



# Firmware/Software Release Note

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Reference: P64x-RN-EN-91J-1

## MiCOM P40 Agile P642, P643

### Firmware Version 91, Minor Version J

#### Overview

- This document contains the release notes for Firmware Version 91J for MiCOM P40 Transformer Protection Relay
- Applicable to products: P642 and P643
- Firmware Version 91J is a minor release that succeeds Firmware Version 91H
- Firmware Version 91J supports both Edition 2 and Edition 1 of IEC 61850 (selectable)

#### Key Updates

- Supports hardware options (7th digit of order code) U, W, and Y in addition to existing R, S and T
- Combine 2 instances SNMP services into one
- New LCCH logical node for IEC 61850 Ed.1 and Ed.2 data models for link status of Ethernet ports (NP2A and NP2B)
- Addition of two DDBs to show link status of NP2A and NP2B ports
- Configuration of HSR/PRP/RSTP/Failover via IED Configurator tool (MCL file)
- Rebranding of ICD template to GE Vernova
- Bug fixes of platform issues
- Ethernet traffic overload protection to handle DDoS attack
- Bug fixes of P64x application issues



## Scope of the Release

The scope of this release covers models and protocols as indicated in the table below:

Model	Protocol							
	Courier (1)	Modbus (2)	IEC 60870-5-103 (3)	DNP3 (4)	UCA2 (5)	IEC 61850 (6)	IEC 61850 + 103 (7)	DNP3OE (8)
P642	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
P643	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

## Key bug fixes in this firmware version

Code	Change ID	Description	Effect
C	PX40PL-7	ICD file for IEC 61850: 'valKind' of all 'ctlVal' should be "Set", not "RO"	Not a constraint on configuration. Possible interoperability problem at system engineering time.
C	PX40PL-341	IEC 61850: Two reports are generated, one with 'Old' Time Stamp and other with 'New' Time stamp, for value change of LLN0.ST.Mod	IEC 61850 client system may use old timestamp, causing confusion.
D	PX40PL-507	'PTP Failure Alarm' momentarily set and reset when there is a single port fail in PRP network	Momentary (200 ms) spurious "PTP Failure" alarm in the relay.
C	PX40PL-513	IEC 61850: Incorrectly formed packet reply from P40 IEDs in rare circumstances	One of the IEC 61850 Clients occasionally loses the connection with P40 IED. This occurs occasionally after a control action from the client.
C	PX40PL-542	The configuration of VIP8 and VIP9 defined in model as Ind08/Ind09 are ignored after renumbering of Logical Node data objects to use 01,02...09 numbering as required for conformance	IEC 61850 client system can have incorrect status information for the affected signals. The affected attributes are Virtual Inputs 8 and 9.
C	Px40PL-554	Cyber Security Vulnerability on TMW Library for DNP3.0 protocol	Possible Denial of Service; relay must be rebooted to recover communication.
C	PX40PL-558	IEC 61850 Interoperability issue with clients with MMS 'proposedVersionNumber' = 2	The client will not initiate IEC 61850 connection.
C	PX40PL-582	IEC 61850 IED does not respond for 'SetDataValues' request on 'setSrcRef' read only Data Attribute	IED should give a negative response with data access error "object-access-denied" but it does not respond.
C	PX40PL-586	Frequency setting range incorrectly limited to 50Hz only	60Hz setting not selectable.
C	PX40PL-589	Some data changes are not reported via IEC 61850 if 'BufTm' is set > 0	IEC 61850 client system may not receive some data changes.



Code	Change ID	Description	Effect
C	PX40PL-590	IEC 61850: When IED is in 'Test Blocked' mode, SBO 'Cancel' request incorrectly sends negative response	For a control object whose control mode is "SBOs" or "SBOes", after sending 'Select' followed by 'Cancel', then IED sends negative response instead of positive response. User cannot select new command until the timer expires.
C	PX40PL-597	When the Disturbance Record format was extended to contain scaling information, it rendered the memory calculation for IEC 61850 files incorrect	When extraction of DR file is attempted the IEC 61850 ethernet card application will fail. Failure will occur only fail if the number of channels is increased past the default number already configured.
C	PX40PL-602	IEC 61850: IED can incorrectly switch to duplicate GOOSE for some stNum	Subscriber IED can incorrectly switch to duplicate GOOSE message (that is not marked as Simulated). Unlikely to occur intentionally, but maybe by operator error or maliciously. Similarly, when the duplicate GOOSE publishing was stopped, the subscriber IED incorrectly does not immediately switch back to the process GOOSE.
C	PX40PL-612	IEC 61850 Reporting stops after few Select Before Operate control operations	IEC 61850 reporting to client system stops. Client not getting updates reflecting site statuses. Only occurs for SBO commands. Requires restarting (power cycle) of IED to recover.
C	PX40PL-623	IEC 61850: IED loses client communication when EntryID/Buffer Overflow is selected for Unbuffered RCB	The client communication will stop. Need to reconfigure and resend MCL to resolve.
D	PX40PL-624	User authentication: Login/Logout appear to work although Bypass is active	Misleading indications to user: it appears that they can log in and out when they cannot.
C	PX40PL-626	GOOSE Control Block (GCB) enable and CSWI controls are failing when initiated only from "UniGrid" conformance test tool	No impact to customer, as customer Client systems do not use the specific "UniGrid" encoding. This will only be observed during testing with the "UniGrid" IEC 61850 conformance test tool, resulting to control blocks not initiated.
C	PX40PL-638	Occasional ping loss on the Ethernet port	With an established IEC 61850 connection, if the user successively pings the IED, occasionally there might be no reply to a ping, but there is no direct impact to the IEC 61850 communication.
R	PX40PL-689	COMTRADE Format for IEC 61850 incorrectly shows "1997" instead of "1999"	Some IEC 16850 clients may not decode the COMTRADE file.

Code	Change ID	Description	Effect
C	PX40PL-690	IEC 61850 client read of some whole Logical Nodes may fail in firmware version 91 with multi-client support	Some IEC 61850 clients cannot establish communication with IED.
C	PX40PL-693	IEC 61850 Edition 2 conformance test: Association 'servicesSupportedCalled' shall not contain 'obtainFile'	Non-conformance to Edition 2.0 Test Procedures.
C	PX40PL-694	IEC 61850 Edition 2 conformance test: IED should not send 'CommandTermination-' when the operation is successful	Non-conformance to Edition 2.0 Test Procedures.
C	PX40PL-695	IEC 61850: Control is successful when the IED is in On Mode and the Control has Test flag set, but should fail	Non-conformance to Edition 2.0 Test Procedures. Could affect customer during commissioning/maintenance testing (control unexpectedly actioned).
C	PX40PL-705	IEC 61850 Ed2.0: for a non-configured BRCB, ResvTms is 0 instead of >0	Non-conformance to Edition 2.0 Test Procedures.
C	PX40PL-707	IEC 61850: IED requires the test flag to be present when LLN0.Mod is in Test for LPHD.Sim to be active - not compliant with Tissue 1819	Test flag should be ignored when LLN0.Mod is in Test. Non-conforming to Tissue 1819.
C	PX40PL-708	IEC 61850 Commands incorrectly do not work when the device is in Test/Blocked Mode	User cannot send commands when IED is in Test/Blocked Mode, not compliant with the standard.
C	PX40PL-717	IRIG-B Status changes to 'Card Failed' from 'Signal Healthy' after a long duration of operation	IRIG-B Status changes to 'Card Failed' and loses sync to IRIG-B.
C	PX40PL-725	Frequent logging of short-duration 'SNTP Failure' Alarms	SNTP Sync lost for 5 to 10 seconds and events file will fill with 'SNTP Failure' alarms.
C	PX40PL-726	v91 NIC No Response and NIC MemAlloc Fail Alarms - If dataset contains CF elements	IEC 61850 Client communication and GOOSE are interrupted while ethernet board re-starts due to the NIC alarms.
C	PX40PL-735	v91 NIC No Response Alarms with no CF in data sets	IEC 61850 Client communication and GOOSE are interrupted while ethernet board re-starts due to the NIC alarms.
C	PX40PL-744	If BRCB is configured with a dataset containing SI Unit Data Attribute, IEC 61850 client connection is lost	IEC 61850 client connection is lost if BRCB is configured with a dataset having SI Unit Data Attribute and enabled.
C	PX40PL-753	IEC 61850: Two reports are generated, one with 'Old' Time Stamp and other with 'New' Time stamp, for value change of LPHD1.PhyHealth	IEC 61850 client system may use old timestamp, causing confusion.

Code	Change ID	Description	Effect
C	PX40PL-823	P40 IEDs with summertime enabled continue sending of IEC 103 telegrams in wintertime	P40 IEDs with summertime enabled continue sending of IEC 103 telegrams in wintertime, although the DST has been enabled, so DCS/SCADA shows wrong time (shifted by 60 minutes).
D	PX40PL-870	Reset of User Alarms - Incorrect reset through Function Key when Binary Input still energised	Incorrect operation of User Alarm. While Binary Input is still energised, user can still reset through Function Key, which is incorrect.
C	PX40PL-936	VLAN Priority in GoCB online is different from configuration (MCL and IID) when the GOCB is empty	A mismatch could be observed when analysing the CID file of the relay.
U	PX40PL-913	Error Code and Reboot initiated if user copies the settings from Group1 to any other Group through the HMI	Unexpected error code and reboot.
C	PX40PL-929	Duplicate GOOSE - IED may incorrectly not accept GOOSE when switched between normal and simulation	The Simulation feature does not work correctly. This would likely affect commissioning or maintenance testing activities, but not normal relay operation.
R	P640-418	Fault measurements stored in Disturbance Record (DR) are displayed in Secondary values, although the setting is set as "Primary"	Earth Fault Values stored in Disturbance Record (DR) are displayed in secondary values, although the setting is set as "Primary". The protection is not impacted.
C	P640-473	IEC 61850: Invalid Quality reported in ATVFIt measurement within PriFltMLFR1 Logical Node (LN)	IEC 61850 client system may not display correct value of the ATVFIt measurement within PriFltMLFR1 Logical Node (LN).
R	P640-447	Abnormal values of voltage and frequency reported in Disturbance Record (DR) with Sensitive CT configuration/module in P643	Voltage and Frequency reported in Disturbance Record (DR) with Sensitive CT configuration/module in P643, is getting clipped, resulting in inaccurate voltage waveform and frequency traces in the DR.
R	P640-332	Voltage reported in Disturbance Record (DR) with Sensitive CT configuration/module in P643, is getting clipped	Voltage reported in Disturbance Record (DR) with Sensitive CT configuration/module in P643, is getting clipped, resulting in inaccurate voltage waveform in the DR.
D	P640-460	Assigned Names on User Alarms are not displayed on PSL Editor properly for P643 version 91	Assigned user alarm names are not displayed on PSL.
P	P640-398	P64x CB fail reset operation only depends on the current, when set to CB Open & I< or Prot Reset & I<, while the operation must also consider CB Status or Protection Reset.	The P64x CB fail reset operation only depends on the current & not on the CB status or Protection reset when set to CB Open & I< or Prot Reset & I<, while it must depend on current and CB status, or current and Protection Reset.

Code	Change ID	Description	Effect
D	P640-457	Assigned Names on User Alarms are not displayed on HMI Screen of P64X relays	Assigned user alarms are not displayed on HMI.

## Hardware Compatibility

Firmware 91J runs on Hardware Suffix P.

### Issues Affecting Customer Upgrade/Backwards Compatibility

- Any previous 91 minor version of P64x relays supports hardware options R, S, T. 91J firmware is created to support hardware options R, S, T and the newly introduced U, W, Y.
- To update existing 91 relays from R, S, T hardware option to any of the U, W, Y, the Ethernet board hardware needs to be replaced, and the device firmware needs to be updated for the relays using D&C version 4.1 or later version.
- Concerning backward compatibility of Firmware Version 91J with files from previous Firmware Version, see below:

S1 Data Models		
	New/Updated	Backwards Compatible
Setting	Yes	No
DNP3	No	Yes
PSL	Yes	No
Language	Yes	No
ICD Ed1	Yes	No
ICD Ed2	Yes	No
RDF	No	Yes
DBF	Yes	No
Cell List	No	Yes

## Support Software Compatibility

Requires MiCOM S1 Agile Version 3.2 (or later).

## Categories

This document uses the following categories to classify changes:

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.

Code	Category	Description
<b>D</b>	Changed, incomplete, or false faceplate indications	Changes to, or problems with text messages, LEDs, and user pushbuttons.
<b>R</b>	Changed, incomplete, or false relay records	Changes to, or problems with relay records (oscillography, demand, fault reports, and so on).
<b>C</b>	Protocols and communications	Changes to, or problems with protocols or communication features.
<b>M</b>	Metering	Metering out of specification or other metering problems.
<b>P</b>	Protection out of specification	Protection operates correctly but does not meet published specifications (example: delayed trip).
<b>U</b>	Unavailability of protection	Protection not available in a self-demonstrating way so that corrective actions can be taken immediately.
<b>H</b>	Hidden failure to trip	Protection does not operate when appropriate.
<b>F</b>	False trip	Protection operates when it is not appropriate.
<b>B</b>	Unexpected restart	Relay restarts unexpectedly.

## For Further Assistance

For questions or further product support, please contact the GE Vernova support teams using:

Region	E-mail	Telephone
Global Contact Centre	GA.support@governova.com	+44 1785 250070
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