GE
Grid Solutions

UR Family

Version 7.9x

Release Notes

GE Publication Number: GER-4879F

Overview

This document contains the release notes for firmware and software versions 7.90, 7.91 and 7.92 of the GE 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 7.90: 9 December 2019

Date of release 7.91: 25 February 2020

Date of release 7.92: 3 September 2021

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.

Major firmware releases can introduce new protection and control elements, which can affect the device's Modbus memory map. Check the summary of released features to find out if it applies to a particular release.

Highlights 7.90

- **New** – B30 process bus-based busbar protection is extended to support up to 16 feeders and six differential zones
- **New** – Users can now choose between IEC 61850-9-2LE or IEC 61869 via settings
- **New** – Global or partial blocking when merging unit stream is lost for Process Bus Module
- **New** – CT or VT signal can now be switched to an alternate via settings
- **New** – Increased number of FlexElements, Virtual Inputs and Outputs, FlexLogic Timers, and Digital Elements
- **New** – Increased number of digital and analog channels available in oscillography events
- **New** – Breaker and Disconnect switch front panel control can now be blocked by any FlexLogic operand
- **New** – New disconnect switch symbol for UR with graphical front panel
- **New** – Support for secure firmware upgrade
- Simplified B30 bus protection configuration screen
- Improved network topologies with Process Bus Module by adding master clock functionality for point-to-

point connection with merging units

- Improved IEC 61850 Test Mode and Simulation Mode functionality

Highlights 7.91

- **New** – Added IY software option for B30, providing multi-feeders
- **New** – Increased number of pushbuttons to 48 for a B30 with a Graphical Front Panel and IY software option

Highlights 7.92

- Corrected FW in relays without DSP modules (C30, B90 and N60) to have a uniform protection pass
- Corrected calculation of bus differential restraint current in B30 relays with process bus module

Firmware

Firmware 7.90

- Bus Differential Systems – B30, B90
  - Improved and simplified B30 interface, including added bay configuration
  - Changed names of B90 LED FlexLogic operands to match B90 front panel LED labels
- Common Protection and Control Elements
  - Corrected calculation of base power value for Stage # SMIN setting for Sensitive Directional Power element
  - Corrected Overvoltage Supervision for Frequency Rate of Change element in systems with delta configured VT
- Common Platform Functions
  - Added paged Modbus address mapping on UR
  - Updated Modbus memory map; users to check mapping when using third-party devices
  - Doubled the number of FlexElements to 16 for all products with eight elements
  - Increased the number of Virtual Outputs to 128 and Virtual Inputs to 128
  - Doubled the number of FlexLogic Timers to 64
  - Doubled the number of Digital Elements to 96
  - Added information messages for UR SCL log file regarding Process Bus Module startup
  - Corrected terminal naming for high-density input module 6W
  - Added Actual Values for SV streams to aid diagnostics for a Process Bus Module
  - Changed the default value of the AC Input Waveforms setting in the Oscillography element to 64 samples/cycle
  - Added Process Bus Module General Settings to the front panel
  - Changed firmware to save the state of non-volatile latches in non-volatile memory on every state change
  - Corrected the MMS timestamp of a contact input assigned to GGIO1 to match the event recorder timestamp
  - Changed default values of Port Function settings to enabled when using a Process Bus Module
  - Improved Breaker Flashover element
  - Corrected firmware to display local time with DST on the front panel and the respective Modbus register
  - Corrected functionality of the "RxSV On" FlexLogic operand for a Process Bus Module for configured SV streams that are not assigned to any AC banks
  - Enhanced access rights for M2M role used for SSH tunnel by the D400 gateway
  - Changed firmware to publish the power-on time in the timestamps of all IEC 61850 attributes upon startup
  - Corrected firmware to prevent an unexpected restart in relays using IEC 61850 reports
  - Enhanced SFP information web pages for a Process Bus Module
  - Modified the "GFP Version Mismatch" self-test error for a graphical front panel to assert only on a major version difference
  - Fixed reporting of timestamps in MMS and SCADA clients for contact inputs of the high-density input module (6W)

  - Corrected phase-to-phase voltage metering for WYE connection
  - Corrected firmware to remove the "PBM Clock" option from the real-time clock "Synchronizing Source" setting for non-Process Bus Module order codes
  - Corrected firmware to no longer display the "PBEthPort Offline" FlexLogic operands on the front panel for non-Process Bus Module order codes
  - Improved IEEE 1588 PTP switchover time over Parallel Redundancy Protocol network
  - Corrected Dual HSR setting to support all SV streams for Process Bus Module
  - Shortened source names in FlexAnalogs for display on the graphical front panel
  - Corrected front panel display of 87L Signal Source 2 to 4 settings and Breaker Flashover Side 2 settings
  - Corrected display of FlexElements Actual Values in 16-bit COMTRADE files
  - Corrected Actual Value calculation after a Settings Group change for several elements
  - Corrected graphical front panel firmware to refresh the event list when in Rolling Mode
- Communications
  - Corrected the quality value of the IEC 61850 FlxLgcGAPC1.Health data attribute to always be zero
  - Corrected values of zeroDB data attribute for IEC 61850 logical nodes SynChkRSYN#.V1Src, SynChkRSYN#.V2Src, and SynChkRSYN#.ProjV2
  - Improved the detection of number of IEDs in an IEC 61850 CID file
  - Improved the update speed of the IEC 61850 stSeld data attributes for the breaker and disconnect switch logical nodes
  - Corrected IEC 61850 SCL files that include data sets with arrayed items
  - Corrected the IEC 61850 SCL model to follow naming rules for numeric extensions
  - Changed the enumeration type for IEC 61850 logical nodes LLN0.Beh and LLN0.Mod
  - Removed nameLength attribute from the Access Point Services elements of an IEC 61850 CID file
  - Corrected value of IEC 61850 data attribute LLN0.NamPlt.configRev
  - Changed the IEC 61850 SCL schema to version 2007B
  - Corrected IEC 61850 DAI DigCntFCNT.CntVal.strTm to use standard "dateTime" type
  - Corrected test flag check of an IEC 61850 SelectWithValue request
  - Corrected hex values to be upper case for IEC 61850 GSE APPID and VLAN-ID
  - Added support for PTP Power Profile C37.238-2017 to slave functionality on main CPU (station bus ports)
  - Corrected firmware to prevent an unexpected restart when attempting to retrieve files over RS232
  - Corrected mapping of IEC 61850 data attribute AmpUnbPTOC2.CurUnb.instMag.f
  - Corrected IEC 61850 description strings for a number of logical nodes
  - Corrected IEC 61850 Disconnect Switch CSWI Select and Operate controls with sbo-with-enhanced-security for instances greater than eight
  - Enhanced firmware to map the IEC 61850 quality attribute to the respective data if both are included in the same dataset
  - Corrected enumeration value 9 in IEC 61850 SCL file for GE_Digital_Energy_UR_HiZStKind
  - Corrected IEC 61850 sequence number (SqNum) and state number (StNum) of GOOSE messages received by Process Bus Module
- Phasor Measurement Unit (PMU) – Synchrophasors
  - Corrected issue with synchrophasor Power Triggering for delta connected systems

Bus Differential Systems – B30, B90

N **Improved B30 to support up to 16 feeders**

Products: B30

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Not applicable

Description: Support for feeders is increased from six to 16 in the B30, which also increases the numbers several other elements, such as Instantaneous Overcurrent to 40 and Time Overcurrent to 20.

A B30 with a Process Bus Module of type 85, 86, or 87 can support eight and 16 feeders with three and six differential zones respectively, with full protection functionality for all bays. The following functionality is provided:

- Subscribing to sampled values from up to 16 merging units
- Supporting up to 22 AC banks where each CT or VT input can have a redundant stream with cross-checking capability
- Six UR platform sources allow configuring up to six voltage banks and six current banks for the UR platform elements
- 16 extended bay sources allow configuring 16 current banks for bays and differential zones protection
    - Each bay has the following protection elements:
      Breaker Failure
      End Fault Protection
      Phase TOC
      Phase IOC (two elements)
      Neutral TOC and IOC
      Ground IOC and TOC
- Platform protection elements:
  Phase Directional (six elements)
  Phase UV
  Phase OV
  Neutral OV
  Auxiliary OV
  VTFF
- Each bus differential zone:
  Up to 48 isolators are available to provide inputs to dynamic bus replica
  Breaker status for up to 16 breakers
  Bay-to-zone connections, including reversing CT polarity and tripping the zone from other protection elements, besides differential itself
  Individually settable differential zone characteristics with voting supervision, such as check-zone or UV
  CT trouble supervision

B30 configurations

Element	16 feeders	8 feeders
Sampled values (SVs)	16	8
CT	16	8
VT	6	6
AC banks	22	14
Sources	22	14

Element	16 feeders	8 feeders
Bays	20	12
Auxiliary Overvoltage 59X	6	6
Auxiliary Undervoltage 27X	6	6
Neutral Overvoltage 59N	6	6
Phase Directional Overcurrent 67P	6	6
Phase Overvoltage 59P	6	6
Phase Undervoltage 27P	6	6
VT Fuse Failure (VTFF)	6	6
Source metering	6	6
Restrained Bus Differential 87B	6	3
Breaker Failure 50BF	20	12
AC circuit breaker 52 status	20	12
End Fault Protection 50EF	20	12
Ground Instantaneous Overcurrent 50G	20	12
Ground Time Overcurrent 51G	20	12
Neutral Instantaneous Overcurrent 50N	20	12
Neutral Time Overcurrent 51N	20	12
Phase Instantaneous Overcurrent 50P	40	24
Phase Time Overcurrent 51P	20	12

GE tracking number: 790-63

E **Improved and simplified B30 interface, including added bay configuration**

Products: B30

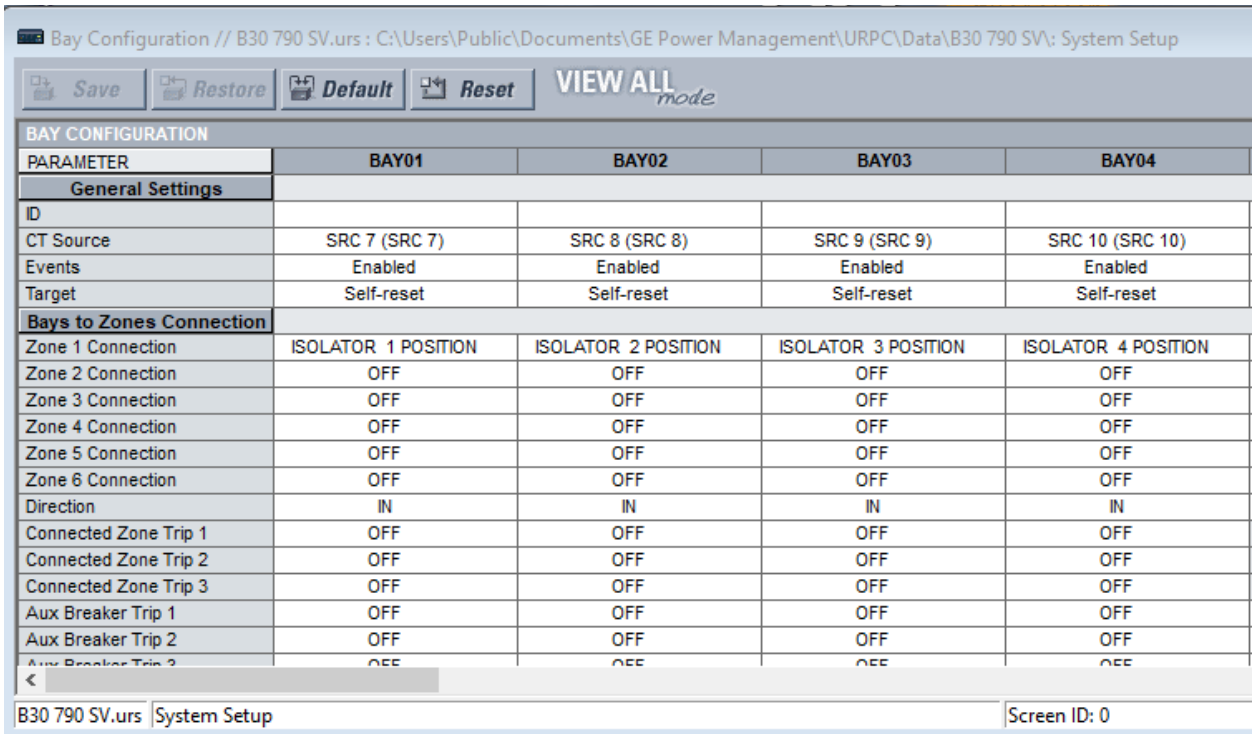
Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Not applicable

Description: This release improves the interface of the B30, including configuration at the bay level. The bus differential interface is simpler and better visualized.

Bus configuration is improved, making setting up bus protection easier. All protection elements associated with a bay are now lined up under a bay column, where assignment of the current transformer to the bay provides current source to all the protection elements of this bay. Also, dynamic assignment of the bay to the differential zone is presented in one EnerVista software screen, making bus configurations simpler.



GE tracking number: 790-64

P **Improved accuracy of bus differential pickup in the spline region**

Products: B30, B90
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: None
Description: The accuracy of bus differential pickup in the spline region is improved.
GE tracking number: 790-46

R **Changed names of B90 LED FlexLogic operands to match B90 front panel LED labels**

Products: B90
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: None
Description: Some of the B90 LED FlexLogic operand names are inconsistent compared to LED names.

Incorrect name	Correct name
Platform LED	B90 LED
OTHER	ZONE 1
PHASE A	ZONE 2
PHASE B	ZONE 3
PHASE C	ZONE 4
NEUTRAL/GROUND	OTHER

In the new release, this issue is corrected. The B90 FlexLogic operand names listed match the B90 front panel LED labels.
GE tracking number: 790-57

Distance Protection Systems – D30, D60, L90

P **Corrected dropout of Operate operand for the Ground Distance element for zones 2 and up**

Products: D30, D60, L90

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: For zones 2 and higher, the Operate and the Pickup operands drop out at the same time. The specification is for the Operate operand to drop out 20 msec later than the Pickup operand.

The new release corrects the issue.

GE tracking number: 790-47

R **Removed the "GND DIST Z1 DIR SUPN" FlexLogic operand**

Products: All

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: Avoid using the operand

Description: In previous versions, the relay mistakenly includes the “GND DIST Z1 DIR SUPN” FlexLogic operand.

The operand is removed from the new release.

GE tracking number: 790-53

Common Protection and Control Elements

P **Corrected calculation of base power value for Stage # SMIN setting for Sensitive Directional Power element**

Products: All with Sensitive Directional Power (C60, D60, F60, G30, G60, L90, M60, N60, T60)

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the calculation of the base power value (pu) for stage # SMIN sensitive directional power element does not account for the difference of the VT connection WYE vs delta.

The new release corrects the issue.

GE tracking number: 790-59

P **Corrected Overvoltage Supervision for Frequency Rate of Change element in systems with delta configured VT**

Products: All with Frequency Rate of Change (D30, D60, F60, G30, G60, L30, L90, N60, T60)

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The calculation of the Overvoltage Supervision for the Frequency Rate of Change element in systems with delta configured VT is incorrect.

The new release corrects the issue.

GE tracking number: 790-60

Common Platform Functions

N **Users can now choose between IEC 61850-9-2LE or IEC 61869 via settings**

Products: All

Impacted firmware: 7.80 to 7.82

Workaround: None

Description: In addition to IEC 61850-9-2LE, UR protective relays now support IEC 61869-9. Up to two ASDU sampled value streams are supported at a fixed 4800 Hz samples per second rate.

GE tracking number: 790-68

N **Global or partial blocking when merging unit stream is lost for Process Bus Module**

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Prior to this release, if any stream from any merging unit was lost, all protection elements in URs were blocked. With this release, the behavior of the UR when a particular stream is lost can be controlled. When the SV TRBL PRT BLOCK setting is set to "Global," the UR behaves the same as before. When this setting is set to "Partial," all protection elements using a stream that is lost are blocked while protection elements using healthy streams continue to be operational.

Additionally, a new SV TRBL CONT OP BLK setting defines behavior of all contact outputs during sampled value stream impairments. When the selected operand is logical "1" for example during stream failure, all contact outputs are blocked, otherwise they continue to be operational as in previous releases.

GE tracking number: 790-67

N **CT or VT signal can now be switched to an alternate via settings**

Products: All

Impacted firmware: All to 7.82

Workaround: None

Description: To facilitate applications when CT and VT signals can come from the different physical CT and VT and from different merging units, URs now support alternate CT/VT bank connection to the source. This can be useful, for example, when one substation bus is de-energized and the VT connected cannot provide voltage signals to protection elements transferred to another bus. Both three-phase and one-phase ground/auxiliary channels now can be transferred from the Main to an Alternate bank (merging unit stream) when the FlexLogic operand assigned to control such transfer changes its state.

GE tracking number: 790-66

N **Increased number of digital and analog channels available in oscillography events**

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Not applicable

Description: In previous versions, the Oscillography element has 16 Analog Channels and 64 Digital Channels.

In the new release, the Oscillography element supports 32 Analog Channels and 128 Digital Channels.

GE tracking number: 790-1

E **Improved network topologies with Process Bus Module by adding master clock functionality for point-to-point connection with merging units**

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Process Bus Modules types 85, 86, and 87 support many network topologies for both IEC 61850 station bus and process bus. With a Process Bus Module supporting both PRP and HSR for the process bus and with a CPU independently supporting PRP for the station bus, the following topologies are now supported:

- PRP for the station bus and HSR for the process bus
- PRP for the station bus and PRP for the process bus
- Dual HSR for the process bus, allowing two independent HSR rings
- Point-to-point connection with a merging unit, where the UR acts as a clock master keeping all merging unit sampled value times aligned even without a UTC clock provided to the merging units

With this release, URs can operate even without a PTP clock provided to the relay. As long as all merging units are time-synchronized, the UR processes all sampled values and provides full protection (excluding 87L Line Differential element).

GE tracking number: 790-65

E Breaker and Disconnect switch front panel control can now be blocked by any FlexLogic operand

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the “BREAKER PUSHBUTTON CONTROL” and “SWITCH PUSHBUTTON CONTROL” settings had Enable/Disable as options.

In the new release, these settings are changed to be FlexLogic operands, providing more flexibility.

GE tracking number: 790-28

C Added paged Modbus address mapping on UR

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Not applicable

Description: In previous versions, the UR uses a single Modbus memory map that included settings and actual values. The Modbus register can be read with both function codes 3 (Read holding registers) and 4 (Read input registers).

In the new release, there are two Modbus memory maps, meaning one for settings and one for actual values. Settings can be read only with function code 3 (Read holding registers). Actual values can be read only with function code 4 (Read input registers). As it is possible for a specific address to be present in both memory maps, correct usage of the function codes is required. GE recommends reviewing any existing automation for backward compatibility between 7.90 and previous UR versions.

GE tracking number: 790-62

C Updated Modbus memory map

Products: All

Impacted firmware: 7.90

Corrected firmware: 8.0x

Workaround: None

Description: As GE continues to add new functionality to the UR, the Modbus memory map in version 7.90 was updated with certain addresses changed compared to version 7.80 and below. This was necessary to

accommodate additional functionality while maintaining a single binary for the platform. For any third-party Modbus master device interacting with the relay, to prevent reading from or writing to wrong UR Modbus registers, review the Modbus memory map in UR firmware version 7.9x and ensure that the Modbus addresses of interest are correct.
GE tracking number: 790-71

E Doubled the number of FlexElements to 16 for all products with eight elements
Products: All with eight elements (B30, C30, C60, D30, D60, F60, L30, L60, L90)
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: Not applicable
Description: Increased the number of FlexElements to 16 across the UR platform.
GE tracking number: 790-2

E Increased the number of Virtual Outputs to 128
Products: All
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: Not applicable
Description: In previous versions, the number of Virtual Outputs is limited to 96.
In the new release, the number of Virtual Outputs increases to 128.
GE tracking number: 790-3

E Doubled the number of Virtual Inputs to 128
Products: All
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: Not applicable
Description: In previous versions, the number of Virtual Inputs is limited to 64.
In the new release, the number of Virtual Inputs increases to 128.
GE tracking number: 790-4

E Doubled the number of FlexLogic Timers to 64
Products: All
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: Not applicable
Description: In previous versions, the number of FlexLogic timers is limited to 32.
In the new release, the number of FlexLogic timers increases to 64.
GE tracking number: 790-5

E Doubled the number of Digital Elements to 96
Products: All
Impacted firmware: All to 7.82
Corrected firmware: 7.90
Workaround: Not applicable
Description: In previous versions, the number of Digital Elements is limited to 48.
In the new release, the number of Digital Elements increases to 96.

GE tracking number: 790-6

E Improved IEC 61850 Test Mode and Simulation Mode functionality

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Not applicable

Description: The Test Mode Function and Test Mode Forcing menus are changed to IED Mode Config. More settings are provided, including the use of FlexLogic operands. The GOOSE & SV menu for Simulation is re-organized as well and includes subscription settings.

GE tracking number: 790-70

C Added information messages for UR SCL log file regarding Process Bus Module startup

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: If the main CPU fails to configure the Process Bus Module, there is no message to restart the relay.

In the new release, if the main CPU fails to configure the Process Bus Module, the UR SCL log file shows one of the following two messages:

"INTERNAL ERROR: SV (PBM) configuration failed – sub-CID. Reboot relay to recover."

or

"INTERNAL ERROR: SV (PBM) configuration failed – pbm_setting. Reboot relay to recover."

In this case, it is possible to recover the full functionality of the relay by restarting the relay.

GE tracking number: 790-7

D, R Corrected terminal naming for high-density input module 6W

Products: All with 6W module

Impacted firmware: 7.61 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The terminal names for the high-density input module 6W denote a terminal number, inconsistent with previous UR terminology.

In the new release, the terminal names for the 6W module are corrected to denote a number and a terminal, for example 1a or 2a.

GE tracking number: 790-8

E, D Added Actual Values for SV streams to aid diagnostics for a Process Bus Module

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In version 7.8x, the SV stream diagnostic Actual Values indicate whether an SV stream is accepted as valid.

In the new release, the SV stream diagnostic Actual Values are changed to aid debugging the system by reflecting whether data is received for the SV streams subscribed. Additional fields in the SV stream (Sync Status, Delay, Missed Frames, Channel Quality) are added to the Actual Values.

GE tracking number: 790-12

G **Changed the default value of the AC Input Waveforms setting in the Oscillography element to 64 samples/cycle**

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the default value of the AC Input Waveforms setting is 16 samples/cycle.

In the new release, the default is 64 samples/cycle. In a B30 with a Process Bus Module, the setting is fixed at 64 samples/cycle.

GE tracking number: 790-14

D **Added Process Bus Module General Settings to the front panel**

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the Process Bus Module General Settings window is only available in the EnerVista UR Setup software.

In the new release, the General Settings are available in the software and on the relay front panel.

GE tracking number: 790-27

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 7.82

Corrected firmware: 7.27, 7.73, 7.90

Workaround: None

Description: In 7.xx versions, the state of a non-volatile (NV) latch is saved periodically to NV memory. If the UR 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

R **Corrected the MMS timestamp of a contact input assigned to GGIO1 to match the event recorder timestamp**

Products: All with an IEC 61850 software option and contact input modules

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The event recorder timestamp and MMS timestamp of a contact input assigned to a GGIO1 do not match.

In the new release, these two timestamps match.

GE tracking number: 790-29

G **Changed default values of Port Function settings to enabled when using a Process Bus Module**

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions with a Process Bus Module, the default value of the Port Function settings in Independent mode is disabled.

In the new release, the Port Function settings are enabled by default in Independent mode.

GE tracking number: 790-30

G Improved Breaker Flashover element

Products: All with Breaker Flashover (B30, C60, C70, D60, F35, F60, G60, L60, L90, M60, T60)

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Breaker Flashover logic can produce incorrect assertion of the element under breaker close scenario if all 6 VTs are configured but only 3 VTs are used.

In release 7.90, this has been corrected and the logic diagram in the instruction manual is updated.

GE tracking number: 790-32

D Corrected firmware to display local time with DST on the front panel and the respective Modbus register

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The relay does not display the local time including daylight savings time (DST) on the front panel or the respective Modbus register.

The new release corrects the issue.

GE tracking number: 790-36

R Corrected functionality of the "RxSV On" FlexLogic operand for a Process Bus Module for configured SV streams that are not assigned to any AC banks

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In a relay with configured SV streams that are not assigned to any AC banks, the respective "RxSV On" FlexLogic operand turns on momentarily at relay startup.

The new release corrects the issue.

GE tracking number: 790-37

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, 7.90

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

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

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.72, 7.80

Corrected firmware: 7.73, 7.81, 7.90

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, 7.90

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

R **Enhanced SFP information web pages for a Process Bus Module**

Products: All with Process Bus Module

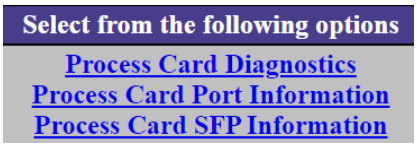
Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous releases, a relay with a Process Bus Module does not display any diagnostics related to the Process Bus Module small form-factor pluggable ports (SFPs). An SFP is supplied with the relay and plugs into an Ethernet port on the rear of the module. It is chrome.

In the new release, the **Process Card Menu > Process Card SFP Information** web page displays information related to the SFP, such as if the SFP is present, SFP type, SFP transmit/receive power, and temperature.



PHY 1a	
Type / Media / Connector	SFP / Fiber / LC
Vendor / Part Number / Revision Number	AVAGO SF / AFBR-5715APZ /
Bit Rate	1200 Mbits/sec
Module Temperature	42.72 °C
Supply Voltage in Transceiver / TX Bias Current	3.30 V / 4.33 mA
TX Power / RX Power	-5.10 dBm / -5.80 dBm
Status	OK

GE tracking number: 790-39

D **Modified the "GFP Version Mismatch" self-test error for a graphical front panel to assert only on a major version difference**

Products: All with a graphical front panel

Impacted firmware: 7.60 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the “GFP Version Mismatch” self-test error is asserted if the graphical front panel and the main CPU version differ.

In the new release, the error asserts if the major version numbers differ (first digit after the decimal point). For example, 7.70 and 7.72 are fine, while 7.80 and 7.90 generate the error.

GE tracking number: 790-40

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, 7.90

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

M Corrected phase-to-phase voltage metering for WYE connection

Products: All except C30

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Phase-to-phase voltage metering is incorrect when the injected phase-to-ground voltages are greater than 160 V and the Phase VT secondary setting is less than 140 V.

The new release corrects the issue.

GE tracking number: 790-41

D Corrected firmware to remove the "PBM Clock" option from the real-time clock "Synchronizing Source" setting for non-Process Bus Module order codes

Products: All without Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The relay front panel can show the “PBM Clock” option for the real-time clock “Synchronizing Source” setting in relays without a Process Bus Module.

In the new release, the range for the “Synchronizing Source” setting is correct.

GE tracking number: 790-42

D Corrected firmware to no longer display the "PBEthPort Offline" FlexLogic operands on the front panel for non-Process Bus Module order codes

Products: All without Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In relays without a Process Bus Module, the relay front panel still allows selection of one of the "PBEthPort Offline" FlexLogic operands.

The new release corrects the issue.

GE tracking number: 790-43

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, 7.90

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 for station bus ports.

GE tracking number: 781-3

C **Corrected Dual HSR setting to support all SV streams for Process Bus Module**

Products: All with Process Bus Module using Dual HSR setting

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The Dual HSR setting works only for two SV streams.

The new release corrects the issue. Dual HSR is supported for all streams supported by the relay according to the software option.

GE tracking number: 790-45

D **Shortened source names in FlexAnalogs for display on the graphical front panel**

Products: All with the IEC 61850 software option

Impacted firmware: 7.60 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Using a long source name (over 20 characters) causes a string overlap on the graphical front panel for the FlexAnalogs for that source.

In the new release, long source names are truncated to six characters when displaying FlexAnalogs for that source on the graphical front panel, similar to the enhanced front panel.

GE tracking number: 790-51

D **Corrected front panel display of 87L Signal Source 2 to 4 settings and Breaker Flashover Side 2 settings**

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

Impacted firmware: 7.00 to 7.82

Corrected firmware: 7.90

Workaround: Use EnerVista UR Setup software to configure these settings

Description: The following settings do not correctly show all the available sources:

- Grouped Elements > Setting Group 1 > Line Differential Elements > Current Differential > 87L Signal Source2, or 87L Signal Source3, or 87L Signal Source4
- Control Elements > Monitoring Elements > Breaker Flashover 1 > Breaker 1 Flashover Side 2

In the new release, the front panel display of these settings has been corrected.

GE tracking number: 790-54

D **Corrected display of FlexElements Actual Values in 16-bit COMTRADE files**

Products: All

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: Use 32-bit COMTRADE format

Description: FlexElement Actual Values saturate at much lower values than expected in 16-bit COMTRADE files (oscillography, datalogger).

The new release corrects the issue. The FlexElement Actual Values do not saturate for the full range of -90 pu to +90 pu.

GE tracking number: 790-55

M **Corrected Actual Value calculation after a Settings Group change for several elements**

Products: C60, D60, F60, G30, G60, L90, M60, N60, T60

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: Corrected relay metering performance when switching Setting Groups for protection elements where Signal Source changes between groups. The elements are Subharmonic Stator Ground, Stator Differential, Stator Ground, Field Current, and Sensitive Directional Power.

GE tracking number: 790-56

R **Corrected graphical front panel firmware to refresh the event list when in Rolling Mode**

Products: All with graphical front panel

Impacted firmware: 7.6x, 7.70, 7.71, 7.80

Corrected firmware: 7.72, 7.81, 7.90

Workaround: None

Description: The graphical front panel does not refresh correctly the event record when in Rolling Mode.

The new release corrects this issue.

GE tracking number: 790-61

Communications

C **Corrected the quality value of the IEC 61850 FlxLgcGAPC1.Health data attribute to always be zero**

Products: All with the IEC 61850 software option

Impacted firmware: 7.30 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the quality value of the IEC61850 data attribute (DA) FlxLgcGAPC1.Health.q can be different from zero.

In the current release, this is corrected per Tissue 1456 and the value is always zero.

GE tracking number: 790-9

C **Corrected values of zeroDB data attribute for IEC 61850 logical nodes SynChkRSYN#.V1Src, SynChkRSYN#.V2Src, and SynChkRSYN#.ProjV2**

Products: All with IEC 61850 software option and Synchrocheck element (B30, C60, D30, D60, F60, G30, G60, L30, L60, L90, N60, T60)

Impacted firmware: 7.70 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In the new release, the value of the zeroDb data attribute of the IEC 61850 logical node SynChkRSYN#.V1Src, SynChkRSYN#.V2Src, and SynChkRSYN#.ProjV2 is corrected to 36.

GE tracking number: 790-11

C **Improved the detection of number of IEDs in an IEC 61850 CID file**

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The relay does not always identify correctly the number of IEDs in the received IEC 61850 CID file.

The new release identifies the number correctly.

GE tracking number: 790-13

C **Improved the update speed of the IEC 61850 stSeld data attributes for the breaker and disconnect switch logical nodes**

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 stSeld data attributes (DAs) of the breaker and disconnect switch logical nodes are updated slower than the rest of the data attributes.

In the new release, these data attributes updates are improved.

GE tracking number: 790-15

C **Corrected IEC 61850 SCL files that include data sets with arrayed items**

Products: All with the IEC 61850 software option and measuring current/voltage harmonics

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 data sets are not configured correctly in the SCL files if they include data attributes from the data object current/voltage harmonics HThdMHAI#.HA or HThdMHAI#.HPhV

The new release corrects the issue. The SCL files are correct syntactically.

GE tracking number: 790-16

C **Corrected the IEC 61850 SCL model to follow naming rules for numeric extensions**

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 naming rules for numeric extensions are not observed. For example, in some instances BlRef01 is used instead of BlkRef1, or the numbering of InRef objects does not start from one.

The new release corrects the IEC 61850 SCL model to follow the naming rules for numeric extensions.

GE tracking number: 790-17

C **Changed the enumeration type for IEC 61850 logical nodes LLN0.Beh and LLN0.Mod**

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC61850 SCL model does not include new enumeration types in cases when the data object has a limited range.

The new release fixes this issue. New enumeration types are created for these cases. This affects the LLN0.Mod and LLN0.Beh data objects.

GE tracking number: 790-18

C Removed nameLength attribute from the Access Point Services elements of an IEC 61850 CID file

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The nameLength attribute is present in the Access Point Services elements of an IEC 61850 SCL file.

In the new release, nameLength is removed from the Access Point Services elements of an SCL file.

GE tracking number: 790-19

C Corrected value of IEC 61850 data attribute LLN0.NamPlt.configRev

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The value of the IEC 61850 data attribute LLN0.NamPlt.configRev is empty.

In the new release, this value is 1.

GE tracking number: 790-20

C Changed the IEC 61850 SCL schema to version 2007B

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the IEC 61850 SCL schema is 2007B4.

In the new release, the SCL schema is 2007B.

GE tracking number: 790-21

C Corrected IEC 61850 DAI DigCntFCNT.CntVal.strTm to use standard "dateTime" type

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 Instantiated Data Attribute (DAI) DigCntFCNT.CntVal.strTm is 0 instead of the standard "dateTime" XML schema type.

In the new release, the DAI for DigCntFCNT.CntVal.strTm is "1970-01-01T00:00:00.0".

GE tracking number: 790-22

C Corrected test flag check of an IEC 61850 SelectWithValue request

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the IEC 61850 SelectWithValue request does not check whether the test flag matches the test mode. The test flag is checked in the operate request, and if they do not match the request is denied.

The new release corrects the issue.

GE tracking number: 790-23

C Corrected hex values to be upper case for IEC 61850 GSE APPID and VLAN-ID

Products: All with the IEC 61850 software option

Impacted firmware: 7.30 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 GSE APPID and VLAN-ID uses lower case letters.

GE tracking number: 790-69

E, C Added support for PTP Power Profile C37.238-2017 to slave functionality on main CPU (station bus ports)

Products: All with PTP software option

Impacted firmware: 7.00 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the relay does not support PTP Power Profile C37.238-2017 for the main CPU PTP slave.

The new release adds this support.

GE tracking number: 790-26

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 7.82

Corrected firmware: 7.73, 7.90

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 releases, 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

G Corrected mapping of IEC 61850 data attribute AmpUnbPTOC2.CurUnb.instMag.f

Products: All with Process Bus Module

Impacted firmware: 7.80 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 data attribute (DA) AmpUnbPTOC2.CurUnb.instMag.f is mapped incorrectly. The same quantity for the first logical node of current unbalance is mapped correctly.

The new release corrects the mapping.

GE tracking number: 790-31

C **Corrected IEC 61850 description strings for a number of logical nodes**

Products: All with the IEC 61850 software option

Impacted firmware: 7.30 to 7.82

Corrected firmware: 7.90

Workaround: Overwrite the “d” strings

Description: Some of the description strings for IEC 61850 logical nodes listed are incorrect.

Bkr0XCBR.Loc.d

Bkr1XCBR.Loc.d

BkrCSWI.OpOpn.d

RgDifPDIF.DifAClc.d

RgDifPDIF.RstA.d

B_EfpPIOC.InRefγ1 (γ from 1 to 6)

B_EfpPIOC.BlkRef1 to B_EfpPIOC.BlkRef6

B_DifPDIF.InRef901 to B_DifPDIF.InRef924

B_AmpMMXN.ChA

B_AmpMMXN.ChV

The new release corrects the “d” attributes.

GE tracking number: 790-33

C **Corrected IEC 61850 Disconnect Switch CSWI Select and Operate controls with sbo-with-enhanced-security for instances greater than eight**

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 61850 disconnect switch CSWI select and operate controls with sbo-with-enhanced-security do not work for instances greater than eight. The same controls for instances for CBRE, XSWI, and Breaker CSWI work correctly.

The new release corrects the issue.

GE tracking number: 790-38

C **Enhanced firmware to map the IEC 61850 quality attribute to the respective data if both are included in the same dataset**

Products: All with the IEC 61850 software option

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: In previous versions, the relay matches the quality attribute to the associated data attribute only when subscribed as a data object (DO).

In the new release, when the quality and its associated data are subscribed as data attributes, the relay automatically associates the quality with the corresponding data attribute.

GE tracking number: 790-44

C **Corrected enumeration value 9 in IEC 61850 SCL file for GE_Digital_Energy_UR_HiZStKind**

Products: All with the IEC 61850 software option

Impacted firmware: 7.40 to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The IEC 68150 SCL files enumeration value 9 of GE_Digital_Energy_UR_HiZStKind is stated incorrectly as “Downed Conductor actual values”.

In the new release, the value is corrected to “Downed Conductor”.

GE tracking number: 790-50

C **Corrected IEC 61850 sequence number (SqNum) and state number (StNum) of GOOSE messages received by Process Bus Module**

Products: All with Process Bus Module (order code 85, 86, 87)

Impacted firmware: 7.80, 7.81

Corrected firmware: 7.82, 7.90 and up

Workaround: None

Description: In previous versions, IEC 61850 state numbers (StNum) and sequence numbers (SqNum) of GOOSE messages received by the Process Bus Module can be incorrect. The data in the received messages is correct.

The new releases correct the issue.

GE tracking number: 782-1

Phasor Measurement Unit (PMU) – Synchrophasors

M **Corrected issue with synchrophasor Power Triggering for delta connected systems**

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

Impacted firmware: All to 7.82

Corrected firmware: 7.90

Workaround: None

Description: The PMU Power Trigger is calculated incorrectly for delta connected systems.

The new release corrects the issue.

GE tracking number: 790-58

Firmware 7.91

- Bus Differential Systems – B30
  - Added IY software option for B30, providing multi-feeders
  - Increased number of user programmable pushbuttons to 48 for a B30 relay with Graphical Front Panel and IY software option

Bus Differential Systems – B30

E Added IY software option for B30, providing multi-feeders

Products: B30

Impacted firmware: 7.90

Corrected firmware: 7.91

Workaround: Not applicable

Description: The new IY software option with six feeders is implemented.

When equipped with this new software option, the B30 can be applied as centralized protection for up to six feeders. On the protection and control elements side, this software option adds Neutral Directional Overcurrent, Autoreclose, Underfrequency, Synchrocheck, and an extended number of soft pushbuttons.

This software option is available with IEC 61850-9-2LE process bus modules H85, H86, and H87.

The table shows the number of supported sample values and P&C elements and compares it to other available B30 software options.

B30 feeder examples

	IM software option	OF software option	New IY software option
Inputs	**Number provided**		
Sampled value (SV) streams	16	8	8
AC banks	22	14	14
Platform AC sources	6	6	6
Differential zone AC sources	16	8	8
Feeders	16	8	6
Bays	14	22	14
Protection and control elements	**Number provided**		
59Vx – Auxiliary overvoltage	6	6	6
27Vx – Auxiliary undervoltage	6	6	6
59N – Neutral overvoltage	6	6	6
67P – Phase directional	6	6	6
59P – Phase overvoltage	6	6	6
27P – Phase undervoltage	6	6	6
VT fuse failure (VTFF)	6	6	6
Source Metering	6	6	6
87B – Bus differential zones	6	3	3

	IM software option	OF software option	New IY software option
50BF – Breaker failure	20	12	12
52 status	20	12	12
End fault	20	12	12
50G – Ground instantaneous overcurrent	20	12	12
51G – Ground time overcurrent	20	12	12
50N – Neutral instantaneous overcurrent	20	12	12
51N – Neutral time overcurrent	20	12	12
50P – Phase instantaneous overcurrent	40	24	24
51P – Phase timed overcurrent	20	12	12
67N – Neutral Directional	---	---	6
81U – Underfrequency	---	---	12
25 – Synchrocheck	---	---	6
79 – Autoreclose, 3 poles, 1 breaker	---	---	6
Soft front panel pushbuttons	8	8	40

GE tracking number: 791-2

E,D Increased number of user programmable pushbuttons to 48 for a B30 relay with Graphical Front Panel and IY software option

Products: B30 with Graphical Front Panel

Impacted firmware: 7.90

Corrected firmware: 7.91

Workaround: Not applicable

Description: In previous versions, any relay with a Graphical Front Panel has 16 user programmable pushbuttons (eight physical pushbuttons and eight graphical interface pushbuttons).

In the new release, a B30 relay with Graphical Front Panel and IY software options has 48 user programmable pushbuttons (eight physical and 40 graphical interface). Up to 10 graphical interface pushbuttons per single-line diagram page can be used, up to a total of 40 pushbuttons.

GE tracking number: 791-1

Firmware 7.92

Bus Differential Systems – B30

M **Corrected calculation of bus differential restraint current in B30 relays with process bus module**

Products: B30 with process bus module

Impacted firmware: 7.90, 7.91

Corrected firmware: 7.92

Workaround: Not applicable

Description: In previous versions, in a B30 relay with Process Bus Module (PBM) the bus differential restraint current may be incorrectly set to zero.

GE tracking number: 792-1

Common Platform Functions

B,P **Corrected FW in relays without DSP modules (C30, B90 and N60) to have a uniform protection pass**

Products: C30, B90 without DSP modules, N60 without DSP modules

Impacted firmware: 7.90, 7.91, 8.00 to 8.04, 8.10

Corrected firmware: 7.92, 8.05, 8.11, 8.20

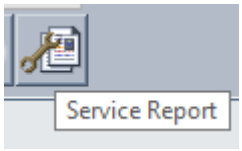
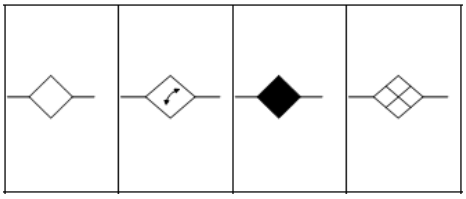
Workaround: Not applicable

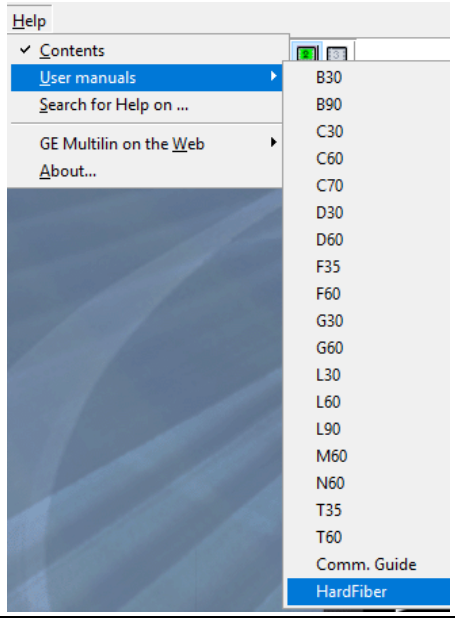
Description: In previous versions, a B90 or N60 relay without DSP modules or a C30 relay may not have a regular protection pass, which may lead to unexpected behavior, including an unexpected restart.

GE tracking number: 820-9

Software

Software 7.90

Category	Description
N	Added support for secure firmware upgrade To meet NERC CIP-013, UR firmware version 7.90 and up includes a digital signature embedded in the binary file. The new UR binary with digital signature has a .SFD extension. The EnerVista UR Setup software version 7.90 and up downloads the firmware to the UR only when the digital signature embedded in the firmware binary file (.SFD) is validated successfully. The EnerVista UR Setup software version 7.90 and up also validates the UR firmware binaries below version 7.90 with extension .000 against a corresponding digital signature that is stored in EnerVista UR Setup software version 7.90 and up. The released EnerVista UR Setup Software versions are already signed digitally.
E	Allow HardFiber Brick logs to be retrieved with Service Report Previously, HardFiber Brick logs can be retrieved only if the relay is put into Factory Service mode from the front panel using a TFTP command. The newly implemented feature allows the brick logs (for example, Bricklog1 to Bricklog4 for the respective Brick core) to be automatically retrieved with the Service Report through a single click of the Service Report button. 
E	Added a new B30 Disconnect Switch component to the Single Line Diagram for the Graphical Front Panel, as Switch Custom 1 
E	Fixed EnerVista UR Setup v7.70 reading back B90 settings file using 213 kbps Direct I/O The issue fixed relates to the increased Direct I/O data rate (to 213 kbps) that enables 256 DI/DO in the B90, when reading back the settings files, any direct input referencing a bit number > 96 was defaulted to 0. This caused the settings file to be incorrect.
E	Fixed issue when downloading an IID file from relay through USB-to-Serial cable to work on Windows 10 system Downloading an IID file through USB-to-Serial cable failed. This issue is fixed by modifying the handshaking process for the file transfer.
E	Fixed conversion issues, when converting version 7.10 file to 7.40 using version 7.70 or 7.80 software A few FlexLogic operands were turned “OFF” and a few operands indexes were changed in the converted file.
E	Resolved datalogger issue with last channel not showing in the COMTRADE waveforms viewer
E	Fixed issue where C70 7.2x to 7.6x conversion "GOOSE Analog input" operands are not converted When converting C70 v7.2x to v7.6x settings, the value ‘GOOSE Analog In 13’ assigned to ‘DNP

Category	Description
	Analog Input point 24' setting should have been converted, but it was set to 'OFF'. This is fixed in this release.
N	Added HardFiber manual to software help files 
E	Fixed issue with L90 conversions between devices with different numbers of Direct IOs, from v1 ≥ 7.70 to v2 ≥ 7.70, where some 'Direct I/P 1-%d On' operands were shown as 'Direct I/P 2-%d On', while 'Direct I/P 2-%d On' operands were shown as 'Direct I/P 1-%d On'. The fix also ensures that the correct number of Direct I/O channels, the correct number of elements, and the value ranges are shown after converting.
E	Corrected display issues in the graphical view of the FlexLogic Equation Editor in Japanese, where 1. 'END' text was cropped inside the symbol. 2. 'END' text should not be displayed in Japanese. 3. The values on 'Timer' were cropped.
E	Fixed issue where COMTRADE .CFG file is missing a linefeed character at the end of the file The issue occurred when a COMTRADE file was converted into ASCII format using the COMTRADE Utility.
E	Fixed issue with G2/E3-2.0 Type Mismatch when importing a URS file, where a correct configuration type (G2 or E3) of CID file was not generated with the type set on Preferences window

Software 7.91

Category	Description
C	Adding a new offline device inside an existing device folder now is not allowed
E, D	Increased number of user programmable pushbuttons to 48 in B30 devices with IY software option, as explained in the firmware section
D	For B30 devices, fixed issue in single-line diagrams where breaker status and isolator components were automatically associated with pushbuttons
D	Corrected a few elements in the FlexLogic Equation Editor that were defaulted when opening a firmware 3.4 file in EnerVista UR Setup software 7.90
R	Fixed device conversion from version 7.70 to version 7.90 Settings that store Modbus addresses (such as in User Programmable Display, Modbus User Map, and Ethernet Global Data screens) needed to be converted.
C	AC channels are no longer offset in E3 mode When stream RxSV16 is configured by making the protocol IEC 61869 with two ASDUs and default configuration of 4 CT and 4 VT channels, saved, the relay restarted, and the SV Stream Config window opened, all AC Channels are shifted by three in RxSV16. For example, AC1 displays as CT1-N, AC2 as CT2-A, and so on. This issue is corrected.
C	InRefs are now populated correctly in E3 mode In E3 mode when assigning an SV stream to banks and the banks to SRC7, there was no metering. The issue was caused by an InRef data object and has been corrected. The metering displays.
C	Corrected issue where importing SCL files situated on remote drives resulted in the loss of Logic Designer diagram information
G	Changed terminal names for type W High Density Cards for device versions prior to 7.90 Contact Input names follow rules. In version 7.90, these naming rules started to be applied to W card inputs, but only to order code versions 7.90 and higher. In version 7.91, the naming rules for W card contact inputs have been applied to all the order codes that include W cards, irrespective of version.

Upgrade

Compatibility

The 7.91 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 7.91 firmware release is not compatible with previous UR CPU hardware (CPU types A, B, D, E, G, H, J, K, N, and S).

The 7.91 firmware release requires EnerVista UR Setup software version 7.9x or higher. GE suggests use of the latest available version of the software.

Upgrade

When upgrading both EnerVista software and UR firmware, upgrade the software first. Upgrade of the software takes about five minutes, and upgrade of firmware takes about 25 minutes. They 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 (double-)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 .SFD file.
2. In the EnerVista software, navigate to **Maintenance > Update Firmware** and select the .SFD file.
   For any issues, see a UR instruction manual.
   When the upgrade finishes, the relay restarts.
3. Reconnect the EnerVista software to the relay, and refresh the order code in EnerVista under the **Device Setup** button.
4. Convert any existing settings file, then load the converted settings to the relay. See the instruction manual for information.
5. Set the device to "Programmed" under **Settings > Product Setup > Installation** to put it into service.

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
North America toll-free: 1 800 547 8629
Fax: +1 905 927 5098
Worldwide e-mail: multilin.tech@ge.com
Europe e-mail: multilin.tech.euro@ge.com
Website: http://www.gegridsolutions.com/multilin/