

ALMEMO® OUTPUT MODULES

External SD memory and relay / trigger / analog output interface a per ALMEMO® system

A modern measuring instrument must be able to communicate with its environment, i.e. transfer its measured data to peripheral equipment, execute commands from a computer, trigger alarm signals, and respond to switching pulses.

To cover all possibilities while also keeping the hardware needed to a minimum all necessary interfaces have been integrated in our ALMEMO® output connector. This concept allows the user - with one and the same ALMEMO® measuring instrument - to choose freely from a wide variety of output interfaces to best suit the particular task in hand .

For the purposes of connecting the modules virtually all ALMEMO® devices are equipped with two output sockets A1 and A2; these also allow the devices to participate in digital networking. The output modules, just like the sensors, are detected automatically; no extra programming is required.

 Please note that many ALMEMO® output modules can only be operated in conjunction with ALMEMO® devices, version 6 and above (not 2390, 8390). Labeled V6 (device firmware update may be needed)

 Describing all the many options provided by the ALMEMO® system with output modules would be beyond the scope of this catalog.

Please ask for our ALMEMO® Manual. It will provide you with valuable tips and a detailed description of our ALMEMO® output modules.

We shall of course be pleased to offer you competent advice and support to help you solve your particular measuring tasks. Or you can arrange a date for a demonstration. Our experts will be pleased to visit you - to introduce and explain the numerous application options that the ALMEMO® system offers.

ALMEMO® OUTPUT MODULES

new!

ALMEMO® memory connector with micro-SD ZA 1904 SD



- ▶ for ALMEMO® data loggers, as of version 6
- ▶ Large memory
- ▶ High data security
- ▶ Measured values can be saved to a text file.
- ▶ The memory card in the data logger can be replaced quickly and easily on site.
- ▶ Files can be transferred to a PC quickly and easily via a card reader

Technical data

Measuring instruments for ALMEMO® 2590-2/-3S/-4S, 2690, 2890, 4390, 5690, 5790, 8490, 8590
Memory connector on device output socket A2

ALMEMO® memory connector	Integrate drive for micro-SD card
Memory card	Micro-SD, up to 2 GB, standard FAT16 format
Measured values	With 128 MB approx. 8 million measured values
Ring memory	no
File format	ASCII text file, measured values in table format, separated by semi-colons
Reading device	USB card reader for removable storage media
Measuring software	WinControl (as of version 6), see page 06.06

01/2011 We reserve the right to make technical changes.

Variants

ALMEMO® memory connector with micro-SD memory card (minimum 512 MB) including USB card reader
Micro-SD memory card (minimum 512 MB as replacement)

Order no. ZA1904SD
Order no. ZB1904SD



Micro-SD memory card (as replacement)



Micro-SD memory card, including USB card reader

ALMEMO® OUTPUT MODULES

new!

ALMEMO® trigger cable ZA 1000 ET / ZA 1006 EK2



Technical data

Trigger input	
ZA1000ET	Trigger variants can be programmed by key
ZA1006EK2	For external zero-potential contact (not electrically isolated) and for external voltage 4 to 30 VDC (optocoupler), trigger variants - can be programmed
Current consumption	approx. 3 mA
Cable length	1.5 meters
Connection	(see variants)

Variants

ALMEMO® trigger cable, V5 / V6, with 1 key

Order no. ZA1000ET

ALMEMO® trigger cable, V5 / V6, with 1 trigger input for external voltage, with 2 banana plugs

Order no. ZA1000EK

ALMEMO® trigger cable, V6, with 2 trigger inputs

for external contacts or voltages, with clamp connector

Order no. ZA1006EK2

ALMEMO® trigger / relay cable V6 ZA 1006 EKG / ETG

new!



Technical data

Trigger input	For external zero-potential contact (not electrically isolated) or for external voltage 4 to 30 VDC (optocoupler)
	New Trigger variants - can be programmed (V6 only)
Relay	Normally open contact (semiconductor relay)
	New Can also be programmed as inverted (V6 only) Load capacity: 50 VDC, 0.5 A, 1 ohm
Current consumption	approx. 3 mA
Cable length	1.5 meters
Connection	Clamp connector

Variants

ALMEMO® trigger / relay cable, V6, with 2 trigger inputs for external voltages and 2 normally open contacts

Order no. ZA1006EKG

ALMEMO® trigger / relay cable, V6, with 2 trigger inputs for external zero-potential contacts and 2 normally open contacts

Order no. ZA1006ETG

for ALMEMO® devices, version V5

ALMEMO® trigger / relay cable, V5, with 1 trigger input

for 1 external zero-potential contact or for voltage and 2 normally open contacts

Order no. ZA1000EKG

ALMEMO® OUTPUT MODULES

04

new!

ALMEMO® relay cable, V6, ZA 1006 GK and electrical socket relay adapter, ZB 2280 RA



Technical data

Relay cable, V6, type ZA 1006 GK	
Relay	Normally open (semiconductor relay) New Can also be programmed as inverted (V6 only) Load capacity 50 VDC, 0.5 A, 1 ohm
Current consumption	approx. 3 mA
Cable length	1.5 meters
Connection	Banana plug

Variants

ALMEMO® relay cable, V6, with 1 normally open contact	Order no. ZA1006GK
for ALMEMO® devices, version V5 ALMEMO® relay cable, V5, with 1 normally open contact	Order no. ZA1000GK

Technical data

Relay adapter ZB2280RA	
Control input	for optocoupler output or switching contact $R < 10 \text{ k}\Omega$
Output	Electrical safety socket, mechanical relay, load capacity 250 V, 6 A
Switching status	OFF idle; ON alarm

Variants

Relay adapter for switching mains supplied devices combined with relay cable ZA1006GK/ZA1000GK	Order no. ZB2280RA
---	---------------------------

ALMEMO® analog output cable ZA 1601 RK



Technical data

Output voltage	-1.250 to 2 000 V, not electr. isolated
Gain	0.1 mV / digit
Load	$> 100 \text{ k}\Omega$
Accuracy	$\pm 0.1\% \pm 6$ digits
Temperature drift	1 digit / K
Time constant	100 ms
Current consumption	approx. 3 mA
Cable length	1.5 meters

- ▶ Measured values can be recorded using a chart recorder or a similar output device.
- ▶ A signal converter is integrated in the connector.
- ▶ The device signal is converted into a voltage corresponding to the linearized measured value.
- ▶ To obtain a high response speed a conversion rate of 10 mops can be set in the ALMEMO® device.
- ▶ The output signal can be scaled as required.

Variants

Analog output cable -1.250 to 2.000 V (0.1 mV / digit) not electrically isolated

Order no. ZA1601RK

01/2011 We reserve the right to make technical changes.

AHLBORN
www.ahborn.com

SUPPLYLAB
www.supplylab.pt

04.05

ALMEMO® OUTPUT MODULES

new!

ALMEMO® relay trigger adapter, analog ZA 8006 RTA3 for connecting to ALMEMO® devices



- ▶ Universal trigger output interface for connecting to output sockets on ALMEMO® devices - from version V6 up (but not 2390, 8390).
- ▶ Up to 10 peripheral elements (relays, trigger inputs, analog outputs) each with individually configurable function
- ▶ Relay functions, total alarm, assignment to particular limit values, or addressing via interface
- ▶ Integrated alarm signaling device can be assigned to all relay functions.
- ▶ Inverse relay addressing for alarm in the event of power failure
- ▶ Programmable messages to be issued when relays are activated
- ▶ Comprehensive trigger features with the aid of command macros, addressing via 2 keys or electrical signals
- ▶ Either 2 or 4 analog outputs (10 V or 20 mA) can be assigned to any measuring channels, scalable sub-areas, or, alternatively, addressing via interface.
- ▶ **New** Analog output type 10 V or 20 mA (programmable)
- ▶ All programming and peripheral states shown on illuminated graphics display
- ▶ Keypad for selecting menu and port
- ▶ Watchdog function in the event of a failure of ALMEMO® device or computer addressing
- ▶ Connection of peripherals via ALMEMO® clamp connectors, cable with anti-kink protective sleeve and strain relief
- ▶ Power supply is via the ALMEMO® device; in the case of the analog output option a mains adapter may also be required.
- ▶ Modern, compact housing - also suitable for DIN top-hat rail mounting

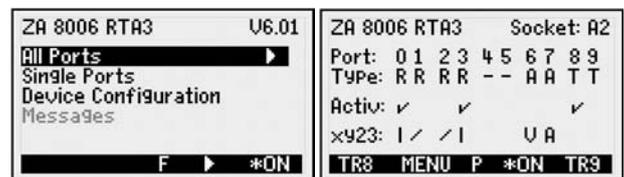
Scope of delivery:

ALMEMO® relay trigger adapter with 2 trigger inputs, 4 normally open relays, DC socket, graphics display, and keypad, including 1.5-meter ALMEMO® connecting cable and 3 ALMEMO® clamp connectors **Order no. ZA8006RTA3**

Technical data:

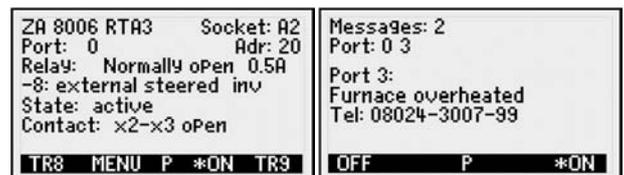
Trigger inputs	Optocoupler, 4 to 30 V, Ri >3 kΩ
Relay	Semiconductor relay 50 V, 0.5 A, 1 Ω
Analog outputs	10 V or 20 mA (programmable) 16-bit DAC, electrically isolated
0.0 to 10.0 V	0.5m V / digit, Load > 100 kohms
0.0 to 20.0mA	0.1 mA / digit, Load <500 ohms
Accuracy	0.1% of final value
Temperature drift	10 ppm / K
Time constant	100 μs
Power supply	via ALMEMO® device
or mains adapter	ZA1312NA8 (recommended with analog output option)
Current consumption (with 9V supply)	approx. 10 mA, Lighting approx. 15 mA 2 analog outputs approx. 15 mA + 1.8 I _{out}
Display	Graphics 128 x 64 (55 x 30 mm) Lighting 2 white LEDs
Keypad	7 silicone keys (of which 4 soft-keys)
Housing	127 x 83 x 42 mm (LxWxH) ABS (maximum 70°C), 290 g

Displays:



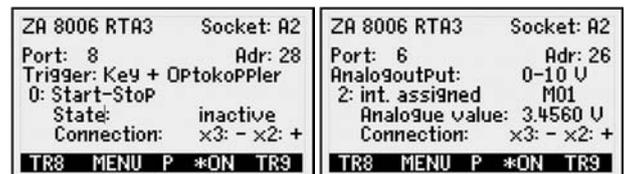
menu selection

all peripherals



relais

messages



trigger inputs

analog outputs

Basic version 2 trigger inputs and 4 normally open relays
Options 2 additional relays (normally open) OA8006SH2
 Per normally open pair 2 additional normally closed relays
 (with normally open relays 2 changeover relays) OA8006OH2
 2 analog outputs (common ground), electrically isolated
 10 V or 20 mA (programmable) OA8006R02

Possible combinations

2x OA8006SH2 (+4 relays)
 or 1x OA8006SH2 (+2 relays) + 1x OA8006R02 (+2 analog outputs)
 or 2 x OA8006OH2 (+4 analog outputs)

Accessories

Connector mains unit, 12 V, 1 A ZA1312NA8
 Fixture for DIN rail mounting ZB2490HS

01/2011 We reserve the right to make technical changes.

ALMEMO® OUTPUT MODULES

ALMEMO® relay adapter, analog ZA 8006 RTA4 for PC-controlled operation or as manual simulator



- ▶ Universal output interface as manual simulator or for PC-controlled operation with settable device address
- ▶ Up to 10 peripheral elements (maximum 10 relays, maximum 4 analog outputs)
- ▶ PC connection via all ALMEMO® data cables, networking via network distributor or network cable (as last device only)
- ▶ Relay addressing and analog output addressing also via keypad
- ▶ Integrated alarm signaling device can be assigned to all relays.
- ▶ Inverse relay addressing for alarm in the event of power failure
- ▶ Programmable messages to be issued when relays are activated
- ▶ Either 2 or 4 analog outputs (10 V or 20 mA), analog signal can be programmed via interface or keypad.
- ▶ Simulation of process variables (standard analog signals) either manually or automatically, in stages or as ramp
- ▶ All programming and peripheral states shown on illuminated graphics display
- ▶ Watchdog function in the event of a failure of computer addressing
- ▶ Connection of peripherals via ALMEMO® clamp connectors, cable with anti-kink protective sleeve and strain relief
- ▶ Power supply via battery, mains unit, USB cable ZA 1919-DKUV or connection to RS422 network distributor with connector ZA 5099-FSV
- ▶ Modern, compact housing - also suitable for DIN top-hat rail mounting

new!

Technical data:

Relays	Semiconductor relays 50 V, 0.5 A, 1 Ω
Analog outputs	10 V or 20 mA (programmable) 16-bit DAC, electrically isolated
0.0 to 10.0 V	0.5m V / digit, Load >100 kohms
0.0 to 20.0mA	0.1 mA / digit, Load <500 ohms
Accuracy	0.1% of final value
Temperature drift	10 ppm / K
Time constant	100 μs
Power supply	10 to 30 VDC (or battery)
Mains adapter	ZA1312NA1
	Current consumption: approx. 20 mA, Lighting approx. 35 mA (battery 4.5 V) 2 analog outputs: approx. 30 mA + 3.5 I _{out}
Display	Graphics 128 x 64 (55 x 30 mm) Lighting: 2 white LEDs
Keypad	7 silicone keys (4 soft-keys)
Housing	127 x 83 x 42 mm (LxWxH) ABS (-10 to +70 °C), 290 g

Displays:



main menu

device configuration



all peripherals

relays



analog outputs

10V-Simulator in Stufen

Basic version 6 normally open relays

- Options** 2 additional relays (normally open) OA8006SH2
- Per normally open pair 2 additional normally closed relays (with normally open relays 2 changeover relays) OA8006OH2
- 2 analog outputs (common ground), electrically isolated
- 10 V or 20 mA (programmable) OA8006R02

Possible combinations

- 2x OA8006SH2 (+4 relays)
- or 1x OA8006SH2 (+2 relays) + 1x OA8006R02 (+2 analog outputs)
- or 2 x OA8006R02 (+4 analog outputs)

Accessories

- Connector mains unit, 12 V, 1 A
- V24 data cable, electrically isolated
- Ethernet data cable, electrically isolated
- USB data cable, electrically isolated
- USB data cable with 9V supply, not electr. isol.
- Connector for RS422 network distributor
- Fixture for DIN rail mounting

- ZA1312NA8
- ZA1909DK5
- ZA1945DK
- ZA1919DKU
- ZA1919DKUV
- ZA5099FSV
- ZB2490HS

Scope of delivery:

ALMEMO® relay adapter with 6 normally open relays, DC sockets, A1, graphics display, and keypad, including 3 ALMEMO® clamp connectors, batteries

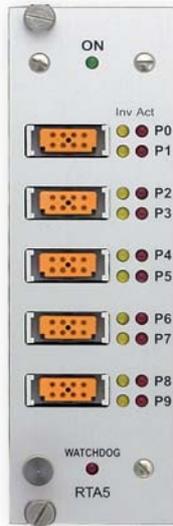
Order no. ZA8006RTA4

01/2011 We reserve the right to make technical changes.

ALMEMO® OUTPUT MODULES

new!

**ALMEMO® trigger output interface,
ES 5690 RTA5,
for ALMEMO® data acquisition systems**



- ▶ Universal trigger output interface for ALMEMO® 5690 data acquisition systems
- ▶ System (master measuring circuit or CPU module) addressed via an internal SPI bus
- ▶ Up to 10 peripheral elements (relays, trigger inputs, analog outputs) each with individually configurable function
- ▶ Relay functions, total alarm, assignment to particular limit values, or addressing via interface
- ▶ Inverse relay addressing for alarm in the event of power failure
- ▶ Relay states shown via LEDs
- ▶ Watchdog function in the event of a failure of ALMEMO® device or computer addressing
- ▶ Comprehensive trigger features with the aid of command macros, addressing via electrical signals
- ▶ Either 2 or 4 analog outputs (10 V or 20 mA programmable) can be assigned to any measuring channels, scalable sub-areas, or, alternatively, addressing via interface.
On request : 10 analog outputs per plug-in module (without trigger inputs, without relays)
- ▶ Connection of peripherals via ALMEMO® clamp connectors, cable with anti-kink protective sleeve and strain relief
- ▶ Power supply via ALMEMO® system

Technical data:

Trigger inputs	Optocoupler 4 to 30 V, $R_i > 3 \text{ k}\Omega$
Relays	Semiconductor relays 50 V, 0.5 A, 1Ω
Analog outputs	Digital-to-analog converter (DAC) electrically isolated
0.0 to 10.0 V	Load $>100 \text{ kohm}$
0.0 to 20.0 mA	Load $<500 \text{ ohm}$
Output type V or mA can be selected (and programmed).	
Resolution	16 bit
Accuracy	0.1% of final value
Temperature drift	10 ppm/K
Time constant	100 μs
Power supply	via ALMEMO® measuring system
Current consumption	Standard: approx. 10 to 20 mA 2 analog outputs: approx. $15 \text{ mA} + 1.8 \cdot I_{\text{out}}$
Module	19" 8-DU (2 slots)



ALMEMO®-clamp connector

- Basic version** 2 trigger inputs and 4 normally open relays
- Options** 2 additional relays (normally open) OA8006SH2
 Per normally open pair 2 additional normally closed relays
 (with normally open relays 2 changeover relays) OA8006OH2
 2 analog outputs (common ground), electrically isolated
 10 V or 20 mA (programmable) OA8006R02
- Possible combinations
 2x OA8006SH2 (+4 relays)
 or 1x OA8006SH2 (+2 relays) + 1x OA8006R02 (+2 analog outputs)
 or 2 x OA8006R02 (+4 analog outputs)

Scope of delivery:

ALMEMO® relay trigger module - with 2 trigger inputs,
4 normally open relays, and 3 ALMEMO® clamp connectors

Order no. ES5690RTA5

01/2011 We reserve the right to make technical changes.

ALMEMO® OUTPUT MODULES

04

01/2011 We reserve the right to make technical changes.

AHLBORN

www.ahlborn.com

www.supplylab.de

supplyLAB

04.09