

## ALMEMO® 470-1



**Wireless data logger ALMEMO® 470-1. Wireless ALMEMO® sensor for temperature, atmospheric humidity, atmospheric pressure. For monitoring the room air condition or with extended operating temperature range from -40 to +85 °C. Wireless ALMEMO® interface for ALMEMO® D7 sensor. For various measurable variables.**

### Wireless data logger, Wireless ALMEMO® sensor and wireless ALMEMO® interface

#### ALMEMO® 470-1 wireless data logger

The professional measuring instrument ALMEMO® 470-1 is a professional wireless data logger, which receives the measured values with timestamp from wireless sensors that are positioned remotely, saves the measured values and shows them on graphical display. The acquisition of the measured values occurs in a cycle that can be individually adjusted to each wireless sensor: for measurements, i.a. in climate chambers, for long term measurements, i.a. for monitoring the room air condition or environmental measurements. The data logger ALMEMO® 470-1 is intended to be mounted on a wall. The power is supplied via an external mains unit. An additional rechargeable battery in the device serves as a temporary buffer in case of power failure or during a brief mobile usage.

#### Reliable radio transmission build upon a star-shaped and meshed net structure

To provide wireless communication, the data logger ALMEMO® 470-1 operates in the 2.4 GHz frequency band. To increase the wireless range and the transmission reliability, the wireless sensors automatically configure themselves as a star-shaped and meshed net structure. Repeater functionality is integrated in each wireless sensor by default, so the sensor can forward data from adjacent wireless sensors to the data logger. This means that more distant sensors, which do not have a wireless connection to the data logger, can still be integrated into the wireless net. The transmission power of the network is configurable in the data logger to 1, 10, or 100mW such that local networks in the immediate neighborhood as well as long distance networks are possible.

#### Wireless ALMEMO® sensor for temperature, atmospheric humidity, and atmospheric pressure.

The wireless sensors operate with a plugged-on digital multi-sensor module for temperature, atmospheric humidity, and atmospheric pressure. The sensor module has a data medium on which all sensor specific data, such as serial number, adjustment data, and calibration data, is saved. The sensor module can therefore be replaced any time.

#### For monitoring the room air condition or with extended operating temperature range from -40 to +85 °C.

The standard version of the wireless sensor is used for monitoring the room air condition. The version with an extended operating temperature range from -40 to +85 °C and splash-water protection is used i.a. for measurements in conditioning and climate chambers or for outdoor tasks in the environmental measurement technology.

#### Wireless ALMEMO® interface for ALMEMO® D6 and D7 sensors. For a vast variety of measurable variables.

The digital wireless interface broadens the range of applications considerably. Almost all ALMEMO® D6 and D7 sensors for

various measurable variables can be connected via the integrated ALMEMO® input socket to the wireless interface and their measured values can be transferred over the air to the wireless data logger. This way the amount of CO<sub>2</sub> in the atmosphere, surface temperatures on objects, or the illuminance at measuring locations can be recorded.

#### Power supply of the wireless sensors and the wireless interfaces

The wireless sensors and the interfaces are supplied by an integrated rechargeable battery. The rechargeable battery can be charged via the integrated micro USB port. A continuous power supply via mains unit is possible as well.

#### Visualize measuring data on the data logger

To visualize measuring data, the display of the data logger features a list of the measuring channels as well as a single measurement value display. In addition, the user can configure his own individual display as a customer specific user menu on the data logger by only adding his own selection of measuring channels.

#### Evaluation and storage of the measured data.

Via an external PC measured data is recorded and visualized by the WinControl software. The data logger ALMEMO® 470-1 and the PC are either connected via USB interface or via Ethernet interface. An industrial SD card integrated in the data logger ensures a safe storage of the measured data. Additionally, the actual measured data is cached in every wireless sensor to make sure that the complete measured data is available also in case of a short-time failure of either the wireless connection or the data logger.

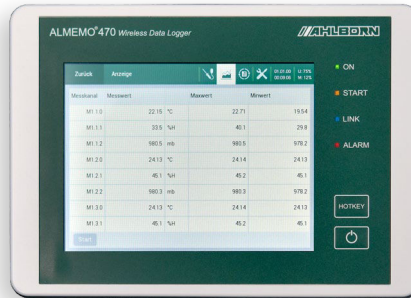
#### Configuration of the wireless system

The sensors in the wireless network are configured and managed on the data logger ALMEMO® 470-1 via the clear touch display. Various functions are available, i.a. to couple and de-couple the wireless sensors with the data logger or to configure the cycles and limit values of the wireless sensors. In addition, it is possible to add a comment to every wireless sensor to be able to assign a particular measurement point to the sensors. The program ALMEMO® Mesh-Viewer makes it possible to display the signal strength of every single sensor node / wireless sensor as well as the entire network topology on the PC. This, in combination with the configurable signal strength in the data logger, enables a fast and optimal installation of the wireless network.

#### Accessories for installing the components for different applications

Thanks to an integrated holder, the data logger ALMEMO® 470-1 can be mounted to the wall. Regarding the wireless sensors, different accessories for mounting the sensors are available: wall mount, suction cup fastening, magnetic mount, or rope to hang the sensors.

## Wireless data logger ALMEMO® 470-1



Wireless data logger for 10 wireless sensors. Interface to the PC for WinControl software for measured data scanning and measured value processing.

## Technical data

<b>Measuring inputs:</b>	10 wireless sensors of type - wireless ALMEMO® sensor for atmospheric humidity, temperature and atmospheric pressure FH 1746-1Cx - wireless ALMEMO® interface for ALMEMO® D6 and D7sensor ZA 1770-1IF	Date and time-of-day:	industrial flash memory as micro SD card. Real-time clock (4.7 ppm) buffered with lithium battery
<b>Channels:</b>	up to 40 measuring channels	<b>Power supply:</b>	Rechargeable battery: 5 rechargeable NiMH batteries AA (1900 mAh), Failure buffer for up to 6 hours in power saving mode
<b>Interfaces:</b>	USB, Ethernet for connection to the PC and measured value scanning via WinControl	mains adapter:	ZB 1112-NA10 100 to 240 VAC to 12 VDC, 2 A, galvanically isolated, via an hollow connector
<b>Standard equipment:</b>	Display: graphics display 5,7", TFT-LCD VGA 640x480, illumination while LED, dimmable	<b>Operating temperature:</b>	0 to +40 °C
Keypad:	capacitive touch screen and 3 additional keys on front foil	<b>Storage temperature:</b>	-5 to +50 °C
Memory:	up to 2 million measured values,	<b>Housing:</b>	Protection class: IP50 Dimensions: 190 x 135 x 40 mm (WxHxD) (without wall mount)
		Weight:	ca. 0.8 kg (including rechargeable batteries)

## Accessories

## Order no.

Base (snap-on) for ALMEMO® 470, desk form, for wall mounting or as table desk.

ZB9470S

WinControl software for measured value scanning  
For further explanations and descriptions, see chapter Software

## Standard delivery

## Order no.

Wireless data logger ALMEMO® 470-1 with Ethernet interface and USB interface, SD memory,  
rechargeable battery. Including mains unit ZB1112NA10 and wall mount.

MA4701

## Wireless ALMEMO® sensor for atmospheric humidity, temperature, atmospheric pressure



Replacement multi-sensor module  
FH0D 46-C



Replacement sensor module  
FH0D 46-C2

### Technical data

<b>Measuring input:</b>	for 1 multi-sensor element for humidity, temperature and atmospheric pressure FH0D 46-Cx	<b>Operating temperature:</b>	-5 to +50 °C (standard version) -40 to +85 °C (version with extended temperature range)
<b>Channels:</b>	4 measuring channels	<b>Storage temperature:</b>	-20 to +50 °C (standard version). -40 to +85 °C (version with extended temperature range)
<b>Accuracy:</b>	see sensor specification FH0D 46-Cx	<b>Housing:</b>	
<b>Galvanic Isolation:</b>	yes (wireless)	Protection class:	(with sensor) FH 1746-1C4 IP54 FH 1746-1C2VR1 IP20
<b>Measuring cycle *:</b>	10 s to 24 h	Dimensions:	(without mount) FH 1746-1C4 43 x 135+30* x 21 mm (WxHxD). (*filter cap)
<b>Interfaces:</b>	Radio, repeater function integrated USB for supply and update	FH 1746-1C2VR1	43 x 135+50* x 21+50* mm (WxHxD). (*sensor tube)
<b>Standard equipment:</b>		FH 1746-1C2VR2	43 x 135+40* x 21+100* mm (WxHxD). (*sensor tube)
Display:	3 LEDs	<b>Weight:</b>	approx. 0.1 kg (including rechargeable batteries)
Keypad:	foil keypad		
Memory:	ring memory for 128 measured values		
<b>Date and time-of-day:</b>	clock synchronization via data logger ALMEMO® 470-1		
<b>Power supply:</b>			
Rechargeable battery:	2 rechargeable NiMH batteries AA (1900 mAh)		
Operating time with rechargeable battery:	depends on the measuring cycle		
mains adapter:	ZB 1505-NA1 100 to 240 VAC to 5 VDC, 1 A, galvanically isolated, via micro USB		

\* depending on the number of data logged with the data logger ALMEMO® 470-1 connected wireless sensors

### Standard delivery (Power supply unit see under accessories)

Wireless ALMEMO® sensor (radio, repeater function integrated) with multi-sensor module for humidity, temperature and atmospheric pressure. Ring memory, integrated rechargeable battery.

Straight sensor version, with protective cap PTFE. Standard version.

Straight sensor version, with extended operating temperature range.

Digital replacement multi-sensor module for humidity, temperature and atmospheric pressure (adjusted, pluggable) for FH 1746-1C4

Angled sensor version, with short angled sensor tube, slotted sensor cover.

Angled sensor version, with long angled sensor tube, slotted sensor cover.

Digital replacement multi-sensor module for humidity, temperature and atmospheric pressure (adjusted, pluggable) enclosed in slotted sensor cover for FH 1746-1C2x

### Order no.

**FH17461C4**  
**FH17461C4HT**

**FH0D46C**  
**FH17461C2VR1**  
**FH17461C2VR2**

**FH0D46C2**

DAkKS or works calibration KH9xxx, humidity, temperature and KD92xx, atmospheric pressure, for digital sensors (see chapter „Calibration certificates“). DAkKS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025

## Wireless ALMEMO® interface ZA 1770-1IF



## Technical data

<b>Measuring input:</b>	1 ALMEMO® socket for ALMEMO® D6 or D7 sensors	<b>Power supply:</b>	Rechargeable battery: 2 rechargeable NiMH batteries AA (1900 mAh)
<b>Channels:</b>	up to 10 measuring channels		Operating time with rechargeable battery: depends on current consumption of the ALMEMO® D7 sensor and the measuring cycle
<b>Accuracy:</b>	see specifications of the ALMEMO® D7 sensor		Mains adapter: ZB 1505-NA1 100 to 240 VAC to 5 VDC, 1 A, galvanically isolated, via micro USB
<b>Galvanic isolation:</b>	yes (wireless)	<b>Operating temperature:</b>	-5 to +50 °C
<b>Sensor supply:</b>	6 V, 30 mA (operated with rechargeable battery or with mains adapter)	<b>Storage temperature:</b>	-20 to +50 °C
<b>Measuring cycle*:</b>	10 s to 24 h	<b>Housing:</b>	Protection class: IP50
<b>Interfaces:</b>	Radio, repeater function integrated USB for supply and update		Dimension: 43 x 135 x 21 mm (WxHxD) (without mount)
<b>Standard equipment:</b>			Weight: ca. 0.1 kg (including rechargeable batteries)
Display:	3 LEDs	* depending on the number of data logged with the data logger ALMEMO® 470-1 connected wireless sensors	
Keypad:	foil keypad		
Memory:	ring memory for 128 measured values		
Date and time-of-day:	clock synchronization via data logger ALMEMO® 470-1		

**Standard delivery** (Power supply unit see under accessories)

Wireless ALMEMO® Interface (radio, repeater function integrated) with 1 ALMEMO® input socket for 1 ALMEMO® D6 or D7 sensor. Ring memory, integrated rechargeable battery.

**Order no.****ZA17701IF****Accessories for wireless ALMEMO® sensor and wireless ALMEMO® interface****Order no.**

For battery charge respectively permanent supply:

Switch-mode power supply / connector version, 100 to 240 V AC / 5 V DC including cable with micro USB plug

**ZB1505NA1**

Wall mount: mounting plate (including magnet). Dimension: 35 x 50 mm (WxH).

**ZB9700WH**

Suction cup fastening: 2 suction cups with mount (including magnet). Dimension: approx. 50 x 110 mm (WxH).

**ZB9700SH**

Magnet mount: round magnet (including fastening screw). Dimension: Ø 31 mm.

**ZB9700MH**

Magnet mount



Mounting plate



Suction cup fastening