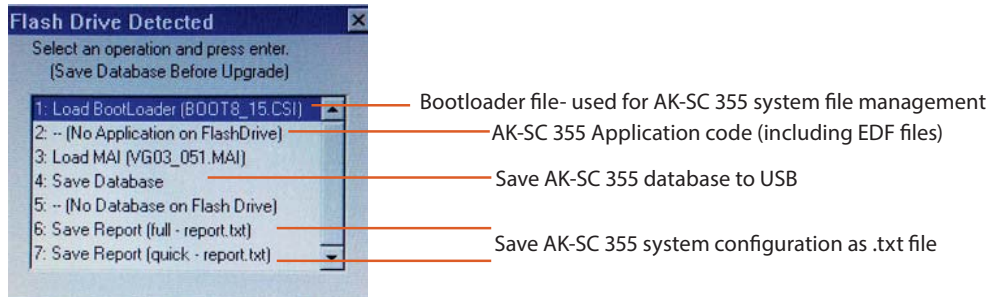## UPDATING SOFTWARE (via USB Flash Drive)

The AK-SC 355 can read & write to USB flash based drives. Upon insertion (or via main menu option 7), the USB menu window will be shown (for DIN units read following section). A typical example of the resulting pop up screen can be seen below, with descriptions for each option. The menu reflects supported files located on the USB memory stick, and may vary from the example below. Ensure relevant software files are located in the USB root directory.   When updating your AK-SC it is recommended to first update the 'Boot-loader' (if specified), followed by the Master Application Image (MAI). The MAI contains AK-SC firmware, EDF and Web files needed.

Flash Drive Detected
Select an operation and press enter.
(Save Database Before Upgrade)

1: Load BootLoader (BOOT8_15.CSI) — Bootloader file- used for AK-SC 355 system file management
2: -- (No Application on FlashDrive) — AK-SC 355 Application code (including EDF files)
3: Load MAI (VG03_051.MAI)
4: Save Database — Save AK-SC 355 database to USB
5: -- (No Database on Flash Drive)
6: Save Report (full - report.txt) — Save AK-SC 355 system configuration as .txt file
7: Save Report (quick - report.txt)

Flash Drive options
Option 1: The Bootloader file can be updated via USB connection.
Option 2: The Application software can be updated via USB connection and will include all system EDF files.
Option 3: Master Application Image (MAI). This is the recommended file to update your AK-SC, it contains firmware, EDF and Web files
Option 4: Save AK-SC database via USB
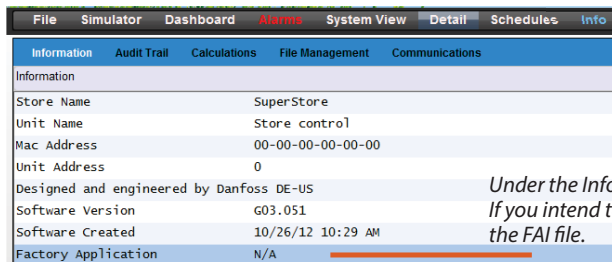Option 5: Load AK-SC database via USB
Option 6: Save report (txt file format, containing main system configuration details)
Option 7: Save Report (txt file format, containing configured system status, not full configuration details)

File type / Description	Method of loading
Boot.csi / Boot Loader file (required for system file management)	USB Flash drive
CSI / Application code for AK-SC 355. Includes all system EDF files	USB Flash drive or RMT tool
MAI / Master Application code for AK-SC 355. Includes all firmware, EDF and Web files	USB or RMT tool
FAI / Factory Application Image	USB

Remotely Upgrading you AK-SC unit - what is the FAI file
Your AK-SC has the ability to be upgraded via a remote connection (RMT). Upgrading via remote offers several advantages, the obvious one being time saving. However, this is increased risk when preforming remote upgrades (i.e. quality of connectivity, power..). Software version 03_051 (and above) comes with an additional extension, FAI (Factory Application Image). The FAI software file contains special code designed to support remote software upgrades. The FAI file provides a 'fall back' state, if at any time a later remote upgrade fails or gets corrupted. Rather than leave a unit in a unstable state in the event of a corrupted remote upgrade, the factory image ensures you can always make contact to re-install code again. In addition, the FAI contains the MAI, which also contains all relevant web and EDF files. Via the Info screen, check if your AK-SC unit has a Factory Application installed. For future remote upgrades it is recommended that the FAI is installed if it is not already present in your system.   The AK-SC can run without the FAI, with firmware updates being done via the MAI file.

File   Simulator   Dashboard   Alarms   System View   Detail   Schedules   Info

Information   Audit Trail   Calculations   File Management   Communications

Information
Store Name   SuperStore
Unit Name   Store control
Mac Address   00-00-00-00-00-00
Unit Address   0
Designed and engineered by Danfoss DE-US
Software Version   G03.051
Software Created   10/26/12 10:29 AM
Factory Application   N/A

Under the Info->Information tab, check to see if a Factory Application is installed (FAI). If you intend to perform remote software updates, Danfoss recommends the loading of the FAI file.

Recommended method for upgrading your AK-SC 355 - Bootloader
The AK-SC bootloader file is a critical file that manages system boot up sequence and system management. The Bootloader can **not** be loaded remotely.   Updating the bootloader can be done in application mode (normal AK-SC operation) or when placed in bootloder mode. The following description of how to upgrade your Bootloder version is via normal AK-SC operation mode.

Bootloader

1/ Back up current database (via USB flash drive or RMT)

2/ Load the latest Bootloader on to the **root directory** of a suitable USB flash Drive and insert in the AK-SC. The Bootloader file is shown under option 1 of the resulting USB pop up window. A progress dialog box will appear, to confirm loading status.

3/ Upon finishing the Bootloader file installation the AK-SC 355 will reset. Your AK-SC will reset in Bootloder mode. Manually reset the AK-SC 355 by pressing CPU reset button on the baseboard. The system will now boot into normal application mode.

AK-SC 355 Baseboard

CPU Reset (after updating Bootloader)

Located inside AK-SC 355 (top right area located on the baseboard)

Firmware

Danfoss recommends using the Master Application Image software (MAI), as it contains all relevent files for correct operation (Firmware, Web and EDF). The following steps describe how to update whilst in normal operation mode.

1/ Back up current database (via USB flash drive or RMT) if not already done so

2/ Load the latest AK-SC firmware (i.e. MAI file) in the **root directory** of a suitable USB flash Drive and insert in the AK-SC. The MAI file should be shown under option 3 of the resulting USB pop up window. Follow on screen instructions.

2/ Allow the MAI to fully install and write to system flash memory

3/ After a few minutes the unit will reset and return to normal operation, using the latest code.

Updating AK-SC DIN mount units

When upgrading system software on AK-SC DIN units, two main options are available, RMT tool or USB

RMT

When using the RMT tool, the AK-SC DIN unit IP address must be known in order to make a connection. Depending on installed conditions, the IP address may be known, in situations where the IP address is not known, use the rotary address switch to force a fixed IP address. Rotate the address switch on the AK-SC DIN to position 9, this will assign a fixed IP address of 192.168.1.161. Using this address in the RMT tool a connection can be made, and after successful log on, system software can be updated via the tools menu. MAI is not currently supported in the RMT, select the csi file format.
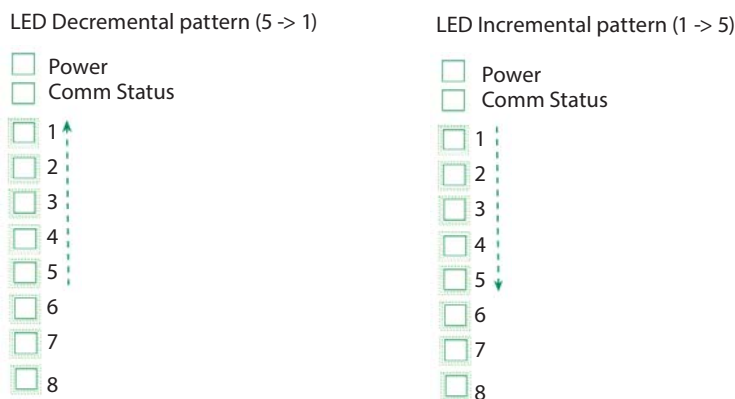
USB

Utilizing the LED lights seen on the DIN AK-SC model, it is possible to use the USB method to update system code and files. The berg jumper and rotary address switch are also used in the process. The table below reflects the LED patterns

LED #	LED State	Selection
1,2,3,4,5,6,7,8	ON,OFF,OFF,OFF,OFF,OFF, *,*	1: Boot loader Upgrade
1,2,3,4,5,6,7,8	OFF,ON,OFF,OFF,OFF,OFF, *,*	2: App Upgrade
1,2,3,4,5,6,7,8	OFF,OFF,ON,OFF,OFF,OFF, *,*	3: MAI Upgrade
1,2,3,4,5,6,7,8	OFF,OFF,OFF,ON,OFF,OFF, *,*	4: Load Database
1,2,3,4,5,6,7,8	OFF,OFF,OFF,OFF,ON,OFF, *,*	5: Save Database
1,2,3,4,5,6,7,8	OFF,OFF,OFF,OFF,OFF,ON, *,*	6: Save Report (available only in CS)

LED patterns:

1) Incremental Running LED's (1 -> 5) indicating that a USB device has been detected

2) Decrementing Running LED's (5 -> 1) indicating that there is a data transfer going on between the USB disk and the AK-SC 255 unit

3) When all the LED's 1-5 are ON it indicates an error while downloading.

4) LED 1-6 Indicate a particular selection, the selection is valid only when berg pin is on

5) LED 7 & 8 blinking alternately indicates unit is in boot loader mode

6) LED 7 blinking and Led 8 ON indicates unit in application mode.

7) LED 6 blinking indicates downgrade warning (the user is trying to move from a higher application to a lower application so database will be deleted)

8) After a successful upgrade when the unit comes back up the unit will have LED 6 ON indicating successful upgrade

9) If LED 6 is blinking after a boot up in App mode, this indicates extraction of support files from the MAI images failed

10) If LED 8 is toggling on / off it indicates extraction of support files from the MAI during application boot up just after an MAI upgrade

LED Decremental pattern (5 -> 1)   LED Incremental pattern (1 -> 5)

☐ Power   ☐ Power
☐ Comm Status   ☐ Comm Status

☐ 1   ☐ 1
☐ 2   ☐ 2
☐ 3   ☐ 3
☐ 4   ☐ 4
☐ 5   ☐ 5
☐ 6   ☐ 6
☐ 7   ☐ 7
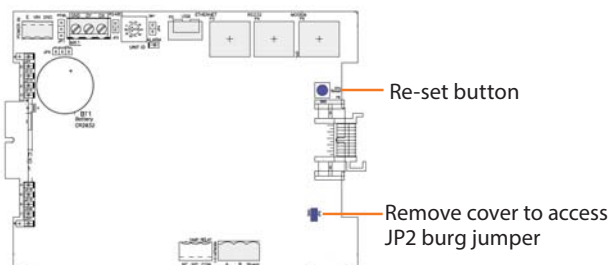☐ 8   ☐ 8

Update procedure

The following steps should be followed while upgrading a AK-SC DIN unit both in the bootloader and normal run status.

1. Ensure that the unit is either in the bootloader mode or application mode (Note the pattern on Led 7 and 8)
2. Also ensure that the Rotary address switch is in position zero (If the switch is at any different location ensure that it is returned to that position after the upgrade)
3. Connect the USB disk to the unit
4. Ensure that there is an incrementally running led pattern on the LEDs. If no pattern is evident, disconnect and re-connect the USB, repeat until the LED pattern shows.
5. Remove berg jumper JP2 (see diagram below).
6. Once the USB is detected, make a selection using the Rotary address switch, using the following assignments

Rotary Address 1 = Boot loader Upgrade
Rotary Address 2 = App Upgrade
Rotary Address 3 = MAI Upgrade   Re-set button
Rotary Address 4 = Load Database (Only in application mode)
Rotary Address 5 = Save Database (Only in application mode)
Rotary Address 6 = Save Report (Only in the CS version)
                                                          Remove cover to access
                                                          JP2 burg jumper

7. Insert the berg jumper (JP2)
8. Ensure that the LED pattern on leds reflects the selection made. Refer the above table for the correct pattern. (If the Led pattern does not reflect the selection that mean Invalid selection was made.)
9. Check Led 6 if blinking the user is downgrading, ensure that you really want to downgrade
10. If the pattern matches the selection, remove the berg jumper.
11. Position in the Rotary address switch back to position 0. this indicates a confirmation
12. Insert the JP2 berg jumper back
13. The led should show a decrementing running led pattern indicating data transfer between USB and the AK-SC unit.
14. Restore the rotary switch back to the original position before you stared the upgrade.
15. If you made a wrong selection or the patterns do not match, Remove the berg jumper and move the rotary switch to position 9 to reset. Ensure that you have incrementing running led pattern and then start all over again.

After each code / application update or database load (Bootloader, Application, MAI or database) ensure the AK-SC is re-set

Important notes

- Always move the rotary switch only when the berg pin is removed
- Position 0: Indicates confirmation to process with the operation.
- The LED pattern will be visible only when the berg jumper in on.
- The position of the rotary switch will be read only after the berg pin is inserted back
- Position 9: Can be used like ESC
- If the LED pattern does not match the selection there is a mistake so don't proceed with confirmation
- The Incrementing running led pattern indicate the initial state of the USB Menu
- Re-set the AK-SC 255 after each code loading sequence or database load