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Data logger ALMEMO® 104





ALMEMO® data logger Precision measuring instrument, latest V7 generation. Comprehensive range of functions for all application areas. Increased measuring accuracy, fast measuring rate. 4 measuring inputs.

Technical data and functions

Data logger of the latest V7 generation
The precision measuring instrument ALMEMO® 104 provides numerous outstanding functions for special applications using all ALMEMO® sensors (analog, DIGI, ALMEMO® D6) and the latest ALMEMO® D7 sensors.

Digitize and calibrate the existing sensor technology
Using the ALMEMO® D7 input plugs the existing sensor technology can easily be digitized. For digital sensors the overall accuracy of the measurement is independent from the ALMEMO® V7 display device / data logger. The complete measuring chain, consisting of sensor and connected ALMEMO® D7 measurement plug, can be calibrated. The accuracy during the calibration process can be increased by using multi-point adjustment.

One measuring instrument for every need
This compact, handy device can, as an option, be fitted with rubberized impact protection with mounting bracket for mobile use. For stationary applications H-rail or magnetic mounting are available.

Data logger for all storage applications
To save measured values a large flash memory is integrated. For monitoring tasks it can also be configured as a ring memory.
For larger amounts of data, an external memory is available featuring a plug-in SD card.
For autonomous long-term monitoring the data logger can also be run in energy-saving sleep mode.

Measuring inputs for ALMEMO® sensors, all generations
Data logger ALMEMO® 104 incorporates 4 measuring inputs. All new and already existing sensors designed for any measurable variable can be connected and evaluated.

Sensors using analog signals pass via the integrated high-speed, high-resolution A/D converter. Additional electrical isolation between measuring inputs and power supply (device ground) increases measuring quality.

Digital D6 and the latest digital D7 sensors transfer measured values to the measuring instrument directly in digital form.

New digital ALMEMO® D7 sensors
With these digital ALMEMO® D7 sensors the ALMEMO® system is enhanced by many new functions.

They operate via an all-digital interface to the ALMEMO® 104 measuring instrument ensuring high-speed serial transmission of all measured values.

The measuring ranges of ALMEMO® D7 plugs are independent of the measuring instrument and can be expanded as and when required for new applications.

Measured values can be displayed with up to 8 digits (depending on range) and the units with up to 6 characters. Sensor designation and information can be up to 20 characters.

The ALMEMO® D7 sensor has its own processor. These all work in parallel at their sensor-specific sampling rate. Scanning times on the ALMEMO® 104 can be set individually for quick-acting and slow-acting sensors.

The ALMEMO® D7 plug can process up to 10 channels for measured values and function values. This includes new applications, especially for multi-purpose sensors (e.g. Meteo sensors) and for linking up to complex third-party devices (e.g. chemical analysers, power analysers).

Bright graphics display, easy and convenient operation by means of soft-keys
The white, illuminated graphics display ensures that functions and measured values can be viewed in the clearest way possible. The device is easy and convenient to operate by means of 4 soft-keys and a cursor block. The menu guidance is clearly structured and easy to understand.

The sensor display shows the measured values together with all relevant sensor-specific functions, e.g. temperature compensation, atmospheric pressure compensation. Measured values, peak values, average values, and limit values can all be displayed in easy-to-understand lists.

Choice of languages: German, English, French

End-to-end programming of all parameters for ALMEMO® D6 and D7 sensors
The ALMEMO® 104 precision measuring instrument provides a programming menu for the end-to-end programming of all the parameters needed for digital ALMEMO® D6 and D7 sensors.
The required measuring ranges are selected (with ALMEMO® D7 sensors up to 10 measuring channels) and other relevant sensor parameters are configured, e.g. moving average, atmospheric pressure compensation, temperature compensation.

Other equipment
The two ALMEMO® output sockets can be used to connect a PC / network and an ALMEMO® output interface with relays and analog output at the same time.
With option KL it is possible - for an ALMEMO® sensor (i.a. temperature or pressure sensors) to program multi-point adjustment or linearization in the ALMEMO® plug itself.
This option is possible with all ALMEMO® plug versions. Standard connector (analog or DIGI), ALMEMO® D6 and D7 plugs.

ALMEMO® 104



Precision measuring instrument, latest V7 generation, 4 measuring inputs
Data logger with internal memory or external memory connector (accessory)

Technical data

Measuring inputs:	4 ALMEMO® input sockets for ALMEMO® sensors, all generations analog sensors, D6 and D7 sensors
Precision class:	A (see general technical data) up to AA with digital ALMEMO® sensors
Total sampling rate:	up to 2000 measurements/s
Measuring rate for analog sensors, D6 sensors:	2.5 / 10 / 50 / 100 mops (measuring operations per second)
Measuring rate for D7 sensors:	up to 1000 mops
Electrical isolation for analog sensors:	with semiconductor relays (50 V) Additional electrical isolation between measuring inputs and power supply (device ground)
Channels:	Up to 40 measuring channels per device
Sensor power supply:	9 / 12 V, maximum 0.4 A for supply via mains adapter 12 V, maximum 0.4 A
Air pressure sensor:	built-in, meas. range 700 to 1100 mbar
Accuracy:	± 2.5 mbar at 23 °C ±5 K
Outputs:	2 ALMEMO® sockets, suitable for all output modules (data / analog / trigger / relay cables, memory connector, etc.)

Standard equipment:	
Display:	Graphics display, 128 x 64 pixels, 8 rows Illumination: 2 white LEDs
Keypad:	7 silicone keys (of which 4 soft-keys)
Date and time-of-day:	Real-time clock (4.7 ppm), buffered by device battery
Memory:	internal, approx. 400 000 meas. values (depending on number of channels)
Power supply:	
Battery set:	3 AA alkaline batteries
Mains adapter:	ZA1312NA12 100 to 240 VAC to 12 VDC, 1.5 A galvanically isolated
DC-adapter cable galvanically isolated:	ZA2690-UK, 10 to 30 V, 0.25 A
Current consumption (without input and output modules):	
Active mode:	approx. 35 mA
with display illumination:	approx. 65 mA
Sleep mode:	approx. 0,15 mA
Housing:	127 x 83 x 42 mm (LxWxH), ABS Weight 290 g
Environmental conditions	see general technical data

Accessories

	Order no.
Memory plug with Micro-SD incl. USB card reader (see chapter General Accessories)	**ZA1904SD**
Mains adapter 12 V / 1.5 A	**ZA1312NA12**
DC adapter cable, 10 to 30 VDC, 12 V / 0.25 A, electrically isolated	**ZA2690UK**
Rubberized impact protection, green	**ZB2490GS1**
Magnetic fastening	**ZB2490MH**
DIN rail mounting	**ZB2490HS**
Instrument case	**ZB2490TK2**

Connecting cables

	Order no.
USB data cable, electrically isolated	**ZA1919DKU**
Ethernet data cable, electrically isolated	**ZA1945DK**
WLAN module, wireless WLAN connection	**ZA1739WL**
ALMEMO® radio modules, wireless connection to the PC	**ZA1739BPVU**
Analog output cable, galvanically isolated, 1 x 20 mA	**ZA1601RI**
Analog output cable, galvanically isolated, 2 x 10 V	**ZA1602RU**
Trigger and alarm cable (2 NO contacts, 0.5 A, 50 V DC)	**ZA1006EKG**
V24 data cable, electrically isolated	**ZA1909DK5**
Network technology, wireless modules: see chapter Network technology	

Option

	Order no.
Multi-point adjustment and / or linearization can - with all ALMEMO® plug versions - be programmed by users themselves	**OA104KL**

Standard delivery

	Order no.
Measuring instrument, batteries, instruction manual, data logger, manufacturer's test certificate, **ALMEMO® 104 precision measuring instrument**	**MA104**
Measuring instrument, batteries, rubberized impact protection ZB2490GS1, mains adapter ZA1312NA12, USB data cable ZA1919DKU, device case ZB2490TK2, instruction manual, data logger, **ALMEMO® 104 precision measuring instrument in a carrying case kit**	**MA104KSU**

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Fig.: ALMEMO® 104 for digital and analog sensors with 4 measuring inputs and rubberized impact protection.
For more measuring inputs, select ALMEMO® 710.

