

## COMPACT-LINE



- Measuring range  
-1999 to +1999 mV
- Switchable from  
ORP to pH
- pH or mV/ORP  
(Oxidation Reduction Potential)  
and temperature display
- Easy to program and  
calibrate
- Compact design
- Analogue actual-value output  
scaleable  
(electrically isolated)
- External setpoint  
changeover possible
- Two programmable relays  
for control functions
- Two binary inputs
- One binary output  
(alarm contact or  
temperature-limit contact)



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**Model:**  
 ARM-Z

## Description

The compact microprocessor operated transmitter/controller measures and controls the ORP in aqueous solutions. It is available as a panel-mounted device according to DIN 43 700 or in a IP 65 field housing.

Its simple operation and user-friendly programming allows universal service in almost all areas of industrial applications. The transmitter is fitted with two analogue and two binary inputs. The first analogue input is suited for connecting a ORP combined electrode. A Pt 100 resistance thermometer can be connected to the second analogue input.

The device has two 4-digit, 7-digit displays for indicating ORP value (red) and temperature (green).

The displays show comments during programming to facilitate operation.

The two controller relays can be configured as limit value and/or pulse lengths or pulse frequency controllers with P, PI, PD or PID structure. A maximum of two relay contacts, one binary output and one analogue output is available.

To simplify programming and operation, the controller parameters and configuration data have been assigned in different levels.

- Operating level
- Parameter level
- Configuration level

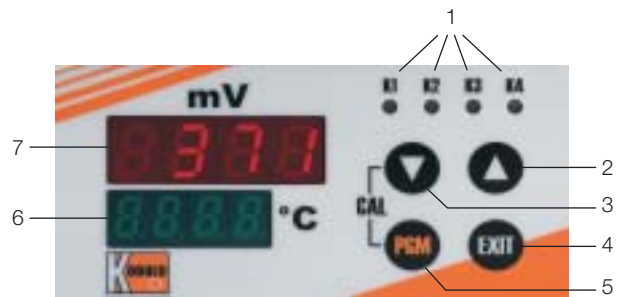
The levels are secured with pass words against unauthorized access. Membrane keys ensure simple and user-friendly operation.

Both LEDs show parameter symbols and values.

The device can be switched from the ORP to pH measurement.

### A complete measuring device comprises:

- the ORP transmitter model ARM-Z
- a ORP combined electrode model ARS-Z
- a suitable ORP measuring cable model APK-Z  
*as well as one of the following:*
- transmitter wall (AZM-Z1) or pipe mounting (AZM-Z2) accessory.
- flow or immersion assembly for installation and protection of the electrodes (see Accessories)
- a separate temperature sensor Pt 100 model AZT-Z (see Accessories)



- (1) Status indicators (yellow) for outputs 1 to 4
- (2) Increment key for changing parameters and manual operation of relay
- (3) Decrement key for changing parameters and manual operation of relay K1
- (4) EXIT-key to the leave levels
- (5) PGM-key for selection of the parameters and to confirm entries
- (6) 4-digit temperature display (LED, green, 8 mm high)
- (7) 4-digit actual-value indication (LED, red, 13 mm high)
- (3+5) "CAL": start calibration of electrodes (single or two-point calibration)
- (2+4) Start hand operation or Hold function.

### Application examples for ORP measurements:

Drinking water:

- Chlorine dosing ORP

### Industrial waste-water treatment:

- Chromous salt reduction with iron(II) or bisulphite
- Nitrite oxidation with hypochlorite
- Cyanide oxidation with hypochlorite

### Comunal waste-water treatment plant:

- Controlling denitrification

### Swimming pools

- Regulating the chlorine dosing
- Monitoring water quality according to DIN 19 643



## Technical Datas

### General

● Measuring range:	- 1999 - + 1999 mV
Measuring error:	≤ 0.15 % of measuring range
● Temperature display:	- 50 - + 250 °C
Measuring error:	≤ 0.1 % / 10 K
● Data back-up:	EEPROM
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● Power supply:	110 - 240 V <sub>AC</sub> , +10 % / -15 %, 48 - 63 Hz or 20 - 53 V <sub>AC/DC</sub> , 48 - 63 Hz
● Power consumption:	approximately 8 V A
● Electrical connection:	with gold-plated flat connector according to DIN 46 244/A; 4.8 mm x 0.8 mm ORP combined electrode BNC socket
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● Ambient temperature:	0 - +50 °C (under nominal reerence conditions)
● Ambient temperature:	- 10 - + 55 °C (under limit conditions of operation)
● Storage temperature:	- 40 - + 70 °C
● Relative humidity:	≤ 95 % non-condensing
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● Protection according to EN 60 529:	Panel housing: front IP 65/rear IP 20 Field housing: IP 65
● Electrical security:	according to EN 61 010, clearances in air and creepage distances for - overvoltage category II - pollution degree 2
● Electromagnetic compatibility:	acc. NAMUR-recommendation NE21, EN 50 081 part 1, EN 50 082 part 2
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● Housing for panel mounting:	conductive plastic according to DIN 43 700, base material ABS, with pluggable controller insert
● Field housing:	Aluminium, powder coated with plastic caps
● Installation position:	any
● Weight:	approximately 320 g (panel-mounted device) approximately 1500 g (in field housing)



## Inputs

- Analogue input 1: input impedance:  $\geq 10^{12} \Omega$   
insulation resistance or the reference-system to ground  $> 10^7 \Omega$  according to DIN 19 265 for all standard metal electrodes
- Analogue input 2: resistance thermometer Pt 100 or Pt 1000, in three-wire connection  
-50 - +250 °C, display in °C
- Lead compensation for analogue input 2: compensation of line resistance by actual-value correction possible  
(not required when connecting a resistance thermometer in three-wire connection)  
When connecting a resistance thermometer in three-wire circuitry can also be performed with an external balancing resistor.
- Function of binary inputs 1 and 2: Both binary inputs can be operated with floating contacts (relay) or switches

  - Keyboard interlock
  - Setpoint changeover
  - Measured value freezing
  - »Hold«
  - Alarm stop
  - Measured-value expansion (x10)

## Outputs

- Output 1 and 2 (relay) N/O contact (N/O contact, can also be configured as a N/C contact)  
Switching current: 3 A, 250 V<sub>AC</sub>  
Service life of contact with ohmic load:  
>  $5 \times 10^5$  switching operations at load rating
- Output 3 (binary output): 0/5 V R<sub>Load</sub>  $\geq 250 \Omega$  (standard)
- Output 4 (actual-value analogue output): configurable: 0(2) - 10 V R<sub>Load</sub>  $> 500 \Omega$  or  
0(4) - 20 mA R<sub>Load</sub>  $> 500 \Omega$ , electrically isolated to the inputs:  $\Delta U \leq 30 V_{AC}$  or  $\Delta U \leq 50 V_{DC}$
- Output 5 (analogue output temperature): option configurable: 0(2) - 10 V R<sub>Load</sub>  $\geq 500 \Omega$  or  
0(4) - 20 mA R<sub>LOAD</sub>  $\geq 500 \Omega$ , electrically isolated to the inputs:  $\Delta U \leq 30 V_{AC}$  or  $\Delta U \leq 50 V_{DC}$   
also programmable as continuous action controller
- Deviation from characteristic of the output signal: < 0.25 %  $\pm 50$  ppm/K

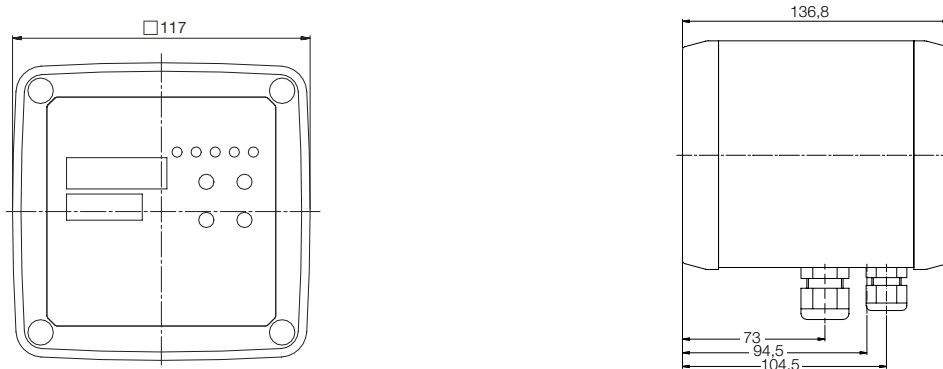


**General controller characteristic values**

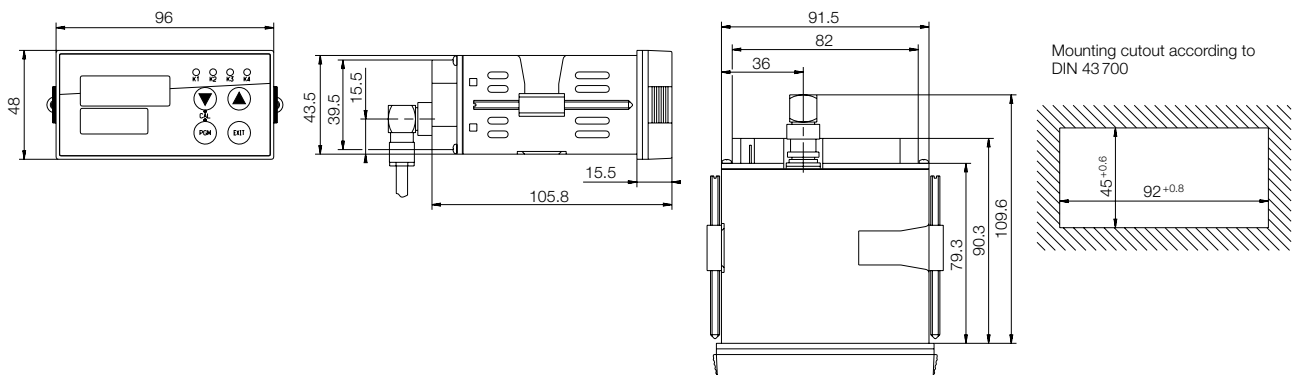
● A/D converter:	resolution >15 Bit
● Control models:	limit controller; pulse length controller, pulse frequency controller
● Sampling interval:	210 ms
● Measuring circuit monitoring:	input 1: out-of-range, input 2: out-of-range, sensor short-circuit, sensor breakage. The outputs go to a defined (configurable) state.

## Dimensions

### Field housing



### Panel-mounted housing



## Type codes ARM-Z

