ABB INDUSTRIAL DRIVES ACS880 WITH FUNCTIONAL SAFETY MODULE (FSO-12 AND FSO-22)

Delta Package download instructions

3AXD10002422601 Rev B
EN
Original instructions
EFFECTIVE: 2025-02-13

Introduction

This instruction shows the necessary and easy steps that must be carried out when downloading the delta loading package *"ACS880_and_FSO_Delta_package_v1_x.lp"* to the ACS880 drive. The delta package contains a correction patch, not the complete drive FW, and as such doesn't affect the basic FW and is thus fast to download (30-60 sec).

More information about the issue can be found in chapter "Description of the issue".

Before downloading the delta loading package into the drive

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work. Refer to the ACS880 Hardware Manual, Firmware Manual, FSO User Manual and safety instructions of the drive.

IMPORTANT!
Before downloading the delta loading package verify that:

- parameter 99.16 is not changed after the safety validation,
- the motor is turning to the desired direction, and
- the rotation direction matches the limits that the FSO is monitoring.
  (see also chapter „Description of the issue")

When all these items are fulfilled, continue with the download procedure.

Instructions for downloading the delta loading package into the drive

1. Download „ACS880_and_FSO_Delta_package_1_x.lp" from the ABB library

   ACS880_and_FSO_Delta_package.lp

   and save it on your computer.

2. Drive Composer Pro version 2.8.1 and newer or Drive Composer Entry version 2.9 and newer can be used for the download of the delta loading package to the drive. A USB cable connection between computer and drive is required to carry out the download procedure using below instructions.
   If the Drive Composer Tool is not installed on you computer or the version is older than the ones mentioned above, first install Drive Composer Entry (or Pro if you have a license key). If already installed, continue with the next step.

   Drive Composer - Software tools | Software tools | ABB

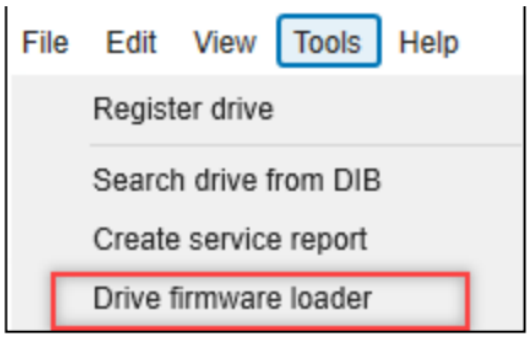
3. Connect the drive (control panel USB port) to Drive Composer (computer) via a USB cable. For more information, see section ”Connecting to a drive through an Assistant control panel for the first time” in the Drive Composer User Manual.

4. Power up the drive or the external 24VDC supply if the control unit is powered by an external power supply.

   Note: Make sure that the motor is not running (drive modulating) and no start command is active!

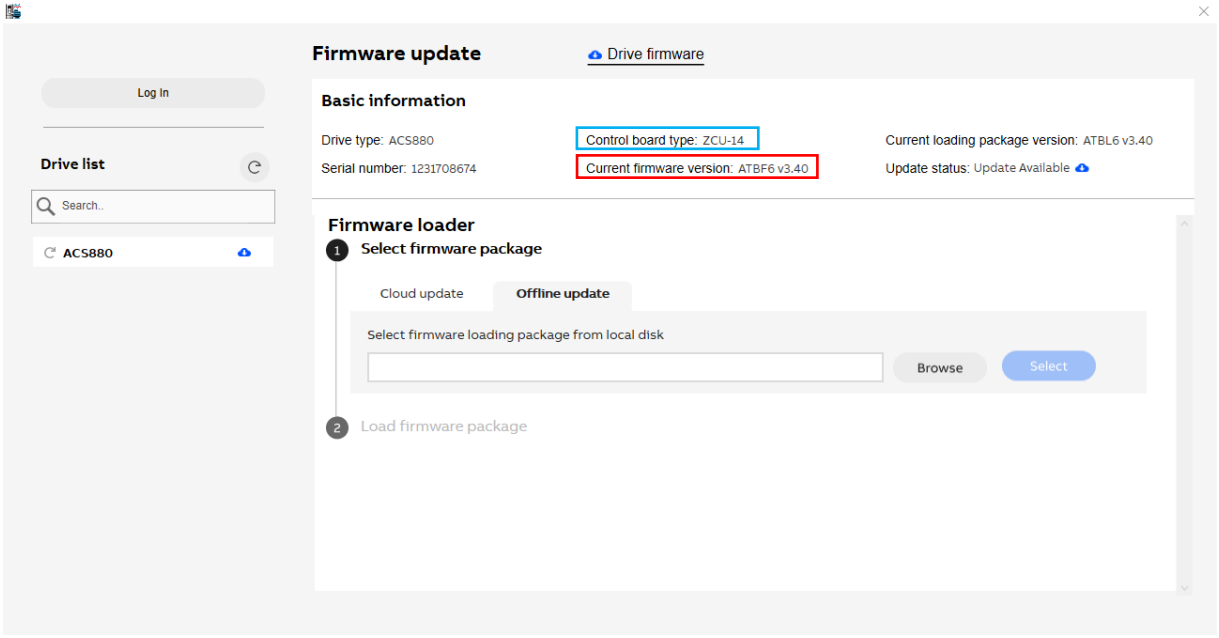
5. Open Drive Composer and establish connection between Drive Composer and the drive.

6. Click **Tools** → **Drive firmware loader**.



   The Firmware update window appears.

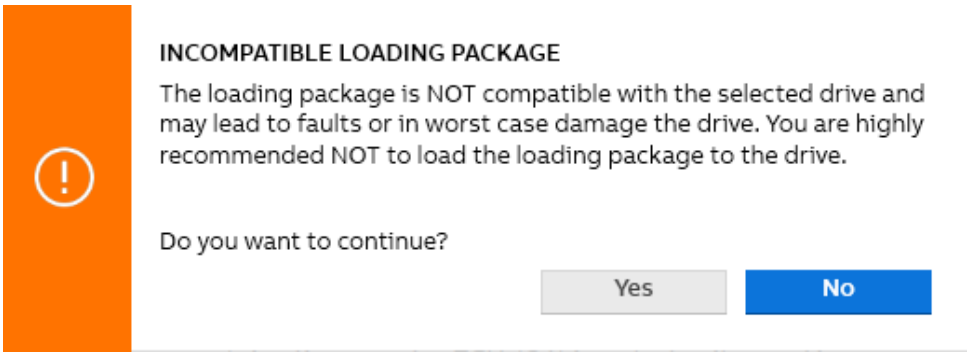
The example shown in the image below is the **ZCU-14** control unit and the firmware version ATBF**6** v3.40:



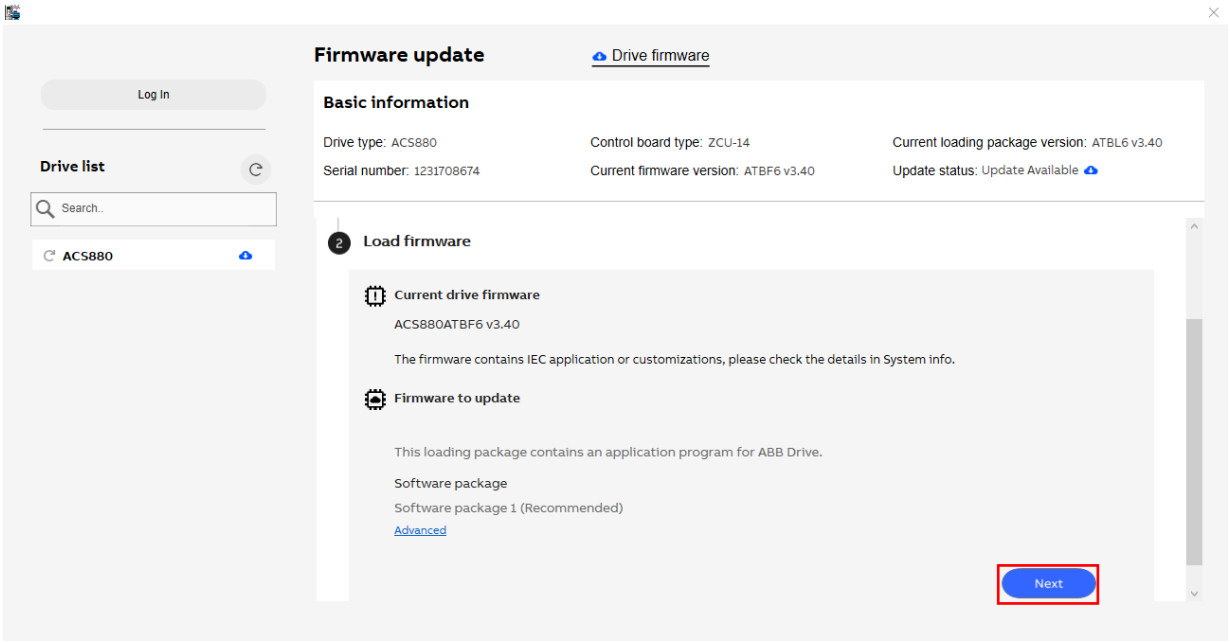
7. Click **Browse** to upload the delta loading package from your computer

8. Click **Select** to continue to download options

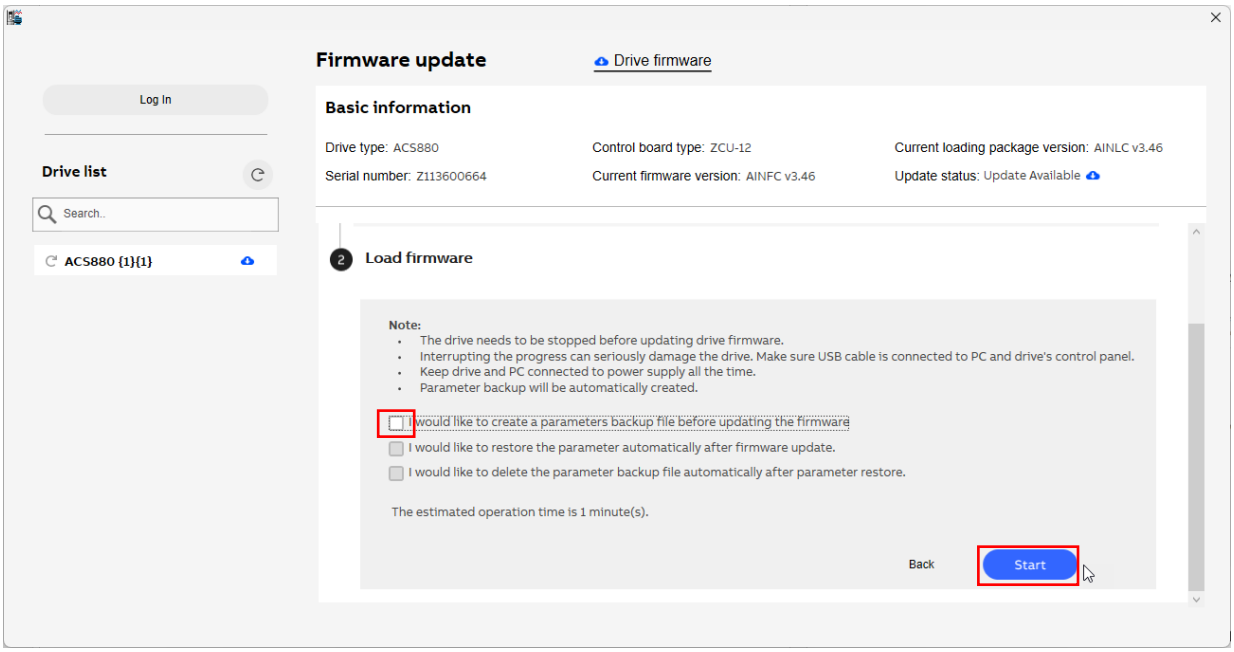
In case the following message appears, select "Yes" to continue with the download.



9. Click **Next** to enter the backup selection

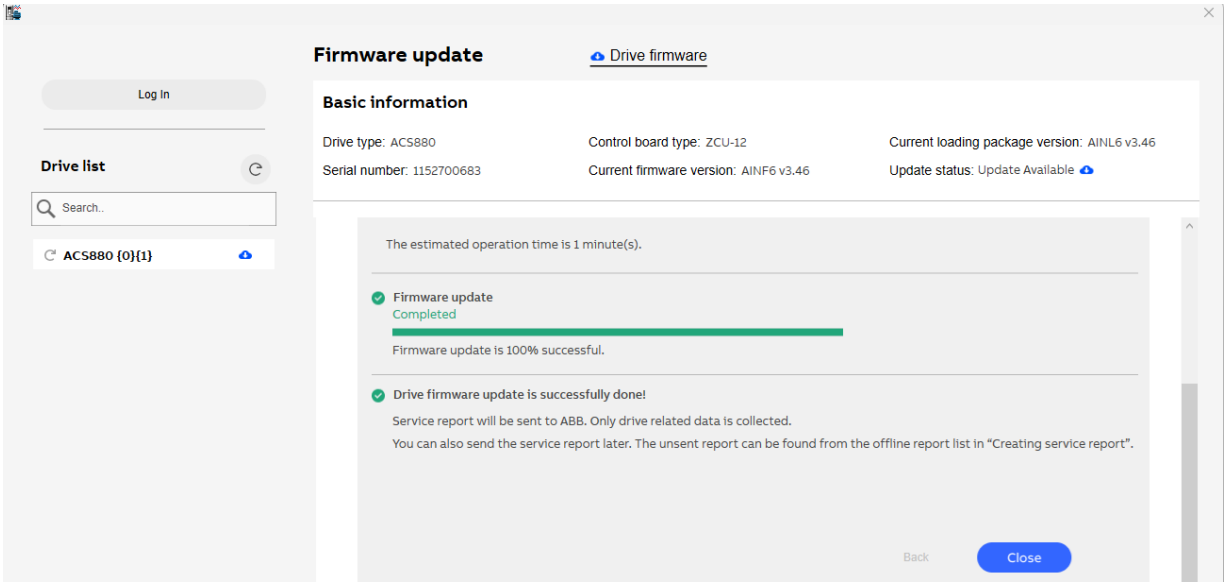


10. Untick the check box *'I would like to create a parameters backup file before updating the firmware'* and click **START**.



Note: Creating a back-up is not required as the delta loading package will only affect the attributes of parameter 99.16 and not the actual value setting of any of the parameters.

11. The update is complete when the progress bar turns green and a message appears that the **Drive firmware update is successfully done!** Click **Close**.



12. In case PROFISAFE communication is in use, the drive firmware update process will cause communication faults in the FSO and the PLC.

    To clear the communication faults:

    1. Boot the FSO:
        - Use parameter '96.09 FSO reboot' or
        - Use drive composer -> safety settings -> "Reboot FSO" or
        - Power cycle the FSO (e.g. Disconnect/connect connector X112)
    2. Reset the PROFIsafe communication fault from the PLC once all drives on the network have been updated and booted (see step 1).

After downloading the delta loading package into the drive

Finalize the update by executing the validation procedure:

a. Verify that parameter 99.16 is read only and cannot be changed
b. Verify that the motor is still turning to the desired direction
   (E.g. request 100 rpm and see that the rotation direction is correct).
c. Verify that the rotation direction matches with the limits that the FSO is monitoring.

IMPORTANT NOTE:
if the drive firmware is reloaded after the download of the delta loading package, the delta loading package must be downloaded again.

After completion of the above described actions, the original safety certificates remain valid with the original SIL and PL levels.

Description of the issue

Drive parameter 99.16 *Motor phase order* may affect the motor safety functionality. Specifically, if parameter 99.16 is changed after the safety validation, the motor direction of rotation and monitored limits are changed.
This applies if one or more of these safety functions are used: SLS (Safely-Limited Speed), SMS (Safe Maximum Speed), SSM (Safe Speed Monitoring), variable SLS over PROFISAFE, Safe speed information over PROFISAFE.

	99. Motor data					
3	Motor type	Asynchronous motor	NoUnit			Asynchronous...
4	Motor control mode	DTC	NoUnit			DTC
6	Motor nominal current	**1,2**	A	0,0	6400,0	**0,0**
7	Motor nominal voltage	**230,0**	V	0,0	800,0	**0,0**
8	Motor nominal frequency	**50,00**	Hz	0,00	1000,00	**0,00**
9	Motor nominal speed	**1360**	rpm	0	30000	**0**
10	Motor nominal power	**0,18**	kW	0,00	10000,00	**0,00**
11	Motor nominal cos φ	**0,71**	NoUnit	0,00	1,00	**0,00**
12	Motor nominal torque	0,000	Nm	0,000	400000...	0,000
13	ID run requested	None	NoUnit			None
14	**Last ID run performed**	Standstill	**NoUnit**			None
15	**Motor polepairs calculated**	2	**NoUnit**	**0**	**1000**	0
16	Motor phase order	U V W	NoUnit			U V W

WARNING!
Parameter 99.16 is useful during the commissioning phase, but after the safety validation changing the parameter value can lead to a potential safety risk for people and property.

For example:

- SLS limit positive = 5000 rpm and SLS limit negative = -100 rpm
- Safety validation performed
- Then 1 year later: Parameter 99.16 is changed from *UVW* to *UWV*
- In such event, a request for 4000 rpm forward will cause 4000 rpm backward without an SLS limit violation fault.

The delta loading package ensures that parameter 99.16 cannot be changed anymore and eliminates the above-described potential safety risk. In practice this means, it locks parameter 99.16 *Motor phase order* and makes it read only.