

Danfoss
AKS 4100
Liquid Level
Sensor



Danfoss AKS 4100 Liquid Level Sensor Instruction Manual

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Danfoss AKS 4100 Liquid Level Sensor



Specifications

- **Available lengths:**
 - **Cable:** 800-5000 mm
 - **Coaxial:** 500-2200 mm (other lengths upon request)
- **Standard signal:** 4 – 20 mA 2-wire loop powered; no separate transformer needed
- **Measuring range: Standpipe diameter:** 2-4 in.

Product Usage Instructions

Probe Length Adjustment:

The AKS 4100 allows for easy on-site probe length adjustment. Follow these steps to adjust the probe length:

1. Identify the required probe length based on the specific application.
2. For cable version, adjust the length between 800-5000 mm; for coaxial version, adjust between 500-2200 mm.
3. Ensure the correct probe length to avoid any dead zones as per the provided tables.
4. Record the adjusted values on the setting label and affix it onto the Signal Converter.

Commissioning and Setup:

Utilize the optional HMI Service/Display unit for commissioning and quick on-site setup. Follow these steps:

1. Connect the HMI unit to the AKS 4100 sensor.
2. Select desired language and units (SI or Imperial).
3. Adjust settings as required based on the specific refrigerant and probe length.
4. Record the adjusted values on the setting label for future reference.

Maintenance and Care:

Ensure regular maintenance to keep the sensor functioning optimally:

- Check for any oil layer at the bottom of the standpipe for ammonia applications.
- Clean the sensor periodically to prevent any buildup that may affect accuracy.

A whole new level of flexibility and accuracy

Experience the AKS 4100 Liquid Level Sensor with TDR Guided Radar technology (Time Domain Reflectometry) fully adapted to the Industrial Refrigeration segment – reliable and with high accuracy. All sensors in the new AKS 4100 family are easy to install and fully flexible. No on-site calibration is needed, and the probe length can easily be adjusted on site.

75% time savings due to the very easy on-site adjustment procedure.

The benefits of the AKS 4100

- Easy on-site probe length adjustment, easy commissioning regardless of liquid level or refrigerant type – including ammonia and CO2
- The cable version is very compact and easy to handle, ship, install and use with different lengths and refrigerants
- The AKS 4100 sensors are available with cable or Coaxial (sleeve) tube
- The AKS 4100/4100U can be used with all non-flammable refrigerants – including ammonia and CO2
- Oil proof. Oil layer at the bottom of the stand pipe (ammonia) does not affect the liquid refrigerant level.

HMI Service/Display unit

- The optional HMI Service/Display unit is used for commissioning and quick on-site setup. and is easily connected to the AKS 4100.
- The service unit supports multiple languages and both SI and Imperial units.
- The LCD display has a resolution of 128 x 64 pixels.



Technical overview of AKS 4100

- **Available lengths:**
 - **Cable:** 800-5000 mm
 - **Coaxial:** 500-2200 mm (other lengths upon request)
- **Mechanical process connection:** G1" or ¾" NPT
- **Temperature range:** 60°C/100°C (–76°F/212°F)
- **Pressure range:**
 - 1 barg / 100 barg
 - 14.5 psig / 1450 psig)
- **Standard signal:** 4 – 20 mA
- 2-wire loop powered; no separate transformer needed

Technical details of the AKS 4100

Measuring range of AKS 4100 – CABLE version

Bottom deadzone values based on the factory setting of dielectric constant

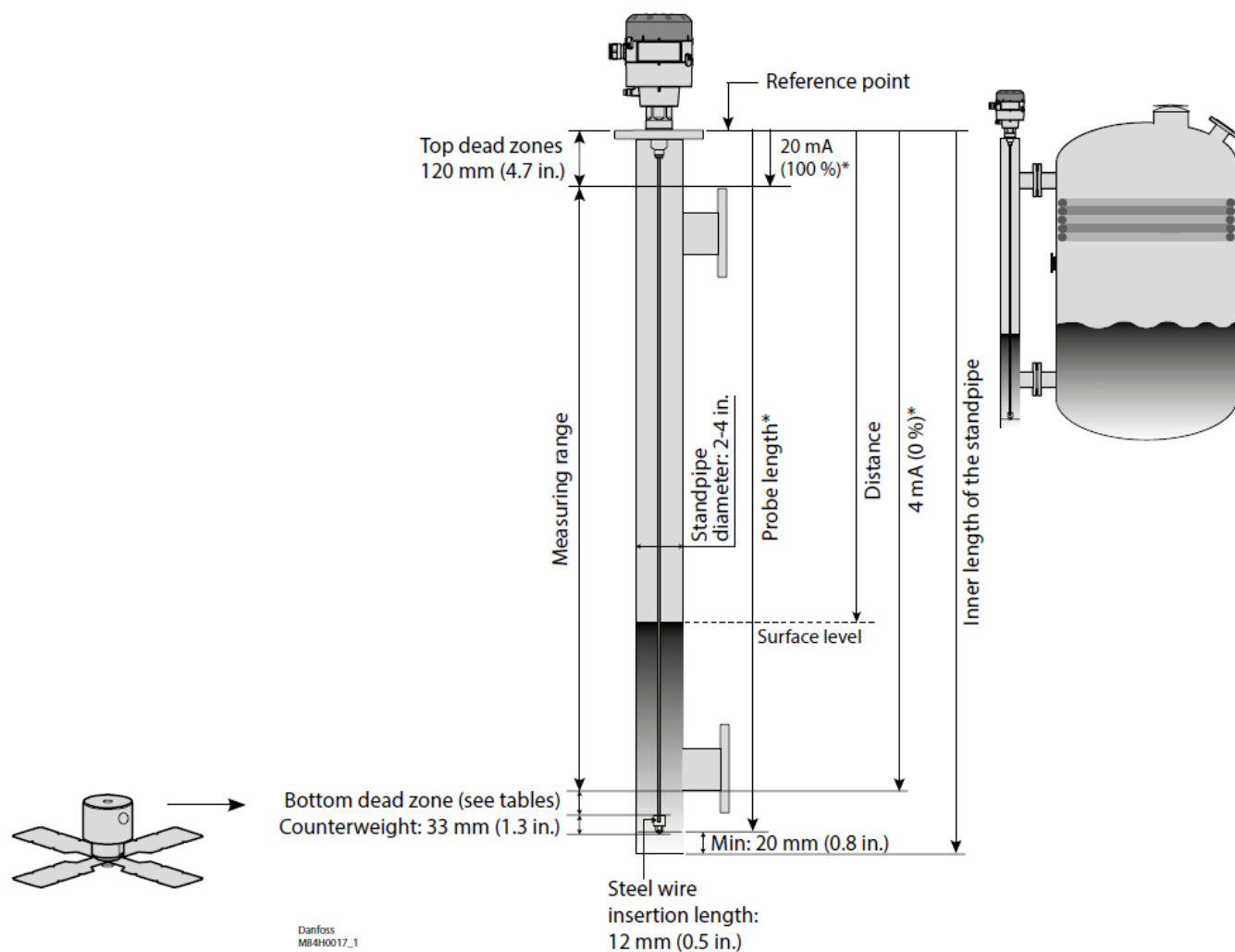
Refrigerant	Probe length range [mm]	Bottom dead zone [mm]
Ammonia, HFC, HCFC	800	115
	801 – 999	120
	1000 – 1999	150
	2000 – 2999	180
	3000 – 3999	210
	4000 – 5000	240

Improved Bottom dead zone values after the adjustment of dielectric constant

Refrigerant	Probe length range [mm]	Bottom dead zone [mm]
Ammonia, HFC, HCFC	800 – 5000	90

Code number with HMI	Code no.
AKS 4100 with 5 m (197 in.) Ø2 mm (Ø0.08 in.) stainless cable and counterweight	084H4501

Values to be entered into HMI Quick Setup menu and recorded on the setting label. Stick the setting label onto the Signal Converter either inside or outside.



Measuring range of AKS 4100 – COAXIAL version

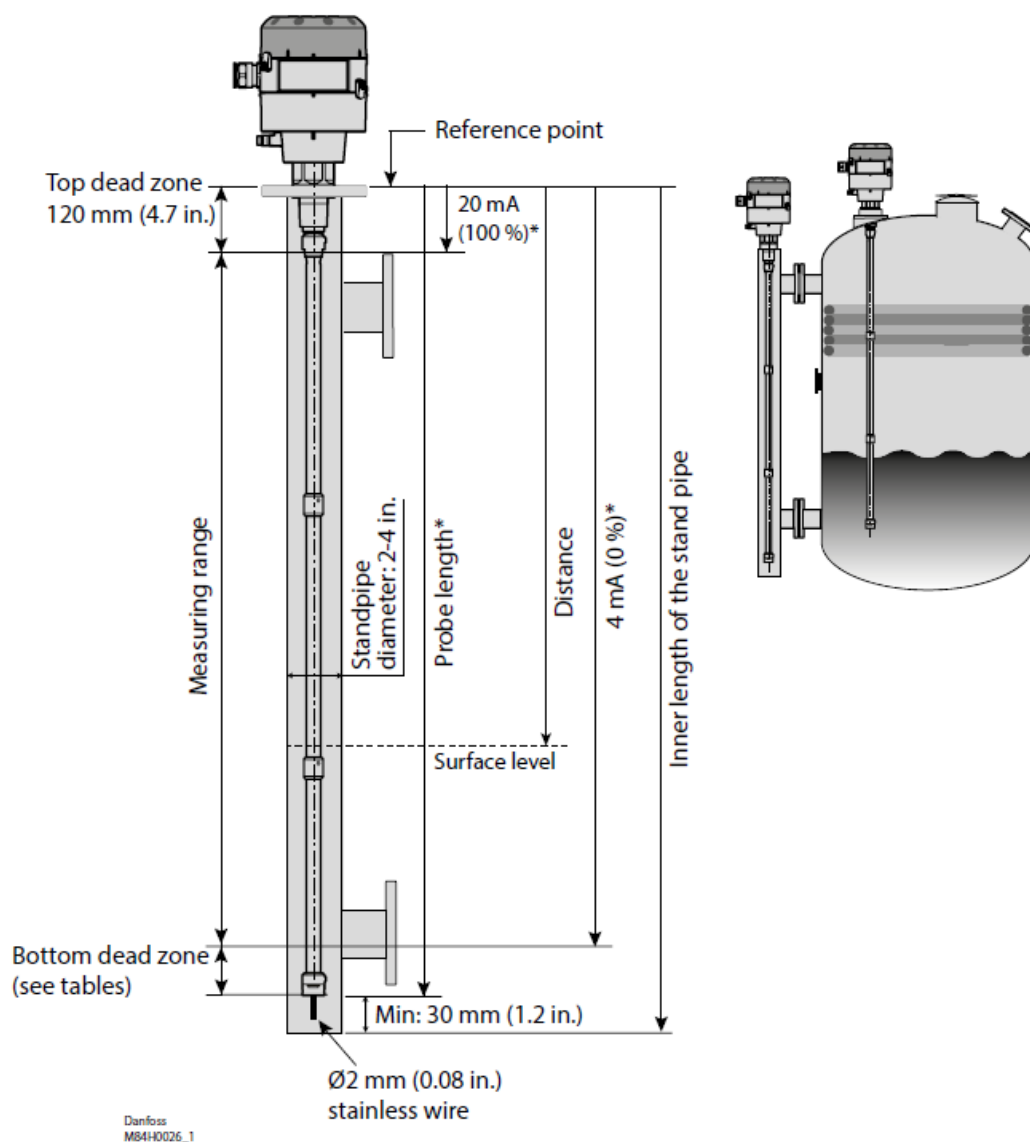
Dielectric Constant ϵ_r is always set during Quick Setup

Refrigerant	Probe Length [mm]	Bottom Dead Zone [mm]
CO2	500	170
	800	
	1000	
	1200	
	1500	
	1700	
	2200	

Code number with HMI	Probe Length [mm]	Code no.
AKS 4100 – Coaxial	500	084H4510
AKS 4100 – Coaxial	800	084H4511
AKS 4100 – Coaxial	1000	084H4512
AKS 4100 – Coaxial	1200	084H4513
AKS 4100 – Coaxial	1500	084H4514
AKS 4100 – Coaxial	1700	084H4515
AKS 4100 – Coaxial	2200	084H4516

Values to be entered into HMI Quick Setup menu and recorded on the setting label. Stick the setting label onto the Signal Converter either inside or outside.

Please note: It is mandatory to input dielectric constant for CO₂ applications.



For further details, please see the technical literature.

Danfoss Industrial Refrigeration: A world of expertise at the click of a button

Turn to Danfoss if you want to combine quality components with expert knowhow and support. Try out these free tools, designed to make your work much easier.

- **Coolselector® 2 – New calculation software for Industrial Refrigeration**

Coolselector®2 is your brand new Danfoss calculation and selection software designed to make selection processes for all industrial refrigeration projects easier and less time consuming. Coolselector® 2 is a unique calculation and support tool for contractors and system designers, offering complete pressure drop calculations, analysis of pipe and valve design and the ability to generate performance reports. It replaces the well-known DIRcalc™ software and offers several new functionalities.

- **Danfoss IR app**

The free IR App gives you a spare parts tool, which makes it easy for you to find the spare part number for a given Danfoss industrial refrigeration valve. It also presents all the products and benefits of the SVL Flexline™ range – with a fun game thrown in as well.

- **Download 3D CAD symbols**

From our online product catalogue on our website, you can download 3D CAD symbols and illustrations to help you when designing refrigeration plants.

- **IR application tool**

With this interactive PowerPoint slideshow, you can explore all the details of a two-stage ammonia plant. You will find detailed cut-away drawings and information on the valves in the installation along with links to videos, literature and product animations.

- **Application handbook**

The Application Handbook is designed to help you every step of the way when working with industrial refrigeration systems. Among many other things, it contains examples of how to select control methods for different refrigeration systems, their design and which components to choose.

Visit www.danfoss.com/IR-tools and find all the tools you need.

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FAQ

Q: What refrigerants can the AKS 4100 be used with?

A: The AKS 4100 can be used with all non-flammable refrigerants, including ammonia and CO2.

Q: What is the purpose of the optional HMI Service/Display unit?

A: The HMI unit is used for commissioning, quick on-site setup, and adjusting settings in multiple languages and units.

Q: How do I adjust the probe length for different applications?

A: Follow the provided tables and guidelines to adjust the probe length within the specified ranges for cable and coaxial versions.

Documents / Resources



[Danfoss AKS 4100 Liquid Level Sensor](#) [pdf] Instruction Manual

AKS 4100, AKS 4100U, 084H4501, AKS 4100 Liquid Level Sensor, AKS 4100, Liquid Level Sensor, Level Sensor

References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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