

## Stratos *Eco* 2405 pH

### pH Measurement

Simultaneous display of pH/ORP and temperature; unit symbols as text.

Icons provide operating notes and signal unusual operating states; status displays provide information on the current operating mode.

### Connectible Sensors

- All customary pH sensors with nominal zero points of pH 7
- Combination electrodes or separate glass and reference electrodes
- Wide selection of temperature detectors (Pt100, Pt1000, NTC 30 k $\Omega$ , NTC 8.55 k $\Omega$  and Balco 3 k $\Omega$ )
- Typical metallic ORP electrodes (gold, platinum)



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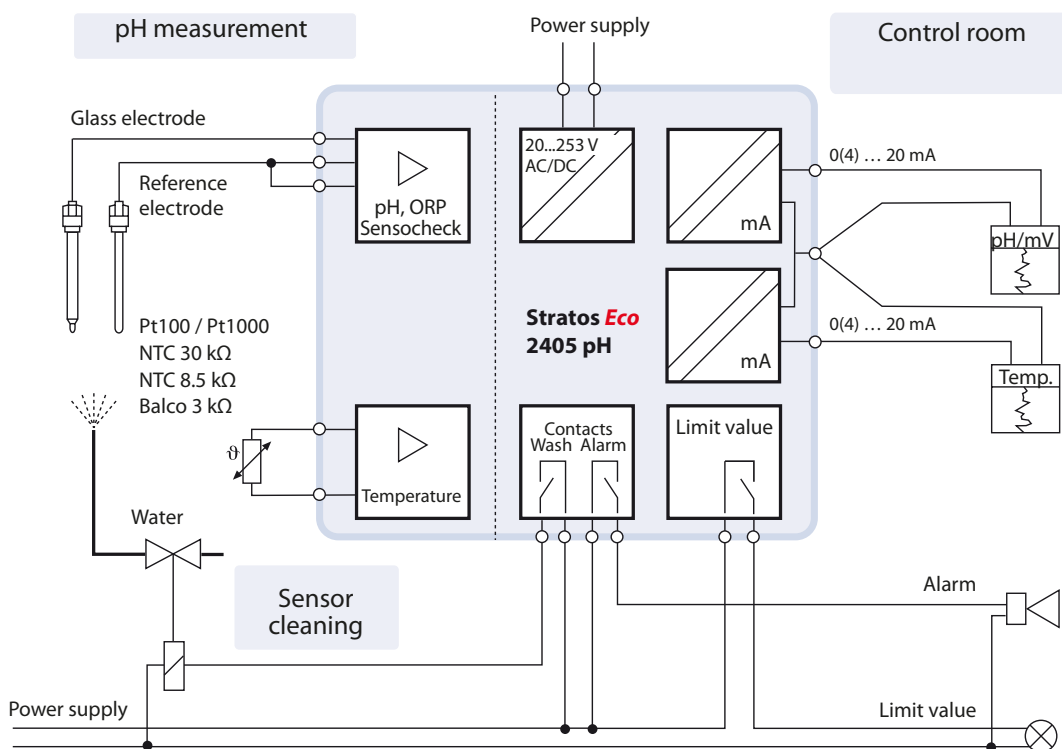
## Product Range

		Order No.
<b>Stratos Eco 2405 pH</b>	Process device for pH measurement	<b>2405 pH</b>

## Mounting Accessories

		Order No.
Pipe/post mount kit		<b>ZU 0274</b>
Panel mount kit		<b>ZU 0275</b>
Protective hood		<b>ZU 0276</b>

## Wiring



## Specifications

## pH/mV input

Input for pH or ORP sensors

Measuring range -1500 ... 1500 mV

Display range  
pH value: -2.00 ... 16.00  
ORP: -1999 ... 1999 mVGlass electrode input<sup>1)</sup>  
Input resistance > 0.5 x 10<sup>12</sup> Ω  
Input current < 2 x 10<sup>-12</sup> AReference electrode input<sup>1)</sup>  
Input resistance > 1 x 10<sup>10</sup> Ω  
Input current < 1 x 10<sup>-10</sup> AMeasurement error<sup>1,2,3)</sup>  
pH value: < 0.02  
TC: 0.002 pH/K (display)  
mV value: < 1 mV TC: 0.1 mV/K

## pH sensor standardization\*)

Operating modes

pH calibration

BUF Calibration with automatic  
buffer recognition Calimatic:

Buffer sets:

-00- Knick 2.00/4.01/7.00/9.21

-01- MettlerToledo 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 input of premeasured 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 glass electrode monitoring  
(can be disabled)Sensoface Provides information on sensor condition,  
zero point/slope evaluation, response time,  
calibration interval, SensocheckTemperature input\*)  
Pt100 / Pt1000 / NTC 30 kΩ  
NTC 8.55 kΩ / Balco 3 kΩ  
2-wire connection, adjustable

## Measuring range

Pt100 / Pt1000 -20.0 ... 200.0 °C / -4 ... 392 °F

NTC 30 kΩ -20.0 ... 150.0 °C / -4 ... 302 °F

NTC 8.55 kΩ -10.0 ... 130.0 °C / 14 ... 266 °F

Adjustment range 10 K

Resolution 0.1 °C/1 °F

Measurement error<sup>1,2,3)</sup>  
< 0.5 K (< 1 K for Pt100  
< 1 K for NTC > 100 °C)Temperature compensation  
of process medium Linear -19.99 ... 19.9%/K  
(reference temp. 25 °C)

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## Specifications

<b>Output 1</b>	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 2)	
	Process variable*)	pH or mV value
	Overrange*)	22 mA in the case of error messages
	Output filter*)	Low-pass, filter time interval: 0 ... 120 s
	Measurement error	< 0.3% current value + 0.05 mA
	Start/end of scale*)	Configurable within the measuring range for pH or mV
	Permissible span	pH 2.00 ... 18.00/200 ... 3,000 mV
<b>Output 2</b>	0/4 ... 20 mA, max. 10 V, floating (galvanically connected to output 1)	
	Process variable	Temperature
	Overrange*)	22 mA for temperature error reports
	Output filter*)	Low-pass, filter time interval: 0 ... 120 s
	Measurement error <sup>1)</sup>	< 0.3% current value + 0.05 mA
	Start/end of scale*)	20 ... 200 °C / -4 ... 392 °F
	Permissible span	20 ... +200 K / 36 ... 396 °F
<b>Alarm contact</b>	"Alarm" 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
	<b>Limit contact</b>	"R1" relay contact, floating
Contact response*)		N/C or N/O
Delay*)		0000 ... 9999 s
Setpoints*)		Within range
Hysteresis*)		0.00 ... 5.00 pH/0 ... 500 mV
<b>Cleaning contact</b>	"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 disabled)
	Rinse duration*)	0000 ... 1,999 s
	<b>Display</b>	LC display, 7-segment with icons
Primary display		Character height 17 mm, unit symbols 10 mm
Secondary display		Character height 10 mm, unit symbols 7 mm
Sensoface		3 status icons (friendly, neutral, sad)
Status display		4 status bars "meas","cal","Alarm","config" More icons for configuration and reports
Alarm indication		Red LED in case of alarm
<b>Keypad</b>	5 keys: [cal] [conf] [▶] [▲] [enter]	

## Specifications

<b>Service functions</b>	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)
	<b>Protection against electric shock</b>	Protective separation of all extra-low-voltage circuits against mains by double insulation as per EN 61010-1
<b>Power supply</b>	24 (-15%) ... 230 (+10%) V AC/DC	Approx. 5 VA/2.5 W AC: 45 ... 65 Hz Overvoltage category II, protection class II
<b>Nominal operating conditions</b>	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F
	Relative humidity	10 ... 95%, non-condensing
	Maximum operating height	2,000 m
<b>Transport/Storage temperature</b>	-20 ... 70 °C / -4 ... 158 °F	
<b>EMC</b>	EN 61326-1, EN 61326-2-3	
	Emitted interference	Class B (residential environment) Class A: for mains > 60 V DC
	Immunity to interference	Industrial applications
<b>Explosion protection</b>	FM	NI, Class I Div 2, Groups A, B, C & D T4, T <sub>a</sub> = 55 °C; Type 2 NI, Class I Zone 2, Group IIC T4, T <sub>a</sub> = 55 °C; Type 2
<b>Housing</b>	Molded enclosure made of PBT (polybutylene terephthalate), glass bead reinforced	
	Color	Black
	Mounting	- Wall mounting - Post/pipe mounting ZU 0274 Ø 40 ... 60 mm □ 30 ... 45 mm - Panel installation ZU 0275 Cutout as per DIN 43 700, sealed against panel
	Dimensions (mm)	H x W x D 144 x 144 x 105
	Protection	IP 65/NEMA 4X
	Cable glands	3 knockouts for M20 x 1.5 cable glands 2 knockouts for NPT ½; or rigid metallic conduit
	Weight	Approx. 1 kg

<sup>\*)</sup> User-defined

<sup>1)</sup> At nominal operating conditions

<sup>2)</sup> ±1 digit

<sup>3)</sup> Plus sensor error

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## 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 do not connect	RTD	aux. el.	shield	ref. el.	meas. el.
power											contacts		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, CLI, DIV2, GPA, B, C, D, T4  
 NI, CLI, ZN2, GPIIC, T4  
 CLI DIV2 GPA, B, C, D, T4  
 Ex nA IIC T4

ENCLASURE TYPE 2  
 Tamb -20 to +55 °C

Made in Germany

75430/000000 F-2405PH