

Danfoss
AKS 41-3 Series
Liquid Level
Transmitter



Danfoss AKS 41-3 Series Liquid Level Transmitter Instructions

[Home](#) » [Danfoss](#) » Danfoss AKS 41-3 Series Liquid Level Transmitter Instructions 

Contents

- [1 Danfoss AKS 41-3 Series Liquid Level Transmitter](#)
- [2 Specifications](#)
- [3 Assembly](#)
- [4 Electrical connection](#)
- [5 Measuring range](#)
- [6 FEATURES](#)
- [7 Setting of the AKS 41](#)
- [8 Signal damping](#)
- [9 DECLARATION OF CONFORMITY](#)
- [10 FAQ](#)
- [11 Documents / Resources](#)
 - [11.1 References](#)

Danfoss

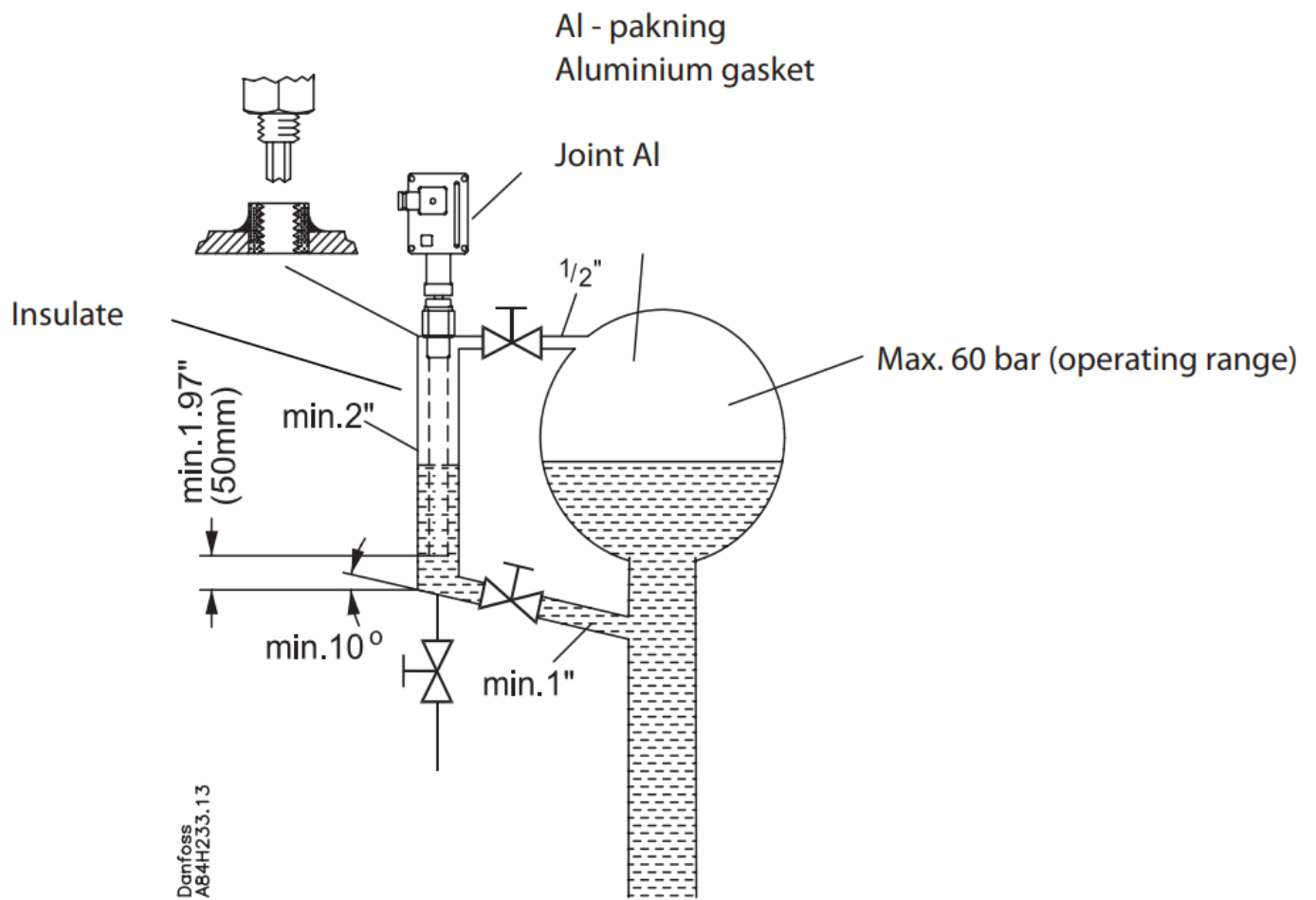
Danfoss AKS 41-3 Series Liquid Level Transmitter



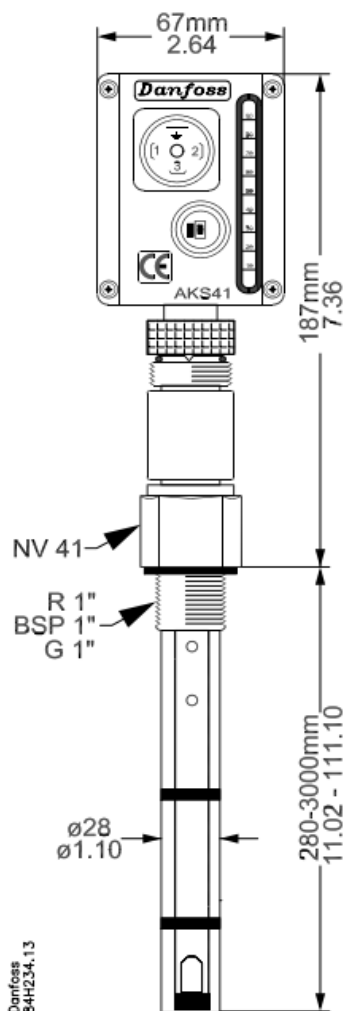
Specifications

- **Model:** AKS 41 ver. 4.0
- **Available sizes:** AKS 41-3, AKS 41-5, AKS 41-8, AKS 41-10, AKS 41-12, AKS 41-15, AKS 41-17, AKS 41-22, AKS 41-30
- **Length Range:** 280 mm (11.02 in) – 3000 mm (118.10 in)
- **Power supply:** 24V DC or 024V AC 50/60 Hz, 24V AC

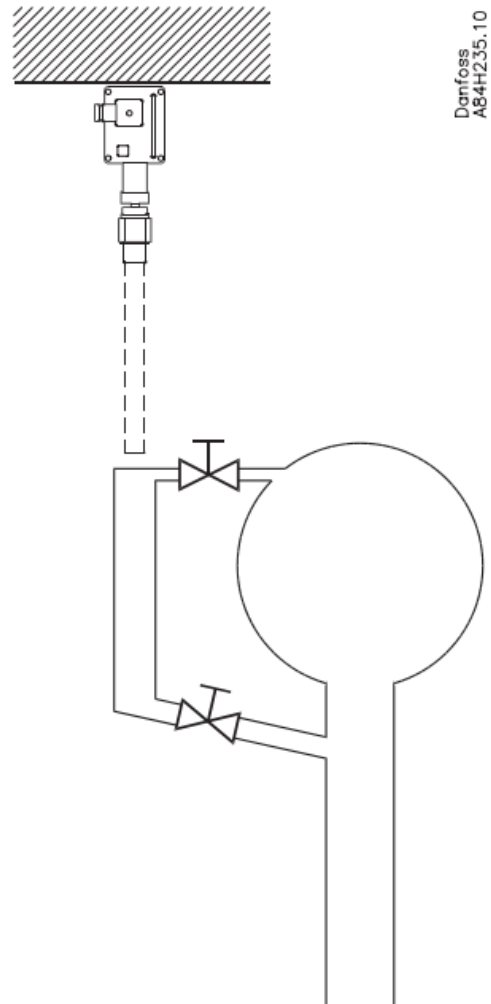
Assembly



Remember clearance required for replacement of level transmitter, if applicable

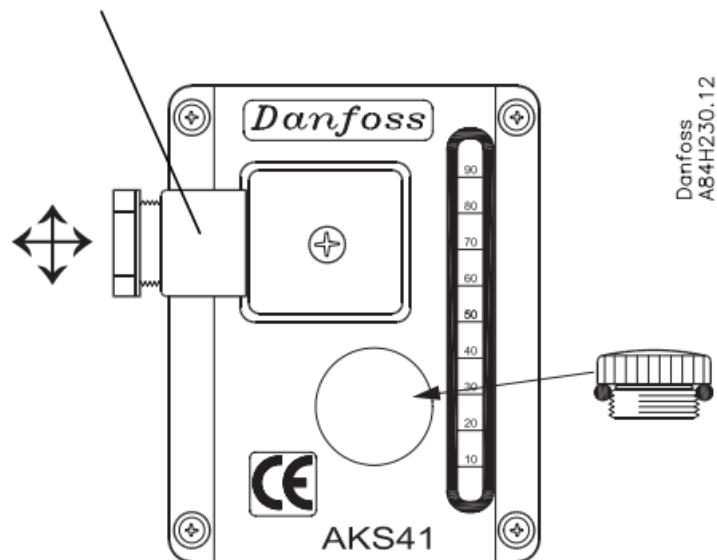


AKS 41-3	280 mm	(11.02 ")
AKS 41-5	500 mm	(19.69 ")
AKS 41-8	800 mm	(31.50 ")
AKS 41-10	1000 mm	(39.37 ")
AKS 41-12	1200 mm	(47.24 ")
AKS 41-15	1500 mm	(59.06 ")
AKS 41-17	1700 mm	(66.93 ")
AKS 41-22	2200 mm	(86.61 ")
AKS 41-30	3000 mm	(118.10 ")

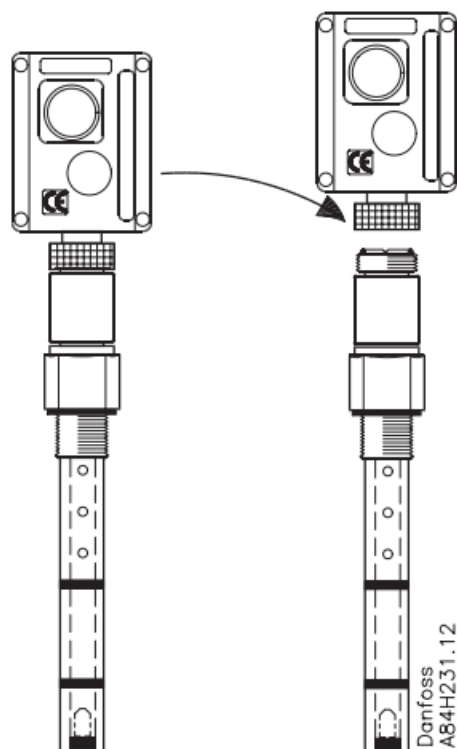


Danfoss
AB4H235.10

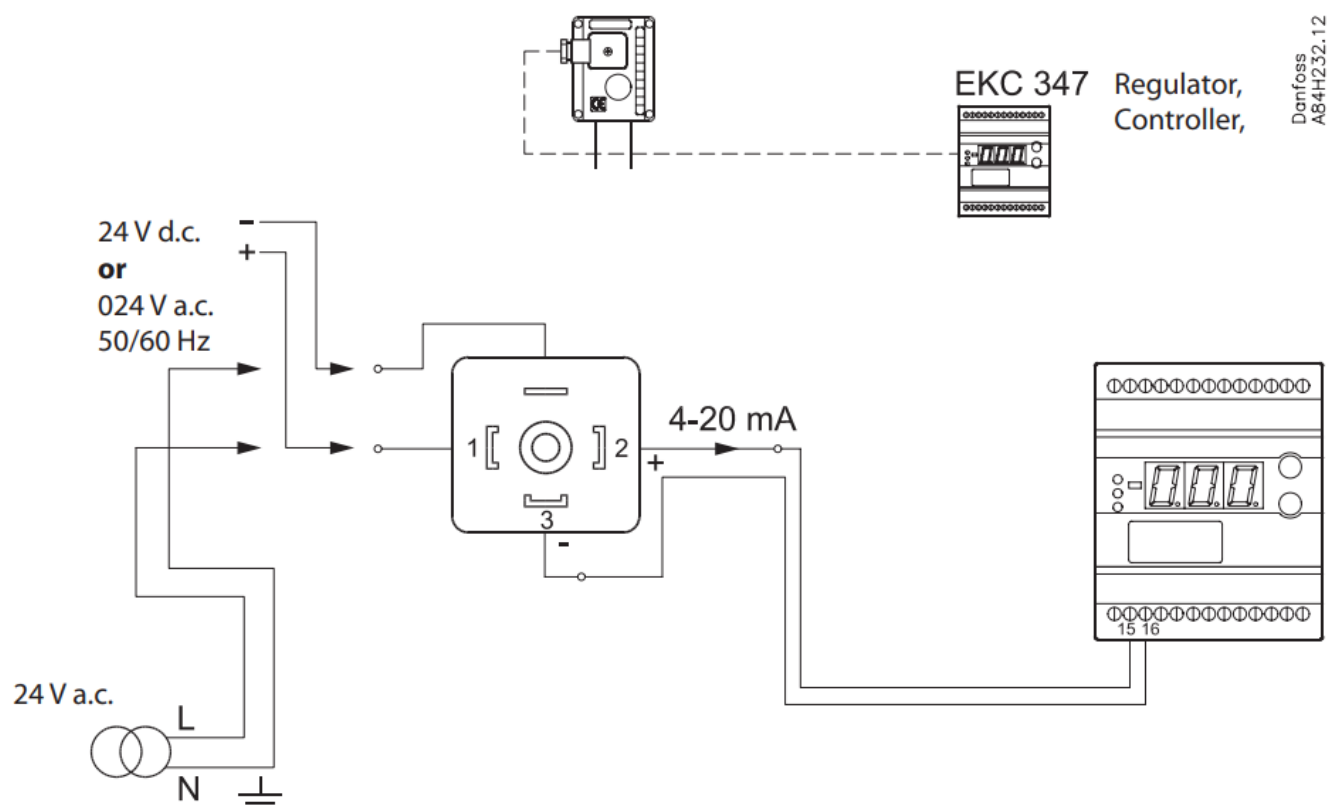
Plug – can be mounted in 4 different positions



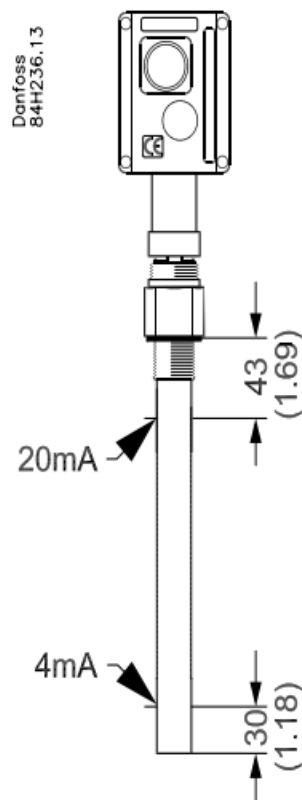
Can be separated without dismantling the standpipe.



Electrical connection



Measuring range



Factory setting:

The rod comes factory calibrated for R717 (NH₃), so that it will cover 4 to 20 mA throughout the rod's whole measuring range. Any disturbances in connection with the level measurement will be damped internally.

- **R717 (NH₃)**

It is not necessary to change the settings. The factory setting can be used.

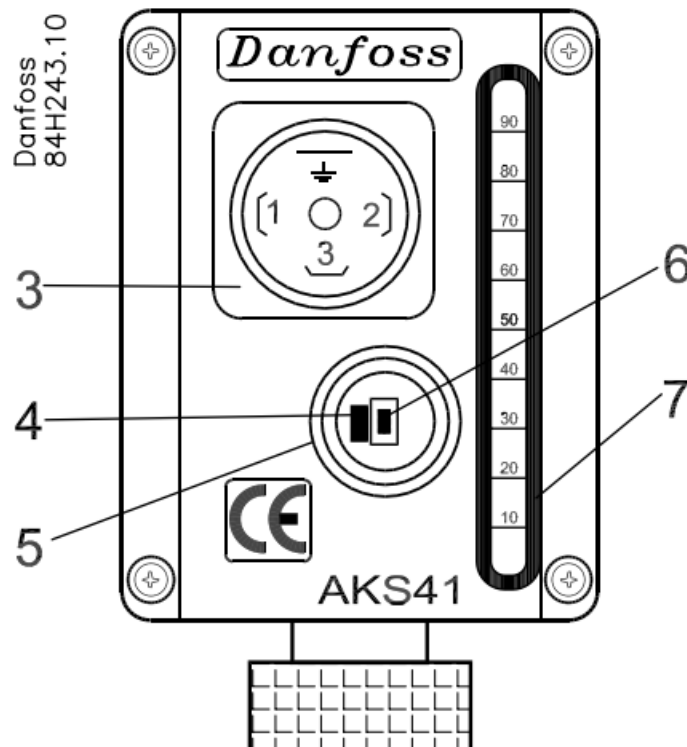
- **R22 / R404A / R134a/R744 (CO₂)**

Setting for the required refrigerant must be made by following the procedure described in next section.

- **R_____**

If an alternative refrigerant is used to those listed, revised calibration of the level transmitter is required. Please contract Danfoss.

FEATURES



- 3 DIN connection
- 4 Green LED
- 5 Calibration cover
- 6 Calibration pushbutton
- 7 OPTION: LED Bargraph for indication of liquid level.

Setting of the AKS 41

The setting may be carried out before the level transmitter is mounted on the plant.

1. To give in the refrigeration mode setting push the calibration pushbutton and keep it pressed while 24 V a.c. is connected and then release the pushbutton.

NOTE! This sequence must be observed. If the supply voltage is connected before the calibration pushbutton is activated, the signal damping will be changed.

2. Release the calibration pushbutton. Observe the present refrigerant setting and measure the 4-20 mA output signal.
 - 1 flash of Green LED – output signal is ~ 5 mA = R717 (factory setting)
 - 2 flashes of Green LED – output signal is ~ 6 mA = R22
 - 3 flashes of Green LED – output signal is ~ 7 mA = R404A
 - 4 flashes of Green LED – output signal is ~ 8 mA = R134a
 - 5 flashes of Green LED – output signal is ~ 9 mA = R744
3. Activate the calibration pushbutton to select required refrigerant. Each activating will cause AKS 41 to step to next refrigerant according to below sequence:
 - ~ 5 mA = R717 (factory setting)
 - ~ 6 mA = R22
 - ~ 7 mA = R404A
 - ~ 8 mA = R134a

- $\sim 9 \text{ mA} = R744$

4. When the current corresponds to the required refrigerant, wait 10 seconds until the green LED is constant ON (not flashing). This indicates that the required refrigerant has been selected.
5. To leave the setting mode isolate the voltage supply to the level transmitter. Go through step 1, 2 and 5 if you wish to control the setting.

Signal damping

Signal damping is factory-set at 15 seconds. This setting can be altered by activating the calibration switch. The setting range is 1 to 120 seconds. Settings can also be made whilst the system is operating.

Procedure:

1. Connect the supply voltage.
2. Push the calibration switch once for each second by which you want to increase the damping.

Example:

- 1. push \Rightarrow 1 sec.
- 2. pushes \Rightarrow 2 sec. etc.
- 120. pushes \Rightarrow 120 sec.
- 121. pushes \Rightarrow 120 sec.

10 seconds after the last push, the value will be saved in the memory and the green LED will start flashing again. After 10 seconds, a further push will start 1-second signal damping again. (If the damping setting is set too high, restart the procedure from step 1).

Adjusting the min. /max. calibration points: Min. calibration:

1. Bring the refrigerant liquid level to desired minimum level.
2. Press the calibration pushbutton and keep it activated in approx. 5 seconds, until green LED stops flashing.
3. Activate, within the next 10 seconds, the calibration pushbutton once (If calibration pushbutton is not activated within 10 seconds, it will automatically leave calibration mode and return to normal operation)

Green LED is ON in a few seconds, and then flashing. Output is now 4 mA and AKS 41 is in normal operation

Max. calibration:

1. Bring the refrigerant liquid level to desired maximum level.
2. Press the calibration pushbutton and keep it activated in approx. 5 seconds, until green LED stops flashing.
3. Activate, within the next 10 seconds, the calibration pushbutton twice (If calibration pushbutton is not activated within 10 seconds, it will automatically leave calibration mode and return to normal operation)

Green LED is ON in a few seconds, and then flashing. Output is now 20 mA and AKS 41 is in normal operation

Min. calibration when minimum refrigerant level must be different from 4 mA:

1. Bring the refrigerant liquid level to desired minimum level.
2. Press the calibration pushbutton and keep it activated in approx. 5 seconds, until green LED stops flashing.
3. Activate, within the next 10 seconds, the calibration pushbutton once and keep it activated. (If calibration pushbutton is not activated within 10 seconds, it will automatically leave calibration mode and return to normal operation)
4. Observe the output mA signal increasing fast starting at 4 mA.
5. Release the calibration pushbutton when the output signal is approx. 0.5 mA from the desired point.
6. All the next activations will increase the output signal by approx. 0.05 mA
7. Approx. 10 seconds after the latest activation the LED starts flashing
8. Output now corresponds to the value measured at the latest activation.

Max. calibration when maximum refrigerant level must be different from 20 mA:

1. Bring the refrigerant liquid level to desired maximum level.
2. Press the calibration pushbutton and keep it activated in approx. 5 seconds, until green LED stops flashing.
3. Activate, within the next 10 seconds, the calibration pushbutton twice and keep it activated. (If calibration pushbutton is not activated within 10 seconds, it will automatically leave calibration mode and return to normal operation)
4. Observe the output mA signal decreasing fast starting at 20 mA.
5. Release the calibration pushbutton when the output signal is approx. 0.5 mA from the desired point.
6. All the next activations will decrease the output signal by approx. 0.05 mA
7. Approx. 10 seconds after the latest activation the LED starts flashing
8. Output now corresponds to the value measured at the latest activation.

Reset to factory setting

AKS 41 can always be reset to factory setting regardless of any revised calibration values.

1. Press the calibration pushbutton and keep it activated in min. 20 sec, until green LED starts flashing
2. Release calibration pushbutton
3. When LED starts flashing, reset to factory setting is completed.

AKS 41 is now operating according to the factory settings.

DECLARATION OF CONFORMITY

Name and Address of Manufacturer's Representative within the European Community Danfoss Industrial Refrigeration A/S

- Stormosevej 10
- DK-8361 Hasselager

Declaration

We hereby declare that below-mentioned equipment is in conformity with below mention directives, standards or other normative documents, provided it is used according to our instructions.

Description of Equipment

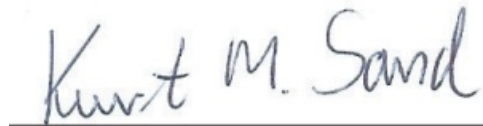
- Electronic Level Transmitter
- Type AKS 41

References of other Technical Standards and Specifications used

- EMC Directive 89/336/EEC
- EMC Directive 92/31/EEC
- EN 50081-2, January 1992
- EN 50082-2, January 1992

Authorised Person for the Manufacturer's Representative within the European Community

- **Name:** Kurt M. Sand
- **Title:** Product Manager
- **Signature:**



- **Date:** 14/01/2005

FAQ

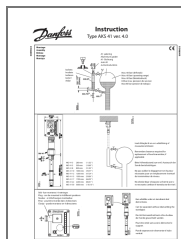
Do I need to change the factory settings for refrigerators other than R717?

If an alternative refrigerator is used, revised calibration of the level transmitter is required. Please contact Danfoss for assistance.

Can the level transmitter be separated without dismantling the standpipe?

Yes, the converter unit can be separated without dismantling the standpipe.

Documents / Resources



[Danfoss AKS 41-3 Series Liquid Level Transmitter](#) [pdf] Instructions

AKS 41-3, AKS 41-5, AKS 41-8, AKS 41-10, AKS 41-12, AKS 41-15, AKS 41-17, AKS 41-22, AKS 41-30, AKS 41-3 Series Liquid Level Transmitter, AKS 41-3 Series, Liquid Level Transmitter, Level Transmitter, Transmitter

References

- [User Manual](#)