ENGINEERING
TOMORROW

User Guide

Danfoss troubleshooting guide
for supermarket electronics

www.danfoss.com

Contents

1. AK-SM 800A

Compressors not coming on with high suction

1. Check status screen of rack to see if any warnings are listed (i.e. phase loss, high discharge pressure, oil fail, etc).
   a. For high discharge pressure, check settings tab to confirm cutin/cutout values for "Disch pressure safety" are appropriate (cutout should be higher than cutin)
   b. For phase loss, oil fail, see if the device sending Danfoss a signal is tripped (i.e. phase loss monitor, oil sensor). If so, that device needs to be investigated.
   c. If the device is not tripped, check wiring and polarity in program (under Addresses on-off inputs tab) to ensure proper config (i.e open/closed/voltage/no voltage).
2. If no warnings are listed, check staging pattern of controller (auto/manual) under Settings
   a. If set to manual, # of steps should be greater than 0, and individual steps should show compressors selected with capacity increases from one step to the next.
   b. Reset the controller after reviewing this section (even if no changes made). Staging pattern changes do not take effect until after a reset.
3. Check Address section to ensure relay address for compressor still exists, polarity correct.
4. Under status screen for rack, select "Service" and confirm no manual overrides on compressors

---

IO Offline

1. Verify Power to modules, Complete rescan
   a. Power supply to comm modules should be 24 V AC/DC
2. Verify 'Channel Lonworks' enabled on Network Nodes screen
   a. If not, enable and rescan afterwards
3. Verify term resistor switch position at AK-SM 800 is correct
   a. If 1 loop from plug, switch = 'On' position
   b. If 2 loops from plug, switch = 'Off' position
4. Verify EOL resistor in place at end of loop(s)
   a. 120 Ω resistor or term switch in On position
   b. If term switches exist on modules in middle of loop, need to be in Off position
5. Verify comm module addresses via rotary switches
6. Verify that there are no hairline shorts on the comm loop terminal
7. Verify comm loop is run as point-to-point daisy chain (no branches, etc)
8. Verify comm cable type
   a. EIA RS 485 (max. 4000') for Modbus and LON RS485 devices
   b. 120 Ω impedance, 42 – 75.5 pF/m capacitance, typically 22-24 AWG
9. Isolate loop in sections, rescan
   a. Identifies where comm problem may be introduced

Case Controller 'Mismatch' Issue

1. Go to Network Nodes → Scan Status → Controllers
   a. Locate address in list
   b. Note controller version, part #, type shown
2. Go to Configuration → Control → Refrigeration → Circuits → Type
   a. Confirm type matches info from #1 above
   b. If not, change selection in list to proper choice
   c. Rescan after updating
3. Common mistakes
   a. For AK-CC 550A, parameter o61 not set to match program.
      i. Typically o61=2 for most setups
4. Recommendations
   a. Use 'Show only scanned devices' option at top of Circuits screen to limit choices
   b. If correct choice is missing from list, update system manager to latest version of firmware

---

AK-SM 800A Stuck on 'Verifying Nodes'

1. Go to Network Nodes, verify only channels being used are enabled
   a. Disable any channels not being used
   b. Reset AK-SM 800A

Stepper Valves not Controlling Properly

1. Try a rescan to confirm module is online and recalibrate valve position. Open/Close LED's on stepper module should light up.
2. Under Configuration → Control → Refrigeration → Addresses → Variable Outputs, verify valve config is correct (# of steps, step rate, etc).
3. Verify points are not being skipped on the stepper module (i.e. cannot use output 3 if outputs 1&2 aren't used).
4. For Danfoss EEPR valves (i.e. KVS), motors can be ohmed out. Should measure 52 ohms (+/-10%) across red/green wires and also black/white wires.

Blank Red Screen

Background:

It has been observed that in some cases the AK-SM 800A continually resets and will show a blank red screen, before resuming normal operations.

Root cause:

The AK-SM 800A has a system process supervision function called 'monit' and the role is to perform certain actions in error conditions to protect and maintain AK-SM 800A App runtime. In R3.0.12, monit will count how many times the AK-SM 800A resets within a 10 min window. If there are 2 or more reset events (power cycled, pin, or hard failure of application) detected in this window a script is run to initiate a reset. Monit process has a 20-cycle count before any error count is reset. Each cycle is 30 seconds. After the 20-cycle limit is reached the error counter is reset and unless another reset (pin reset / power-cycle/ failure) is detected the unit will run correctly.

Workaround - required:

1. If you need to reset your AK-SM 800A please use the Configuration → Comm *'Press to Reset this unit'* button.

2. If your unit enters the monit script mode, then allow 10 mins to pass with no further power resets - unit will then continue as normal.

Notes:

The monit script is only initiated by a sequence of power/ failure resets and is not initiated by user reset via user screens.

Each 30-cycle is counted based on the hardware clock, so in some cases if power/ failure resets start occurring in the middle of the cycle count, the time before monit resets could be less than the 10-minute rolling timeframe.

Digital Compressor/Unloader in alarm

1. Note that the AK-SM 800A will not send a constant voltage to the digital compressor when we are not calling for the compressor to run. This will result in error LED's being active on the compressor module. However, it is not a true indication of a problem-the LED's will clear once we call for the compressor to run and voltage is sent to the module. Due to this, alarm contacts on the compressor module should be used as a monitoring-only signal back to the AK-SM 800A, not to alarm on.

Digital Compressor/Unloader remains off/0% while compressor relay is On

1. For a digital compressor setup using inverter type of "VO", the program requires points that do not physically exist to have an assignment entered, and overrides put in place. Fake bd-pt assignments in the addresses tab using 99-x.x for each point should be entered. These points include:
   a. VFD Reset (relay)
   b. VFD Bypass (relay)
   c. VFD proof (digital input)
   d. VFD fault (digital input)
2. Once points have been verified, also ensure that the VFD proof is in a manual-on state, and the VFD fault are in a manual-off state from the Service tab of the rack status page. Points may have custom names if already programmed by someone else.
3. Also confirm that the analog output signal (0 – 5 V, 0 – 10 V, etc) has the physical point assigned that is wired to the compressor module under Addresses → Variable Outputs. Note there are not 1 – 5 V options here, instead we use a min speed setting under configuration to accomplish min voltage requirements.
4. After the above is completed, check rack status screen for "Inverter" status to ensure signal is not being bypassed on fault or no proof. If so, select the line "press to clear bypass"
5. If programming of addresses was required in steps 1-3, controller should also be reset.

Case will not go into manual defrost on IO circuit

1. Go to Configuration → Control → Refrigeration → Circuits
2. Under setup, check term type for case.
   a. If temp termination, is temp sensor already above this value when starting manual defrost?
   b. If on/off termination, is termination showing "On" on status screen when starting manual defrost?
   c. If a) or b) are true, case is terminating immediately after manual defrost is starting. Otherwise move onto 3.
3. Check setting for "Auto defrost schedules". If enabled:
   a. If "max concurrent defrosts" is set to 0, increase setting to 4 and try manual defrost again
   b. If a) does not work, try changing "Auto defrost schedules" to Disabled, and try manual defrost again

RTU/AHU showing "desired" status and no heat/cool

1. Go to Configuration → Control → HVA → Setup → Addresses and choose the problem unit in drop-down
2. Under Relays, check if Fan relay is assigned with a point
   a. If not assigned and physical relay assignment should exist, add-in
   b. If not assigned and no physical relay exists (i.e. unit heater), add in fake relay point (i.e. 99-1.1)

2. AK-SM 800

Compressors not coming on with high suction

1. Check status screen of rack to see if any warnings are listed (i.e. phase loss, high discharge pressure, oil fail, etc)
   a. For high discharge pressure, check settings tab to confirm cutin/cutout values for "Disch pressure safety" are appropriate (cutout should be higher than cutin)
   b. For phase loss, oil fail, see if the device sending Danfoss a signal is tripped (i.e. phase loss monitor, oil sensor). If so, that device needs to be investigated.
   c. If the device is not tripped, check wiring and polarity in program (under Addresses on-off inputs tab) to ensure proper config (i.e open/closed/voltage/no voltage).
2. If no warnings are listed, check staging pattern of controller (auto/manual) under Settings
   a. If set to manual, # of steps should be greater than 0, and individual steps should show compressors selected with capacity increases from one step to the next.
   b. Reset the controller after reviewing this section (even if no changes made). Staging pattern changes do not take effect until after a reset.
3. Check Address section to ensure relay address for compressor still exists, polarity correct.
4. Under status screen for rack, select "Service" and confirm no manual overrides on compressors

Keypad not Responsive

1. Reset unit
2. Remove keypad from AK-SM 800 and reconnect
3. Ensure excessive wiring does not exist behind keypad
   a. If so, shorten cables where possible
4. Replace AK-SM 800

IO Offline

1. Verify Power to modules, Complete rescan
   a. Power supply to comm modules should be 24 V AC/DC
2. Verify 'Channel Lonworks' enabled on Network Nodes screen
   a. If not, enable and rescan afterwards
3. Verify term resistor switch position at AK-SM 800 is correct
   a. If 1 loop from plug, switch = 'On' position
   b. If 2 loops from plug, switch = 'Off' position
4. Verify EOL resistor in place at end of loop(s)
   a. 120 Ω resistor or term switch in On position
   b. If term switches exist on modules in middle of loop, need to be in Off position
5. Verify comm module addresses via rotary switches
6. Verify that there are no hairline shorts on the comm loop terminal
7. Verify comm loop is run as point-to-point daisy chain (no branches, etc)
8. Verify comm cable type
   a. EIA RS 485 (max. 4000') for Modbus and LON RS485 devices
   b. 120 Ω impedance, 42– 75.5 pF/m capacitance, typically 22-24 AWG
9. Isolate loop in sections, rescan
   a. Identifies where comm problem may be introduced

Database will not load via USB

1. Verify filename ends in '.s55' extension
2. Verify filename is 8 characters or less, no special characters
3. Verify file is on root drive of USB, not subfolder
4. Verify controller firmware version equal or higher than database version
   a. Database version can be verified in RMT
   b. If database is 255 database being converted, must be v2.191 or higher.
5. Reset AK-SM 800 and attempt to load again

Case Controller 'Mismatch' Issue

1. Go to Network Nodes → Scan Status → Controllers
   a. Locate address in list
   b. Note controller version, part #, type shown
2. Go to Configuration → Control → Refrigeration → Circuits → Type
   a. Confirm type matches info from #1 above
   b. If not, change selection in list to proper choice
   c. Rescan after updating
3. Common mistakes
   a. For AK-CC 550A, parameter o61 not set to match program.
      i. Typically o61=2 for most setups
4. Recommendations
   a. Use 'Show only scanned devices' option at top of Circuits screen to limit choices
   b. If correct choice is missing from list, update system manager to latest version of firmware

---

AK-SM 800 Stuck on 'Verifying Nodes'

1. Go to Network Nodes, verify only channels being used are enabled
   a. Disable any channels not being used
   b. Reset AK-SM 800

Missing License

1. Did MAC address revert back to 00 : 0B : 2D : 00 : 4B : 00 ?
   a. If yes, AK-SM 800 must be replaced
   b. If no, please contact Danfoss Tech Support and supply the MAC address. Tech Support will help reinsert the license.
2. The controller will still operate regularly, but you won't be able to make any changes to configuration
   a. In need of immediate assistance, you may load in the back-up/old database to bring the license back.

Host Comm/ Host Count Error

1. Verify the comm configuration (config → comm)
   a. Make sure same master IP addresses for every controller and separate slave IP addresses for each slave controller
   b. If DHCP is set to no, verify default gateway and network mask. Every controller will share the same default gateway and network mask
   c. Verify # of SM's on network
2. Verify rotary dial addresses
   a. Master unit needs have address 0
   b. Each controller must have unique address
3. Verify connection from AK-SM 800 to switch, and switch to network
   a. Could be the issue with the cable
   b. Power cycle network switch, router, or cell modem
4. Reset AK-SM 800
   a. Make sure to reset all slave controllers before resetting master
5. Verify firmware version in each controller. Units should have same version.

Slowness in AK-SM 800

1. Verify firmware version is above v8.074
   a. If running an older firmware version, it is recommended to upgrade (latest version is v8.091)
2. Is slowness present when viewing case controller only or any other screen?
   a. If only present to case controller info, it could indicate an issue with case controller comm loop
      i. Try temporarily breaking loop to few case controllers and see if results are better. You may also choose to unplug Modbus plug and see if it speeds up
      ii. Start adding case controllers back to the loop one-by-one and see at what point slowness returns. This will indicate where the issue is.

DNS Failure Alarm

1. DNS stands for domain name server, which allows you to type domain name (i.e. google.com) instead of server IP. If you know the server IP, you may choose to type in the IP and turn DNS off.
2. DNS failure alarm indicates that an alarm transmitted, or attempted to transmit via email from the AK-SM 800, and there was no feedback from the email server to the AK-SM 800 saying the alarm was received.
   a. Sometimes the server is simply not setup to send this feedback, so if the user did in fact receive the initial alarm via email, it is nothing more than a nuisance and DNS alarm can be disabled.
   b. Otherwise, verify the DNS name entered under the Config → Alarms → Connections section of the AK-SM 800 is correct.

Stepper Valves not Controlling Properly

1. Try a rescan to confirm module is online and recalibrate valve position. Open/Close LED's on stepper module should light up.
2. Under Configuration → Control → Refrigeration → Addresses → Variable Outputs, verify valve config is correct (# of steps, step rate, etc).
3. Verify points are not being skipped on the stepper module (i.e. cannot use output 3 if outputs 1&2 aren't used).
4. For Danfoss EEPR valves (i.e. KVS), motors can be ohmed out. Should measure 52 ohms (+/-10%) across red/green wires and also black/white wires.

Digital Compressor/Unloader in alarm

1. Note that the AK-SM 800A will not send a constant voltage to the digital compressor when we are not calling for the compressor to run. This will result in error LED's being active on the compressor module. However, it is not a true indication of a problem-the LED's will clear once we call for the compressor to run and voltage is sent to the module. Due to this, alarm contacts on the compressor module should be used as a monitoring-only signal back to the AK-SM 800A, not to alarm on.

RTU/AHU showing "desired" status and no heat/cool

1. Go to Configuration → Control → HVAC → Setup → Addresses and choose the problem unit in drop-down
2. Under Relays, check if Fan relay is assigned with a point
   a. If not assigned and physical relay assignment should exist, add-in
   b. If not assigned and no physical relay exists (i.e. unit heater), add in fake relay point (i.e. 99-1.1)

Digital Compressor/Unloader remains off/0% while compressor relay is On

1. For a digital compressor setup using inverter type of "VO", the program requires points that do not physically exist to have an assignment entered, and overrides put in place. Fake bd-pt assignments in the addresses tab using 99-x.x for each point should be entered. These points include:
   a. VFD Reset (relay)
   b. VFD Bypass (relay)
   c. VFD proof (digital input)
   d. VFD fault (digital input)
2. Once points have been verified, also ensure that the VFD proof is in a manual-on state, and the VFD fault are in a manual-off state from the Service tab of the rack status page. Points may have custom names if already programmed by someone else.
3. Also confirm that the analog output signal (0 – 5 V, 0 – 10 V, etc) has the physical point assigned that is wired to the compressor module under Addresses->Variable Outputs. Note there are not 1-5V options here, instead we use a min speed setting under configuration to accomplish min voltage requirements.
4. After the above is completed, check rack status screen for "Inverter" status to ensure signal is not being bypassed on fault or no proof. If so, select the line "press to clear bypass"
5. If programming of addresses was required in steps 1-3, controller should also be reset.
6. Refer to the document "AK-SM 800 Digital Unloader Programming" for a full step-by-step process of the digital unloader from scratch, including screenshots.

Case will not go into manual defrost on IO circuit

1. Go to Configuration → Control → Refrigeration → Circuits
2. Under setup, check term type for case.
   a. If temp termination, is temp sensor already above this value when starting manual defrost?
   b. If on/off termination, is termination showing "On" on status screen when starting manual defrost?
   c. If a) or b) are true, case is terminating immediately after manual defrost is starting. Otherwise move onto 3.
3. Check setting for "Auto defrost schedules". If enabled:
   a. If "max concurrent defrosts" is set to 0, increase setting to 4 and try manual defrost again
   b. If a) does not work, try changing "Auto defrost schedules" to Disabled, and try manual defrost again

---

3. AK-CC55

AKV Not Opening

1. Is proper voltage at terminals 8&9 (should match coil voltage spec)?
2. Is case controller calling for valve to be open? (parameter u23 > 0%)
   a. If yes
      i. If voltage on 8 but not 9, bad relay
      ii. If no voltage on 8, check voltage source
      iii. If voltage to 8&9 ok, could be bad coil or issue with valve blockage
   b. If no
      i. Is superheat reading correct? (see 'incorrect superheat' below to troubleshoot)
      ii. Is saturated suction temp above MOP temp setting (parameter u26 vs. n11)
      iii. Is main switch on (r12)?
      iv. Verify 'close EEV during rack shutdown' setting at rack controller is not exceeded
      v. Verify shutdown schedule in rack controller not enabled

---

Incorrect Superheat

1. Is coil outlet sensor (s2) accurate?
   a. Check parameter u20. If reading inaccurate, sensor should be replaced as this can lead to floodback.
2. Is pressure transducer accurate?
   a. Check parameter o20 (-15psi)
   b. Check parameter o21 (174psi-HFC, 855psi-CO2)

Pe Error (E20)

1. Verify transducer wiring
   a. If using 060G1034 connector, terminals 30, 31, 32 wired black, blue, brown.
   b. Measure voltage across terminals 30, 31. Should be 5 V DC
   c. Measure voltage across terminals 31, 32. Should be in range of 0.5 – 4.5 V DC.
   d. Verify transducer type. Label of transducer should say AKS32R (HFC) or AKS 2050 (CO2)

S3 Error (E25)

1. If no return air (s3) sensor exists, verify the following parameters:
   a. R15 = 100%
   b. A36 = 100%
   c. O17 = 100%
   d. R61 = 100%
2. If return air sensor does exist, verify ohm reading of sensor, and confirm wired to terminals 37, 38.

AK-CC55 Case Controllers Offline

1. Complete rescan
2. Verify if loop is Modbus or Lon
   a. If LON, is comm card installed?
   b. If Modbus, verify polarity on all units is consistent
3. Verify 'Channel Lonworks' or 'Channel Modbus' enabled appropriately on Network Nodes screen
   a. If not, update and rescan afterwards
4. Verify term resistor switch position at AK-SM 800 is correct
   a. If 1 loop from plug, switch = 'On' position
   b. If 2 loops from plug, switch = 'Off' position
5. Verify EOL resistor in place at end of loop(s)
   a. 120ohm resistor
6. Verify # of devices on system manager is less than 120.
7. Verify total loop distance less than 4000 ft.
   a. If longer, repeater must be added.
8. Verify no Duplicates on System Manager
   a. Found under Duplicates tab in Network Nodes
   b. If duplicates exist, identify controllers sharing address and correct
9. Verify wire type ok
   a. Should be EIA485 rated cable
   b. Refer to Danfoss comm guidelines document as needed
10. Isolate loop in sections, rescan
   a. Identifies where comm problem may be introduced

Dual Temp Setup

1. Dual temp setup uses the digital input on the case controller (below example uses DI1)
   a. Set parameter o02 to 7 for thermostat band changeover (European term for dual temp)
   b. Define your secondary setpoint in parameter r21
   c. Define high and low alarm settings for that setpoint in parameter A20 and A21

4. AK-CC 550A

AKV Not Opening

1. Is proper voltage at terminals 5&6 (should match coil voltage spec)?
2. Is case controller calling for valve to be open? (parameter u23 > 0%)
   a. If yes
      i. If voltage on 5 but not 6, bad relay
      ii. If no voltage on 5, check voltage source
      iii. If voltage to 5&6 ok, could be bad coil or issue with valve blockage
   b. If no
      i. Is superheat reading correct? (see 'incorrect superheat' below to troubleshoot)
      ii. Is saturated suction temp above MOP temp setting (parameter u26 vs. n11)
      iii. Is main switch on (r12)?
      iv. Verify 'close EEV during rack shutdown' setting at rack controller is not exceeded
      v. Verify shutdown schedule in rack controller not enabled

Incorrect Superheat

1. Is coil outlet sensor (s2) accurate?
   a. Check parameter u20. If reading inaccurate, sensor should be replaced as this can lead to floodback.
2. Is pressure transducer accurate?
   a. Check parameter o20 (-15psi)
   b. Check parameter o21 (174psi-HFC, 855psi-CO2)

Pe Error (E20)

1. Verify transducer wiring
   a. If using 060G1034 connector, terminals 30, 31, 32 wired black, blue, brown.
   b. Measure voltage across termainls 30, 31. Should be 5Vdc
   c. Measure voltage across terminals 31, 32. Should be in range of 0.5-4.5Vdc.
   d. Verify transducer type. Label of transducer should say AKS32R (HFC) or AKS 2050 (CO2)

S3 Error (E25)

1. If no return air (s3) sensor exists, verify the following parameters:
   a. R15 = 100%
   b. A36 = 100%
   c. O17 = 100%
   d. R61 = 100%
2. If return air sensor does exist, verify ohm reading of sensor, and confirm wired to terminals 37, 38.

AK-CC 550A Case Controllers Offline

1. Complete rescan
2. Verify if loop is Modbus or Lon
   a. If LON, is comm card installed?
   b. If Modbus, verify polarity on all units is consistent
3. Verify 'Channel Lonworks' or 'Channel Modbus' enabled appropriately on Network Nodes screen
   a. If not, update and rescan afterwards
4. Verify term resistor switch position at AK-SM 800 is correct
   a. If 1 loop from plug, switch = 'On' position
   b. If 2 loops from plug, switch = 'Off' position
5. Verify EOL resistor in place at end of loop(s)
   a. 120 Ω resistor
6. Verify # of devices on system manager is less than 120.
7. Verify total loop distance less than 4000 ft.
   a. If longer, repeater must be added.
8. Verify no Duplicates on System Manager
   a. Found under Duplicates tab in Network Nodes
   b. If duplicates exist, identify controllers sharing address and correct
9. Verify wire type ok
   a. Should be EIA485 rated cable
   b. Refer to Danfoss comm guidelines document as needed
10. Isolate loop in sections, rescan
   a. Identifies where comm problem may be introduced

Mismatch Error during v2.0 Firmware Install

1. Refer to AK-CC 550A application guide, "Installing AK-CC 550A with the new v2.0 firmware"

Configuration (AK-CC 550A to AK-SM 800)

1. Refer to AK-CC 550A service guide, "AK-CC 550A to AK-SM 800 Configuration"

Dual Temp Setup

1. Dual temp setup uses the digital input on the case controller (below example uses DI1)
   a. Set parameter o02 to 7 for thermostat band changeover (European term for dual temp)
   b. Define your secondary setpoint in parameter r21
   c. Define high and low alarm settings for that setpoint in parameter A20 and A21

5. AK-CC 750

Replacing AK-CC 750

1. Set address on the case controller
2. Perform rescan on rack controller
3. Do not upload from case controller
4. Verify the main switch is off
5. Determine how many evaporators are controlled by AK-CC 750
6. Set the Quick Setup in Config. Once Quick Setup is completed, download to AK-CC 750
7. Verify the number of evaporators is correct
8. Turn the main switch on

Sensor naming conventions

When viewing case sensor status, alarms, etc it becomes important to understand the naming convention used in the 750. Naming is as follows:

S = temp sensor

#2, 3, 4, 5 indicates sensor location on evaporator

- S2 = coil outlet
- S3 = Return air
- S4 = Discharge air
- S5 = defrost termination sensor

a, b, c, d indicates which evaporator

- a = coil #1
- b = coil #2
- c = coil #3
- d = coil #4

So for example:

- S2c would be the coil outlet temp sensor of the 3rd evaporator.
- S4a would be the discharge air temp sensor of the first coil.

6. AK-XM Modules

AKS Temp Sensor not Reading on IO Module

1. Verify input sensor is wired to, verify program matches (including address and sensor type)
2. Ensure board/point is online
3. If reading 320F in program, this indicates open, -50F indicates short.
4. Ohm out sensor at module
   a. If reading an open, break in cable or loose connection between module and probe
   b. If reading closed, likely a short in cable between module and probe
   c. If reading expected resistance (compare to temp-ohm chart for PT1000), move sensor to different input and reprogram address
   d. Verify other sensors on module reading ok to ensure not a larger problem
      i. If so, may need to isolate sensors to identify problematic input on module
5. Verify that no external resistors are still wired to the board-point in question.

AK-XM 103A module not coming online

1. If 255, version must be v2.101 or higher

Relay will not respond to override through program

1. Ensure module has power, online
2. Check Service screen in Rack controller. If 'remote', override is through switch at relay module
3. If using the XM-103A module on the same controller, verify that relay points have not been mistakenly assigned to the same board as the XM-103A.

Sensor Readings Fluctuating

1. Ensure module has steady voltage, ground connected on power plug, shield connected on comm plug
2. If comm module is not powered by Danfoss power supply, switch to one. Lack of filtering from other manufacturers or direct from RTU condenser, etc can lead to this.
3. Remove earth ground to see if fluctuations stop. This points to a bad transformer/power supply, or miswiring.
4. Remove inputs from modules one at a time, checking other readings each time. Feedback from a set of wires into the modules can cause this issue.

Intermittent IO Offline Issues

1. Ensure end-of-line termination is correct. Physical resistor or switch enabled (not both) at last module, not enabled anywhere else in comm loop.
2. Ensure no loose comm cabling, strands touching, etc.
3. If issues are on module in condenser, very rare but possible issues from voltage spike requiring snubbers. Contact Danfoss to discuss further.

7. Storeview

Unable to Connect to Site that Works in Web Browser

1. Delete site from Storeview, re-add.

8. AK-SC 255

Battery Replacement/Low Battery Alarm

1. Do not power down controller
2. Remove old battery. Be careful not to bend the battery clip any more than necessary; battery clip can break
3. Insert new battery

255 Alarm Dialout Issues

1. Verify modem has power
2. Reset modem, 255
3. Verify info on Alarm Routing screen
4. Verify phoneline is active (inbound call from phone)
5. Verify phone # is correct (outbound call from corded phone on modem phoneline)
6. Verify modem config screen

'Press 9 to Clear Database' Message

1. Database must be cleared, no options to bypass.
2. Press 9 to clear
3. Reload database after clear is complete

'Alarm' Flashing on 255, LED Red but no active/acknowledged alarms

1. Go to Configuration → Alarms → Service
   a. To reset the Alarm! Message and LED, try enabling a one-time Test Alarm
   b. If this does not work, use 'Clear Alarm Log' option

IO Offline

1. Verify Power to modules, Complete rescan
2. Verify 'Channel Lonworks' enabled on Network Nodes screen
   a. If not, update and rescan afterwards
3. Verify EOL resistor in place at end of loop
   a. 120 Ω resistor or term switch in On position at last comm module
   b. If term switches exist on modules in middle of loop, need to be in Off position
4. Verify comm module addresses via rotary switches
5. Isolate loop in sections, rescan
   a. Identifies where comm problem may be introduced
6. If module is still offline, remove power to communication module for 15 seconds, repower. Do Complete Rescan again.

Missing License

1. Please contact Danfoss Tech Support and supply the MAC address. Tech support will help reinsert the license
2. The controller will still operate regularly, but you won't be able to make any changes to configuration
   a. In need of immediate assistance, you may load in the back-up/old database to bring the license back
3. Verify CPU card is inserted correctly. Reset the controller

---

Black Display Screen

1. Verify ribbon cable between the screen and CPU board
   a. If not loose or disconnected, the unit will need to be replaced

---

White Display Screen

1. Verify that ribbon cable from the baseboard is connected at both ends (Connector at the display may have worked loose)

Host Comm/ Host Count Error

1. Verify the comm and see if the controllers can see each other
   a. If the router is down, the controllers cannot dial out alarms or see each other
      i. Power cycle the router and the controllers (Unit #0 as last)
2. Verify host comm type (RS 485 or Ethernet)
   a. If Ethernet, go to configure internet (comm → internet)
      i. Make sure to have same master IP addresses for every controller and distinctive slave IP addresses for each slave controllers
      ii. Verify DNS and DHCP
      iii. If DHCP is set to no, verify default gateway and network mask. Every controller will share the same default gateway and network mask
   b. Verify # of AK-SC255's on network.
      i. i.e. (of x); x should match the total number of AK-SC 255s in host network
3. Reset #0 (master) to force scan for slave units.

Stepper Valves not Controlling Properly

1. Try a rescan to confirm module is online and recalibrate valve position. Open/Close LED's on stepper module should light up.
2. Under Configuration → Refrigeration → Board & Points → Variable Outputs, verify valve config is correct (# of steps, step rate, etc).
3. Verify points are not being skipped on the stepper module (i.e. cannot use output 3 if outputs 1&2 aren't used).
4. For Danfoss EEPR valves (i.e. KVS), motors can be ohmed out. Should measure 52 ohms (+/-10%) across red/green wires and also black/white wires.

Case will not go into manual defrost on IO circuit

1. Go to Configuration → Refrigeration → Rack "X" → Evaporators
2. Under setup, check term type for case.
   a. If temp termination, is temp sensor already above this value when starting manual defrost?
   b. If on/off termination, is termination showing "On" on status screen when starting manual defrost?
   c. If a) or b) are true, case is terminating immediately after manual defrost is starting. Otherwise move onto 3.
3. Check setting for "Auto defrost schedules". If enabled:
   a. If "max concurrent defrosts" is set to 0, increase setting to 4 and try manual defrost again
   b. If a) does not work, try changing "Auto defrost schedules" to Disabled, and try manual defrost again

---

RTU/AHU showing "desired" status and no heat/cool

1. Go to Configuration → HVAC → Setup → Board & Points
2. Under Relay Outputs, check if Fan relay is assigned with a point
   a. If not assigned and physical relay assignment should exist, add-in
   b. If not assigned and no physical relay exists (i.e. unit heater), add in fake relay point (i.e. 99-1.1)

---

9. AKA 65

'Invalid License'

1. Try right-click on desktop icon, go to Properties → Compatibility tab. Enable check box for 'Run this Program as an administrator'
2. Uninstall software, reinstall AKA65 software outside of Program Files or Program Files x86 folder.
3. Obtain generic copy of aka65.ini file, place in C:/Windows folder (replace existing).

'Unable to locate compatible Win55' Error

1. Each version of 255 software that exists requires a separate file on PC to view.
   a. Verify location win55 should exist under Options button in AKA65. Under Directories tab, 'Win55' path is where file should be placed matching version of controller you are connecting to.
   b. If no file exists matching version of controller, file must be downloaded from 255 support website and placed in folder.

Unable to Fully Connect to Site Remotely

1. If seeing 'Connection Accepted' but connection then times out, select Edit button to review setup for site.
   a. Drop-down at bottom of setup screen should be set to 'Ethernet' for 255, 'Netmodem' for AKC55

Unable to Direct Connect to AK-SC 255 Locally

1. Ensure controller address is '0'
   a. If not set to 0, will need to connect to 255 that is address 0 (if host network exists)
   b. Otherwise, controller address will need to be changed to 0 and 255 reset
2. If using Danfoss direct connect cable, ensure you are connecting to port on side of controller, above latch
3. If using crossover cat5 cable:
   a. Ensure connection goes to Ethernet port inside of 255
   b. Ensure PC settings and 255 IP settings allow for both devices to see one another. Process is documented here.

Danfoss A/S
Climate Solutions • danfoss.com • +45 7488 2222