands were improved for more reliability
- C70 phase current unbalanced compensation factors
- UR Platform Enhancements
    - Common protection elements (<u>Distance</u>, trip bus, restricted ground fault, inter-relay communications)
    - Communication ports and protocols
    - Synchrophasor
    - Event Recorder
    - Fault Report
    - Real time clock
    - Flex-elements
    - Front Panel

This document contains the release notes for the 5.61 release of the Universal Relay (UR) Family.

- Affected products: B30, B90, C30, C60, C70, D30, D60, F35, F60, G30, G60, L30, L60, L90, M60, N60, T35, T60
- Date of release: Jan 12, 2009
- Firmware revision: 5.61

This document also comprises the release notes of previous 5.6x firmware versions.

If uses have existing UR Family 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 Family products:

- B30 Bus Differential Relay
- B90 Bus Differential Relay
- C30 Controller
- C60 Breaker Management Relay
- C70 Capacitor Bank Relay
- D30 Line Distance Relay
- D60 Line Distance Relay
- F35 Multiple Feeder Management Relay
- F60 Feeder Management Relay
- G30 Generator Management Relay
- G60 Generator Management Relay
- L30 Line Current Differential System
- L60 Line Phase Comparison Relay
- L90 Line Differential Relay
- M60 Motor Management Relay
- N60 Network Stability and Synchrophasor Measurement System
- T35 Transformer Management Relay
- T60 Transformer Management Relay

Firmware Compatibility

The new 5.61 firmware that is a part of this release is compatible with the UR series hardware version 4.00 and higher.

The use of the new 5.61 firmware requires the EnverVista UR Setup software to be version 5.00 and higher.

Rev2: Updates page four Item "B   Two-terminals redundant Inter relay communication was enhanced to prevent the local relay from rebooting if power cycled after the remote relay"

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FW 5.61 Release details

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.

L90 Enhancements

F **L90's test functionality was enhanced to prevent unwanted operations while performing communication tests.**

Applicable: L90.

Internal algorithms were improved so that a remote loopback test does not cause a miss-operation of the 87L element when working in a two terminals-redundant channel scheme. The previous FW versions showed up that, after experiencing both "channel fail" and "channel ID fail" alarms in one channel, the 87L element could miss operate if a remote loopback test had performed on the same failed channel.

GE Multilin strongly recommends that, once the relays are in service, users must freeze (via UR Setup software) or disconnect (via hardwire) the trip contact output before performing any kind of test.

F **Enhanced L90 ensures correct source reading when switching settings groups and having several local sources.**

Applicable: L90.

The L90 setting group function was improved to guarantee that all required sources are read when switching from one setting group to another one. Previous firmware version might read only the source assigned to group 1.

This only applies for protections schemes were more than one local source contribute to the differential current estimation.

C70 Enhancements

E **An improved "Phase Current Unbalance Auto Setting" element ensures accurate compensation factors when phase and differential CT ratios difference is high.**

Applicable: C70.

The "Phase Current Unbalance Auto Setting" element was enhanced so that compensation factors, applicable to the "Phase Current Unbalanced" element, are accurately estimated even with high levels of CT mismatch. Previous FW version could calculate incorrect compensation factors in the case where there is a large difference between the CT ratio of phase CTs and CT ratio of differential CTs (E.g. Phase CT ratio 3300; Differential CT ratio 10).

This issue only affects customers who have set the "Current Unbalance Auto Setting Element" to "manual" or "Auto".

Common Protection Elements

F **The Voltage memory buffer has been modified to prevent inaccurate <u>phase distance</u> measurements when an internal data corruption event is detected**

Applicable: D30, D60, G60, L30, L90, T60

The phase distance protection element uses a Voltage Memory buffer as its source of positive sequence voltage when the actual voltage level drops below 10% of the nominal.

When an internal data error is detected, all pertaining protection elements (Phase distance included) are blocked to prevent miss operations; once the data error is cleared protection elements go back to normal condition. Internal data errors are unusual events that can be caused by fast electrical transients.

Recent tests performed to the phase distance element, revealed expired data from the voltage memory buffer was used by this element when returning to normal after a data error condition. The use of expired voltage data might cause the distance element to miss operates.

This FW version makes the voltage memory buffer resets right after a data error is cleared, so the distance element uses actual voltage data thus fixing the issue.

This only affects End users having UR devices with FW version previous to 5.61. End users which UR devices meet these conditions are advised to upgrade their relays with the latest FW version available.

UR devices with FW version 5.61 or newer are not affected.

F **An improved "Trip Bus Element" prevents miss operation when set to "latching" and the relay is powering up**

Applicable: F35.

The F35 "Trip Bus Elements" (one to six) were enhanced to prevent its mis-operation when both settings "trip Bus Function" and "Trip Bus Latching" are enable and the relay powers up.

If your F35 settings meet these conditions, you must immediately update your firmware version.

F **An enhanced "Restricted Ground Fault" element ensures correct operation when phase current are > 13*CT**

Applicable: T60, G30, G60

The "Restricted Ground Fault" element was enhanced to ensure the relay will operate correctly when currents incoming from phase CTs are higher than thirteen times the nominal CT current (13*CT).

B **Two-terminals redundant Inter relay communication was enhanced to prevent the local relay from rebooting if power cycled after the remote relay.**

Applicable: B30, C30, C60, C70, D30, D60, F35, F60, G30, G60, L60, M60, N60, T35, T60.

This firmware version ensures that, for two terminals-redundant channel applications, the relay in one end would not reboot when it has been powered on after the relay in the other end.

This issue does not affect relays with firmware version prior to 5.40.

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Communication Enhancements

C **Enhanced IEC61850 client/server communication prevents UR relays from losing communication when two clients are polling data**

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

When two or more IEC61850 clients were linked to one UR relay, and at least one of them was polling a report (buffered or not), all clients could lose connection in the event that, the client polling the report, was disconnected from the LAN. Then the relay had to be powered off and on to recover communications. This firmware version corrects this issue.

E **Enhanced IEC61850 GOOSE messages prevent unwanted alarms**

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

Now GOOSE messaging has a dynamic algorithm to estimate "time to live period", which prevents the generation of unnecessary "Remote device off" Alarms. Previous firmware version could raise this alarm when communication channels and remote devices were linked.

C **Improved IEC60870-5-104 prevents possible communications freezing when losing one of the masters.**

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

UR relays have been improved to prevent communication freezing when linked to an IEC60870-5-104 Master. In the Previous firmware versions relay communication could freeze on the condition that the IEC60870 master dropped after about 02 days of polling message integrity.

C **Enhanced IEC 61850 client/server communication ensures proper interaction with 02 Siemens SICAM PAS clients.**

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

The IEC61850 station bus communication has been enhanced to operate correctly when two connected SICAM PAS clients are recovering from broken link. Previous firmware version could allow one of the connected UR relays to re-start when experiencing that condition.

E **IEC61850 configurable GOOSE re-transmission time reduced.**

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

The retransmission rate of configurable GOOSE dataset 2-8 was modified to enhance speed from a rate of 100ms, 500ms, 1000ms to 100ms, 100ms, 100ms.

E **Faster Data File Transmission.**

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

UR Relays now use the TFTP ports to transmit data files reducing the transmission time. E.g. event records, oscillography, fault reports, data logger.

C   **Enhanced EC61850 protocol to ensure that "Remote device off" alarms will rise effectively when GOOSE messaging is only set for sending "Remote double point" status.**

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

UR's IEC61850 GOOSE messaging has been improved to ensure that "Remote Device Off" alarms are generated properly when the GOOSE messages being sent from the device are only double point status. If GOOSE messages are set to send another sort of data, alarms work correctly all the time.

Relays with FW version prior to 5.6 are not affected.

C   **Enhanced IEC61850 "disconnect switch" logical nodes to ensure that remote "block commands" will work properly.**

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

The IEC61850 "disconnect switch" logical nodes (XSWI1...24) were enhanced so that a block open or block close command coming from an IEC61850 client will be effectively accomplished.

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Fault Report

R **Improved Fault Report guarantee accurate records when VTs are in delta**

Applicable: B30, B90, C60, C70, D30, D60, F35, F60, G30, G60, L30, L60, L90, M60, T35, T60.

UR fault report algorithm has been improved to ensure accurate fault records. In previous firmware versions, in cases where VTs were in Delta configuration and new fault records were substituting old records in memory, the voltages values could not be recorded.

Event Recorder

R **Enhanced event recorder to guarantee proper sequence of Contacts inputs events when having different debounce time.**

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

UR event recorder was improved to ensure that all contact input events are correctly sequenced by the event recorder. Previous firmware version could allow the event recorder to miss the correct order if two contacts inputs with different debounce time settings operated almost at the same time.

This issue does not affect relays with firmware version prior to 4.60.

Real Time Clock

B **Improved IRIG-B noise immunity.**

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

IRIG-B inputs were enhanced to reduce noise sensitivity by rejecting short duration input pulses (lower than 250micro-sec). In previous firmware version, on the condition that a "DC Shift" IRIG-B signal had been set and a high frequency noise came in through IRIG-B inputs, the relay could reboot.

Synchrophasor

M **Enhanced Synchrophasor guarantee accurate Timestamp**

Applicable: N60, D60, L90, G60.

The continuous polling of PMU data revealed that "the seconds field" of synchrophasors timestamp didn't show the correct rollover from milliseconds approximately once every 45 minutes.

This firmware version corrects this issue.

Flex-Elements

M   **Flex-elements to ensure accurate actual values when inputs are assigned to analog parameters that have a decimal point in the CT or VT ratio setting.**

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

UR Flex-elements were enhanced to show exact "Flex-element's actual values" when their analog inputs, "InputPlus" or "InputMinus", are assigned to parameters that have a decimal point in their scale factor. E.g. voltage values which VT ratio contains decimals such as VT 6900V: 120V = 57,5:1), frequency values.

Self-test Diagnostic

D   **Internal Self-test diagnostic element to show the module type and location when detecting a faulty DSP module.**

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

Now the self-test diagnostic messages are able to show where the failed module is located in the UR Chassis. Previous firmware versions would show the self-test error message "Module failure XX" only.

This issue does not affect relays with firmware version prior to 5.50..

Front Panel

D   **Ensuring programmable push buttons reset when keeping them pressed for a period longer than the "Auto Reset Delay" setting**

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

Internal control algorithm of programmable push buttons was improved to guarantee that they would reset properly even if were kept pressed for a period longer than its "Auto Reset Delay" setting.

It only applies providing that the "Auto Reset Function" be set as "enable".

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FW 5.60 Release details

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.

New Products Introductions

N   **New L30 Line Current Differential System**

The NEW L30 is a cost effective line differential protection relay intended for sub-transmission and medium voltage lines and cables of different voltage levels providing reliable and secure operation of the system. The L30 provides high-speed phase-segregated fault clearance suitable for three-pole tripping applications.

Suitable for applications such as; overhead lines and underground cable of different voltage levels, circuits with tapped transformer feeders, distributed bus bar protection, to name a few. The new L30 provide comprehensive line protection for today's demanding environments.

In addition to comprehensive protection the L30 provides advanced monitoring and metering which includes; real time monitoring of remote, local and differential per phase currents, oscillography with up to 64 samples/cycle and up to 64 records, a 1024 time stamped event recorder, a user selectable 16 channel data logger and synchronized measurement of voltage and current providing real time data of system activities.

With the ability of the L30 to communicate via a variety of different communication protocols such as; IEC61850, DNP 3.0 Level 2, Modbus RTU, Modbus TCP/IP and IEC60870-5-104 the L30 provides superior communication capabilities and flexibility for integrating the L30 in a variety of communication architectures.

Part of the UR Family, the L30 comes with a variety of versatile features truly integrating protection, monitoring, metering, communications and control in one easy-to-use device.

N   **UR Platform support for The Hardfiber (IEC 61850 Process Bus) System**

Applicable: B30, C30, C60, C70, D30, D60, F35, F60, G30, G60, L30, M60, N60, T35, T60

The UR Family has been enhanced to allow the full integration of the NEW Hardfiber (IEC 61850 Process Bus) System across the complete UR Family.

The Hardfiber (IEC 61850 Process Bus) System is a revolution in the installation and ownership of protection and control systems, by reducing the overall labor required for substation design, construction and testing. With this break though in system designs, simplified installation is required at the site location, thereby eliminating a majority of the copper wiring required.

The NEW Hardfiber (IEC 61850 Process Bus) System can be installed and integrated into virtually any type of protection and control systems such as; Generator protection, Transformer protection, Transmission Line protection, Bus and Feeder protection to name a few. Also built to withstand different operating environments, the extremely rugged hardened switchyard interface is suitable for environments without requiring specialized enclosures.

By eliminating thousands of cables and connection points required for communication from the switchyard to the control house, the Hardfiber system provides a unique solution for protection and control applications.

Security Enhancements

N   **Dual – Permission Access Control**

Applicable: Entire UR Family

The Universal Relay (UR) has 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 family of relays, 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 local operator must first 'surrender' the relay to grant the local operator the ability to make changes to the settings.

When the control operator 'surrenders' the relay, the local operator is required to enter a 'Setting Level' password before making any changes to the relay.

This enhancement to the Security features in the UR family 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.

Communication Enhancements

N   **IEC 61850 Enhancements**

Applicable: Entire UR Family

IEC 61850 Enhancements have been made to the entire UR family, providing additional functionality to the UR product platform.

Logical nodes for both the XCBR (control of circuit breaker) and CSWI (control of disconnect switches) have been implemented.

Enhanced Security option was not possible for UR due to library limitations

With these further enhancements, the capability to map DPS (double-point-status) information to two remote inputs in the UR family has been implemented.

The number of buffered and unbuffered reports has been increased to four (4) in the UR Family.

E   **Incorrect Message displayed during Primary Ethernet Connection Failure**

Applicable: Entire UR Family

The redundant Ethernet option in the UR product family has been improved to eliminate incorrect status messages being recorded through DNP protocol. In the event that the Primary Ethernet channel is interrupted, the secondary Ethernet channel takes over communication and transmits data correctly. However, prior to this release, upon interruption of the primary Ethernet and the transfer to the secondary Ethernet channel an Ethernet failure was recorded in the event recorder and momentarily displayed in the HMI and in the communications.

The incorrect message status indication has been corrected in this release.

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E   **IEC 61850 GGIO1 Timestamp Updates**

Applicable: Entire UR Family

Prior to this release, when the report was disabled, the status value timestamp for the GGOI1 was not updated when the GGOI1 status changed. With the release of firmware version 5.60, the timestamp is updated every time the GGIO1 status changes regardless of if the report is enabled or disabled.

C   **PMU Communications to Support Redundant Synchrophasor Masters**

Applicable: Entire UR Family

In release 5.60, the UR family has been enhanced to allow PMU data to be sent over two UDP channels at the same time. With this enhancement, the UR family provides the functionality of redundancy.

C30 Controller

N   **Double-Point breaker status and control**

Applicable: C30

The breaker control elements and the new double-point breaker status have been implemented into the following models of the UR family that previously did not have breaker control elements available: C30.

The Breaker control elements are available to verify the breaker status using a double-point measurement method. The breaker status is ascertained by using two separate contact inputs to measure both the "52A" contact and "52B" contact of the breaker. Using this information, the status of the breaker is determined and reported with one of the following 4 states: Open (01), Closed (10), Intermediate State (00), Bad State (11).

The double-point breaker status has been made available in the IEC61850 protocol as the common data class "Double Point Status – 61850-7-3/FDIS. The double point breaker status has been made available in the DNP3.0 protocol as a Binary Input status with each value of the two-bit status being represented in a separate binary input.

N   **Double-Point isolator switch status and control**

Applicable: Entire C30

Seven new double-point isolator switch status elements have been added to the C30 for determining the status and controlling isolator switches. Two separate contact inputs are used to measure the "52A" contact and "52B" contact of the switch and using this information, determine and reported the switch status with one of the following 4 states': Open (01), Closed (10), Intermediate State (00), Bad State (11).

The double-point switch status has been made available in the IEC61850 protocol as the common data class "Double Point Status – 61850-7-3/FDIS. The double point switch status has been made available in the DNP3.0 protocol as a Binary Input status with each value of the two-bit status being represented in a separate binary input.

C70 Capacitor Bank Protection

E   **C70 Capacitor Bank Protection Enhancements**

Applicable: C70

The C70 Capacitor Bank Protection has been enhanced to provide additional functionality to the relay.

The Automatic Voltage Regulator (AVR) has been enhanced to allow the user the ability to select a specific phase-ground voltage, (Van, Vbn or Vcn).

The 59NU (Neutral Voltage Unbalance), has been enhanced to provide a maximum setting of 1.00 p.u. Prior to this release the 59NU feature had a maximum setting of 0.25 p.u.

The 87V (Voltage Differential) function has been enhanced to provide a maximum setting of 1.00 p.u. With the enhancement of this function, the 87V covers all possible setpoints, with a 1.00 p.u. voltage differential being a complete bank failure.

The C70 has been enhanced with a single stage neutral directional overcurrent element.

E   **Selector Switch**

Applicable: C70

In release 5.60 the selector switch option has been added to the C70 Capacitor Bank Protection. The selector switch element is intended to replace a mechanical selector switch. Typical applications include setting group control or control of multiple logic sub-circuits in user-programmable logic.

E   **Neutral Voltage Unbalance**

Applicable: C70

Prior to release 5.60, when the setting is configured for 'NTRL VOL UNBAL BUS 3VO' and set to 'Measured' and the phase voltages are present in the Bus source the Auto-Set balancing factors were incorrect.

In firmware release 5.60, the Auto-Set balancing factors have been corrected.

G60 & G30 Motor Protection System

E   **Inadvertently taking relay out of service when starting Generators as Motors**

Applicable: G30 and G60

In release 5.60 the DSP self-test diagnostics has been enhanced to eliminate the occurrence of invalid self-diagnostic errors.

Prior to release 5.60, under certain conditions where the generator was started as a motor in very few occurrences the relay self diagnostics would consider the low frequency signals as invalid and proceed with issuing a self-test message and take the relay out of service.

In release 5.60 the self-test algorithm has been enhanced to ride through the low frequency levels condition in such applications.

This self-test message would always occur on systems that met the conditions where the low frequency levels were within a certain range and the generator was started as a motor. However, on already installed units, if the self-test message did not previously occur on the relay during start-up, this issue will not present itself in the future.

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M60 Motor Protection System

N **Support for RRTD Module by the M60 Relay**

Applicable: M60

The M60 relay has been enhanced to incorporate the GE Multilin RRTD module.

The remote RTD module (RRTD), provides additional RTD temperature metering capabilities for the GE Multilin M60 Motor Protection System. The RRTD module monitors up to 12 RTD's with all metered values accessible through serial communications. The 12 programmable RTD inputs in the RRTD module are used for monitoring the Stator, Bearing and ambient temperatures. Each RTD input has 3 operational levels: alarm, high alarm and trip. The M60 supports RTD trip voting and provides open and short RTD failure alarms.

The RRTD module has been designed to be mounted close to the motor to reduce the length of the RTD cables. The M60 Motor Protection System can then monitor the RTD's from a remote locations and use the temperature information for protection and metering purposes.

The RRTD module communicates via a RS485 port using Modbus RTU and can communicate at speeds up to 19,200 baud. The RRTD's can be configured through either the M60 setup program.

With the integration of the RRTD module into the M60 this allows users to remotely monitor motor RTD's rather than cabling all RTD wires back to the motor protection relay providing additional cost savings.

E **Time Dial Multiplier (TDM)**

Applicable: M60

In versions prior to 5.60, the Time Dial Multiplier (TDM) was adjustable from 0 up to a maximum of 600 in steps of 10ms. However, in applications where the TDM was used, the maximum setting in most applications would not exceed 10. Therefore, the TDM in the M60 has been enhanced to reflect industry typical applications and the maximum setting range for the TDM will be 16.

L60 Phase Comparison Protection

E **Inadvertent Operation of Phase Comparison during Power Cycle**

Applicable: L60

In versions prior to 5.60, under certain conditions, the L60 would operate when power is cycled to the relay. This was caused during startup when the Phase Comparison element would operate on in-rush currents.

In release 5.60, The Phase Comparison has been enhanced to ensure proper operation of the L60 during startup conditions.

L90 Line Current Differential Protection

E **POTT Available in Event Recorder**

Applicable: L90

The Event Recorder in the L90 Line Differential System has been enhanced to record the operation of the POTT scheme in the event recorder.

T60 Transformer Protection

E **Breaker Failure**

Applicable: T60

The Breaker Failure element has been enhanced to provide a reduced time for resetting breaker failure Overcurrent conditions. The Breaker failure element is now able to provide a consistent reset time of less than 12 ms.

UR Platform Enhancements

E **New Digital I/O Module Configuration for Industrial Applications**

Applicable: Entire UR Family

A New Digital I/O module, '6V' has been developed to provide all the required I/O for many industrial applications. This enhancement provides users with additional flexibility with digital I/O.

Digital I/O module includes the following options:
- o 2 x Form-A Outputs
- o 1 x Form-C Output
- o 1 x Latching Output
- o 8 x Digital Inputs

N **Ambient Temperature Monitoring**

Applicable: Entire UR Family

The UR product family has been enhanced to include ambient temperature monitoring and alarming. With the implementation of ambient temperature monitoring and alarming, the UR 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 proper ventilation can be communicated from the UR family to the control room.

E **Fault Report Recording of Pre-fault Voltages**

Applicable: Entire UR Family

The Fault Report in the UR Family has been enhanced to capture the specified pre-fault and fault currents and voltages. Prior to this release it was found in certain cases that the pre-fault voltage values were not recorded in the fault report.

The fault report has been enhanced to capture the pre-fault and fault data in the 5.60 release.

E **Daylight Savings Time Updates in SNTP**

Applicable: Entire UR Family

Prior to this release, the Daylight Savings Time did not update when SNTP was enabled. With the release of 5.60 firmware the Daylight Savings Time now updates when SNTP is enabled.

E **Ground Time Overcurrent**

Applicable: Entire UR Family

Prior to release 5.60, the pick-up and operating time for ground time overcurrent was shorter than published documentation. In release 5.60 the ground time overcurrent has been improved to operate according to published documentation.

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EnerVista Setup Software Enhancements

E **Support for Universal Relay (UR) Release 5.60**

Applicable: Entire UR Family

The URPC Setup Program version 5.60 has been enhanced to support the additional features and functions that are now implemented in the UR Release version 5.60.

N **Support for L30 Line Current Differential System**

Applicable: L30 Line Current Differential System

The URPC Setup Program has been enhanced to support the NEW L30 Line Current Differential System. The L30 Line Current Differential System is a cost effective line differential protection relay intended for sub-transmission and medium voltage lines and cables of different voltage levels providing reliable and secure operation of the system. The L30 provides high-speed phase-segregated fault clearance suitable for three-pole tripping applications.

N **UR Platform Support for IEC 61950 Process Bus System**

Applicable: Entire UR Family

The EnerVista Setup program has been enhanced to support the IEC 61850 Process Bus System. The IEC 61850 Process Bus System is a revolution in the installation and ownership of protection and control systems, by reducing the overall labor required for substation design, construction and testing. With this break though in system designs, simplified installation is required at the site location, thereby eliminating a majority of the copper wiring required.

N **Dual – Permission Access Control**

Applicable: Entire UR Family

The EnerVista Setup program has been enhanced to support added the security measures implemented in the UR family in Release 5.60.

With the implementation of the Dual Permission Access Control in the UR family of relays, 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.

N **Support for RRTD Module by the M60 Relay**

Applicable: M60 Motor Protection System

The EnerVista Setup program has been enhanced to support the RRTD module with the M60 Motor Protection System.

The remote RTD module (RRTD), provides additional RTD temperature metering capabilities for the GE Multilin M60 Motor Protection System. The RRTD module monitors up to 12 RTD's with all metered values accessible through serial communications. The 12 programmable RTD inputs in the RRTD module are used for monitoring the Stator, Bearing and ambient temperatures. Each RTD input has 3 operational levels: alarm, high alarm and trip. The M60 supports RTD trip voting and provides open and short RTD failure alarms.

N   **Windows Vista Operating Environment**

EnerVista URPC version 5.60 Setup software is compatible to operate in the Windows Vista operating environment. In addition to supporting Windows Vista, version 5.60 set-up software also supports Windows XP and Windows 2000.

E   **Setting Group Naming**

Prior to EnerVista URPC version 5.60 Setup software if the term 'Group' was used within the device name / site name or file name it would cause the settings in each group to behave the same way. If a setting was changed in one group, the setting would be changed in all the other groups.

In EnerVista release 5.60 the term 'Group' can be used within the path/filename without any impact to the setting files.

E   **Character Length in the Description Field**

Prior to EnerVista URPC version 5.60 Setup software and starting with release 5.20 of the URPC Setup program, the maximum character limit for the file path length was limited to 100 characters. This error could prevent the user from upgrading the setting file.

In EnerVista release 5.60 the maximum path length has been correct.   The maximum length for the file path can now be up to a maximum of 255 characters.

EnerVista Viewpoint Engineer

E   **EnerVista Viewpoint Engineer**

EnerVista Viewpoint Engineer version 3.30 has been enhanced to support all functionality of the Universal Relay (UR) Family release 5.60.

E   **EnerVista Viewpoint Engineer COMTRADE Viewer**

Prior to EnerVista Viewpoint Engineer version 3.30, the COMTRADE viewer would reverse the values when the user selected between primary and secondary values. In EnerVista Viewpoint Engineer version 3.30 this issue has been corrected to ensure all values are reported accurately.

GE Multilin

Upgrade paths

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 preformed 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 versions 4.00 and above

For UR-series devices installed with versions 4.00 firmware and above, the revision 5.61 release can be uploaded to the relay using the EnerVista UR Setup software.

Upgrade path for revisions below version 4.00

For UR-series devices installed with versions of firmware below 4.00, an upgrade package must be obtained from GE Multilin to upgrade the relay CPU and CT/VT modules.

Benefits of revision 4.00 and above:

The benefits of revision 4.00 and above are as follows:

- 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, L90, N60 & G60
  - Support for Breaker-and-a-Half Transmission Line Protection (D60, L90)
  - Motor Health Diagnostics (M60)
  - Enhanced Front Panel
- Exceeds new IEEE C37.90 requirements
  - Transient immunity (2 to 4 kV)

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

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