Transmitter for ORP

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)

KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
☎ +49(0)6192 299-0
Fax +49(0)6192 23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

Model:
ARM-Z

02 / 03-2007

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

02 / 03-2007

Technical Data

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

Power supply:	110...240 V_{AC}, +10 %/-15 %, 48...63 Hz or 20...53 $V_{AC/DC}$, 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

Ambient temperature:	0...+50 °C
Ambient temperature:	-10...+55 °C
Storage temperature:	-40...+70 °C
Relative humidity:	≤ 95 % non-condensing

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

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: ≥ 10^{12} Ω linsulation resistance or the reference-system to ground > 10^{7} Ω 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 (x 10)

Outputs

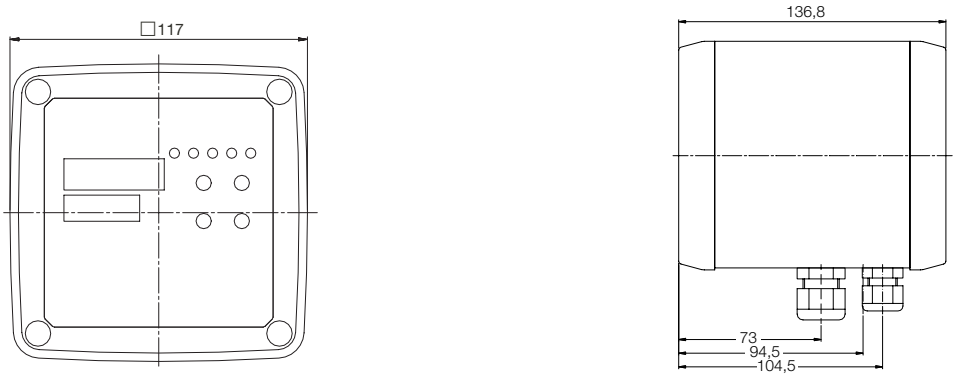
Output 1 and 2 (relay)	N/O contact (N/O contact, can also be configured as a N/C contact) Switching current: 3 A, 250 V_{AC} Service life of contact with resistive load: > 5x10^{5} switching operations at load rating
Output 3 (binary output):	0/5 V R_{LOAD} ≥ 250 Ω (standard)
Output 4 (actual-value analogue output):	configurable: 0(2)...10 V R_{LOAD} ≥ 500 Ω or 0(4)...20 mA R_{LOAD} ≥ 500 Ω, electrically isolated to the inputs: ΔU ≤ 30 V_{AC} or ΔU ≤ 50 V_{DC}
Output 5 (analogue output temperature): option	configurable: 0(2)...10 V R_{LOAD} ≥ 500 Ω or 0(4)...20 mA R_{LOAD} ≥ 500 Ω, electrically isolated to the inputs: ΔU ≤ 30 V_{AC} or ΔU ≤ 50 V_{DC} also programmable as continuous action controller
Deviation from characteristic of the output signal:	< 0.25 % ±50 ppm/K

02 / 03-2007

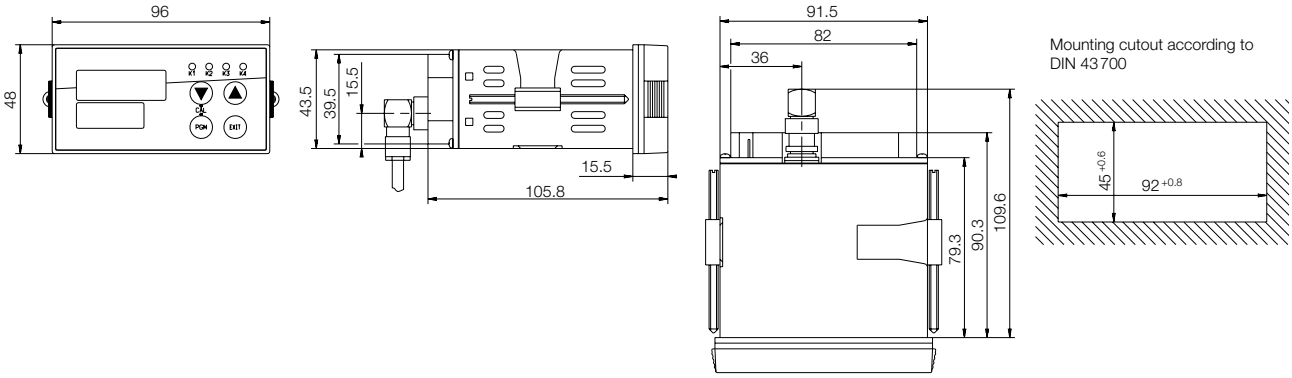
General controller characteristic values	
A/D converter:	resolution > 15 Bit
Control models:	limit controller; pulse length controller, pulse frequency controller; configurable as P, PI, PID or PD
Sampling interval:	210 ms
Measuring circuit monitoring:	input 1: out-of-range, input 2: out-of-range, sensor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

Dimensions

Field housing



Panel-mounted housing



Order Details Transmitter (Example: **ARM-Z 1 E 1 A O N**)

Model	Controller	Housing	Power supply	Output	Options	Interface
ARM-Z	**1** = Presetting of controller: limit controller	**E** = housing for panel mounting **F** = field housing **S** = field housing with wall mounting bracket (360° rotation) **R** = field housing with pipe mounting bracket for pipe 2"	**1** = 110...240 V_{AC} ±10 % / -15 %, 48...63 Hz **2** = 20...53 $V_{AC/DC}$ ±0 %, 48...63 Hz	**A** = 1 analogue output, free configurable **B** = 1 analogue output pH or ORP and 1 analogue output temperature or continuous action controller	**O** = without options	**N** = no serial interface

Mounting brackets: see page 64