ALMEMO® OUTPUT MODULES

Analog and Digital Data Transmission à la ALMEMO®

A modern measuring instrument must be able to communicate with its environment, i.e. transmitting measuring data to analog and digital peripheral equipment, running the commands of a computer, triggering alarm signals or responding to switching pulses.

To suit all possibilities, while keeping the hardware requirements at a minimum, all necessary interfaces have been integrated into the ALMEMO® output connectors. This concept enables the user to freely select, depending on the desired functions, between the RS232, USB, Bluetooth, Ethernet, RS422, RS485, or current-loop interfaces and between wire, optic fiber, or radio connections. For remote inquiries the data can also be transmitted via modem with a baud rate of 57.6 kbd at maximum.

For connection of the modules almost all ALMEMO® devices are equipped with two output sockets A1 and A2, which also allow for the digital networking of the devices. The output modules, like the sensors, are automatically detected so that no programming is required.

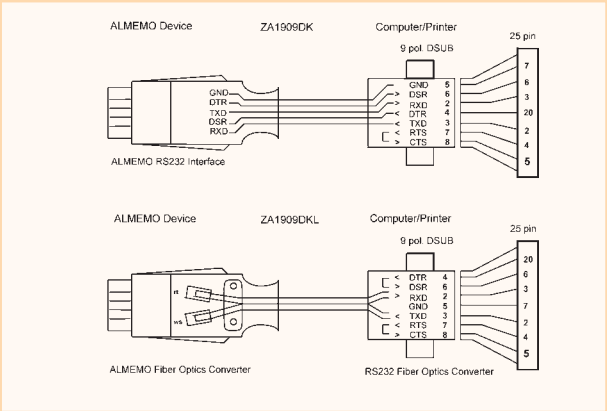
Describing the large number of options provided by the ALMEMO® system for digital and analog data transmission would be beyond the scope of this catalogue.

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

We will, of course, provide you with individual and competent advice to support you with solving your measuring task, or request a date for a demonstration. Our experts look forward to visiting you to and introduce the numerous application options of the ALMEMO® system.

ALMEMO® OUTPUT MODULES

RS232 Data Cable Type ZA1909DK5
USB Converter cable ZB1909USB



- Interface cable with SUB-D socket for data transmission from an ALMEMO® device to a computer or printer.
- Different cables can be used to alternately connect several peripheral devices such as printer, terminal or computer with different parameters to a measuring instrument without requiring any settings.
- **The version with fiber optics** ensures absolute electrical isolation and extensive lightning protection. Particularly recommended for laptop use.

Types:

RS232 data cable electrically isolated, max. 115.2 kbaud, Current consumption : approx. 1 mA Cable length : 1.5 m	**Order No. ZA1909DK5**
As above, but cable lengths 5m / 10m / 15m	**Order No. ZA1909DK5-05 /-10 /-15**
RS232 data cable with optic fiber, max. 115.2 kbaud, Cable length 1,5 m	**Order No. ZA1909DKL**
Longer optic fiber (up to 50 m) for interiors, Duplex plastic 2.2 x 4.3mm, per meter	**Order No. LL2243L**
Converter, USB to RS232, 9-pin DSUB for ALMEMO® data cable ZA1909DKx, including WINDOWS driver	**Order No. ZB1909USB**
USB data cable, electrically isolated, maximum 115.2 kbaud, cable length 1.5 meters, including CD with Windows driver	**ZA1919DKU** new!
as above but cable length 5 meters	**ZA1919DKU-05**

Ethernet data cable ZA1945-DK

- For connecting almost any ALMEMO® measuring instrument to an Ethernet PC network.
- Linking up to the Internet now possible.
- Terminal operation using our AMR-Control software, available free-of-charge.
- XPort-Installer configuration software also included on the AMR CD.
- Measured data acquisition via several Ethernet modules using our Win-Control software. (Version SW5600WC2 and above, see page 06.06)

Technical data

Ethernet	Socket RJ45 (10/100 base-T)
	Automatic switchover 10 / 100 MHz
ALMEMO®	ALMEMO® connector for socket A1 Baud rate standard 9600 bd, max. 115.2 kbd (can be changed via XPort-Installer and browser)
Power supply	12 V DC via measuring instrument (suitable mains supply unit recommended)
Current consumption	<60 mA (10 MHz), <90 mA (100 MHz)

Accessories

Patch cable RJ45, plug / plug, 2 meters — **Order no. ZB 1904 PK2**

Type :

Ethernet data cable, RJ45 socket on ALMEMO® connector, cable length 1.5 meters — **Order no. ZA 1945-DK**

ALMEMO® OUTPUT MODULES

Wireless data link with ALMEMO® Bluetooth connector, class 2, ZA1709-BT2
Bluetooth module, class 1, ZA1709-BT1x

ALMEMO® Bluetooth connector, class 2

- Complete Bluetooth module, class 2, integrated in the ALMEMO® connector.
- Wireless link between ALMEMO® devices over up to 20 meters (free field).
- Paired connectors at A1 and A2 as direct substitute for network cable.
- Remote station on PC : Bluetooth USB stick or class 1 modules (see below).

Bluetooth modules, class 1

- Range over 100 meters thanks to special antenna (free field).
- Any connection is possible from ALMEMO® device to PC using the variants ALMEMO®, RS232, RS422, and Ethernet.
- Any combination is available as a ready-to-use pairing (except USB stick).
- Power supply via ALMEMO® devices or 12-V mains adapter.
- Multiple connections are possible using a Bluetooth USB stick on the PC. Measured data can be acquired via several COMs using the WinControl software (version SW5600WC2 and above, see page 06.06).

☞ The range of the radio link is substantially lower inside buildings.

Technical data

Protocol:	SPP (sequence packet protocol) (128-bit encryption)
ALMEMO® data rate	9600 baud fixed
PC data rate	9600 baud to 115 kbaud (irrespective of the ALMEMO® baud rate)
Security	6-character pin needed to enable the connection
Power supply	ZA1709BT2/BT1 via the ALMEMO® device, otherwise via 12-V connector mains unit, USB stick via the PC
Bluetooth, class 2	
Approval	For all countries worldwide
Range	up to 20 meters free field
Device name	"ALMEMO xxx", set before leaving the factory
Current consumption	approx. 15 mA at 9 to 12 V, 30 mA at 7 V
Operative range	-10 to +55 °C
Housing	ALMEMO® connector
Bluetooth, class 1	
Approval	For all countries worldwide - except France
Range	up to 100 meters free field (up to 200 meters free field using ZA1709BT1DK or BT1NK with antenna ZB1709BT1A in each case)
Device name	"ALMEMO xxx", set before leaving the factory
Current consumption	approx. 25 mA at 9 to 12 V, 40 mA at 7 V
Operative range	-10 to +60 °C
Housing	(HxWxD) 60 x 108 x 29 mm, PS
Bluetooth USB stick, class 1	
Approval	For all countries worldwide - except France
Range	up to 100 meters free field (USB extension cable recommended)
Driver software	included on CD-ROM
Interfaces	1 virtual COM (standard installation), up to 6 other COMs possible

Types:

Cost-efficient connections on the PC (including driver software)

Wireless data link from Bluetooth USB stick and ALMEMO® Bluetooth connector, class 2	**Order no. ZA1709BT2DKU**
Wireless data link from Bluetooth USB stick and ALMEMO® Bluetooth module, class 1	**Order no. ZA1709BT1DKU**

Paired combinations (no installation necessary)

Wireless data link from 2 Bluetooth modules, class 1, RS232, and ALMEMO®	**Order no. ZA1709BT1DK**
Wireless network link from 2 ALMEMO® Bluetooth connectors, class 2	**Order no. ZA1709BT2NK**
Wireless network link from 2 ALMEMO® Bluetooth modules, class 1	**Order no. ZA1709BT1NK**

Single positions

ALMEMO® Bluetooth connector, class 2	**Order no. ZA1709BT2**
Bluetooth module, class 1, with ALMEMO® adapter cable, cable length 1 meter	**Order no. ZA1709BT1**
Bluetooth module, class 1, with RS422 adapter cable for ALMEMO® networks, cable length 1 meter	**Order no. ZB1709BT1N**
Bluetooth module, class 1, with Ethernet socket RJ45, mains unit 12 V, 0.2 A	**Order no. ZB1709BT1E**
Special antenna for Bluetooth module, class 1, doubles the range	**Order no. ZB1709BT1A**

ALMEMO® OUTPUT MODULES

Wireless data link for particularly long distances, radio modem ZB1709FM5

- Wireless data link between ALMEMO® device and PC.
- Wireless networking between ALMEMO® devices, also possible in a star-configured network (broadcasting mode).
- The radio modem is already configured and easy to install.
- Frequency band 869 MHz, approved in many European countries.
- Wide range (up to 5 kilometers unobstructed) and reliable data transmission.
- The range can be increased using a directional antenna and repeater mode.

Technical data

Radio link	869.4 to 869.65 MHz, 500 mW (as per EN-300-220/1)
Radio data rate	19200 baud
Duty cycle	10% / hour (as per RegTP) (Regulierungsbehörde für Telekommunikation und Post, the German telecommunications and postal regulator)
Antenna connector	SMA socket
Range	up to 5 kilometers unobstructed
Connection	RS232, D-sub 9-pin, socket
ALMEMO® data rate	9600 baud
Power supply	10 to 30 V DC, 13 to 24 V AC
Current requirement	(at 12 V DC) quiescent current 80 mA, during radio operation, 350 mA
Operative range	-30 to +60 °C, 0 to 99% RH, non-condensing
Dimensions	110 x 185 x 30 mm, aluminum housing with DIN rail holder
EMC	EN 300 683, 89/336/EEC

Types :

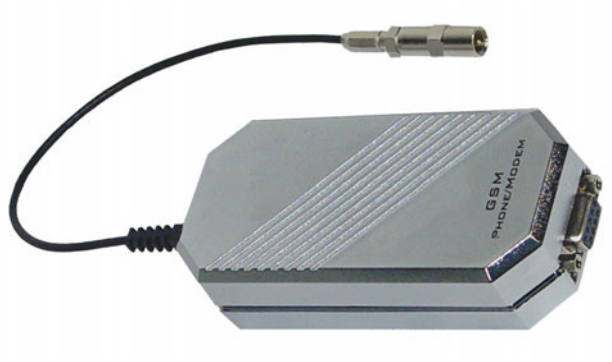
Radio link complete from ALMEMO® device to PC, with 2 radio modems, 2 rod antennas, 1 ALMEMO® data cable with 1 adapter to the radio modem, 1 PC connecting cable, 2 connector mains units — **Order no. ZA1709FM5DK**

Single positions :

Radio modem, 869 MHz, 500 mW, with RS232 interface	**Order no. ZB1709FM5**
Rod antenna (up to 1 kilometer unobstructed), directional antenna available on request	**Order no. ZB1709FMKA**
ALMEMO® data cable	**Order no. ZA1909DK5**
Adapter connector for the radio modem	**Order no. ZA1709AS**
PC connecting cable	**Order no. ZB1909DV9**
Connector mains unit, 230 V AC, 12 V DC, 1000 mA	**Order no. ZB1012NA7**

ALMEMO® OUTPUT MODULES

GSM Mobile Radio Communications Modem, Type ZA1709GSM



- Ideally suitable for tele-polling and tele-configuring ALMEMO® measuring instruments and networked measuring setups using the ALMEMO® system.

☞ On the PC side an analog modem (ZB1709M2) is required.

Types:

GSM mobile radio communications modem for connecting to ALMEMO® devices, including data cable ZA1909DK5, AS adapter connector, mains supply unit, manual, cable set, and installation material **Order No. ZA1709GSMOK**

Technical Data:

Command control language:	AT-Hayes AT special commands for GSM (ETSI standard GSM 07.07/07.05)
Data transmission:	asynchronous
Transmitting power:	2W GSM class 4
Data rate:	max. 9600 baud (GSM standard)
Connection:	RS232 interface with 9-pin SUB-D socket
Power supply:	mains supply unit 230V AC or externally: 11 to 31V DC
Current consumption:	active mode, approx. 325 mA standby mode, approx. 47 mA
Operat. temperature:	–20 to +70°C
Storage temperature:	–20 to +55°C
Dimensions:	115 x 54 x 33mm
Weight:	130g

Accessories

Supply cable for ALMEMO® devices, DC voltage, 10 to 30 VDC, with 2 outputs :

- 12 VDC, 1 A, electrically isolated, with DIN hollow connector, for ALMEMO® 2890-9
- not electrically isolated, with RJ connector for GSM modem

Order No. ZB2590UKGSM

Fixed-line network telecommunications modem Type ZA1709MK2, ZB1709M2

- For analog standard line Telekom connection.
- Ideally suitable for remote inquiries and remote control of ALMEMO® measuring instruments and networked measurement setups with ALMEMO® system.
- Factory-preconfigured particularly for the ALMEMO® system.
- Fully automatic dial-up and call identification.

Types:

Fixed-line network telecommunications modem, 56K (similar to illustration) for connecting to ALMEMO® devices, including data cable ZA1909DK5, adapter connector ZA1709AS, telephone connection cable, and mains unit, including adaptation and testing **Order no. ZA1709MK2**

Fixed-line network telecommunications modem, 56K for connecting to a PC, serial interface, telephone connection cable, including PC connecting cable and mains unit **Order no. ZB1709M2**

Technical Data:

Command control language	AT Hayes
Data transmission	asynchronous
ALMEMO® baud rate	9600
Connection	socket, D-sub 9-pin (RS232)
Power supply	Connector mains unit, 230 V AC or external 9 to 30 V AC, 9 to 42 V DC
Power consumption	2.75 W typical
Operating temp.	0 to +50 °C
air humidity	0 to 80% RH, non-condensing
Dimensions	(HxWxD) 38 x 108 x 140 mm
CE conformance	as per technical requirements, R&TTE (radio and telecommunications terminal equipment) for all EU member countries and Switzerland, tested as per EN 55022, class B, EN 55024, EN 60950, TBR21, EG201-121

☞ Communication is only possible between analog modem, e.g. ZA1709MK2 and ZB1709M2 or PC card.

ALMEMO® OUTPUT MODULES

ALMEMO memory connector with MMC (multi-media card) ZA1904MMC

- 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 can be replaced on the data logger on site quickly and easily.
- Files can be transferred to a PC via a card reader quickly and easily.

Technical data:

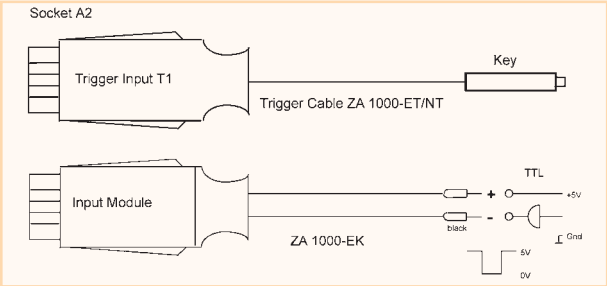
Measuring instruments	for ALMEMO® 2590-2/-3S/-4S, 2690, 2890, 5690, 8490. 8590, Memory connector on device output socket A2
ALMEMO® memory connector Integrated drive for MMC	
Memory card:	MMC, reduced size (RS) (half size), expandable up to 1 GB, standard FAT16 format
Measured values:	at 128 MB approx. 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 4.8), see page 06.06

Model variants :

ALMEMO® memory connector with MMC card including USB card reader — **Order No. ZA1904MMC**
MMC memory card (spare) — **Order No. ZB1904MMC**

ALMEMO® OUTPUT MODULES

Input Cable for External Triggering Type ZA1000EK/ET/NT



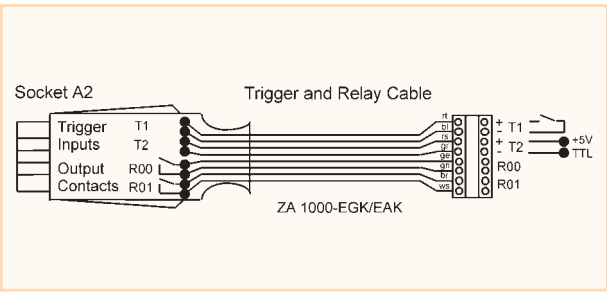
Technical Data:

Trigger input:	optocoupler 4 … 30V, Ri > 3kΩ, or key
Current consumption:	3mA
Cable length:	1.5m

Types:

Input cable for external triggering with key	**Order No. ZA1000ET**
Input cable for external zero-setting of measured values with key	**Order No. ZA1000NT**
Input cable for external triggering with one optocoupler and 2 banana plugs	**Order No. ZA1000EK**

Cable for External Triggering and Output Relay Type ZA1000EGK/EAK



Technical Data:

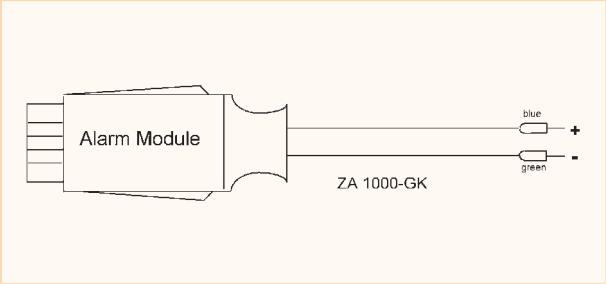
Trigger input T1:	not electr. isol. for potential-free switch contact, Ri > 50kΩ
Trigger input T2:	optocoupler 4 … 30V, Ri > 3kΩ
Output relay:	semiconductor relay (make), power handling capacity: 50V, 300mA
Current consumption:	3mA
Cable length:	1.5m

Types:

Input/output cable for external triggering and 2 limit value relays	**Order No. ZA1000EGK**
Input/output cable for external triggering and 2 PC controlled relays	**Order No. ZA1000EAK**

ALMEMO® OUTPUT MODULES

Output cable for limit value alarm, type ZA1000GK, and socket relay adapter ZB2280RA



Technical Data:

Limit value cable ZA1000GK:	
Output relay:	semiconductor relay (make), power-handling capacity: 50V, 300mA
Cable length:	1.5m

Types:

Output cable with one limit value relay and 2 banana plugs

Order No. ZA1000GK

Technical Data:

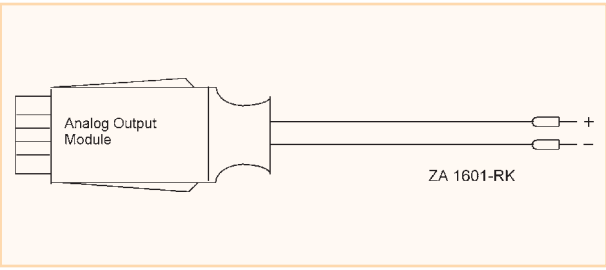
Relay adapter ZB2280RA:	
Trigger input:	for optocoupler output or switch contact R < 10kΩ
Output:	socket with protective contact, mechanical relay, power-handling capacity: 250V, 6A
Switching status	OFF idle; ON alarm

Types:

Relay adapter for switching mains supplied devices combined with limit value cable ZA1000GK

Order No. ZB2280RA

Analog Output Cable Type ZA1601RK



- Recording of measured values with a (chart) recorder or similar output devices.
- Signal converter is integrated in connector.
- Conversion of the device signal into a voltage that corresponds to the linearised measured value.
- For high rates of response the ALMEMO® device allows to set a conversion rate of 10 measurements/s.
- The output signal can be scaled as required.

Technical Data:

Output voltage:	–1.250 … 2.000 V not electr. isolated
Gain:	0.1mV/digit
Load:	> 100kΩ
Accuracy:	± 0.1% ± 6 digit
Temperature drift:	1digit/K
Time constant:	100ms
Current consumption:	approx. 3mA
Cable length:	1.5 m

Types:

Analog output cable –1.250 … 2.000V (0.1mV/digit) not electrically isolated **Order No. ZA1601RK**

ALMEMO® OUTPUT MODULES

ALMEMO® relay trigger adapter, analog
Type 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.
- 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:

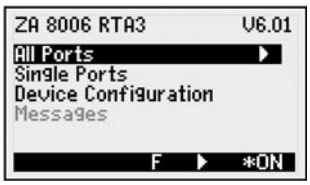
ALMEMO® relay trigger adapter with 2 trigger inputs, 4 normally open relays, DC socket, graphics display, and keypad, including 1.5-meter ALMEMO® connecting cable and 3 ALMEMO® clamp connectors **Order no. ZA8006RTA3**

new!

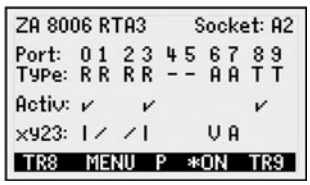
Technical data:

Trigger inputs	Optocoupler 4 to 30 V, Ri > 3 kΩ
Relays	Semiconductor relays 50 V, 0.5 A, 1 Ω
Analog outputs	15-bit PWM (pulse-width modulation), electrically isolated
Option R22	-4.0 to +10.0 V, 0.5 mV/digit, load > 100 k
Option R32	0 to 20.0 mA, 0.1 mA/digit, load < 500 Ω
Accuracy	0.1% ± 6 digits
Residual ripple	2 digits
Temperature drift	1 digit / K
Time constant	100 ms
Power supply	via ALMEMO® device
or mains adapter	ZA1312NA1 (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

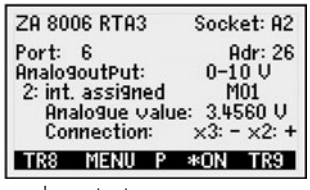


all peripherals

relais

messages

trigger inputs



analog outputs

Options: each including 1 ALMEMO® clamp connector
maximum 4 relays (without analog outputs)
or 2 relays (with 2 analog outputs)
or 4 analog outputs (without relays)

2 additional relays (normally open)	Order no. OA8006SH2
2 additional normally closed relays per relay pair	Order no. OA8006OH2
Analog outputs 2 x 0 to 10 V	Order no. OA8006R22
Analog outputs 2 x 0 to 20 mA	Order no. OA8006R32

Accessories:

Mains adapter 12 V, 200 mA	Order no. ZA1312NA1
Fixture for top-hat rail mounting	Order no. ZB2490HS

ALMEMO® OUTPUT MODULES

ALMEMO® relay adapter, analog
Type 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

Scope of delivery:

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

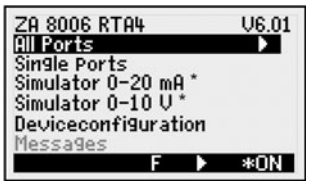
Order no. ZA8006RTA4

new!

Technical data:

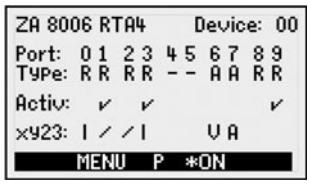
Relays	Semiconductor relays 50 V, 0.5 A, 1 Ω
Analog outputs	15-bit PWM , electrically isolated
Option R22 / R52	-4.0 to +10.0 V, 0.5 mV / digit, load > 100 k
Option R32 / R52	0 to 20.0 mA, 0.1 mA / digit, load < 500 Ω
Accuracy	0.1% ± 6 digits
Residual ripple	2 digits
Temperature drift	1 digit / K
Time constant	100 ms
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:



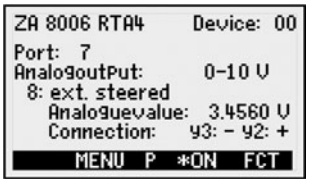
main menu

device configuration

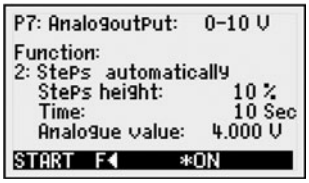


all peripherals

relays



analog outputs



10V-Simulator in Stufen

Options: each including 1 ALMEMO® clamp connector
maximum 4 relays (without analog outputs)
or 2 relays (with 2 analog outputs)
or 4 analog outputs (without relays)

2 additional relays (normally open)	Order no. OA8006SH2
2 additional normally closed relays per relay pair	Order no. OA8006OH2
Analog outputs 2 x 0 to 10 V	Order no. OA8006R22
Analog outputs 2 x 0 to 20 mA	Order no. OA8006R32
Analog outputs 0 to 10 V, 0 to 20 mA	Order no. OA8006R52

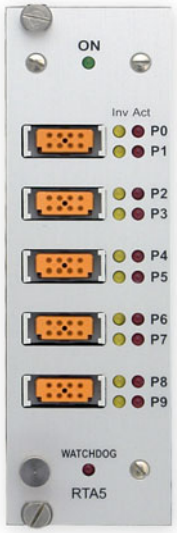
Accessories:

Mains adapter 12 V / 200 mA	Order no. ZA1312NA1
V24 data cable, electrically isolated	Order no. ZA1909DK5
Ethernet data cable, electrically isolated	Order no. ZA1945DK
USB data cable, electrically isolated	Order no. ZA1919DKU
USB data cable with 9V supply, not electrically isolated	Order no. ZA1919DKUV
Connector for RS422 network distributor	Order no. ZA 5099-FSV
Fixture for top-hat rail mounting	Order no. ZB 2490-HS

ALMEMO® OUTPUT MODULES

ALMEMO® relay trigger module, analog, ES 5690-RTA5, for ALMEMO® data acquisition systems

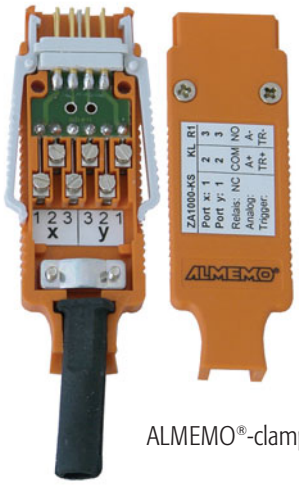
new!



Technical data:

Trigger inputs	Optocoupler 4 to 30 V, Ri > 3 kΩ
Relays	Semiconductor relays 50 V, 0.5 A, 1 Ω
Analog outputs	Digital-to-analog converter (DAC) electrically isolated
0.0 to 10.0 V	Load >100 kohm
0.0 to 20.0 mA	Load <500 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 mA + 1.8·I_{Out}
Module	19" 8-DU (2 slots)

- 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



ALMEMO®-clamp connector

Options: each including 1 ALMEMO® clamp connector

maximum 4 relays (without analog outputs)
or 2 relays (with 2 analog outputs)
or 4 analog outputs (without relays)

2 additional relays (normally open)	Order no. OA5690SH2
2 additional normally closed relays per relay pair	Order no. OA5690OH2
2 analog outputs, electrically isolated, 10 V or 20 mA (programmable)	Order no. OA5690R02

Scope of delivery:

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

Order no. ES5690RTA5