

Process Analysis Systems

Chem

Energy

Pharm

Food

Water

Stratos® Eco 2405 Cond

Conductivity Measurement

Simultaneous display of conductivity/resistance/salinity and temperature; large measurement symbols.

Icons supply operating messages and signal unusual operating states. Mode indicators show the current operating mode.



Suitable sensors:

- all common types of 2-electrode sensors
- all known types of 4-electrode sensors
- cell constant selectable from 0.005 to 20 cm⁻¹
- selectable temperature sensors Pt 100, Pt 1000, NTC 30 kohms, NTC 8.55 kohms

Recommended Installation Sets

• Flow

SE 610

ARF 220





Product Line

Order No.

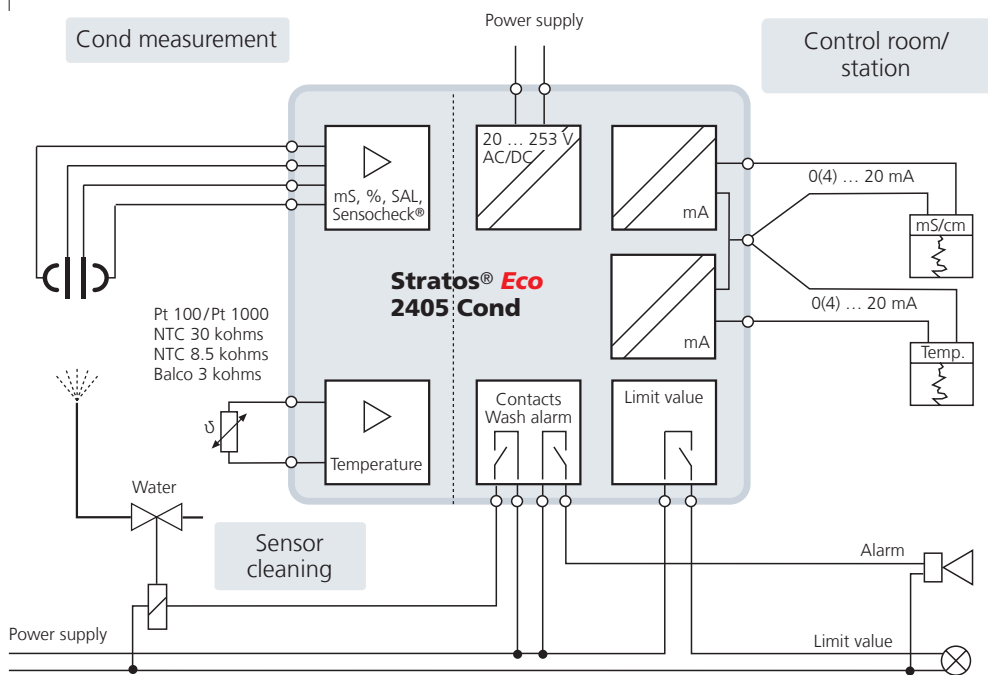
Stratos® Eco 2405 Cond	process analyzer for measuring conductivity using 2- and 4-electrode sensors	2405 Cond
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Mounting Accessories (see page 566)

Order No.

Pipe-mount kit	ZU 0274
Panel-mount kit	ZU 0275
Protective hood	ZU 0276

Connection



Terminal Assignments

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
24 to 230 V ac/dc		clean	alarm	do not connect	rel. 1	+	out 2	+	out 1	do not connect	RTD		RTD	shield	Made in Germany				
power		contacts		output		do not connect						E	D	C					

MAX. RELAY CONTACT RATING: AC < 250 V / < 3 A / < 750 VA, DC < 30 V / < 3 A / < 90 W, RESISTIVE

WARNING -EXPLOSION HAZARD- DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.
WARNING -BONDING BETWEEN CONDUIT IS NOT AUTOMATIC AND MUST BE PROVIDED AS PART OF THE INSTALLATION. SEE INSTALLATION INSTRUCTIONS.
WARNING -SUBSTITUTION OF COMPONENTS MAY IMPAIR SAFETY.
WARNING -CLEAN ONLY WITH ANTISTATIC MOISTENED CLOTH.
CAUTION -USE SUPPLY WIRES SUITABLE FOR 30°C ABOVE SURROUNDING AMBIENT AND RATED AT LEAST 250 V. USE SIGNAL WIRES SUITABLE FOR AT LEAST 250 V.
AVERTISSEMENT -RISQUE D'EXPLOSION- AVANT DE DECONNECTER L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNÉ NON DANGEREUX.

Ni, CL1, DIV2, GPA, B, C, D, T4
 Ni, CL1, ZN2, GP1/C, T4
 CL1 DIV2 GPA, B, C, D, T4
 Ex nA IIC T4 CSA 1342049
 Control Dwg. 194.130-330
 ENCLOSURE TYPE 2
 Tamb - 20 to + 55 °C

75431/0000000 F-2405COND

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Specifications

Conductivity input

Effective ranges

Ranges*)

input for 2-electrode or 4-electrode sensors

0.2 $\mu\text{S} \cdot \text{cm} \dots 1000 \text{ mS} \cdot \text{cm}$

conductivity	0.000 ... 9.999 $\mu\text{S}/\text{cm}$
	0.00 ... 99.99 $\mu\text{S}/\text{cm}$
	0.0 ... 999.9 $\mu\text{S}/\text{cm}$
	0 ... 9999 $\mu\text{S}/\text{cm}$
	0.000 ... 9.999 mS/cm
	0.00 ... 99.99 mS/cm
	0.0 ... 999.9 mS/cm
	0.000 ... 9.999 S/m
	0.00 ... 99.99 S/m
resistivity	0.00 ... 99.99 Mohms $\cdot \text{cm}$
concentration	0.00 ... 9.99 %
salinity	0.0 ... 45.0 ‰ (0 ... 35 °C)

Response (T_{90})

< 1 s (Sensochek® off) < 3 s (Sensochek® on)

Measurement error^{1,2,3)}

< 1% meas. val. + 0.4 $\mu\text{S} \cdot \text{cm}$

Concentration determination

1	NaCl	0.00 ... 9.99 % by wt	(0 ... 100 °C)
2	HCl	0.00 ... 9.99 % by wt	(-20 ... +50 °C)
3	NaOH	0.00 ... 9.99 % by wt	(0 ... 100 °C)
4	H ₂ SO ₄	0.00 ... 9.99 % by wt	(-17 ... +110 °C)
5	HNO ₃	0.00 ... 9.99 % by wt	(-17 ... +50 °C)

Sensor standardization

- input of cell constant with simultaneous display of conductivity and temperature
- input of conductivity of calibration solution with simultaneous display of cell constant and temperature
- product calibration
- temperature probe adjustment

Permissible cell constant

0.0050 ... 19.9999 cm^{-1}

Sensochek®

polarization detection and monitoring of cable capacitance

Sensoface®

provides information on the sensor condition (Sensochek®)

Sensor monitor

direct display of measured values from sensor for validation (resistance/temperature)

Temperature input*)

Pt 100 / Pt 1000 / NTC 30 kohms / NTC 8.55 kohms (Betatherm), 2-wire connection, adjustable

Measuring range

Pt 100 / Pt 1000	-20.0 ... +200.0 °C	(-4 ... +392 °F)
NTC 30 kohms	-20.0 ... +150.0 °C	(-4 ... +302 °F)
NTC 8.55 kohms	-10.0 ... +130.0 °C	(14 ... 266 °F)

Resolution

0.1 °C/1 °F

Measurement error^{1,2,3)}

< 0.5 K (< 1 K bei Pt 100; < 1 K bei NTC > 100°C)

Temperature compensation*)
(ref. temperature 25 °C)

(OFF)	without
(LIN)	linear characteristic 00.00 ... 19.99 %/K
(NLF)	natural waters to EN 27888
(NaCl)	ultrapure water with NaCl traces (0 ... 120 °C)
(HCl)	ultrapure water with HCl traces (0 ... 120 °C)
(NH ₃)	ultrapure water with NH ₃ traces (0 ... 120 °C)

Specifications – continued

Output 1

Process variable*)	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 2)
Overrange*)	conductivity, resistivity, concentration, salinity
Output filter*)	22 mA in the case of error messages
Measurement error ¹⁾	low-pass, filter time constant 0 ... 120 s
Start/end of scale*)	< 0.3 % current value + 0.05 mA
Minimum span	as desired within range
	5 % of selected range

Output 2

Measured variable	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 1)
Overrange*)	temperature
Output filter*)	22 mA in case of temp error messages
Measurement error ¹⁾	low-pass, filter time constant 0 ... 120 s
Start/end of scale*)	< 0.3 % current value + 0.05 mA
Span allowed	-20 ... +300 °C/-4 ... +572 °F
	20 ... 320 K/36 ... 576 °F

Alarm contact

Contact response	relay contact, floating	AC < 250 V/< 3 A/< 750 VA	DC < 30 V/< 3 A/< 90 W
Alarm delay*)	N/C (fail-safe type)		
	10 s		

Grenzwertkontakt

Contact response*)	relay contact, floating	AC < 250 V/< 3 A/< 750 VA	DC < 30 V/< 3 A/< 90 W
Delay*)	N/O or N/C		
Setpoints*)	0000 ... 9999 s		
Hysteresis*)	as desired within range		
	0 ... 50 % full scale		

Cleaning contact

Contact response*)	"clean" relay contact	AC < 250 V/< 3 A/< 750 VA	DC < 30 V/< 3 A/< 90 W
Rinsing interval*)	N/C or N/O		
Rinse duration*)	000.0 ... 999.9 h		
	(000.0 h = cleaning function switched off)		
	0000 ... 1999 s		

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Specifications – continued

Display

Main display

LC display, 7-segment with icons

Secondary display

character height 17 mm, unit symbols 10 mm

Sensoface®

character height 10 mm, unit symbols 7 mm

Mode indication

3 status indicators (friendly, neutral, sad face)

4 mode indicators "meas", "cal", "alarm", "config"
further icons for configuration and messages

Alarm indication

red LED in case of alarm

Keypad

5 keys: [cal] [conf] [▶] [▲] [enter]

Service functions

Current source

current specifiable for output 1 and 2 (00.00 ... 22.00 mA)

Device self-test

automatic memory test (RAM, FLASH, EEPROM)

Display test

display of all segments

Last error

display of last error occurred

Sensor monitor

display of direct, uncorrected sensor signal (electrode)

Data retention

parameters and calibration data > 10 years (EEPROM)

Protection against electric shock

protective separation of all low-voltage circuits against mains by double insulation to EN 61010-1

Power supply

24 (-15 %) ... 230 (+10 %) V AC/DC
approx. 5 VA/2.5 W AC: 45 ... 65 Hz
overvoltage category II, Class II

Nominal operating conditions

Ambient temperature

-20 ... +55 °C

Transport/Storage temperature

-20 ... +70 °C

Relative humidity

10 ... 95 %, not condensing

EMC

EN 61326-1, EN 61326-2-3
emitted interference: Class B (residential area) Class A: for mains > 60 V DC
immunity to interference: Industry

Explosion protection

FM NI, Class I Div 2, Groups A, B, C & D T4, T_a = 55 °C; Type 2
NI, Class I Zone 2, Group IIC T4, T_a = 55 °C; Type 2
CSA Class I Div 2, Groups A, B, C and D, T4 Ex nA IIC T4

For up-to-date information, please visit www.knick.de

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick 

Specifications – continued

Enclosure

molded enclosure made from PBT (polybutylene terephthalate)

Color

bluish gray, RAL 7031

Assembly

– wall mounting
– pipe mounting ZU 0274, Ø 40 ... 60 mm, □ 30 ... 45 mm
– panel mounting ZU 0275
cutout to DIN 43 700, sealed against panel

Dimensions (mm)

H x W x D: 144 x 144 x 105

Ingress protection

IP 65/NEMA 4X

Cable glands

3 knockouts for cable glands M20 x 1.5
2 knockouts for 1/2" NPT or rigid metallic conduit

Weight

approx. 1 kg

*¹) user-defined

¹) to IEC 746 Part 1, at nominal operating conditions

²) ±1 count

³) plus sensor error

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Mounting Examples

ZU 0274 pipe-mount kit

For mounting on vertical or horizontal posts or pipes.



ZU 0276 protective hood

Additional protection from direct weather exposure and mechanical damage.

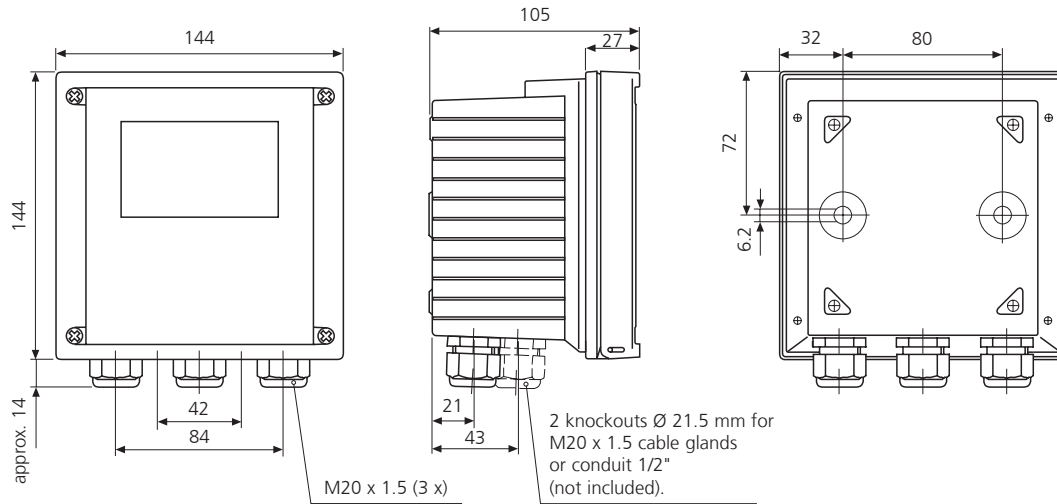


ZU 0275 panel mounting kit

For mounting in standardized panel cutout 138 x 138 mm (DIN 43700), sealed against panel.



Dimension Drawings

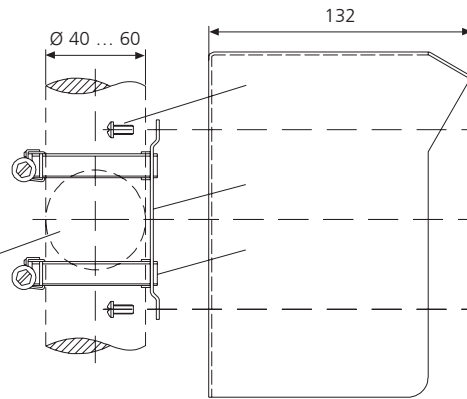


ZU 0274 pipe-mount kit

consisting of:

- 1 Self-tapping screw (4 x)
- 2 Pipe-mount plate (1 x)
- 3 Hose clamps with worm gear drive DIN 3017 (2 x)

Optional for vertical or horizontal posts or pipes.



ZU 0276 protective hood

ZU 0275 panel mounting kit

