Stratos *Eco* 2405

High Tech for an Amazingly Affordable Price

Premium Knick technology now in high-performance basic versions: The new Stratos ***Eco*** series is designed for use in almost all standard applications. The reliable 4-wire devices for measuring pH value, conductivity, or dissolved oxygen are the result of our highly efficient product development process.

Complete Solutions for a Wide Range of Applications

- Simple industrial applications
- Downstream applications
- Water treatment
- Aerating of natural waters
- Energy production
- Boiler water
- Cooling water
- Salt brines
- Seawater desalination
- Mineral water
- Ion exchanger regeneration
- Drinking water / well water
- Reverse osmosis
- Fish farming

3-year warranty!

Stratos Eco 2405

Facts and Features

- Simple installation: large terminal compartment, preassembled cabinet
- Wall, post/pipe or panel mounting
- Application in hazardous locations (FM Class Div 2)
- Large, high-contrast display
- Easy and intuitive operation
- Optical alarm signaling by bright red LED
- Temperature display either in °C or °F
- Easy calibration with process medium
- 2nd current output for temperature measurement
- 2 floating relay contacts
- Sensocheck continuous sensor monitoring
- Sensoface preventive maintenance indication
- Calimatic automatic buffer recognition
- VariPower® power supply for 24 to 230 V AC/DC
- Concentration display (conductivity)
- Reset to factory settings possible
- 3-year warranty

	4-wire process devices in the Stratos *Eco* series
pH/ORP measurement	Stratos ***Eco*** 2405 pH
Conductivity measurement with 2- or 4-electrode sensors	Stratos ***Eco*** 2405 Cond
Inductive conductivity measurement	Stratos ***Eco*** 2405 CondI
Dissolved oxygen measurement	Stratos ***Eco*** 2405 Oxy

Reliable Flexibility

Uncompromisingly Good
From the calibration timer to the GainCheck automatic device self-test and from the red alarm LED to SensoCheck sensor monitoring, the Stratos ***Eco*** models contain the well-designed functionality of our proven Stratos devices.

Allows for Worldwide Use
Just one version with an integrated VariPower broad-range power supply unit enables trouble-free operation with any conventional supply voltage (20 to 253 V AC/DC), even with large power grid fluctuations.

Easy to Operate
The self-explanatory user interface ensures comfortable, intuitive operation. Measured values and temperatures are simultaneously displayed on the large, high-contrast LC display; measured value characters in plain text. International icons provide operating messages and signal unusual operating states. Status displays provide information on the current operating mode.

Sensoface Preventive Maintenance Indication

The sensor measures reliably.

The measured values are still acceptable; the sensor must be checked and replaced if necessary.

Unreliable measured values; the sensor must be replaced.

Saves Costs
Circuit technology unrivaled by other manufacturers means fewer electronic components and lower energy consumption. These features result in a MTBF value of 110 years – alongside the unusually long warranty period of 3 years. Stratos ***Eco*** stands for outstanding availability and extraordinary reliability.

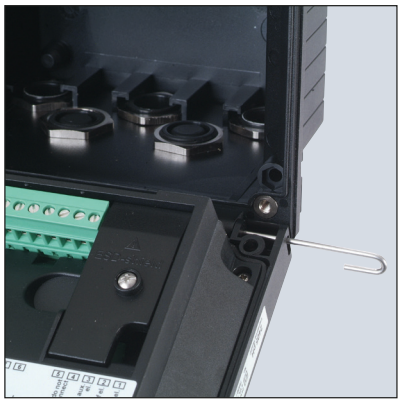
Rugged and Safe
- Rugged PBT housing
- IP 65/NEMA 4 X protection
- Suitable for rigid metallic conduits
- Ex classification Class I Div 2

FM
APPROVED

Stratos Eco 2405

Simple Installation

The ultra flat, fully encapsulated electronics are integrated into the front panel. This provides plenty of room inside the device for wiring and all parts are easily accessible.



Like the other Stratos series, the ***Eco*** series offers the option for wall, pipe/post, or panel mounting. Installation is simplified by plug-in terminals and an empty polymer housing made of rugged PBT that can be preassembled.

Cable glands:
M20 x 1.5 and NPT ½" or
rigid metallic conduit

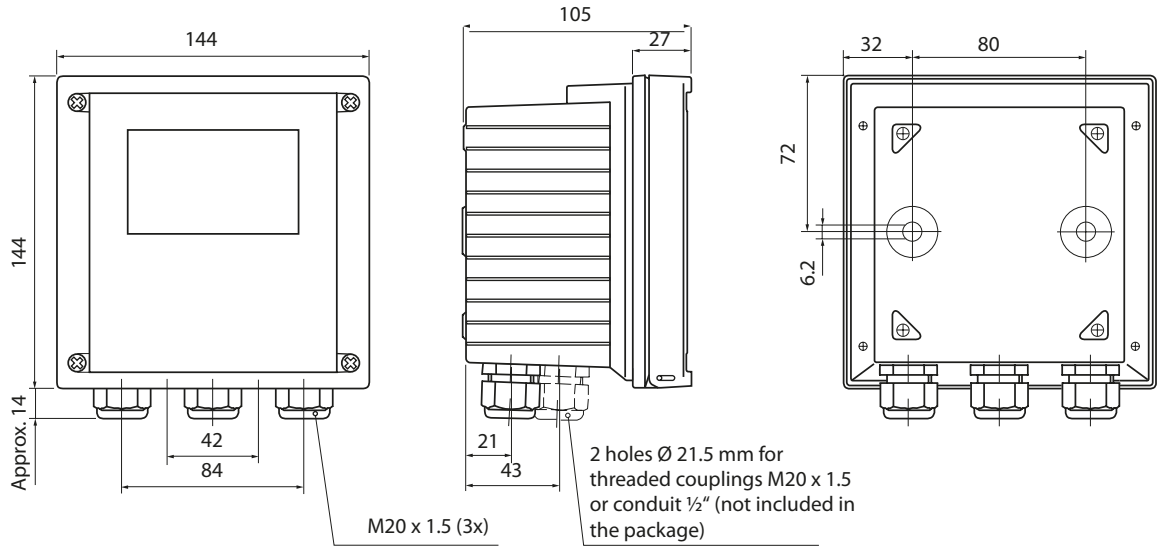
Mounting Examples

ZU 0274 Pipe-Mount Kit
For mounting on vertical
or horizontal posts or pipes.

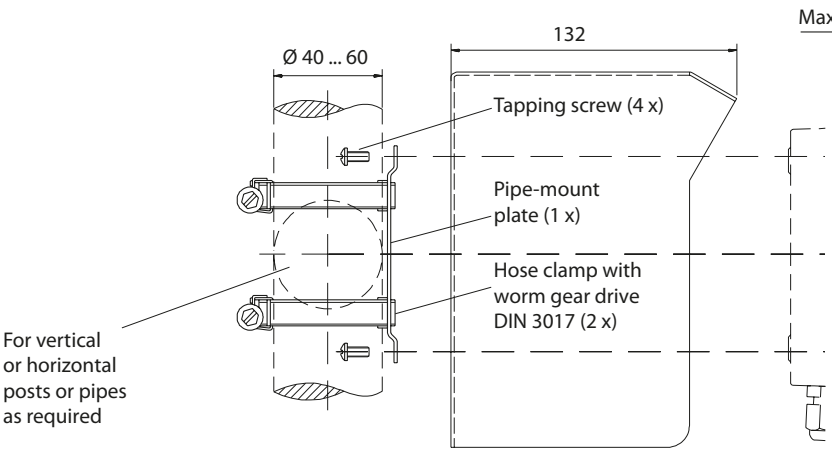
ZU 0276 Protective Hood
Additional protection from direct
weather exposure and mechanical
damage.

ZU 0275 Panel-Mount Kit
For mounting in
standardized panel cutout
138 x 138 mm (DIN 43700),
sealed against panel.

Dimension Drawings

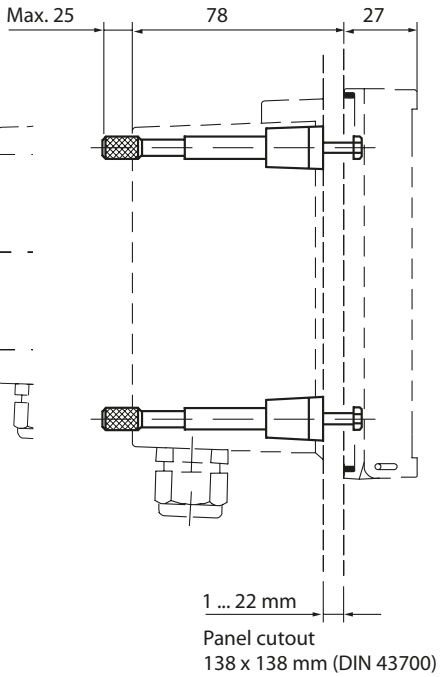


ZU 0274 Pipe-Mount Kit



ZU 0276 Protective Hood

ZU 0275 Panel-Mount Kit



All dimensions in mm.

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 kΩ, NTC 8.55 kΩ and Balco 3 kΩ)
- Typical metallic ORP electrodes (gold, platinum)

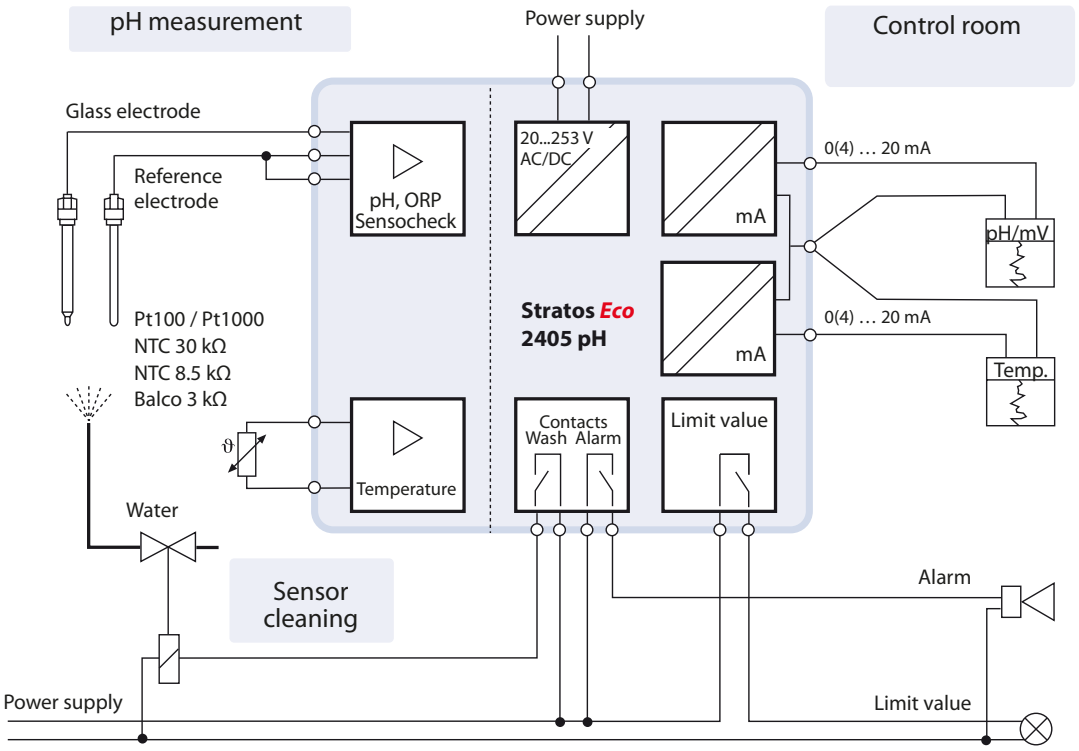
Stratos Eco 2405 pH

Product Range

		Order No.
Stratos *Eco* 2405 pH	Process device for pH measurement	**2405 pH**

Mounting Accessories	**Order No.**
Pipe/post mount kit	**ZU 0274**
Panel mount kit	**ZU 0275**
Protective hood	**ZU 0276**

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 mV
	Glass electrode input[1)]	Input resistance > 0.5 x 10^{12} Ω Input current < 2 x 10^{-12} A
	Reference electrode input[1)]	Input resistance > 1 x 10^{10} Ω 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 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	△: -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, Sensocheck
	Temperature 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[1,2,3)]	< 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)

Stratos Eco 2405 pH

Specifications

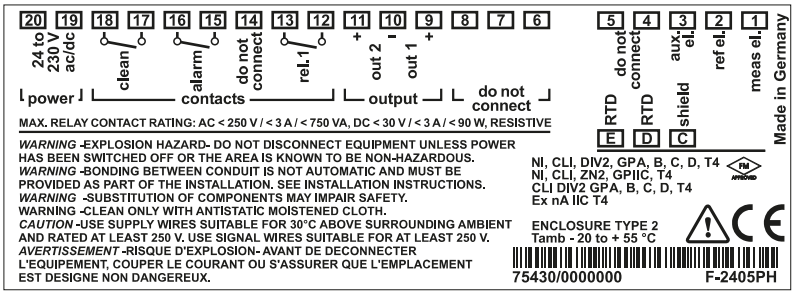
Output 1	0/4 … 20 mA, max. 10 V, floating (galvanically connected to output 2)	
	Process variable*)	pH or mV value
	Overrange*)	22 mA in the case of error messages
	Output filter*)	Low-pass, filter time interval: 0 … 120 s
	Measurement error	< 0.3% current value + 0.05 mA
	Start/end of scale*)	Configurable within the measuring range for pH or mV
	Permissible span	pH 2.00 … 18.00/200 … 3,000 mV
Output 2	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[1)]	< 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
Alarm contact	"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
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*)	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 disabled)
	Rinse duration*)	0000 … 1,999 s
Display	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
Keypad	5 keys: [cal] [conf] [▶] [▲] [enter]	

Specifications

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 extra-low-voltage circuits against mains by double insulation as per 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, protection class II
Nominal operating conditions	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F
	Relative humidity	10 … 95%, non-condensing
	Maximum operating height	2,000 m
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F	
EMC	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
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
Housing	Molded enclosure made of PBT (polybutylene terephtalate), 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

*) User-defined
1) At nominal operating conditions
2) ±1 digit
3) Plus sensor error

Terminal Assignments



Stratos *Eco* 2405 Cond

Conductivity Measurement

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

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

Connectible Sensors

- All known types of 2-electrode sensors
- All known types of 4-electrode sensors
- Freely selectable cell constants 0.005 to 20 cm^{-1}
- Selectable temperature detectors Pt100, Pt1000, NTC 30 kΩ, NTC 8.55 kΩ

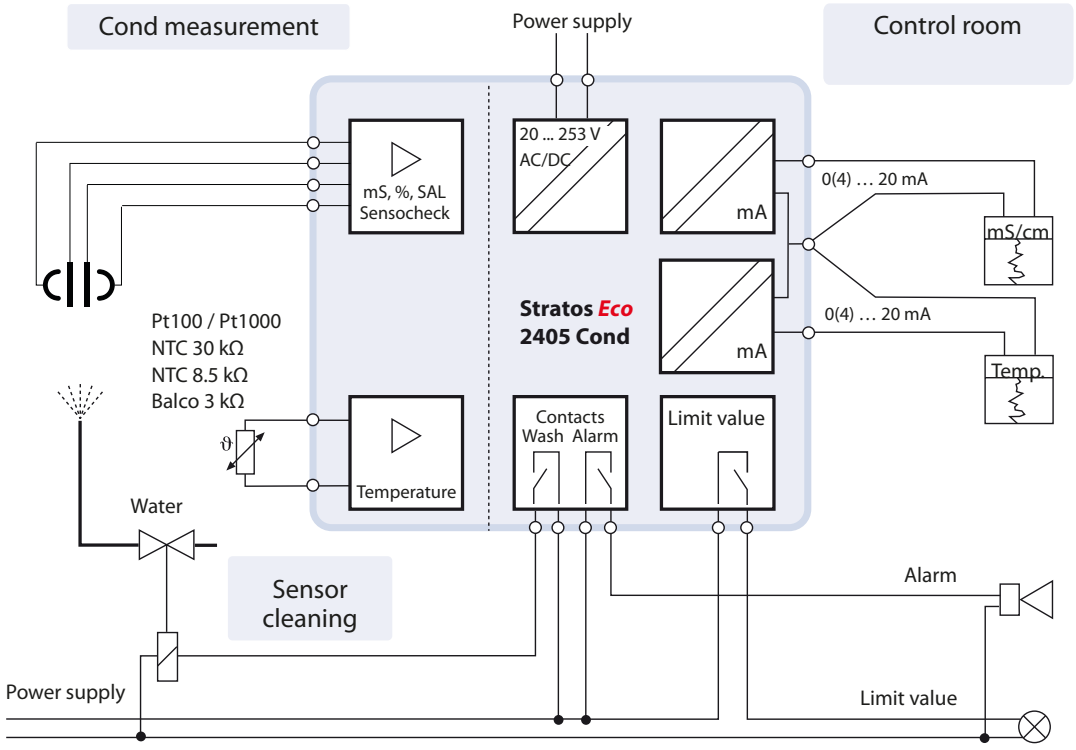
Stratos Eco 2405 Cond

Product Range

		Order No.
Stratos Eco 2405 Cond	Process device for measuring conductivity with 2- and 4-electrode sensors	**2405 Cond**

Mounting Accessories	**Order No.**
Pipe/post mount kit	**ZU 0274**
Panel mount kit	**ZU 0275**
Protective hood	**ZU 0276**

Wiring



Specifications

Conductivity input	Input for 2- or 4-electrode sensors	
	Measuring range	0.2 µS · c … 1000 mS · c
Measuring ranges*)	Conductivity	0.000 ... 9.999 µS/cm 0.00 ... 99.99 µS/cm 0.0 ... 999.9 µS/cm 0 ... 9999 µS/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 mΩ cm
	Concentration	0.00 … 9.99%
	Salinity	0.0 … 45.0‰ (0 … 35 °C)
	Response time (T90)	< 1 s (Sensocheck off) < 3 s (Sensocheck on)
	Measurement error[1,2,3)]	< 1% meas. val. + 0.4 µS • c
Concentration determination	[1] NaCl	0.00 ... 9.99 wt% (0 ... 100 °C)
	[2] HCl	0.00 ... 9.99 wt% (-20 ... 50 °C)
	[3] NaOH	0.00 ... 9.99 wt% (0 ... 100 °C)
	[4] H_2SO_4	0.00 ... 9.99 wt% (-17 ... 110 °C)
	[5] HNO_3	0.00 ... 9.99 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 detector adjustment	
	Permissible cell constant	0.0050...19.9999 cm^{-1}
Sensocheck	Polarization detection and monitoring of cable capacitance	
Sensoface	Provides information on the sensor condition (Sensocheck)	
Sensor monitor	Direct display of measured values from sensor for validation (resistance/temperature)	
Temperature input*)	Pt 100 / Pt 1000 / NTC 30 kΩ / NTC 8.55 kΩ (Betatherm), 2-wire connection, adjustable	
Measuring range	Pt 100 / Pt 1000	-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
	Resolution	0.1 °C/1 °F
	Measurement error[1,2,3)]	< 0.5 K (< 1 K at Pt 100; < 1 K at NTC > 100°C)
Temperature compensation*) (Reference temp 25°C)	(OFF)	without
	(LIN)	Linear characteristic 00.00...19.99%/K
	(NLF)	Natural waters acc. 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)

Stratos Eco 2405 Cond

Specifications

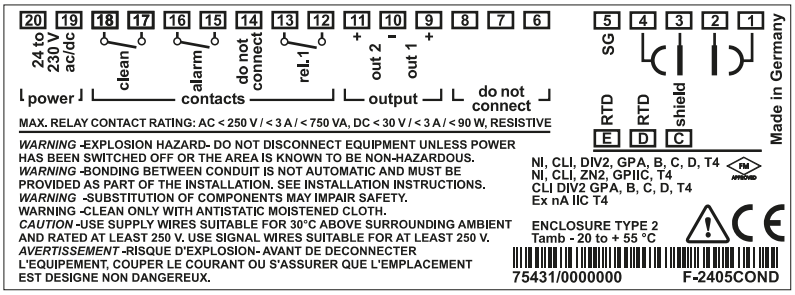
Output 1	0/4 … 20 mA, max. 10 V, floating	(galvanically connected to output 2)
	Process variable*)	Conductivity, spec. resistivity, concentration or salinity
	Overrange*)	22 mA in the case of error messages
	Output filter*)	Low-pass, filter time interval 0 ... 120 s
	Measurement error[1)]	< 0.3% current value + 0.05 mA
	Start/end of scale*)	As desired within range
	Minimum span	5% of selected range
Output 2	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[1)]	< 0.3 % current value + 0.05 mA
	Start/end of scale*)	-20 … 300 °C / -4 … 72 °F
	Permissible span	20 … 320 K / 36 ... 576 °F
Alarm contact	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/O or N/C
	Delay*)	0000 … 9999 s
	Setpoints*)	As desired within range
	Hysteresis*)	0...50% of range
Cleaning contact	"Clean" 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
Display	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 face)
	Status display	4 status bars "meas," "cal," "Alarm," "config" More icons for configuration and reports
	Alarm indication	Red LED in case of alarm
Keypad	5 keys: [cal] [conf] [▶] [▲] [enter]	

Specifications

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 (sensor)
Data retention	Parameters and calibration data > 10 years (EEPROM)	
Protection against electric shock	Protective separation of all extra-low-voltage circuits against mains by double insulation as per EN 61010-1	
Power supply	24 V (-15%) … 230 (+10%) V AC/DC	Approx. 5 VA/2.5 W AC: 45 … 65 Hz Overvoltage category II, protection class II
Nominal operating conditions	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F
	Relative humidity	10 … 95%, non-condensing
	Maximum operating height	2,000 m
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F	
EMC	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
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
Housing	Molded enclosure made of PBT (polybutylene terephtalate), 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

*) User-defined
1) At nominal operating conditions
2) ±1 digit
3) Plus sensor error

Terminal Assignments



Stratos *Eco* 2405 CondI

inductive Conductivity Measurement

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

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

Connectible sensors

- Many conventional European and American toroidal sensors
- Temperature detector Pt100, Pt1000, NTC 100 kΩ

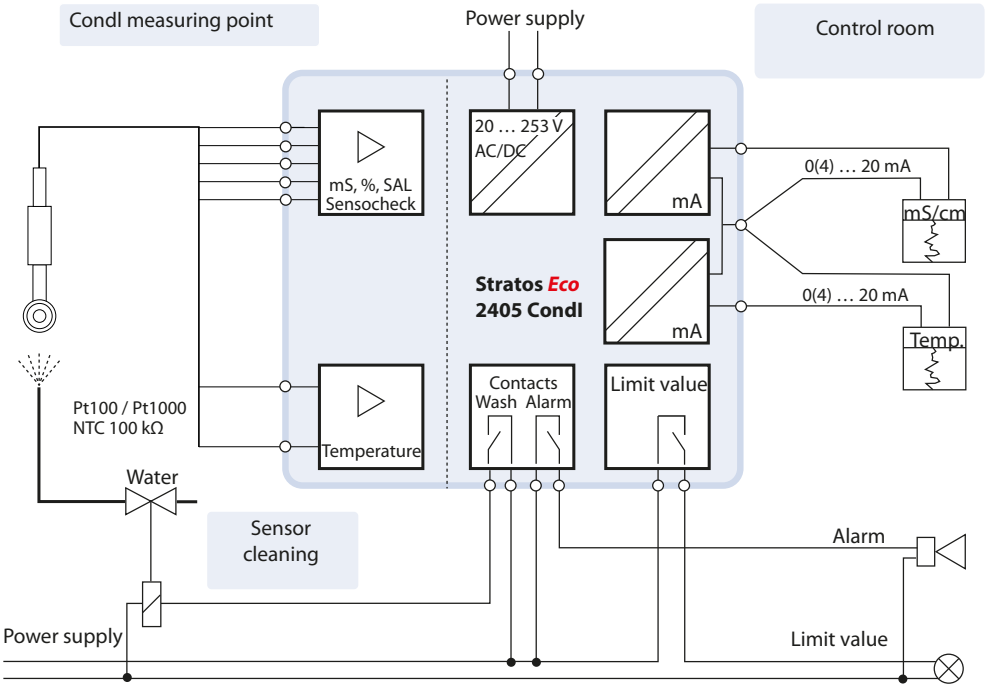
Stratos Eco 2405 Condl

Product Range

		Order No.
Stratos *Eco* 2405 Condl	Process device for measuring conductivity with toroidal sensors	2405 Condl

Mounting Accessories	Order No.
Pipe/post mount kit	ZU 0274
Panel mount kit	ZU 0275
Protective hood	ZU 0276

Wiring



Specifications

Cond input	Input for toroidal conductivity sensors	SE 655, SE 656, SE 660, etc.
Display ranges	Conductivity	0.000 ... 1,999 mS/cm
	Concentration	0.00 … 9.99% by wt
	Salinity	0.0 … 45‰ (0 … 35 °C)
Measuring ranges	Conductivity	0.000 ... 9.999 mS/cm
		0.00 ... 99.99 mS/cm
		0.0 ... 999.9 mS/cm
		0 ... 1,999 mS/cm
		0.000 ... 9.999 S/m
		0.00 ... 99.99 S/m
	Concentration	0.00 … 9.99%
		10.0 … 100.0%
	Salinity	0.0 … 45.0‰ (0 … 35 °C)
	Response time (T_{90})	approx. 2 s
	Measurement error[1,2,3)]	1% meas. val. + 0.005 mS
Temperature compensation[*)]	(OFF)	Without
(Reference temp 25 °C)	(LIN)	Linear characteristic 00.00...19.99%/K
	(NLF)	natural waters as per EN 27888 (0 … 35 °C)
Concentration determination	[1] NaCl	0.00 ... 9.99 wt% (0 ... 100 °C)
	[2] HCl	0.00 ... 9.99 wt% (-20 ... 50 °C)
	[3] NaOH	0.00 ... 9.99 wt% (0 ... 100 °C)
	[4] H_2SO_4	0.00 ... 9.99 wt% (-17 ... 110 °C)
	[5] HNO_3	0.00 ... 9.99 wt% (-20 ... 50 °C)
Sensor standardization	– Input of cell factor with simultaneous display of conductivity and temperature	
	– Input of conductivity of calibration solution with simultaneous display of cell factor and temperature	
	– Product calibration	
	– Zero adjustment	
	– Temperature detector adjustment	
	Permissible cell factor	0.100 … 19.999
	Permissible transfer ratio	1.00 … 199.99
	Permissible offset	±0.5 mS/cm
Sensocheck	– Monitoring of primary and wiring for short circuit – Monitoring of secondary and wiring for open circuit	
Sensoface	Provides information on the sensor condition (evaluation of zero point, Sensocheck)	
Sensor monitor	Sensor monitor for validation of sensor and complete measured-value processing (display: resistance/temperature)	
Temperature input[*)]	Pt 100 / Pt 1000 / NTC 100 kΩ, 2-wire connection, adjustable	
Measuring ranges	Pt 100/Pt 1000	-20.0 … 200.0 °C / -4 ... 392 °F
	NTC 100 kΩ	-20.0 … 130.0 °C / -4 ... 266 °F
	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)

Stratos Eco 2405 CondI

Specifications

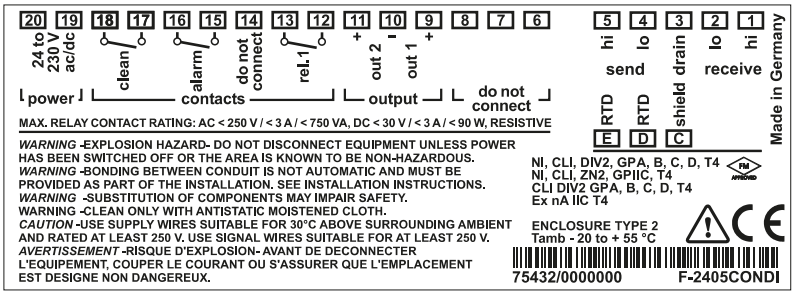
Output 1	0/4 … 20 mA, max. 10 V, floating	
Process variable*)	Conductivity, concentration, or salinity	(galvanically connected to output 2)
	Overrange*)	22 mA in the case of error messages
	Output filter*) (attenuation)	Low-pass, filter time interval 0 ... 120 s
	Measurement error[1)]	< 0.3% current value + 0.05 mA
	Start/end of scale	As desired within range
	Minimum span	5% of selected range
Output 2	0/4 … 20 mA, max. 10 V, floating (galvanically connected to output 1)	
Process variable	Temperature	
	Overrange*)	22 mA in the case of error messages
	Output filter*) (attenuation)	Low-pass, filter time interval 0 ... 120 s
	Measurement error[1)]	< 0.3% current value + 0.05 mA
	Start/end of scale*)	-20 … 300 °C / -4 … 572 °F
	Permissible span	20 … 320 K / 36 ... 576 °F
Alarm contact	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...50% of range
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 disabled)
	Rinse duration*)	0000 … 1,999 s
Display	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
Keypad	5 keys: [cal] [conf] [▶] [▲] [enter]	

Specifications

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 (sensor)
Data retention	Parameters and calibration data > 10 years (EEPROM)	
Protection against electric shock	Protective separation of all extra-low-voltage circuits against mains by double insulation as per EN 61010-1	
Power supply	24 V (-15%) … 230 (+10%) V AC/DC	Approx. 5 VA/2.5 W AC: 45 … 65 Hz Overvoltage category II, protection class II
Nominal operating conditions	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F
	Relative humidity	10 … 95%, non-condensing
	Maximum operating height	2,000 m
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F	
EMC	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
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
Housing	Molded enclosure made of PBT (polybutylene terephtalate), 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

*) User-defined
1) At nominal operating conditions
2) ±1 digit
3) Plus sensor error

Terminal Assignments



Stratos *Eco* 2405 Oxy

Oxygen Measurement

Simultaneous temperature and measured value display; unit symbol as plain text.

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

Connectible Sensors

- Conventional amperometric sensors with (e.g., -675 mV) or without polarization voltage
- Temperature detector NTC 22 kΩ, NTC 30 kΩ

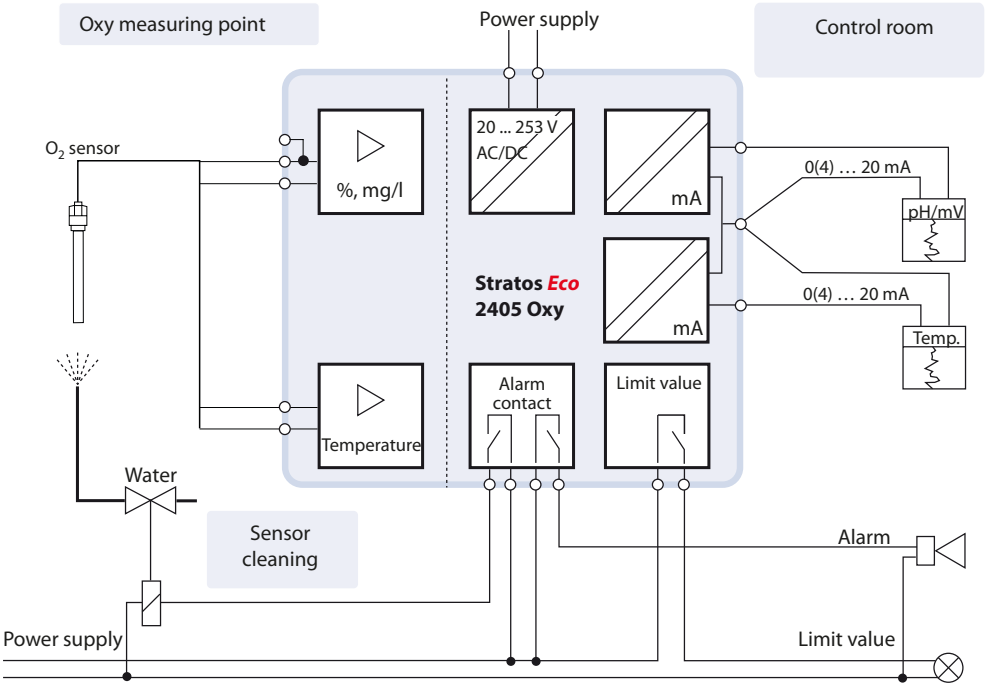
Stratos Eco 2405 Oxy

Product Range

		Order No.
Stratos *Eco* 2405 Oxy	Process device for measuring dissolved oxygen	**2405 Oxy**

Mounting Accessories	Order No.
Pipe/post mount kit	**ZU 0274**
Panel mount kit	**ZU 0275**
Protective hood	**ZU 0276**

Wiring



Specifications

O_2 input	Measuring current	-2 ... 1800 nA
	Resolution (at $U_{pol} \leq 800$ mV and $U_{ref} \leq 200$ mV)	0.05 nA
	Saturation (-10 ... 80 °C)	0 … 200%
	Measurement error[1,2,3)]	0.5% meas.val. + 0.5%
	Concentration (-10 ... 80 °C)	0.00 … 20.00 mg/l 0.00 … 20.00 ppm
	Measurement error[1,2,3)]	0.5% meas.val. + 0.05 mg/l or 0.05 ppm
	Permissible guard current	≤ 20 µA
	Polarization voltage*)	0 … 1000 mV -1000 … 0 mV
	Process pressure*)	0.000 … 9.999 bar (… 999.9 kPa / … 145.0 PSI)
	Salinity correction*)	00.00 … 45.00 g/kg
Sensor standardization	Operating modes	O_2 concentration (automatic) O_2 saturation (automatic) Product calibration, zero point calibration
	Calibration range	Zero point ±2 nA Slope 25 ... 130 nA (at 25 °C, 1013 mbar)
	Calibration timer*)	0000 ... 9999 h
	Pressure correction*)	0.000 ... 9.999 bar / 999.9 kPa / 145.0 PSI
Sensocheck	Monitoring for short circuits or open circuits (can be disabled)	
Sensoface	Provides information on sensor condition (evaluation of zero point/slope, response time, calibration interval, Sensocheck)	
Temperature input*)	NTC 22 kΩ/NTC 30 kΩ	2-wire connection, adjustable
	Measuring range	-20.0 … 150.0 °C / -4 … 302 °F
	Adjustment range	10 K
	Resolution	0.1 °C/1 °F
	Measurement error[1,2,3)]	< 0.5 K (< 1 K at > 100 °C)

Stratos Eco 2405 Oxy

Specifications

Output 1	0/4 … 20 mA, max. 10 V, floating (galvanically connected to output 2)	
	Process variable*)	O_2 saturation / O_2 concentration
	Overrange*)	22 mA in the case of error messages
	Output filter*)	Low-pass, filter time interval 0 ... 120 s
	Measurement error[1)]	< 0.3% current value + 0.05 mA
	Start/end of scale	As desired within range
	Permissible span	5 … 200% / 0.5 … 50 mg/l (ppm)
Output 2	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[1)]	< 0.3% current value + 0.05 mA
	Start/end of scale	-20 … 150 °C / -4 … 302 °F
	Permissible span	20 … 170 K / 36 ... 306 °F
Alarm contact	Relay contact, floating	
	Contact ratings	AC < 250 V / < 3 A / < 750 VA DC < 30 V / < 3 A / < 90 W
	Contact response	N/C (fail-safe type)
	Response delay	10 s
Limit contact	"R1" relay contact, floating	
	Contact ratings	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*)	Within selected range
	Hysteresis*)	0.00 … 5.00 pH/0 … 500 mV
Cleaning contact	"Clean" 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 h = cleaning function disabled)
	Rinse duration*)	0000 … 1,999 s
Display	LC display, 7-segment with icons	
	Primary display	Character height 17 mm, unit symbols 10 mm
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Specifications

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	Device self-test	Automatic memory test (RAM, FLASH, EEPROM)
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	Last error	Display of last error occurred
	Sensor monitor	Display of direct, uncorrected sensor signal (sensor)
Data retention	Parameters and calibration data > 10 years (EEPROM)	
Protection against electric shock	Protective separation of all extra-low-voltage circuits against mains by double insulation as per 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, protection class II
Nominal operating conditions	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F
	Relative humidity	10 … 95%, non-condensing
	Maximum operating height	2,000 m
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F	
EMC	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
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
Housing	Molded enclosure made of PBT (polybutylene terephtalate), 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
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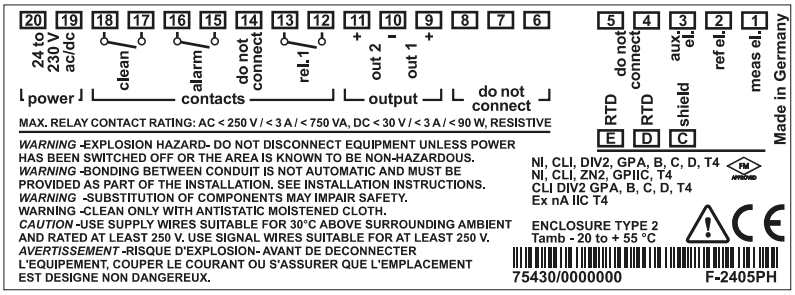
Terminal Assignments