

ILC 3XX – CHANGE NOTES

Change notes for the ILC 3xx Inline controllers

Application note
8416_en_04

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1 General notes

This document contains all changes made between the current firmware (FW) version and the previously released versions of the relevant devices.

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This document is valid for all products listed in the “Ordering data” on page 2.

2 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Inline controller with 10/100 Ethernet interface	ILC 330 ETH	2737193	1
Inline controller with 10/100 Ethernet interface, PROFINET controller	ILC 330 PN	2988191	1
Inline controller with 10/100 Ethernet interface	ILC 350 ETH	2737203	1
Inline controller with 10/100 Ethernet interface, meets the requirements of maritime registers of shipping	ILC 350 ETH/M	2985819	1
Inline controller with 10/100 Ethernet interface, PROFINET controller	ILC 350 PN	2876928	1
Inline controller with 2 x 10/100 Ethernet interfaces, PROFINET controller	ILC 370 PN 2TX-IB	2876915	1
Inline controller with 2 x 10/100 Ethernet interfaces, PROFINET controller, meets the requirements of maritime registers of shipping	ILC 370 PN 2TX-IB/M	2985576	1
Inline controller with 2 x 10/100 Ethernet interfaces, PROFINET controller	ILC 390 PN 2TX-IB	2985314	1

3 FW 3.5x → 3.95 changes

The following table lists the previously released firmware versions of the devices for which these changes will apply:

Controller	Firmware version
ILC 330 ETH	3.52
ILC 330 PN	3.53
ILC 350 ETH	3.52
ILC 350 ETH/M	3.52
ILC 350 PN	3.53
ILC 370 ETH 2 TX-IB	3.52
ILC 370 PN 2TX-IB	3.55
ILC 370 PN 2TX-IB/M	3.55
ILC 390 PN 2TX-IB	3.55

3.1 Changes for PROFINET

- Universal support of 100 PROFINET devices
- Improved compatibility of the connection establishment to PROFINET proxies
- New alarm messages in the diagnostics archive
- Extended functions by switching PROFINET devices as startup behavior
- Possibility of setting the substitute value behavior of the inputs in the event of an error (set to zero or hold last value)
- Network load optimization with parallel connection establishment
- Representation of the maintenance alarms as a system state in the Diag+ software
- Support of the API variable in the ADDR structure of ADDR_TO_ID (ID of the application profile)
- Switching of PROFINET devices with the aid of the AR_MGT function block
- Extended "neighborhood behavior" with regard to device replacement
- Performance increase of RPC services and improved compatibility to third-party PROFINET devices
- Improved processing of fast alarm sequences

3.2 General changes

- Updated runtime system
- Support of the LREAL data type (as of AUTOMATIONWORX software suite 1.70)
- Display of current variable status
- Writing of retain file from the application (LOAD_SAVE_RETAIN)
- Abort of a task during runtime (TASK_RETURN)
- Support of 2 GB Compact Flash cards (FAT16)

- Web server can be disconnected (port 80 free for other web server applications)
- New IP_INFO function block (as of AUTOMATIONWORX software suite 1.70)
- Improvement of system stability

3.3 Removing errors on function blocks for TCP/IP or PCP communications

- The Valid flag of the IP_CONNECT function block acts in consistency with the internal status
- Behavior of the NDR flag when receiving data (edge change)
- Improved transmission behavior in the following scenarios:
 - Frequent activation/deactivation of the function block instance (IP_CONNECT)
 - STOP/START of the controller via key switch
 - Change of the IP address
 - Dual transmission of telegrams
- Improvement of transparent UDP communication
- Adaptation of communication tasks prioritizing
- Change in the management of the lower-level communication instances

3.4 General error removal

- Increase of the number of BootP requests during system start
- Corrected representation of REAL variables in web server projects (data type in the WebVisit software without padding of zeros)
- Increase of stability with cyclic PCP communication
- ILC 370 ETH 2TX-IB: Removal of the network connection problem (no network link after startup)
- Change of the INTERBUS behavior during startup with an activated PROFINET device
- Removal of the sporadic PCP connection error after a warm start
- Writing of Pg variables from a web server application (was read-only before)

4 FW 3.95 → 3.96 changes

The following table lists the previously released firmware versions of the devices for which these changes will apply:

Controller	Firmware version
ILC 330 PN	3.95
ILC 350 PN	3.95
ILC 370 PN 2TX-IB	3.95
ILC 370 PN 2TX-IB/M	3.95
ILC 390 PN 2TX-IB	3.95

New functions/changes

- None

Error removal

- Removal of a possible inconsistency of PROFINET process data under specific PLC project conditions with firmware V3.95.
A sporadic inconsistency might occur if the process data item (global variable) is calculated in a cyclic task and the I/O map is written by the default task or another task.

5 FW 3.96 → 3.97 changes

5.1 ILC 370 PN ... and ILC 390 PN ... changes

The following table lists the previously released firmware versions of the devices for which these changes will apply:

Controller	Firmware version
ILC 370 PN 2TX-IB	3.96
ILC 370 PN 2TX-IB/M	3.96
ILC 390 PN 2TX-IB	3.96

New functions/changes

- Ethernet:
Improved robustness through a multicast filter.
To improve the stability of the controller in the event of multicast storms, a multicast filter has been implemented.
- PROFINET:
The ILC 3xx performance was not high enough to prevent temporary connection aborts to individual PROFINET devices in the event of a high network load caused by the simultaneous and highly accurate transmission of PROFINET telegrams, e.g., by Inline PROFINET bus couplers (IL PN BK). In a network including, for example, a large number of bus couplers, this behavior is due to a minimum transmission jitter of the individual PROFINET devices. To resolve this

behavior in the event of a high network load, a kind of “PROFINET Data Management” has been implemented in firmware 3.97 of the ILC 3xx. This “PROFINET Data Management” enables the data flow to be controlled, even in the limit range. For a targeted control activation depending on the topology, it is possible to optionally switch on this function using a function block. To enable the control process at any time after activation, the speed of the Ethernet interface is set to 10 Mbit, full duplex. Owing to this modification, a stable connection can be established to all PROFINET devices and OPC servers with various topologies and for different application scenarios.

Notes

- The “MODIFY_MAC_SETTINGS_Vx_x” firmware library is required for “PROFINET Data Management” activation. To integrate the library into PC Worx software, PC Worx 6.0 or later must be used.
- A new device description is not required to operate the firmware.

5.2 Changes for ILC 390 PN 2TX-IB

The following table shows the latest released firmware version of the device affected by the changes:

Controller	Firmware version
ILC 390 PN 2TX-IB	3.96

- PROFINET:
Modified behavior of the BF LED and PNIO_SYSTEM_BF system variable of the PROFINET controller.
BF LED:
On No link status at Ethernet port and/or no 100 Mbit transmission and/or no full duplex operation available.
Flashing Link status present, at least one configured PROFINET device has no PROFINET communication connection, or an application program is not available on the controller.
Off The PROFINET controller has established an active communication connection to each configured PROFINET device.

If a PROFINET device has not been configured and/or the node of the PROFINET controller is hidden in PC Worx, the following applies:

- The BF LED (responsible for the PROFINET controller on the ILC 3xx) is switched off.
- The PNIO_SYSTEM_BF system variable is set to FALSE.

PNIO_SYSTEM_BF variable:

TRUE No link status at Ethernet port and/or no 100 Mbit transmission and/or no full duplex operation available.

Or:

Link status present, at least one configured PROFINET device has no PROFINET communication connection.

FALSE The PROFINET controller has established an active communication connection to each configured PROFINET device.

- PCP communication:

During each warm start or hot restart of the controller, the states of all type PCP_READ, PCP_WRITE and PCP_CONNECT PCP function blocks used in the application program are now reset. In addition, deactivation of the PCP_CONNECT function block (input EN_C = FALSE) causes the states of the assigned PCP_READ and PCP_WRITE function blocks to be reset.



Application note - error handling

Implement application-specific error handling for the PCP function blocks. Do not only evaluate the ERROR output of the PCP function blocks but also program application-specific timeout monitoring. It is useful to not only retrigger the affected PCP_READ and PCP_WRITE blocks but also to briefly cut off and re-establish the relevant connection to the PCP device.

6 FW 3.97 → 3.98 changes

The following table lists the previously released firmware versions of the devices for which these changes will apply:

Controller	Firmware version
ILC 350 PN	3.97
ILC 370 PN 2TX-IB/M	3.97
ILC 390 PN 2TX-IB	3.97

General notes

- New device descriptions for firmware V3.98 are not required.

New functions

- PROFINET: Multiple API support.

Error removal

- Rectification of a fault that occasionally occurred when executing the “Download changes” function. Associated are changes in the ProConOS runtime system's storage management for the “Download changes” function as well as the “Patch POU” and “Compile Worksheet” buttons.
- Rectification of an infrequent fault that resulted in the deletion of the “mona_user.ini” file and the loss of the controller’s address settings.

7 FW 3.98 → 3.99 changes

The following table lists the previously released firmware versions of the devices for which these changes will apply:

Controller	Firmware version
ILC 350 PN	3.98
ILC 370 PN 2TX-IB	3.98
ILC 370 PN 2TX-IB/M	3.98
ILC 390 PN 2TX-IB	3.98

General notes

- For licensing reasons, the newly produced devices have an updated operating system. The behavior of the firmware and the runtime of the PLC application remained unchanged.
- Depending on its affixed Microsoft license label for the operating system, each controller requires one specific firmware container for the update.
 - The firmware container marked “CE5” is intended for use with newly produced devices featuring the “Windows CE7 Pro License”.
 - The container without the “CE5” marking is intended for use with already sold devices featuring the “WinCE.Net 4.2 Core” license.

Characteristics

- Supporting the new MAC address range starting with “A8.74.1D” in addition to the present Phoenix Contact MAC address range starting with “00.A0.45”.
- Supporting the HTML5 and JAVA APPLET WebVisit client technologies for web server projects.
- Supporting the “Offline alarming and trending” WebVisit function.
- Supporting the transfer of CF card project content for a different type of controller within the ILC 3xx family. Such transfers are intended to be performed primarily when replacing a controller by means of updates or discontinuation.

Restrictions

- Starting from this firmware version, it will be possible to use the contents of a CF card for a different ILC 3xx controller type. As to that, please note that the new device must be equal or better in performance, compared to the replaced device, when it comes to interfaces and resources.
The boot project cannot start up under the following circumstances:
 - An I/O driver logged in by the boot project is not supported.
 - A function block used by the boot project is not supported.
 - The program, data, or retain memory space required for the boot project to run is insufficient.
 - An unexpected internal error has occurred.
- For the ILC 350 PN (Order No.: 2876928), the “Offline alarming and trending” WebVisit function is only available starting from hardware revision 3.

Modifications

The performance of web server support has been improved. This covers the representation of multiple instances and the processing of a large number of variables.

Bug fixes

- During continuous operation in specific load or project conditions, the network configuration could get lost when restarting. The device then started using the default settings.
- When the network connection was disabled and re-enabled frequently (linkDown, linkUp), the network configuration could get lost. Afterwards, the device used the default settings when restarting.
- Due to the “ARUID” being wrongly used with PROFINET devices not made by Phoenix Contact, the controller deactivated the application relationship (AR) in some cases.
- In combination with the PCP_CONNECT function block, an unexpected error state (error code: 0xC300) occurred in some cases after using the “Download Changes” function.
- When using PROFINET devices not made by Phoenix Contact, the connection could not be established in some cases, when the PROFINET device had sent several ARP replies.
The PROFINET controller interpreted those as ARP replies of multiple different devices. This led to the erroneous conclusion that the corresponding IP address of the device existed several times in the network, which was why the connection was not established.

- During continuous operation and cyclical display of a “WebVisit” web server project, problems with the availability of the web server functionality could occur when the network went down. In those cases, the web server was oversensitive to certain socket error messages, and thus terminated the server task.
- Function blocks FTP_CREATE_USR and FTP_DELETE_USR behaved differently in certain error situations than with other classes of controllers (such as RFC 470...).

Compatibility has been re-established by means of the following enhancements: The maximum length of “UserName” and “Password” is now 30 characters. The maximum length of “Directory” is now 80 characters.