Data logger ALMEMO® 5690

ALMEMO® data logger
Precision measuring instrument for measured data acquisition. Comprehensive range of functions for all application areas. Increased measuring accuracy, fast measuring rate.
Up to 99 / 190 measuring inputs
Operates as data logger or PC interface, also with generously dimensioned graphics display.

Technical data and functions, ALMEMO® 5690

- Multi-functional data acquisition systems with up to 99 or 190 measuring inputs (applies to ALMEMO® 5690-xCPU with option XU or XM)
- Increased measuring accuracy and stability
- Fast measuring rate, up to 50 measuring operations per second. With SD memory card, up to 100 mops, optional for 1 channel up to 500 mops (does not apply to ALMEMO® 5690-xCPU with option XM)
- Measuring rate increased to over 100 channels / second with several measuring circuit boards (applies to ALMEMO® 5690-xCPU with option XM). The measuring circuit boards operate in parallel, thus ensuring short scanning times for a large number of channels.
- Over 65 standard measuring ranges
- Option KL for independent multi-point adjustment or special linearization programmable in 30 points and management of calibration data saved in the sensor connector and the measuring instrument
- Higher measuring quality thanks to electrical isolation between measuring inputs and device power supply (device ground)
- Improved cold junction compensation with 2 sensors per input card
- Operates as data logger (internal EEPROM / RAM or SD memory card, sleep mode for long-term recording) or as interface for PC online operation
- ALMEMO® 5690-1 (variant without display), ALMEMO® 5690-2 (variant with display and operating controls)
- 5 LEDs for displaying the operating status of the measuring circuit and the CPU
- 8 rechargeable NiMH batteries with high-speed battery charging (accessory)
- Relay / trigger / analog interface as plug-in board (accessory) for output of alarm and control signals
- ALMEMO® output sockets, suitable for digital interfaces, analog output, trigger input, alarm contacts, memory card
- Housing in several variants: Desktop housing TG1, TG3, TG8 Wall-mounted housing WG3, Rack housing BT8.

Technical data, ALMEMO® 5690

Precision class	AA (see page 16)
Measuring rate	(100), 50, 10 and 2.5 mops
Electrical isolation for analog sensors	with semiconductor relays (50 V) Additional electrical isolation between measuring inputs and power supply (device ground)
Date and time-of-day	Real-time clock, buffered with lithium battery
Supply current	For system boards and sensor supply Entire system, max. 1.5 A, per board max. 0.3 A

Power supply	
Mains adapter	ZB1212NA11 100 to 240 VAC to 12 VDC, 2.5 A
DC adapter cable	electrically isolated ZB3090-UK2 10 to 30 VDC, 12 VDC, 1 A
Rechargeable battery pack	8 rechargeable NiMH batteries, 9 to 11 V, 1600 mAh with intelligent high-speed charging (3.5 hours) Supply current Entire system maximum 1.5 A

Environmental conditions and general technical data
see page 16 onwards

Accessories ALMEMO® 5690

	Order no.
Rechargeable batteries, 1600 mAh, 1 slot	**ES5690AP**
DC cable, 10 to 30 VDC, 12 VDC, 1.25 A	**ZB3090UK2**
Relay / trigger / analog board (see chapter „Output modules“) 2 slots	**ES5690RTA5**
Carry case, aluminum profile frame / ABS, suitable for ALMEMO® 5690 in desktop housing TGx	**ZB5600TK3**
Rack case with handle, suitable for ALMEMO® 5690 in rack housing BT8	**ZB5090RC**

Connecting cables ALMEMO® 5690

	Order no.
USB data cable, electrically isolated	**ZA1919DKU**
Ethernet data cable, electrically isolated	**ZA1945DK**
Trigger and relay cable (2 relays, 0.5 A, 50 V)	**ZA1006EKG**
Analog output cable, -1.25 to +2.0 V, 0.1 mV / digit	**ZA1601RK**
V24 data cable, electrically isolated	**ZA1909DK5**

Network technology, wireless modules (see chapter „Networking“) Relay trigger analog adapter (see chapter „Output modules“)

ALMEMO® data acquisition systems - a comparison

Function

System type	5690-xM09	5690-xCPU	5690-xCPU with option XU	5690-xCPU with option XM
Measuring circuit	Master measuring circuit board with 9 measuring inputs	Measuring circuit CPU board (without measuring inputs)		
Measuring inputs	up to 99 inputs	up to 100 inputs	up to 190 inputs	up to 190 inputs
Number of channels	up to 99 channels	up to 100 channels	up to 250 channels	up to 250 channels
Expansions Selector switch boards	up to 9 	up to 10 	up to 19 	None
Expansions Active measuring circuit boards	None	None	None	up to 19
Scanning time (approx.) At conversion rate 10 Hz At conversion rate 50 Hz	For 1 to 99 channels in total 0.1 to 10 seconds 0.02 to 2 seconds	For 1 to 100 channels in total 0.1 to 10 seconds 0.02 to 2 seconds	For 1 to 190 channels in total 0.1 to 19 seconds 0.02 to 4 seconds	For 100 / 190 channels in total = 10/19 measuring circuit boards with 10 channels each ... 1.1 / 1.1 seconds* ... 0.3 / 0.5 seconds* *for systems without display
ALMEMO® plug with special measuring range / multi-point calibration, linearization	Up to 9 ALMEMO® plugs (master measuring circuit)	Up to 100 ALMEMO® plugs	Up to 190 ALMEMO® plugs	Up to 190 ALMEMO® plugs
ALMEMO® outputs	Sockets A1 and A2	Sockets A1 to A5 for expanding the periphery, optional socket P0 (relay / trigger / analog outputs)		

Operating modes

System type	5690-1M09	5690-2M09	5690-1CPU	5690-2CPU
Online operation via PC	yes		yes	
Display and operating controls	no	yes	no	yes
Data logger	Accessory ZA1904SD Memory connector including micro SD	Micro SD drive, integrated, including micro SD (as standard)	Accessory ZA1904SD Memory connector including micro SD	Micro SD drive, integrated, including micro SD (as standard)
Internal memory	100 000 values EEPROM (option)		400 000 values RAM, battery-buffered (standard) or 400 000 values FeRAM, non-volatile (option)	

02/2025 • We reserve the right to make technical changes.

ALMEMO® 5690-1M09

Technical data and functions

- Technical data and functions, as for ALMEMO® 5690 series
- Master measuring circuit, 9 ALMEMO® input sockets, electrically isolated, suitable for 9 ALMEMO® sensors
- Up to 9 ALMEMO® connectors; special ranges / multi-point calibration / linearization possible (only on master measuring circuit)
- Expansion up to 99 inputs by means of various selector switch boards, maximum 99 measuring channels
- Data logger option: with internal EEPROM or external ALMEMO® memory connector with micro SD card

Technical data

Technical data, as for ALMEMO® 5690 series	
Measuring inputs	9 ALMEMO® input sockets Expansion up to 99 inputs by means of selector switch boards
Measuring channels	Expansion up to maximum 99 measuring channels
Internal memory (option S)	Internal EEPROM sufficient for 100,000 measured values, configurable as linear or ring memory
External memory (accessory)	ALMEMO® memory connector with micro SD card
Outputs	2 ALMEMO® sockets, suitable for all output modules (analog / data / trigger / relay cables, etc.) Alarm signal transmitter, internal
Operation	1 key, 5 LEDs, 2 coding switches

Accessories	Order no.
Memory connector with micro SD, including USB card reader (see chapter „General accessories“)	**ZA1904SD**

Expansions	Order no.
Selector switch boards U-A10, U-MU, U-TH2	(see page 58/59)
Relay / trigger / analog board, 2 slots per system up to 7 boards are supported. (see chapter „Output modules“)	**ES5690RTA5**

Options	Order no.
Internal data memory sufficient for 100,000 values	**OA5690S**
Multi-point adjustment, special linearization, management of calibration data	**OA5690KL**
Temperature ranges for 8 refrigerants (see page 225)	**SB0000R2**
Measuring rate for 1 measuring channel, 500 mops (SD card required)	**SA0000Q5**

Standard delivery

Precision measuring instrument, data acquisition system with master measuring circuit board MM-A9, mains plug assembly ZB1212NA11, Operating instructions, manufacturer‘s test certificate

DAkkS or works calibration KE90xx, electrical, for measuring instrument, see chapter „Calibration certificates“.
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

ALMEMO® 5690-1M09TG1

Dimensions:
77 x 145 x 218 mm
(WxHxD)

Data acquisition system in desktop housing TG1, 9 inputs,
1 free slot **MA56901M09TG1**
Expansion with
1 U-MU board (10 inputs)

ALMEMO® 5690-1M09TG3

Dimensions:
179 x 158 x 232 mm
(WxHxD)

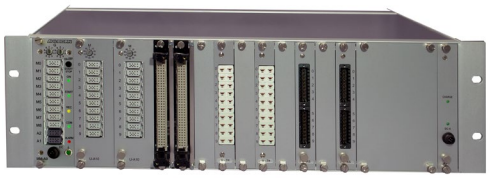
Data acquisition system in desktop housing TG3, 9 inputs,
6 free slots **MA56901M09TG3**
Expansion with
3 U-A10 boards or U-TH2 (30 inputs)
or 6 U-MU boards (60 inputs)
or 3 RTA5 boards

ALMEMO® 5690-1M09TG8

Dimensions:
444 x 158 x 232 mm
(WxHxD)

Data acquisition system in desktop housing TG8, 9 inputs,
19 free slots **MA56901M09TG8**
Expansion with
9 U-A10 boards or U-TH2 or U-MU (90 inputs)
or 7 RTA5 boards

ALMEMO® 5690-1M09BT8



Dimensions:
483 x 132 x 273
mm (WxHxD)

Data acquisition system in 19-inch rack housing, 9 inputs,
19 free slots **MA56901M09BT8**
Expansion with
9 U-A10 boards or U-TH2 or U-MU (90 inputs)
or 7 RTA5 boards

Carry case, aluminum profile frame ZB5600TK3
for ALMEMO® 5690-1/ -2

Rack case with handle ZB5090RC
for ALMEMO® 5690-xxBT8 in 19-inch rack housing

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ALMEMO® 5690-2M09

Technical data and functions

- Technical data and functions, as for ALMEMO® 5690 series
- Master measuring circuit, 9 ALMEMO® input sockets, electrically isolated, suitable for 9 ALMEMO® sensors
- Up to 9 ALMEMO® connectors; special ranges / multi-point calibration / linearization possible (only on master measuring circuit)
- Expansion up to 99 inputs by means of various selector switch boards, maximum 99 measuring channels
- Generously dimensioned graphics display, bright illumination, large display of measured values
- Measured values can be displayed graphically in line chart or bar chart form or numerically in various sizes.
- 3 user-defined menus can be freely configured from a range of 50 functions.
- Easy to operate by means of 4 soft-keys and cursor block, menu-guided with wizards and context-sensitive help windows
- Choice of languages: German, English, French
- Data logger with micro SD (standard)
- Option, internal EEPROM.

Technical data

Technical data, as for ALMEMO® 5690 series	
Measuring inputs	9 ALMEMO® input sockets Expansion up to 99 inputs by means of selector switch boards
Measuring channels	Expansion up to maximum 99 measuring channels
Memory	Micro SD card, integrated drive
Internal memory (option S)	Internal EEPROM sufficient for 100,000 measured values, configurable as linear or ring memory
Outputs	2 ALMEMO® sockets, suitable for all output modules (analog / data / trigger / relay cables, etc.) Alarm signal transmitter, internal
Display	
Graphics display	128 x 128 pixels, 16 rows
Illumination	5 white LEDs, 3 brightness levels
Operation	9 keys (4 soft-keys and cursor block) 9 status LEDs on front panel

Expansions

	Order no.
Selector switch boards U-A10, U-MU, U-TH2	(see page 58/59)
Relay / trigger / analog board, 2 slots per system up to 7 boards are supported. (see chapter „Output modules“)	**ES5690RTA5**

Options

	Order no.
Internal data memory sufficient for 100,000 values	**OA5690S**
Multi-point adjustment, special linearization, management of calibration data	**OA5690KL**
Temperature ranges for 8 refrigerants (see page 225)	**SB0000R2**
Measuring rate for 1 measuring channel, 500 mops (SD card required)	**SA0000Q5**

Standard delivery

Precision measuring instrument, data acquisition system with graphics display and operating controls, master measuring circuit board MM-A9, micro SD card, USB card reader, mains plug assembly ZB1212NA11, operating instructions, manufacturer‘s test certificate

DAkkS or works calibration KE90xx, electrical, for measuring instrument, see chapter „Calibration certificates“.
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

ALMEMO® 5690-2M09TG3

Dimensions:
179 x 158 x 232 mm
(WxHxD)

Data acquisition system in desktop housing TG3, 9 inputs, 6 free slots **MA56902M09TG3**
Expansion with
3 U-A10 boards or U-TH2 (30 inputs)
or 6 U-MU boards (60 inputs)
or 3 RTA5 boards

ALMEMO® 5690-2M09WG3

Dimensions:
209 x 207 x 153 mm (WxHxD)
(width includes fastening strips)

Data acquisition system in wall-mounted housing WG3, 9 inputs, 6 free slots **MA56902M09WG3**
Expansion with
3 U-A10 boards or U-TH2 (30 inputs)
or 6 U-MU boards (60 inputs)
or 3 RTA5 boards
The boards have their connections facing downwards. To facilitate wall-mounting four holes (5.3 mm) are provided on the protruding strips to the left and right of the housing's backplate (which cannot itself be removed).

ALMEMO® 5690-2M09TG8

Dimensions:
444 x 158
x 232 mm
(WxHxD)

Data acquisition system in desktop housing TG8, 9 inputs, 19 free slots **MA56902M09TG8**
Expansion with
9 U-A10 boards or U-TH2 or U-MU (90 inputs)
or 7 RTA5 boards

ALMEMO® 5690-2M09BT8

Dimensions:
483 x 132
x 273 mm
(WxHxD)

Data acquisition system in 19-inch rack housing, 9 inputs, 19 free slots **MA56902M09BT8**
Expansion with
9 U-A10 boards or U-TH2 or U-MU (90 inputs)
or 7 RTA5 boards

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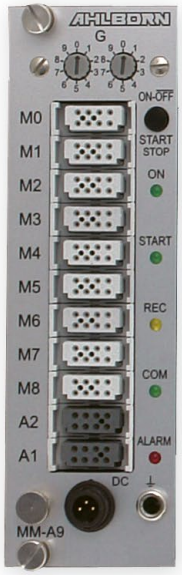
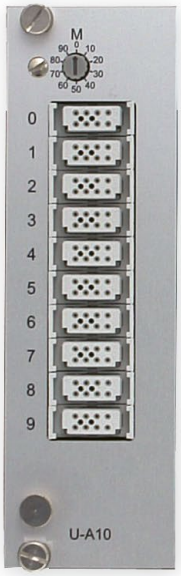
Master measuring circuit board, selector switch boards, and expansions for the ALMEMO® 5690-1M09 and 5690-2M09 systems

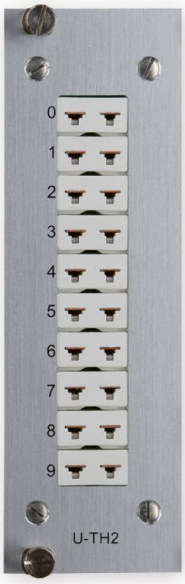


Master measuring circuit board MM-A9



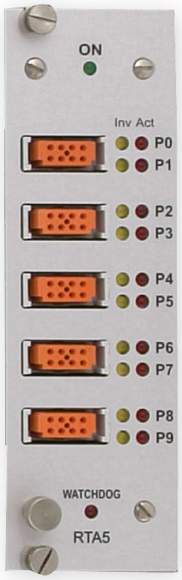
U-A10

U-MU



U-TH2

AP



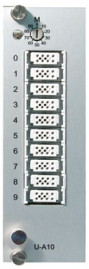
RTA5

Selector switch boards for ALMEMO® 5690-1M09 and 5690-2M09

Technical data and functions of selector switch boards

- Selector switch boards for expanding the ALMEMO® 5690-1M09 and 5690-2M09 systems by additional inputs
- There are several design variants for different installations / input plugs.

Selector switch boards U-A10



10 inputs for ALMEMO® single connectors
For flexible applications with individual sensors and measuring signals.

Technical data

Measuring inputs	10 ALMEMO® input sockets, electrically isolated
Measuring ranges	All ranges (see page 17/18)
Sensor supply	12 V, max. 0.3 A (per system max. 1.5 A)
Footprint	2 slots

Standard delivery	Order no.
Selector switch board U-A10	**ES5690UA10**

ALMEMO® connector must be ordered separately.

Selector switch boards U-MU

10 inputs for ALMEMO® 10-way MU connectors
For permanently installing groups of 10, especially temperature sensors.

Technical data

Measuring inputs	10 inputs, electrically isolated, socket strip for ALMEMO® 10-way MU connector
Measuring ranges	all thermocouples, Pt100, Ni100, NTC, ohms, 2.6 V, 260 mV, 55 mV, 26 mV
Sensor supply	None
Footprint	1 slot

Standard delivery	Order no.
Selector switch board U-MU	**ES5690UMU**
ALMEMO® 10-way MU connector	**ZA5690MU**

Selector switch boards U-TH2

10 inputs for miniature thermal connectors
For any individual thermocouple temperature sensors with miniature thermal connector.

Technical data

Measuring inputs	10 miniature thermal sockets, electr. isolated ALMEMO® sensor parameters are saved in the measuring instrument.
Measuring ranges	all thermocouples
Sensor supply	None
Footprint	2 slots

Standard delivery — Order no.

Selector switch board U-TH2 — **ES5690UTH2**
Miniature thermal connectors must be ordered separately.

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