

# Inductive conductivity/concentration transmitter INDUTEC K - compact version



## **FEATURES**

- **HYGIENIC SENSOR**
- **ACTIVATION OF UP TO FOUR MEASURING RANGES AND TEMPERATURE COEFFICIENTS**
- **CONCENTRATION MEASUREMENT OF CAUSTIC SODA NAOH AND NITRIC ACID HNO<sub>3</sub>**
- **FAST-RESPONSE TEMPERATURE SENSOR- LINEAR, NATURAL WATER OR SPECIFIC CHARACTERISTIC**
- **OPERATION VIA KEYPAD AND LC DISPLAY**

## **DESCRIPTION**

The instrument is used for the measurement/control of conductivity or concentration in liquid media. It is particularly recommended for use in media where severe deposits of dirt, oil, grease or gypsum/lime precipitates are to be expected. The integrated temperature measurement enables fast and accurate temperature compensation, which is of particular importance when measuring conductivity. Additional functions, such as the combined changeover of measurement range and temperature coefficient, and a particularly robust conductivity probe, enable optimum application in CIP processes.

Two built-in switching outputs can be freely programmed to monitor limits for conductivity/concentration and/or temperature. It is also possible to assign alarm and control functions (dilution).

The instrument is operated from the membrane keypad and plain-text graphics display. The display can be read in a vertical or horizontal mounting position.

Temperature signal 4...20mA is available as second parameter.

Typical areas of application: Food/beverage and pharmaceutical industries, product separation in the beverage industry, breweries and dairies, bottle cleaning plant, concentration control in electroplating and chemical processing plant, CIP systems, water and wastewater engineering, dosing of chemicals, leakage indication, in heating and cooling plant, and so on.

The inductive measurement method permits largely maintenance-free acquisition of the specific conductivity, even in the toughest media conditions.

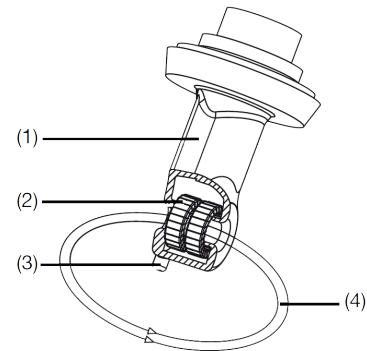
Conductivity is measured by using an inductive probe. A sinusoidal a.c. voltage feeds the transmitting coil. Depending on the conductivity of the liquid to be measured, a current is induced in the receiver coil. This current is proportional to the conductivity of the medium.

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## MEASURING CELL

The measuring cell consists of a hermetically sealed body inside which the two measurement coils are arranged. A bore in the measuring cell enables the medium to flow through. The measurement principle entails an inevitable electrical isolation between the sample medium and the signal output. The measuring cell is largely unaffected by temperature and pressure variations.

- (1) Cell body (PEEK)
- (2) Measuring coils
- (3) Temperature sensor
- (4) Liquid loop



## Exposed temperature sensor

The exposed sensor reacts very quickly to changes in temperature. This is particularly important in CIP processes (phase separation). Parts in contact with the medium depending on the measuring cell version, the following materials come into contact with the sample medium: PEEK, PVDF, EPDM, stainless steels 1.4301 (AISI 304), 1.4305 (AISI 303) and 1.4404 (AISI 316L); see Dimensions.

## Temperature compensation

Since conductivity depends to a large extent on the temperature of the medium, it is usually necessary to compensate for the temperature effect. The instrument allows both linear and nonlinear temperature compensation. If required, temperature compensation can be switched off, for example, when the temperature conditions on the measurement site are stable or when temperature compensation is carried out in the software, in external evaluation devices (PLC or similar).

## Process connections

To cover a wide variety of applications, the instrument can be supplied with different process connections, see dimensions.

## Installation at the measurement point

The operating position is generally unrestricted. However, it is essential to ensure that there is a continuous exchange of the sample medium in the flow channel and that both air bubbles and dry-running are avoided.

## TECHNICAL DATA

General details	
Device type/measuring principle	INDUTEC K / inductive
Input / accuracy	
Measuring ranges	Accuracy (as % of the measuring range span)
0...500µS/cm	≤ 1 %
0...1000µS/cm	≤ 1 %
0...2000µS/cm	≤ 0,5 %
0...10mS/cm	≤ 0,5 %
0...50mS/cm	≤ 0,5 %
0...100mS/cm	≤ 0,5 %
0...200mS/cm	≤ 0,5 %
0...500mS/cm	≤ 0,5 %
0...1000mS/cm	≤ 1 %
0...2000mS/cm	≤ 1 %
Ambient temperature effect	≤ 0,1%/K
Concentration measurement	
NaOH	0...15% by weight or 25...50% by weight (0...90°C)
HNO <sub>3</sub>	0...25% by weight or 36...82% by weight (0...80°C)
Output	
Output signal	4...20mA or 20...4mA
Burden	≤ 500Ω
Analog output at "alarm"	- low 0mA / 3.4mA or fixed value - high 22mA or fixed value

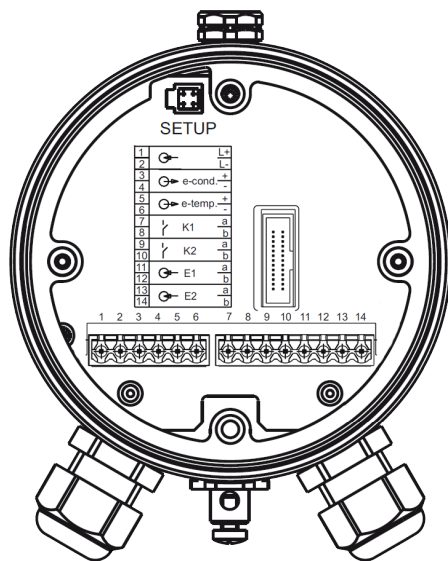
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## TECHNICAL DATA

Conditions of use	
Medium temperature	-10°C ... +120°C (140°C sterilization)
Ambient / storage temperature	5...+50°C/ -10...+75°C; max. rel. humidity. 93 %, no condensation
Protection class acc. to EN60529	IP 67
Electromagnetic compatibility	class B, acc.to EN 61326
Temperature compensation	
Reference temperature	15...30°C, adjustable
Temperature coefficient	5,5%/°C, adjustable
Compensation range	-20...150°C
Function	linear
Construction	
Electrical connection	- Standard: M16x1.5 cable screw connection, nickel-plated brass (stainless steel available on request) - Optional: M12x1 round plug-in connector, nickel-plated brass (stainless steel available on request)
Materials	- Field housing: CrNiSt 1.4305 (303) - Sensor: PEEK
Pressure	max. 10bar
Display and operation	
Display	Multiple-colour status LED
Operation	2-key concept
Auxiliary energy resources	
Power supply / burden	19...31V DC

## ELECTRICAL CONNECTION

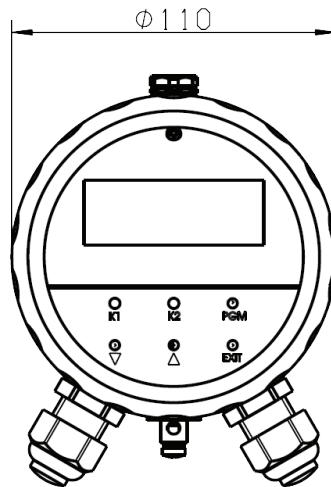


Cable Gland M16

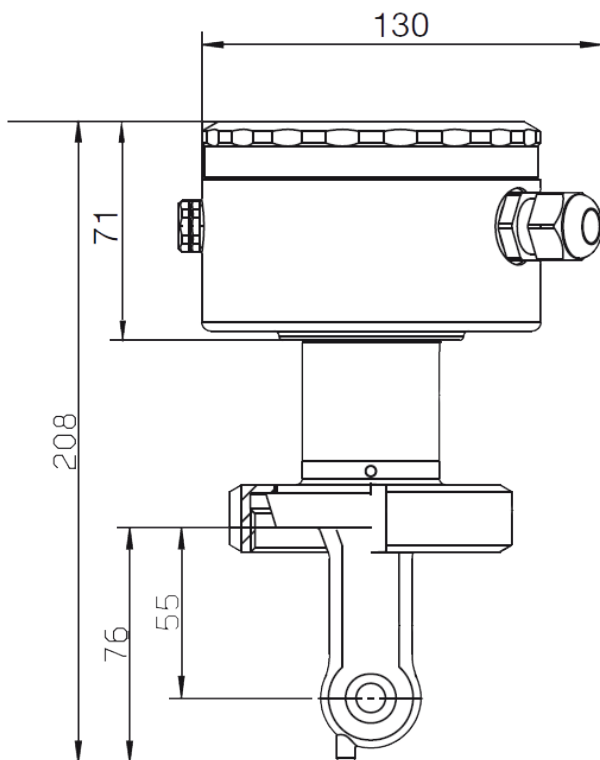
Terminal	Description
1	L+
2	L-
3	+
4	-
5	+
6	-
7	Foto-MOS-Relay K1 (floating, no)
8	Foto-MOS-Relay K2 (floating, no)
9	Foto-MOS-Relay K2 (floating, no)
10	Foto-MOS-Relay K2 (floating, no)
11	Binary input E1
12	Binary input E1
13	Binary input E2
14	Binary input E2

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INDUTEC K - compact version**

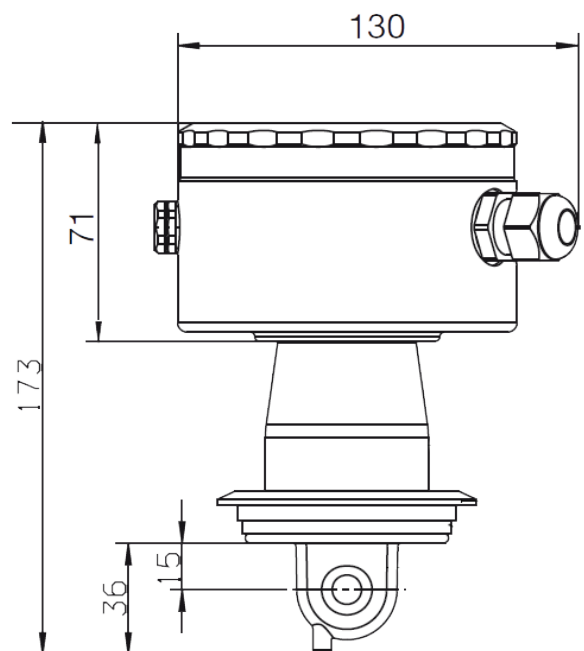
**DIMENSIONAL DRAWINGS**



INDUTEC K  
stainless steel round housing



INDUTEC K M4 / M5 / M6 / M8  
Conical coupling with groove union nut acc. to DIN 11851, DN40, DN  
50, DN65 or DN80



INDUTEC K V8  
VARIVENT® flange d=68mm, for DN 40-125 pipe

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## ORDER INFORMATION for INDUTEC K

### Process connection

M4	Conical coupling with groove union nut acc. to DIN 11851, DN40, flush-mounted
M5	Conical coupling with groove union nut acc. to DIN 11851, DN50, flush-mounted
M6	Conical coupling with groove union nut acc. to DIN 11851, DN65, flush-mounted
M8	Conical coupling with groove union nut acc. to DIN 11851, DN80, flush-mounted
V8	VARIVENT® flange d=68mm, for DN 40-125 pipe, flush-mounted
S9	Alternative process connection available on request

### Electrical connection

K2	M16x1.5 cable screw connection
M	M12x1 round plug-in connector

### Cell material

PE	PEEK
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**INDUTEC K**

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Please observe the permissible nominal pressure of the process connection selected.  
All specifications and certifications specified are only guaranteed when Hengesbach original components are used.  
Our devices are subject to constant development; subject to technical modification.