

Process Analysis Systems

Chem

Energy

Pharm

Food

Water

Stratos® Eco 2405 pH

pH Measurement

Simultaneous display of pH value/ORP and temperature; unit symbol as plain text.

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



Suitable sensors

- all customary pH sensors with nominal zero point at pH 7
- combination electrodes or separate glass and reference electrodes
- a broad selection of temperature sensors (Pt 100, Pt 1000, NTC 30 kohms, NTC 8.55 kohms, or Balco 3 kohms)
- common metallic ORP electrodes (gold, platinum)

Recommended Installation Sets

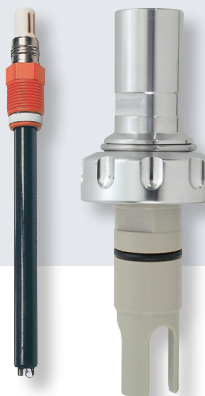
• Flow

SE 531 ARF 201
ZU 0323



• Inline

SE 531 ARI 106



• Immersion

SE 531 ARD 230



Product Line

Order No.

Stratos® Eco 2405 pH process analyzer for measuring pH values

2405 pH

Mounting Accessories (see page 542)

Order No.

Pipe-mount kit

ZU 0274

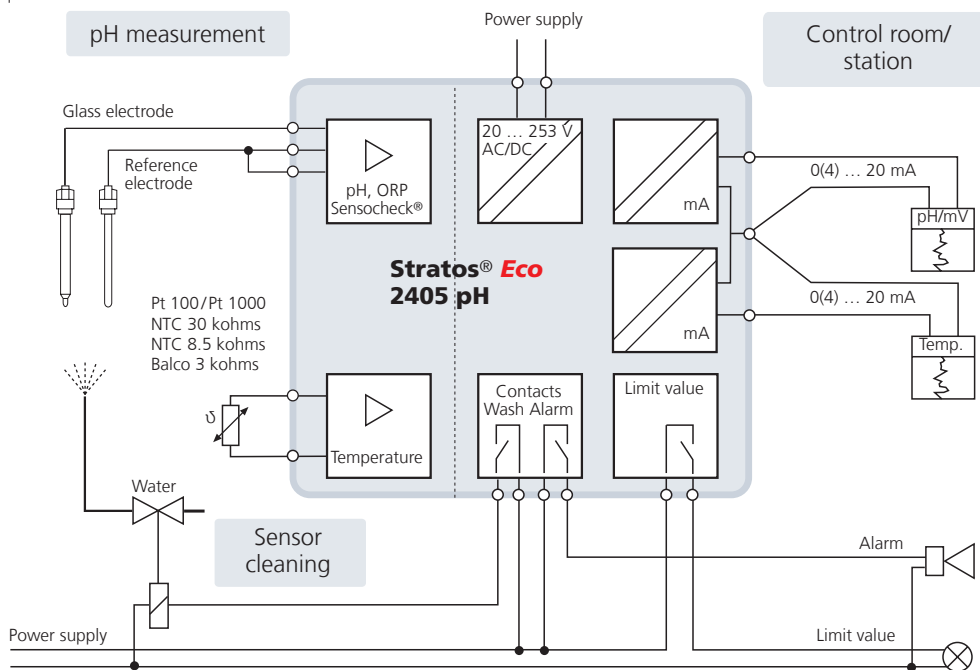
Panel-mount kit

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	-	+	+	+	+	+	+	+	do not connect	RTD	RTD	shield	aux. el.	ref. el.	meas. el.

power | **clean** | **alarm** | **contacts** | **do not connect** | **output** | **do not connect**

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, GPIIC, 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

Made in Germany
 75430/000000 F-2405PH

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Specifications

pH/mV input

Measuring range

input for pH or ORP sensors

–1500 ... 1500 mV

Display range

pH value: –2.00 ... 16.00 ORP: –1999 ... 1999 mV

Glass electrode input¹⁾

input resistance > 0.5 x 10¹² ohms
input current < 2 x 10^{–12} A

Reference electrode input¹⁾

input resistance > 1 x 10¹⁰ ohms
input current < 1 x 10^{–10} A

Measurement error^{1,2,3)}

pH value: < 0.02 TC: 0.002 pH/K (display)
mV value: < 1 mV TC: 0.1 mV/K

pH sensor standardization^{*)}

pH calibration

Operating modes

BUF calibration with Calimatic® automatic buffer recognition:
Buffer sets:
-00- Knick 2.00/4.01/7.00/9.21
-01- Mettler Toledo 2.00/4.01/7.00/9.21
-02- Merck/Riedel de Haen 2.00/4.00/7.00/9.00/12.00
-03- Ciba (94) 2.06/4.00/7.00/10.00
-04- NIST technical 1.68/4.00/7.00/10.01/12.46
-05- NIST standard 1.679/4.006/6.865/9.180
-06- HACH 4.00/7.00/10.18
-07- WTW technical buffers 2.00/4.01/7.00/10.00
MAN manual calibration with input of individual buffer values
DAT data entry of pre-measured electrodes

Max. calibration range

asymmetry potential: ±60 mV; slope: 80 ... 103 % (47.5 ... 61 mV/pH)

ORP sensor standardization^{*)}

ORP calibration

max. calibration range Δ: –700 ... 700 mV

Calibration timer

0000 ... 9999 h

Sensocheck®

automatic monitoring of glass electrode (can be disabled)

Sensoface®

provides information on the sensor condition, evaluation of zero/slope, response time, calibration interval, Sensocheck®

Temperature input^{*)}

Pt 100 / Pt 1000 / NTC 30 kohms / NTC 8.55 kohms/Balco 3 kohms;
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)

Adjustment range

10 K

Resolution

0.1 °C/1 °F

Measurement error^{1,2,3)}

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

Temperature compensation of process medium

linear –19.99 ... +19.9 %/K (reference temp. 25 °C)

Specifications – continued

Output 1

	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 2)
Process variable*)	pH or mV value
Ovrange*)	22 mA in the case of error messages
Output filter*)	low-pass, filter time constant: 0 ... 120 s
Measurement error ¹⁾	< 0.3 % current value + 0.05 mA
Start/end of scale*)	configurable within the measuring range for pH or mV
Span allowed	pH 2.00 ... 18.00/200 ... 3000 mV

Output 2

	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 1)
Measured variable	temperature
Ovrange*)	22 mA in case of temp error messages
Output filter*)	low-pass, filter time constant: 0 ... 120 s
Measurement error ¹⁾	< 0.3 % current value + 0.05 mA
Start/end of scale*)	20 ... 200 °C/-4 ... +392 °F
Span allowed	20 ... 220 K (36 ... 396 °F)

Alarm contact

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

Limit contact

	"R1" relay contact, floating AC < 250 V / < 3 A / < 750 VA DC < 30 V / < 3 A / < 90 W
Contact response*)	N/C or N/O
Delay*)	0000 ... 9999 s
Setpoints*)	as desired within range
Hysteresis*)	0.00 ... 5.00 pH/0 ... 500 mV

Cleaning contact

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

Alarm indication

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

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

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 temp

-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