



Alfen NG9xx series Firmware Release notes

Release notes version 4.14.0
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1 Introduction

Firmware release **4.14.0** is a release that incorporates a number of general improvements, stability improvements, security improvements, bug fixes and new features.

The most important change is the update of the encryption keys, which will impact the updating mechanism of CPO's.

Note: firmware 4.13 was not released as an update file and not released in production.

2 Updated encryption keys

2.1 General

The charge station firmware uses encryption keys. For security reasons it was decided to update the encryption keys in firmware release 4.14.

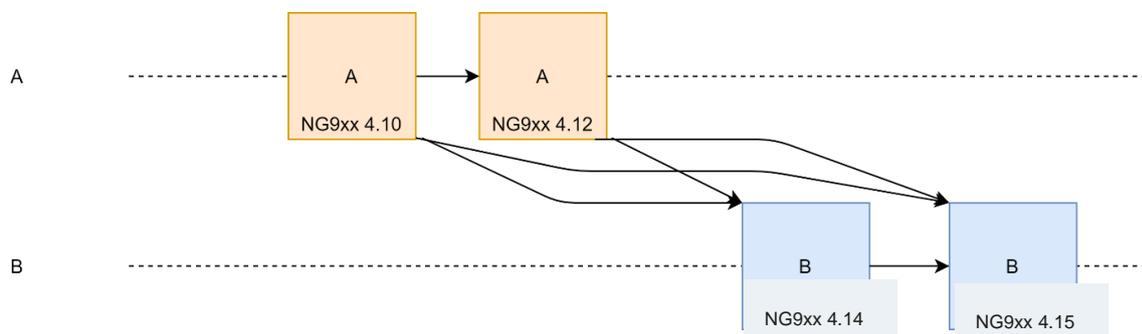
From now on firmware upgrade releases will include two separate fwi files to allow upgrades from older firmware versions to newer.

2.2 Old and new encryption keys

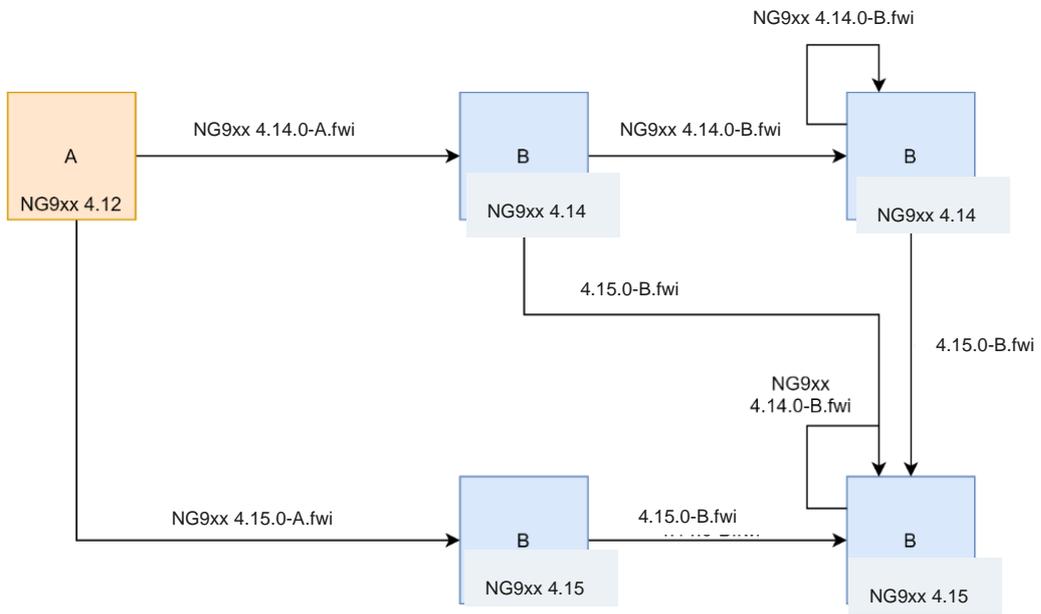
The encryption keys used in firmware version 4.12 and earlier are referred to as “A”.

The encryption keys used in the newer firmware versions 4.14 and later are referred to as “B”.

The following diagram shows that firmware version 4.10 can update to 4.12, which still contains encryption key A. When it is updated to 4.14 or 4.15, the encryption key will be updated to “B”.



For every release, two fwi files will be published: version A and B. Version A can be used to update a charging station with firmware 4.12 or earlier to the new version. Version B can be used to update a charging station firmware with firmware 4.14 or later to the new version.



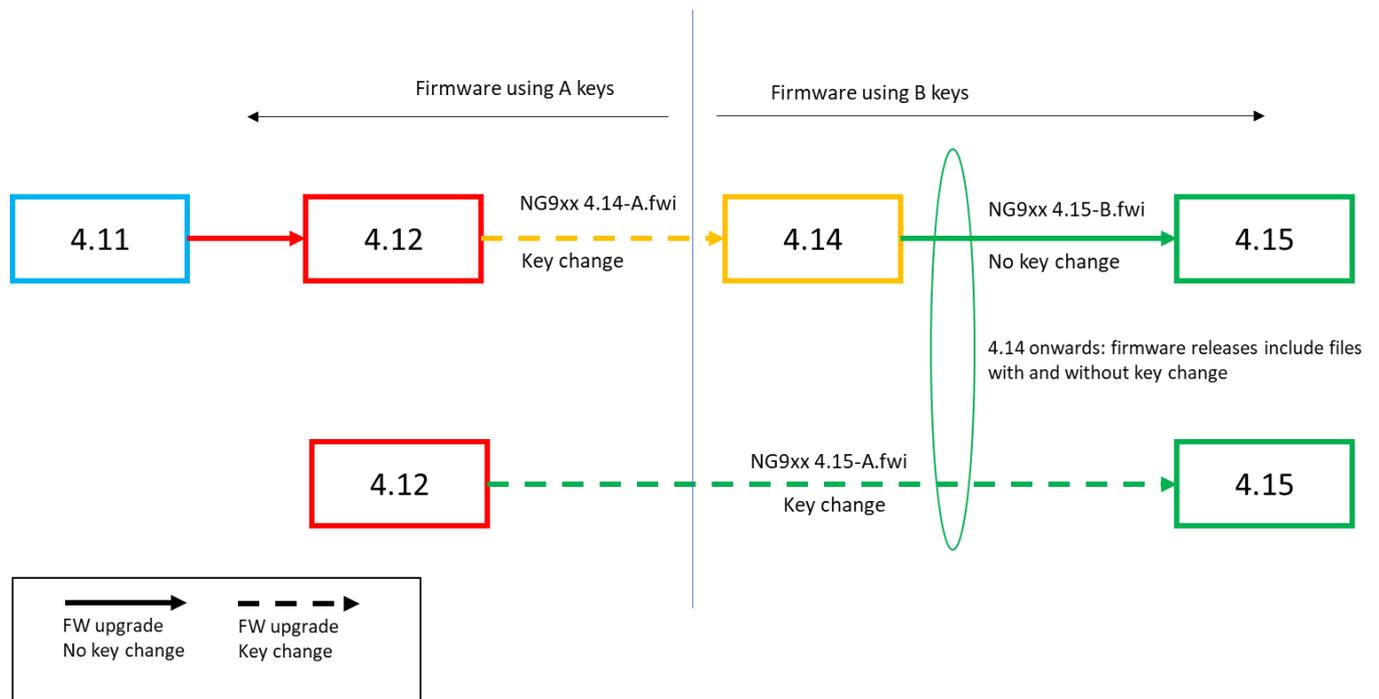
2.3 Firmware upgrade sequence

Key considerations

- I. What is the target version to which the charging station must be updated?
- II. What is the current versions of the firmware?

In case the current firmware is 4.12 or older, an upgrade file version A must be selected. If the current firmware is newer than 4.12, version B must be selected.

Below diagram shows an example of upgrade paths with their corresponding fwi file and key changes. Future firmware upgrades will include a release with and without key change.



2.4 Upgrade file selection

Please find below a matrix that shows you which update file to select in different scenarios.

		Target FW version		
		4.14	4.15*	4.1x*
Current FW version	Upgrade file			
	4.8	4.14A	4.15A	4.1xA
4.9	4.14A	4.15A	4.1xA	
4.10	4.14A	4.15A	4.1xA	
4.11	4.14A	4.15A	4.1xA	
4.12	4.14A	4.15A	4.1xA	
4.14*	n/a	4.15B	4.1xB	
* upcoming release				

Since 4.14 is the first release with encryption key B, this means that upgrading to 4.14 will always be from a release using encryption key A. So: to update a charging station from a previous firmware version to 4.14, you may always use upgrade file 4.14A.

2.5 Upgrade recommendations

PLEASE NOTE: Updating firmware

- We **strongly recommend** updating all your chargers to the newest firmware.
- Updating from an older version to firmware version 4.14 is always possible by using upgrade file 4.14A.
- We **do not recommend downgrading** firmware. In 3-phase Eve Single Pro-line chargers, downgrading causes issues in compatibility with newly sourced power meters.
- If you do decide to downgrade a different charger from 4.14 to an older firmware version, you **must use a specific downgrade firmware file**. This file, with a B-version encryption key, is available upon request through support.alfen.com.

3 New features

3.1 Phase imbalance on a double socket station

Support for imbalance on socket level for double socket charging stations is added.

Earlier, imbalance was added for a single socket that was not part of a SCN and this worked in combination with active load balance. To meet the imbalance/ German Schiefload requirements, this is also enforced on a socket level. The existing imbalance maximum current parameter is used to configure this.

Due to the phase rotation of our double socket charging stations, the imbalance is maintained on charging station level as well on socket level, regardless of the number of phases an EV is using (1, 2 or 3).

Note in case standard load balancing or SCN is enabled, the configured imbalance current must be equal or higher than the (Renault Zoe) Chameleon charge system minimal current to start a charging session. This is 14A by default.

3.2 Polish language support

Added polish text. Removed old special character set and replaced them with £€Ûßááãääåçèéêíîóøùúüąćęłńśź. These are supported for text on the display from external sources together with ANSI_32_126. The Dollar sign \$ used to be on 0xB6 but this is actually part of ANSI_32_126 on 0x24, so this was changed.

Polish identifier = "pl_PL".

4 Improvements

4.1 Support for newly sourced internal power meter

4.2 Modbus meter default IP address

Changed the default IP address of the modbus TCP/IP smartmeter from 192.168.0.5 to 192.168.0.4. This matches the default setting of the Socomec E27/E47 meter which prevents reconfigurations.

Note: the default IP address of both the central and smart meter are equal, which can cause unexplainable connection errors when both these meters are enabled and not changed from their default setting.

4.3 Plug and charge restart issue

For controller boards with a revision C and later we can now check if an EV is connected while in state E of Mode 3. This allows that we can wait until the EV is disconnected and thus prevents the charging station from restarting the transaction when P&C and fixed cable and the transaction is rejected from the back office.

4.4 Charging profile logging

Charging profiles are now logged every hour, when the active profile ID changes or when the transactions starts

4.5 OCPP

Updated the OCPP stack version to version 7.1

5 Back-end communication changes

Added support for polish language.

Property	Description	Values	Access
Added			
Modified			
language	Added "pl_PL" for polish		
Removed			

6 Errorcode changes

No error codes were removed or added.

7 Minor changes

- Fixed an issue where the charging station was handling a signed update firmware request while another request arrived. A timeout occurred while trying to verify the included certificate since two processes required the same resources.
- Underlying StatusNotification mechanism got an overhaul in order to support informational StatusNotifications. This also fixes an issue where vendor error code (towards the backend) 106 (mains RCD tripped) would not be reported properly.
- The update firmware statemachine was not able to handle many new requests within a short period of time. It is now able to handle more requests, however at some point it still too much for the charging station.
- We now show an error on the display when the 6 mA detection got triggered. This used to work such that the RCD error was resolved immediately for the display, while the charging stations waits a

certain time (default 300 seconds) before restarting the transaction. Now also during this time the display shows the RCD error. This change only has influence on this error if we are/were charging (LA-3746).

- Fixed a stackoverflow when the license key was changed.
- If the meter can't be found at startup it will retry 15 times before throwing error code 105.
- Now check if we are configured as P&C before throwing the error that the NFC reader cannot be found.
- Fixed an issue where the charging station rebooted when the idTag in an remoteStartTransaction was missing.
- Fixed a reboot of the charging station that was caused by an invalid TCP packet in the wired network.
- Resolved an issue where 1970-01-01T00:00:00 is interpreted as invalid date, for example in the OCPP update firmware request.

8 Roll-out heads up

Charging stations produced January 2021 onwards will include a newly sourced energy meter. Firmware 4.14 does support this new meter.

Previous firmware from 4.12 and older does not support this power-meter.

When charging stations with a new meter are downgraded to FW 4.12 or older, they will report a power meter error. When the downgraded firmware version is 4.10 or later, it is still possible for the customer to update the firmware back to 4.13.