

Data logger 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 -15 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 with wireless sensors in sleep mode, 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 100 mW 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 -15 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 -15 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 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.

Long runtimes in battery mode with activated sleep mode

For long-term applications, the measured values are recorded in the wireless sensor or wireless interface with a large measuring cycle and transmitted to the data logger. For battery operation, significantly extended runtimes are achieved by using the sleep mode. In this energy saving mode, the power supply and the plug/sensor supply are switched automatically. In sleep mode, the wireless sensor cannot operate as a repeater (only possible in continuous operation) and the operating temperature range is limited (see technical data).

Visualize measuring data on the data logger

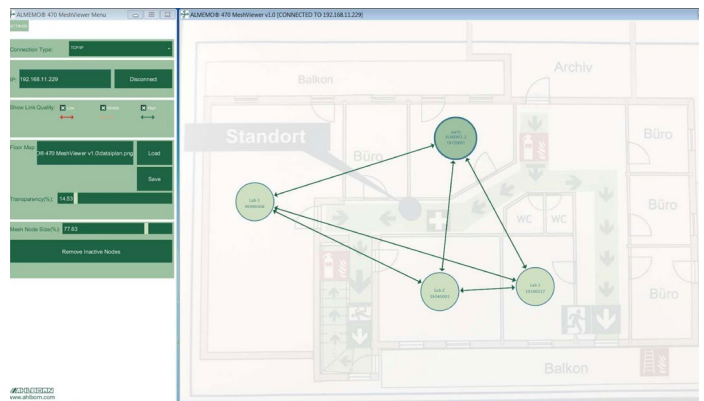
To visualize measuring data, the display of the data logger features a list of the measuring channels as well as a single measurement value display. In addition, the user can configure his own individual display as a customer specific user menu on the data logger by only adding his own selection of measuring 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® 470 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.

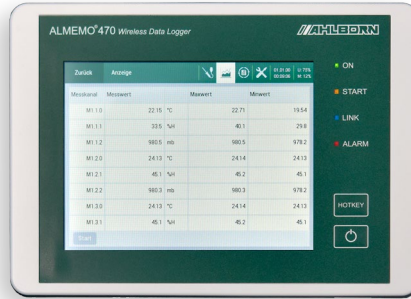


ALMEMO® 470 Mesh-Viewer

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

Measuring inputs:	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 D7 sensor ZA 1770-1IF	Memory:	up to 2 million measured values, industrial flash memory as micro SD card.
Channels:	up to 40 measuring channels	Date and time-of-day:	Real-time clock (4.7 ppm) buffered with lithium battery
Interfaces:	USB, Ethernet for connection to the PC and measured value scanning via WinControl	Power supply:	Rechargeable battery: 5 rechargeable NiMH batteries AA (1900 mAh), Failure buffer for up to 6 hours in power saving mode
Standard equipment:	Display: graphics display 5,7", TFT-LCD VGA 640x480, illumination while LED, dimmable	mains adapter:	ZB 1112-NA12 100 to 240 VAC to 12 VDC, 1.5 A, galvanically isolated, via an hollow connector
Keypad:	capacitive touch screen and 2 additional keys on front foil	Housing:	Protection class: IP50 Dimensions: 190 x 135 x 40 mm (WxHxD) (without wall mount)
		Weight:	ca. 0.8 kg (including rechargeable batteries)
		Ambient conditions see from page 16	

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
with protocol and functionality for ALMEMO® 470 from program version Standard WC2 (or higher WC3/WC4)
For further explanations and descriptions, see chapter Software

SW5600WC2

Standard delivery

Order no.

Wireless data logger ALMEMO® 470-1 with Ethernet interface and USB interface, SD memory,
rechargeable battery. Including mains unit ZB1112NA12 and wall mount, incl. ALMEMO® 470 Mesh-Viewer

MA4701

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



FH 1746-1C4 / HT



Replacement multi-sensor module FH0D 46-C

- For room climate monitoring in production and storage.
- For measurements in climatic and conditioning chambers.
- For environmental measurements.
- Version with extended temperature range and splash water protection
- Sleep mode for long operating time with rechargeable battery

Technical data

Measuring input:	for 1 multi-sensor element for humidity, temperature and atmospheric pressure FH0D 46-Cx	mains adapter:	ZB 1505-NA1 100 to 240 VAC to 5 VDC, 2 A, galvanically isolated, via micro USB
Channels:	4 measuring channels	Operating temperature:	
Measuring ranges:	Temperature: see operating temperature Humidity: 5 ... 98 % r.H. Air pressure: 700 ... 1100 mbar	Standard version	-5 to +50 °C
Accuracy:	see sensor specification FH0D 46-Cx	Version with extended temperature range	-5 to +85 °C Operation in sleep mode -15 to +85 °C Normal operation
Galvanic Isolation:	yes (wireless)	Storage temperature:	-20 to +60 °C (standard version). -40 to +85 °C (version with extended temperature range)
Measuring cycle*:	10 s to 24 h / Standard 1 min (ex works)	Housing:	
Output cycle*:	10 s to 24 h / Standard 1 min (ex works)	Protection class:	(with sensor) IP54
Interfaces:	Radio, repeater function integrated** USB for supply and update	Dimensions:	(without mount) 43 x 135+30* x 21 mm (WxHxD). (*filter cap)
Standard equipment:		Weight:	approx. 0.1 kg (including rechargeable batteries)
Display:	3 LEDs		
Keypad:	foil keypad		
Memory:	ring memory for 128 measured values		
Date and time-of-day:	clock synchronization via data logger ALMEMO® 470-1		
Power supply:			
Rechargeable battery:	2 rechargeable NiMH batteries AA (1900 mAh / version FH1746xHT 1150 mAh)		
Operating time with rechargeable battery:	depending on measuring cycle, output cycle, sleep mode		

* Depending on the number of data logged with the data logger ALMEMO® 470-1 connected wireless sensors
** Repeater operation not in sleep mode

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

Order no.

FH17461C4
FH17461C4HT

FH0D46C

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



- For ALMEMO® D6 and D7 sensors incl. sensor supply.
- Sleep mode for long operating time with rechargeable battery.

Technical data

Measuring input:	1 ALMEMO® socket for ALMEMO® D6 or D7 sensors	Power supply:	Rechargeable battery: 2 rechargeable NiMH batteries AA (1900 mAh)
Channels:	up to 10 measuring channels		Operating time with rechargeable battery: depends on current consumption of the ALMEMO® D7 sensor and the measuring cycle, output cycle, sleep mode
Accuracy:	see specifications of the ALMEMO® D7 sensor	Mains adapter:	ZB 1505-NA1 100 to 240 VAC to 5 VDC, 2 A, galvanically isolated, via micro USB
Galvanic isolation:	yes (wireless)	Operating temperature:	-5 to +50 °C
Sensor supply:	from version V19: 6 V, 30 mA (operated with rechargeable battery or with mains adapter)	Storage temperature:	-20 to +60 °C
Measuring cycle*:	10 s to 24 h / Standard 1 min (ex works)	Housing:	Protection class: IP50
Output cycle*:	10 s to 24 h / Standard 1 min (ex works)		Dimension: 43 x 135 x 21 mm (WxHxD) (without mount)
Interfaces:	Radio, repeater function integrated** USB for supply and update		Weight: ca. 0.1 kg (including rechargeable batteries)
Standard equipment:	Display: 3 LEDs Keypad: foil keypad Memory: ring memory for 128 measured values Date and time-of-day: clock synchronization via data logger ALMEMO® 470-1		

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

** Repeater operation not in sleep mode

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