ALMEMO® PANEL DEVICES

Decentralised (Local) Data Acquisition with ALMEMO® Panel Instruments and Transmitters

ALMEMO® panel instruments and transmitters are ideally suitable for a decentralised, networked data acquisition. Measuring data can be locally acquired using short sensor signal lines and small modular measuring instruments and can be evaluated together on a measuring computer. As a result, this does not only minimise the wiring efforts but it also significantly reduces EMC problems (and totally avoids them if fiber optics are used in the cables). This allows for measurement setups with a very flexible application of the devices so even the most demanding measuring tasks can be solved, e.g.

► Connection of a network controller with RS232 interface

► Installation of measuring devices in separate rooms

► Bridging of longer distances up to 1km

► Realisation of network branches

► Connection of measuring instruments with RS485 interface

► Interface conversion from RS232 to RS422 and vice versa

+ ALMEMO® output modules - see Chapter 04
For information regarding ALMEMO® interface cables for the best data transmission and for detailed information on solving your measuring tasks using ALMEMO® network technology please refer to Chapter 05.

If questions still remain unanswered, please do not hesitate to contact us for further advice, or request a date for a demonstration.
Our experts look forward to visiting you and to introduce the numerous application options of the ALMEMO® system.

ALMEMO® PANEL DEVICES

ALMEMO® MA 4390-2
Precision measuring instrument in control panel housing with 1 measuring input, measured value memory either internal or with memory card 2 outputs for USB, RS232, Ethernet, networking 2 limit value relays, integrated
Option Double analog output, 0 to 10 V / 20 mA

new!

Technical data:

Measuring inputs:	1 ALMEMO®-input socket or 6-contact screw connector with inputs 26 V and 20 mA (0.1%)
Channels	4 channels for double sensors and function channels
A/D converter	Delta-sigma 24-bit, 50 mops
With option Q4	up to 400 mops (see Technical data, page 01.05)
Sensor power supply	12V/0.1A, 9V/0.15mA, 6V/0.2mA

Outputs:	2 ALMEMO® sockets suitable for all output modules (analog / data / trigger / relay cable, memory, etc.)
2 limit value relays	mechanical changeover, 230V, 2A
Option with double analog output	
	10V or 20 mA (progammable) 16 bit DAC, electr. isol.
0.0 to 10.0 V	0.5 mV/ digit, Load >100 kohm
0.0 to 20.0 mA	0.1mA/digit, Load <500 ohm
Accuracy	0.1% of final value
Temperature drift	10 ppm/K
Time constant	100 µs

Technical features:

► 1 ALMEMO input socket for all ALMEMO sensors. per sensor, maximum 4 channels for double sensors, functions

► Or 6-contact socket for clamp connector, also for 26V and 20mA

► More than 65 standard measuring ranges

► As standard, 2 limit value relays, can also be driven via interface

► 2 ALMEMO output sockets for digital interfaces
Analog output, trigger input, alarm contacts, memory card

► High-resolution 24-bit A/D converter, up to 50 mops (measuring operations per second), and with option Q4 up to 400 mops (only possible with MMC memory connector)

► 8-character alphanumeric 14-segment display

► *New* Programming functions displayed in normal text (3 languages)

► *New* 5 programming menus Measuring function, memory, sensor, device, output

► Measuring functions: Measured value, double display, smoothing, zero-setting, setpoint adjustment, maximum / minimum / average values, temperature compensation, atmospheric pressure compensation

► Sensor programming: Measuring range, measured value correction, scaling, units, limit value monitoring, graduated locking of functions, scaling of analog output

► Device programming: Conversion rate, real-time clock with date, output cycle, baud rate, choice of languages

► Multi-point calibration and special measuring ranges in the ALMEMO connector. e.g. 50.000 ohms, 100 kilohms, NTC -5.000 to 46.000 °C, YSI400

► EEPROM sufficient for 8000 measured values, internal
Configurable as linear or ring memory

► Memory connector with pluggable micro SD (accessory)

► Device software update via interface

► Option with double analog output, can also be driven via interface

Standard equipment

Display	8 characters, 14 segments, LED display
Keypad	5 membrane keys
Date and time-of-day	Real-time clock, buffered with lithium battery
Memory, internal	64-KB EEPROM (8000 measured values)

Power supply

Mains operation	90 ... 240 VAC, 50/60 Hz
Option U	10 to 30 V, 0.5 A, electrically isolated

Housing

	Standard plastic housing 96 x 48 x 132 mm (WxHxD)
Panel opening	90 x 42.5 mm

Other general data see ALMEMO® "Technical data", page 01.05.

Included as standard

(including manufacturer's test certificate, operating instructions)

Panel meter ALMEMO® 4390-2 with 1 input, 2 outputs, cascadable interface, 2 relays, LED display, 5 keys, real-time clock, measured value memory   **Order.-No. MA43902**

Options

Option Q4 400 mops measuring rate (see 01.05)	SA0000Q4
Power supply 10 to 30 VDC, electr. isolated	OA4390U
2 analog outputs (common ground), electrically isolated 10 V or 20 mA (programmable)	OA4390R02
Temperature ranges for 8 refrigerants	SB0000R2

Accessories

Memory connector with micro SD, min. 128 MB	ZA1904SD
USB data cable, electrically isolated, max. 115.2 KB	ZA1919DKU
V24 data cable, electrically isolated, max. 115.2 KB	ZA1909DK5
Ethernet data cable, electr. isolated, max. 115.2 KB	ZA1945DK
Network cable, electrically isolated, max. 115.2 KB	ZA1999NK5
Analog output cable, -1.25 to +2.0 V, 0.1 mV / digit	ZA1601RK

Network technology, Bluetooth modules see Chapter 05

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TRANSMITTER
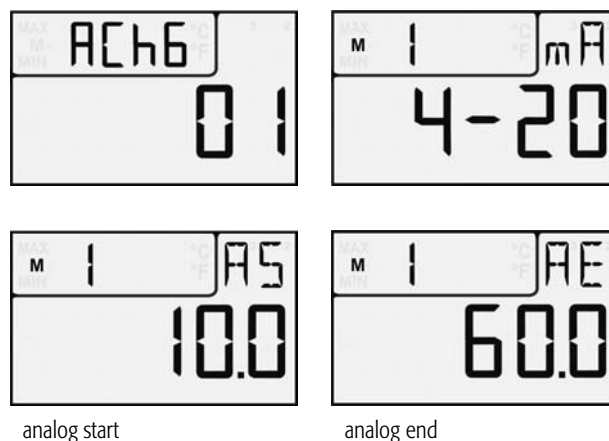
new!

Universal ALMEMO® transmitter 2450 / 2490

▶ 1 or 2 measuring inputs
▶ Various outputs - digital, analog
▶ Various power supplies

Programming analog output (example)

| AChG | M 1 mA |
| 01 | 4-20 |

M 1 A5	M 1 AE
10.0	60.0
analog start	analog end

ALMEMO® transmitters - a comparison

	ALMEMO® 2450	ALMEMO® 2490
Measuring ranges (see table. page 01.10 / 01.11)	Over 35 measuring ranges, inter alia Thermocouples, NTC Temperature / humidity, capacitive	Over 65 measuring ranges, inter alia Pt100, Pt1000 Thermocouples, NTC Temperature / humidity, capacitive Temperature / humidity, psychrometric
A/D converter (For technical data see page 01.05)	Delta-sigma, 15-bit resolution	Delta-sigma, 16-bit resolution
Measuring inputs	ALMEMO® 2450-1x 1 measuring input	ALMEMO® 2490-1x 1 measuring input ALMEMO® 2490-2x 2 measuring inputs
Other technical data	(see ALMEMO® 2450, page 01.12)	(see ALMEMO® 2490, page 01.19)

Common technical data

Analog outputs	10 V or 20 mA (programmable) 16-bit DAC, electrically isolated
0.0 to 10.0 V	0.5 mV / digit Load >100 kohms
0.0 to 20.0 mA	0.1 mA / digit Load <500 ohms
Accuracy	0.1 % of final value
Temperature drift	10 ppm / K
Time constant	100 µs
Standard equipment	LCD screen, keypad
Housing	ABS (maximum 70 °C) (LxWxH) 127 x 83 x 42 mm
Operating temperature	-10 to +60 °C
Atmospheric humidity	10 to 90 % RH (non-condensing))

TRANSMITTER

new!

ALMEMO® 2450-1x
Universal transmitter with display for a wide variety of ALMEMO® sensors

Technical data

Measuring input ALMEMO® 2450-1x	1 ALMEMO® socket
Measuring ranges	(see table. page 01.10 / 01.11) Over 35 measuring ranges, inter alia Thermocouples, NTC Temperature / humidity, capacitive

Other common data (see page 02.04)

Variants

Digital transmitter

Measuring input for ALMEMO® sensors, LCD screen, 7 keys, with interface via 2 ALMEMO® output sockets A1, A2, and 1 ALMEMO® DC socket for mains adapter including 3 AA alkaline batteries, operating instructions, manufacturer's test certificate
ALMEMO® 2450 1 measuring input   **Order no. MA24501**

Analog transmitter , like the digital transmitter described above, plus integrated analog output via socket P0, electrically isolated (scaling via keypad), including ALMEMO® clamp connector, 2 analog outputs (common ground), electrically isolated, 10 V or 20 mA (programmable)
ALMEMO® 2450 1 measuring input   **Order no. MA24501R02**

Option

Protection IP54
(if water-proof connectors are used) **Order no. OA2450W**

Option U
Power supply, electrically isolated   **Order no. OA2450U**

Option I RS485 interface   **Order no. OA2450I**

ALMEMO® 2490-1x/-2x
Universal transmitter with display for all ALMEMO® sensors

Technical data

Measuring input ALMEMO® 2490-1x: ALMEMO® 2490-2x:	1 ALMEMO® socket 2 ALMEMO® sockets	
Measuring ranges	(see table. page 01.10 / 01.11) Over 65 measuring ranges, inter alia Pt100, Pt1000 Thermocouples, NTC Temperature / humidity, capacitive Temperature / humidity, psychrometric	

Other common data (see page 02.04)

Variants

Digital transmitter

Measuring input for ALMEMO® sensors, LCD screen, 7 keys, with interface via 2 ALMEMO® output sockets A1, A2, and 1 ALMEMO® DC socket for mains adapter including 3 AA alkaline batteries, operating instructions, manufacturer's test certificate
ALMEMO® 2490-1 1 meas. input   **Order no. MA24901**
ALMEMO® 2490-2 2 meas. inputs   **Order no. MA24902**

Analogtransmitter. like the digital transmitter described above, plus integrated analog output via socket P0, electrically isolated (scaling via keypad), including ALMEMO® clamp connector, 2 analog outputs (common ground), electrically isolated, 10 V or 20 mA (programmable)
ALMEMO® 2490-1 1 meas. input   **Order no. MA24901R02**
ALMEMO® 2490-2 2 meas. inputs   **Order no. MA24902R02**

Option

Protection IP54
(if water-proof connectors are used) **Order no. OA2490W**

Option U
Power supply, electrically isolated   **Order no. OA2490U**

Option I RS485 interface   **Order no. OA2490I**

Accessories, options
(please place a special order)

Power supply:
230 VAC, via connector mains unit,
12 V, 1 A   Order no. ZA1312NA8
10 to 30 VDC, maximum 80 mA, electr. isol., integrated
incl. ALMEMO® clamp connector   see option U
10 to 30 VDC, maximum 200 mA, electr. isol.
via DC adapter cable, with banana plugs   Order no. ZA2690UK
10 to 30 VDC, not electrically isolated
(not suitable for thermocouple measuring)
including ALMEMO® clamp connector   Order no. ZA1312FS1

Digital interface (see Chapter 05)
USB interface via ALMEMO® USB cable   Order no. ZA1919DKU
Ethernet interface
via ALMEMO® Ethernet cable   Order no. ZA1945DK
RS232 interface
via ALMEMO® RS232 cable   Order no. ZA1909DK5
RS485 interface, integrated
including ALMEMO® clamp connector   see option I

Limit value contact (see Chapter 04)
Programming via digital interface (see above)
2 normally open contacts, 50 VDC / 500 mA (can also be programmed as inverted) via ALMEMO® relay cable, V6, clamped connection   Order no. ZA1006EKG
ALMEMO® limit value cable with banana plugs
(for electrical socket adapter)   Order no. ZA1006GK
Electrical safety socket adapter, 250 V / 6 A
(for ALMEMO® limit value cable)   Order no. ZB2280RA
Mounting
DIN rail   Order no. ZB2490HS
Magnet   Order no. ZB2490MH

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