

## Stratos *Pro*

### The State of the Art for Process Analytics.

#### 2-wire analyzers with great flexibility

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With its exceptional range of functions and application-oriented design, Stratos is well-established in the entire chemicals industry, in process and power plant engineering and in the pharmaceutical and biotechnology industries.

Suitable for all conceivable indoor and outdoor scenarios, the Stratos brand is today a synonym for innovation and reliability in process applications around the world – for example in starch production in Germany, sugar manufacturing in Brazil, cooling water monitoring in France or medicine production in Belgium.

With its outstanding quality and diversity of equipment, the Stratos Pro series is the reference in 2-wire technology for process analytics.

The Stratos Pro series supports both conventional sensors and contactless, digital Memosens technology. Even in tough ambient conditions and hazardous areas, the Stratos Pro can measure pH, ORP, conductivity (conductive and inductive) or oxygen values in almost any type of process.

#### Unique color-coded user interface

Stratos Pro is the first 2-wire device in this class to feature color screen backlighting which requires an absolute minimum of electrical power. To reduce operator errors, the high-contrast widescreen display clearly indicates the current operating mode in six different color tones: The normal measuring mode is white. Information text appears on a green screen and the diagnostic menu appears on turquoise. The orange HOLD mode (e.g., during calibration) is quickly visible as is the magenta screen which indicates asset management messages for predictive diagnostics – such as maintenance request, pre-alarm and sensor wear. The alarm status is indicated in a vibrant red, a flashing red display is a sign of impermissible entries or incorrect passcodes. Scrolling plain text messages and self-explanatory icons simplify operation.

#### Comprehensive features

From the wireless service interface to the complete HART communication system, the Stratos Pro series offers a wide range of reliable functions. The devices can be used in multidrop mode and are certified for handheld and asset management systems of the leading manufacturers. In contrast to all other 2-wire devices on the market, the Stratos Pro features two digital control inputs and a second power output for a further measured value. Special versions are available for temperature class T6.

#### Explosion protection

The special circuit technology ensures low self-heating and an extremely high reliability. Stratos Pro is certified to ATEX / IECEx, FM, CSA, NEPSI, KOSHA, INMETRO.

A special version with ATEX/IECEx approval is available for temperature class T6.

#### Shatter-proof and corrosion-resistant housing

The IP 66/67 enclosure made of PBT is reinforced and UV protected. Safe operation is guaranteed in the range from -20°C to +65°C, even for applications in hazardous locations.

#### Easy assembly

Stratos Pro is suitable for wall, pipe or panel mounting. The rear unit can be pre-assembled; all parts are easily accessible thanks to the large terminal compartment.

# Stratos Pro



White: Measuring mode      Red flashing: Alarm, error      Orange: HOLD mode      Magenta: Maintenance request      Turquoise: Diagnostics      Green: Info texts

## Facts

- 2-wire analyzers for pH/ORP, conductivity or oxygen
- For analog, digital and Memosens sensors
- Automatic sensor identification
- Sensor diagnostic with wear indication, remaining lifetime, CIP/SIP counter and adaptive calibration timer
- High-contrast widescreen display with colored backlighting
- Protective pane made of safety glass
- Intuitive operation with easy-to-understand icons and continuously running plain-text ticker line
- One analog input (4 ... 20 mA) e.g. for external pressure compensation
- Two current outputs
- Two parameter sets
- Two digital inputs
- External HOLD activation
- External switching between parameter sets
- Logbook (200 entries)
- HART communication
- Device versions for use in temperature class T6
- Operation in hazardous areas (explosion-protected for gas and dust)  
2-wire: Zone 1  
(FM, CSA Class I, Div 1)

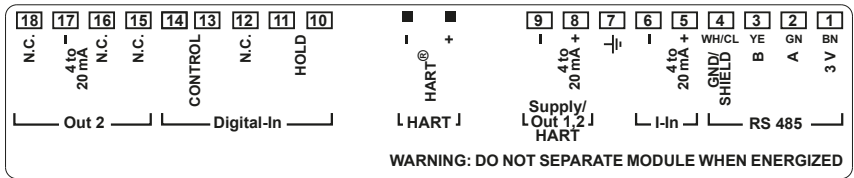


IP 67

NEMA 4X

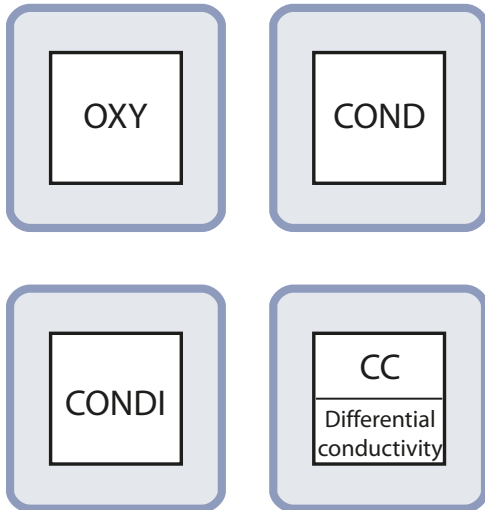


**Terminal Assignments of Basic Device A402N (Non-Ex)**

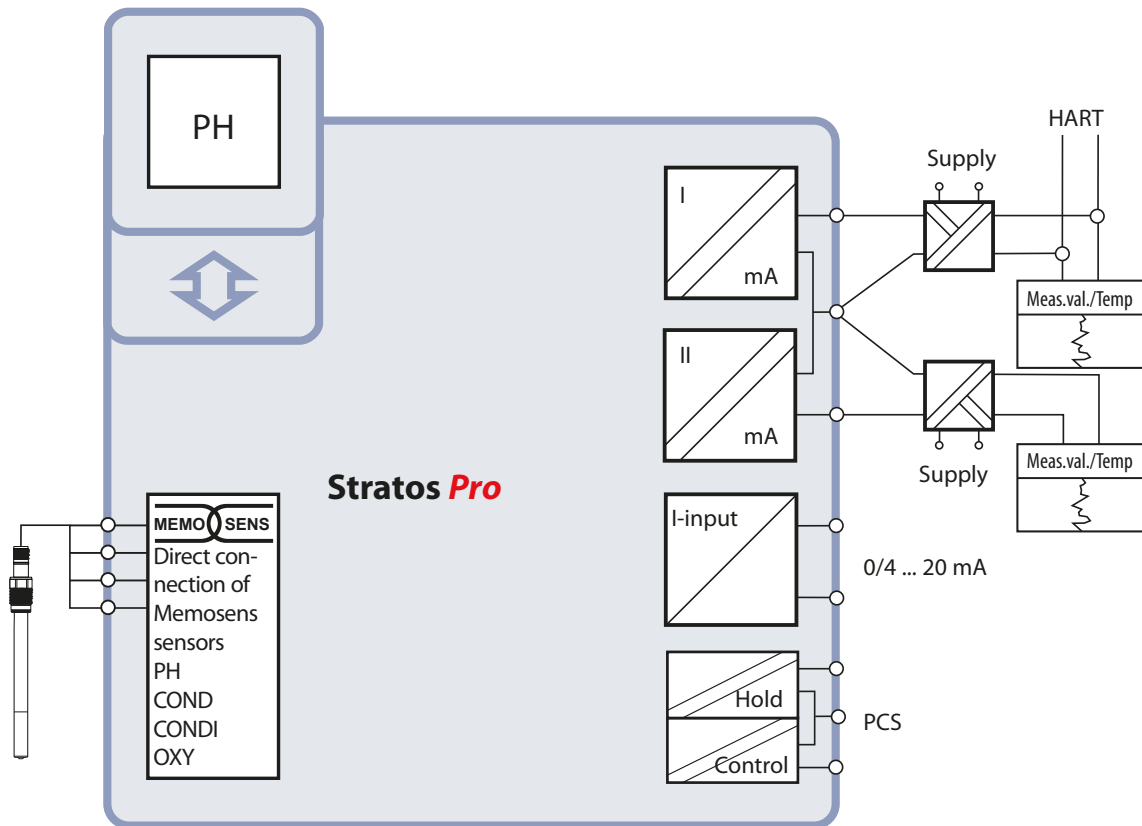


# Stratos Pro

## Wiring Example



Modules for analog measurements



**Product range Stratos Pro A2 T4**

<b>Device</b>	Stratos Pro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type	2-wire / 4 ... 20 mA	A	2	0	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approvals	General Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	ATEX/IECEX Zone 2; FM/CSA Cl 1 Div 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	ATEX/IECEX Zone 1; FM/CSA Cl 1 Div 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process variables	Memosens pH/ORP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens conductivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens inductive conductivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	pHORP, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Conductivity, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Inductive conductivity, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Dual conductivity, analog (A201N only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Oxygen, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Options	Without 2nd current output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
	With 2nd current output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1

**Product range Stratos Pro A2 T6**

<b>Device</b>	Stratos Pro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type	2-wire / 4 ... 20 mA	A	2	0	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approvals	ATEX IECEx Zone 1 T6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process variables	Memosens pH/ORP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens conductivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens inductive conductivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Memosens oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	pH / ORP value, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Conductivity, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Inductive conductivity, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Oxygen, analog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Options	1 current output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

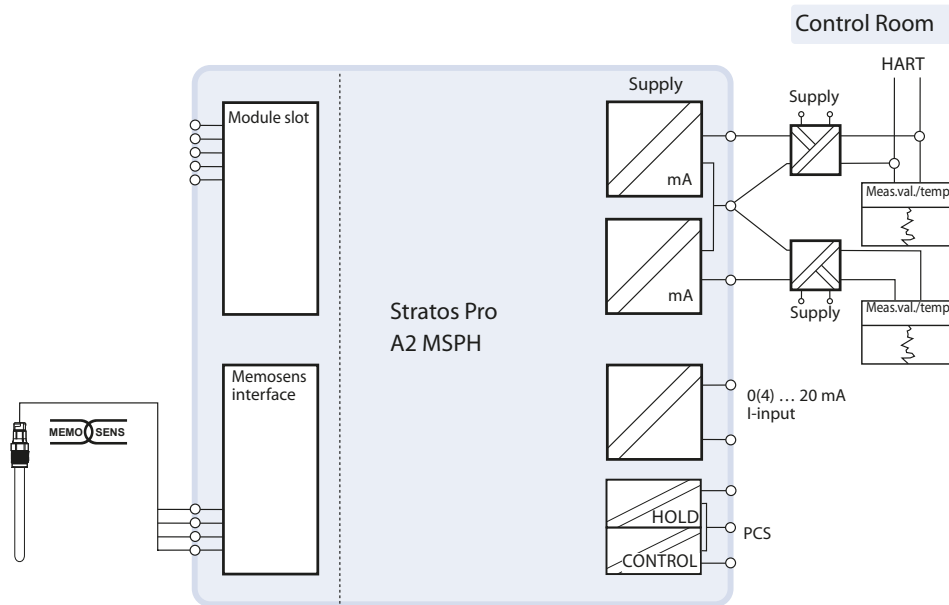
# Stratos Pro

## Accessories

<b>Mounting Kits</b>		Order No.
Pipe-mount kit		ZU 0274
Panel-mount kit		ZU 0738
Protective hood		ZU 0737
<b>Add-On Functions (Firmware via TAN)</b>		Order No.
HART communication		SW-A001
Logbook		SW-A002
Extended logbook (Audit Trail)		SW-A003
Trace oxygen measurement		SW-A004
Current input and 2 digital inputs		SW-A005
ISM digital (for pH and oxygen measuring channels)		SW-A006
Operation with Pfaudler pH sensors		SW-A007
<b>Analog Ex Meas. Modules ATEX/IECEx Zone 1; FM/CSA CI 1 Div 1</b>		Order No.
pH/ORP measuring module		MK-PH 015X
Module for contacting cond. measurement		MK-COND 025X
Module for inductive cond. measurement		MK-CONDI 035X
Oxygen measuring module		MK-OXY 045X
<b>Analog Ex Meas. Modules ATEX/IECEx Zone 2; FM/CSA CI 1 Div 2</b>		Order No.
pH/ORP measuring module		MK-PH 015B
Module for contacting cond. measurement		MK-COND 025B
Module for inductive cond. measurement		MK-CONDI 035B
Oxygen measuring module		MK-OXY 045B
<b>Analog Measuring Modules (General Safety)</b>		Order No.
pH/ORP measuring module		MK-PH 015N
Module for contacting cond. measurement		MK-COND 025N
Module for inductive cond. measurement		MK-CONDI 035N
Oxygen measuring module		MK-OXY 045N
Dual-conductivity measuring module, 2-channel		MK-CC 065N
<b>Repeater Power Supplies</b>		Order No.
Repeater power supply for 90 ... 253 V AC		WG 21 A7
Repeater power supply for 90 ... 253 V AC, with HART transmission		WG 21 A7, Opt. 470
Repeater power supply for 24 V AC/DC		WG 21 A7, Opt. 336
Repeater power supply for 24 V AC/DC, with HART transmission		WG 21 A7, Opt. 336, 470
Loop-powered supply with HART transmission		WG 25 A7
Repeater power supply, safe area, 24 V DC, output: 4 ... 20 mA		B 10116 F0
Repeater power supply, safe area, 24V DC, HART, output: 0/4 ... 20 mA, 0 ... 10 V		A 20100 F0
<b>Test Sockets, Connector Plugs, Cables</b>		Length
HART test socket, integrated in cable gland		ZU 0287
VP8 connector		ZU 0721
M12 socket, 8-pin		ZU 0860
VP8-ST cable (both ends with VP socket)	3 m	ZU 0710
	5 m	ZU 0711
	10 m	ZU 0712
Inspection Certificate 3.1		ZU0268/Analysis

**Connection**

Connection of Memosens interface of 2-wire device with a Memosens sensor  
 Model used: Stratos Pro A201N-MSPH-0



# Stratos Pro A2 MSPH

## Specifications

### Inputs

RS 485	digital input for Memosens pH sensors (glass or ISFET) or Memosens ORP sensors		
Display range	pH value:	-2.00 ... 16.00	
	ORP:	-1999 ... 1999 mV	
	temperature:	-20.0 ... 200.0 °C (-4.0 ... 392.0 °F)	
Current input (TAN)	analog, 0/4 ... 20 mA for external temperature signal		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC)	parameter set A
		10 ... 30 V (AC/DC)	parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1 supply voltage 14 ... 30 V		
Process variable <sup>*)</sup>	pH or mV value or temperature		
Characteristic	linear or bilinear		
Output filter <sup>*)</sup>	PT1 filter, filter time constant: 0 ... 120 s		
<b>Sensor standardization</b>			
Operating modes <sup>*)</sup>	<ul style="list-style-type: none"> <li>- adoption of calibration data from digital sensors</li> <li>- calibration with Calimatic automatic buffer recognition</li> <li>- manually, data entry or using the product buffer sets: Knick, Mettler Toledo, Merck/Riedel de Haen, Ciba (94), NIST, HACH, WTW, Hamilton, Reagecon</li> </ul>		
ISFET	operating point ±200 mV		
ORP calibration range <sup>*)</sup>	-700 ... 700 mV		
Adaptive calibration timer	interval 0000 ... 9999 h		

### Temperature compensation

TC of process medium	linear:	-19.99 ... +19.99 %/K, reference temperature 25 °C
	table:	0 ... 100 °C, user-defined in 5-K steps



**Specifications****Communication**HART communication  
(TAN)

HART version 6  
 digital communication by FSK modulation of output current 1  
 device identification, measured values, status and messages, parameter setting,  
 calibration, records

**Diagnostics/Service**

Diagnostic functions

calibration data, device self-test, display test

Sensocheck

automatic impedance monitoring of glass electrode

Sensoface

information on the sensor condition  
 (zero/slope, response time, calibration interval, Sensocheck, wear)

Logbook (TAN)

100 events with date and time

Extended logbook (TAN)

Audit Trail: 200 events with date and time

FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

Service functions

current source

Sensor monitor

display of direct sensor signals (mV/temperature/resistance, ...)

**Approvals**

Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 MSPH

## Specifications

### Device data

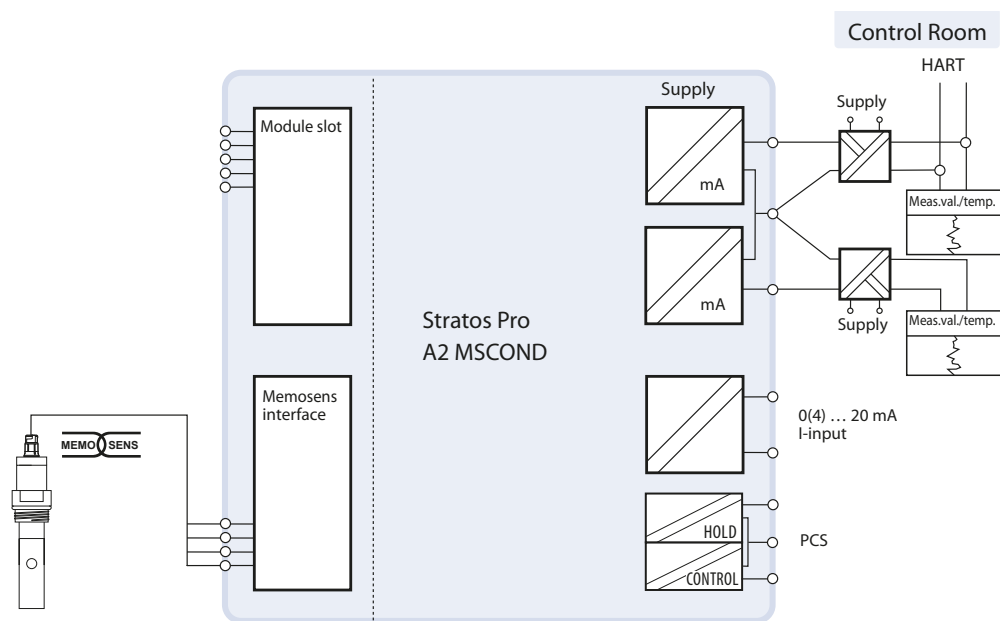
Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface®, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3
<b>Rated operating conditions</b>	
Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Ingress protection	IP 66/67/NEMA 4X
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

\*<sup>1</sup>) user-defined

**Connection**

Connection of Memosens interface of 2-wire device with a Memosens sensor

Model used: Stratos Pro A21N-MSCOND-0



# Stratos Pro A2 MSCOND

## Specifications

### Inputs

RS 485	input for Memosens conductivity sensors		
Measuring ranges <sup>*)</sup>	conductivity	0.000 µS/cm ... 999.9 mS/cm	0.000 ... 99.99 S/m
	resistivity	00.00 ... 99.99 Mohms · cm	
	concentration	00.00 ... 9.99 %	
	salinity	0.0 ... 45.0 ‰ (0 ... 35 °C)	
	temperature	-50.0 ... +250.0 °C / -58.0 ... 482.0 °F	
Temperature compensation <sup>*)</sup> (reference temperature 25 °C)	linear 00.00 ... 19.99 %/K (user-defined reference temperature) natural waters to EN 27888 NaCl from 0 (ultrapure water) to 26 % by wt (0 ... 120 °C) ultrapure water with traces of NaCl, HCl, or NH <sub>3</sub>		
Concentration determination	NaCl	0.00 ... 9.99 % by wt	(0 ... 100 °C)
	HCl	0.00 ... 9.99 % by wt	(-20 ... +50 °C)
	NaOH	0.00 ... 9.99 % by wt	(0 ... 100 °C)
	H <sub>2</sub> SO <sub>4</sub>	0.00 ... 9.99 % by wt	(-17 ... +110 °C)
	HNO <sub>3</sub>	0.00 ... 9.99 % by wt	(-17 ... +50 °C)
Current input (TAN)	analog, 0/4 ... 20 mA for external temperature signal		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC) 10 ... 30 V (AC/DC)	parameter set A parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication at output 1, supply voltage 14 ... 30 V		
Process variable <sup>*)</sup>	conductivity, resistivity, concentration, salinity, or temperature		
Characteristic	linear or logarithmic		
Output filter <sup>*)</sup>	PT1 filter, filter time constant: 0 ... 120 s		
USP function	water monitoring in the pharmaceutical industry (USP) with additional user-defined limit value (%), output via 22 mA and HART (TAN)		
Communication			
HART-Communication (TAN)	HART version 6 digital communication by FSK modulation of output current 1 device identification, measured values, status and messages, parameter setting, calibration, records		

## Specifications

### Sensor standardization

#### Operating modes

- adoption of calibration data from digital sensors
- input of cell constant with simultaneous display of selected process variable and temperature
- input of conductivity of calibration solution with simultaneous display of cell constant and temperature
- product calibration
- temperature probe adjustment

### Diagnostics/Service

#### Diagnostic functions

calibration data, device self-test, display test

#### Sensocheck

polarization detection and monitoring of cable capacitance

#### Sensoface

provides information on the sensor condition, Sensocheck

#### Logbook (TAN)

100 events with date and time

#### Extended logbook (TAN)

Audit Trail: 200 events with date and time

#### FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

#### Service functions

current source

#### Sensor monitor

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

### Approvals

#### Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 MSCOND

## Specifications

### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface®, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3

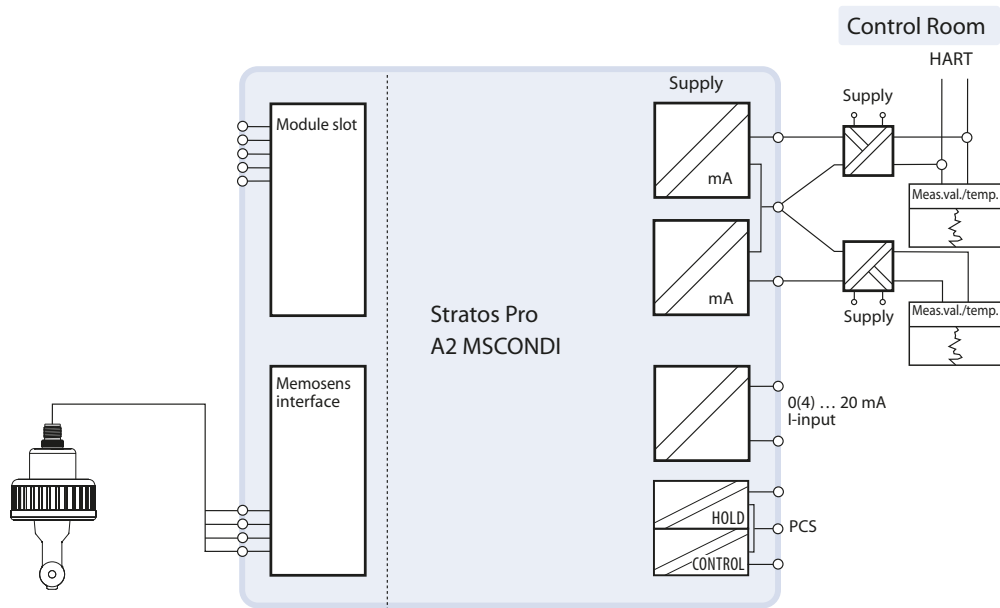
### Rated operating conditions

Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Ingress protection	IP 66/67/NEMA 4X
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

\*) user-defined

**Connection**

Connection of Memosens interface of 2-wire device with a digital sensor  
 Model used: Stratos Pro A21N-MSCONDI-0



# Stratos Pro A2 MSCONDI

## Specifications

### Inputs

RS 485 input for digital toroidal conductivity sensor SE 670 or contactless Memosens conductivity sensors

Display ranges <sup>*)</sup>	conductivity	0.00 ... 999.9 mS/cm	0.000 ... 99.99 S/m
	concentration	00.00 ... 9.99 %/10.0 ... 100.0 %	
	salinity	0.0 ... 45.0 ‰ (0 ... 35 °C)	
	temperature	-20 ... 150 °C / -4.0 ... 302.0 °F	

Temperature compensation<sup>\*)</sup>  
(reference temperature 25 °C) none  
linear characteristic 00.00 ... 19.99 %/K (user-defined reference temperature)  
natural waters to EN 27888 (0 ... 120 °C)  
NaCl from 0 (ultrapure water) to 26 % by wt (0 ... 120 °C)

Concentration determination	[01] NaCl	0–26 % by wt (0 °C) ... 0–28 % by wt (100 °C)
	[02] HCl	0–18 % by wt (-20 °C) ... 0–18 % by wt (50 °C)
	[03] NaOH	0–13 % by wt (0 °C) ... 0–24 % by wt (100 °C)
	[04] H <sub>2</sub> SO <sub>4</sub>	0–26 % by wt (-17 °C) ... 0–37 % by wt (110 °C)
	[05] HNO <sub>3</sub>	0–30 % by wt (-20 °C) ... 0–30 % by wt (50 °C)
	[06] H <sub>2</sub> SO <sub>4</sub>	94–99 % by wt (-17 °C) ... 89–99 % by wt (115 °C)
	[07] HCl	22–39 % by wt (-20 °C) ... 22–39 % by wt (50 °C)
	[08] HNO <sub>3</sub>	35–96 % by wt (-20 °C) ... 35–96 % by wt (50 °C)
	[09] H <sub>2</sub> SO <sub>4</sub>	28–88 % by wt (-17 °C) ... 39–88 % by wt (115 °C)
	[10] NaOH	15–50 % by wt (0 °C) ... 35–50 % by wt (100 °C)

Current input (TAN) analog, 0/4 ... 20 mA for external temperature signal

HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive
	10 ... 30 V (AC/DC)	HOLD active

CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC)	parameter set A
		10 ... 30 V (AC/DC)	parameter set B
	flow	pulse amplitude 10 ... 30 V DC	
		pulse input for flow measurement 0 ... 100 pulses/s	
		display: 00.00 ... 99.99 l/h	
		message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2 4 ... 20 mA current loops, 22 mA for error message,  
HART communication (TAN) at output 1,  
supply voltage 14 ... 30 V

Process variable<sup>\*)</sup> conductivity, resistivity, concentration, salinity, or temperature

Characteristic linear, bilinear, or logarithmic

Output filter<sup>\*)</sup> PT1 filter, filter time constant: 0 ... 120 s

### Communication

HART communication (TAN) HART version 6  
digital communication by FSK modulation of output current 1  
device identification, measured values, status and messages, parameter setting, calibration, records



**Specifications**

## Sensor standardization

## Operating modes

- input of cell factor with simultaneous display of selected process variable and temperature
- input of conductivity of calibration solution with simultaneous display of cell factor and temperature
- product calibration
- zero adjustment
- temperature probe adjustment

## Diagnostics/Service

## Diagnostic functions

calibration data, device self-test, display test

## Sensocheck

monitoring of primary and secondary coils and lines for open circuit and of primary coil and lines for short circuit  
delay approx. 30 s

## Sensoface

provides information on the sensor condition (zero point, Sensocheck)

## Logbook (TAN)

100 events with date and time

## Extended logbook (TAN)

Audit Trail: 200 events with date and time

## FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

## Service functions

current source

## Sensor monitor

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

## Approvals

## Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 MSCONDI

## Specifications

### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3

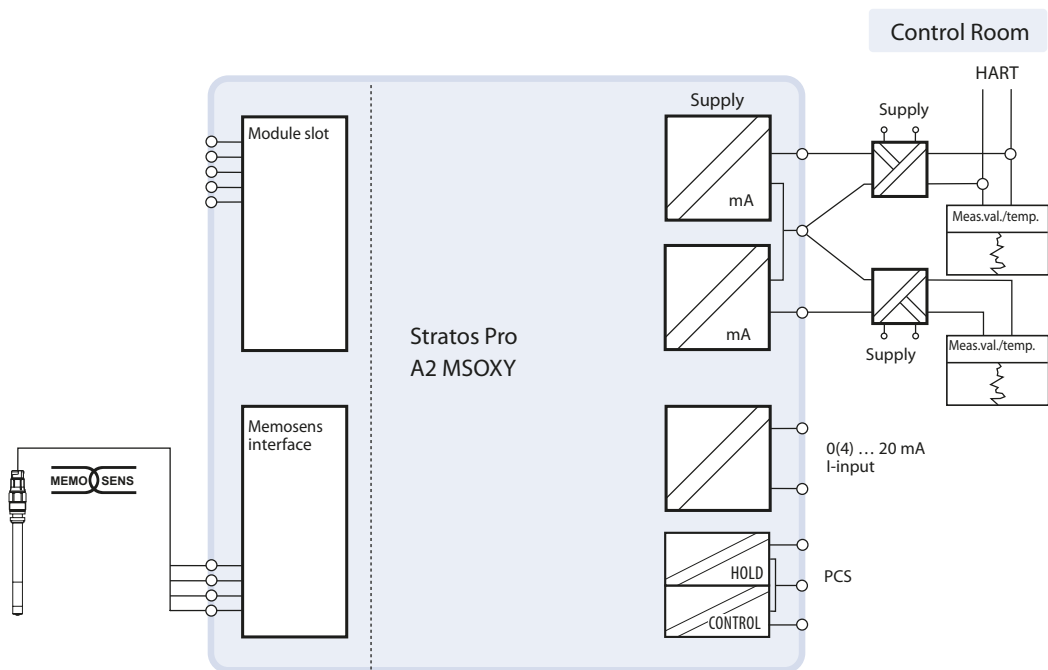
### Rated operating conditions

Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %,
Ingress protection	IP 66/67/NEMA 4X
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

\*) user defined

**Connection**

Connection of Memosens interface of 2-wire device with a Memosens sensor  
 Model used: Stratos Pro A21N-MSOXY-0



# Stratos Pro A2 MSOXY

## Specifications

### Inputs

RS 485	digital input for Memosens oxygen sensors SE 706X-NMSN, SE 707X-NMSN		
Operating modes	GAS	measurement in gases	
	DO	measurement in liquids	
Display ranges with trace sensors "01" (TAN)	saturation 0.000 ... 150.0 % concentration 0 ... 9999 µg/l (ppb)/10.00 ... 20.00 mg/l (ppm) volume concentration in gas 0 ... 9999 ppm (vol)/1.000 ... 50.00 vol %		
Display range for temperature	-20.0 ... 150.0 °C / -4.0 ... 302.0 °F		
Input correction			
Pressure correction <sup>*)</sup>	0.000 ... 9.999 bars/999.9 kPa/145.0 PSI manually or through current input 0(4) ... 20 mA		
Salinity correction <sup>*)</sup>	0.0 ... 45.0 g/kg		
Current input (TAN)	analog, 0/4 ... 20 mA for external pressure compensation		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC) 10 ... 30 V (AC/DC)	parameter set A parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V		
Process variable <sup>*)</sup>	O <sub>2</sub> saturation/O <sub>2</sub> concentration or temperature		
Characteristic	linear		
Output filter <sup>*)</sup>	PT1 filter, filter time constant: 0 ... 120 s		

### Communication

HART communication (TAN)	HART version 6 digital communication by FSK modulation of output current 1 device identification, measured values, status and messages, parameter setting, calibration, records		
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**Specifications**

## Sensor standardization

## Operating modes\*)

- adoption of calibration data from digital sensors
- automatic calibration in air
- automatic calibration in air-saturated water
- product calibration
- zero calibration

Calibration range  
standard sensor "10"

zero point  $\pm 2$  nA  
slope 25 ... 130 nA (at 25 °C, 1013 mbars)

Calibration range  
trace sensor "01"

zero point  $\pm 2$  nA  
slope 200 ... 550 nA (at 25 °C, 1013 mbars)

## Calibration timer\*)

0000 ... 9999 h

## Pressure correction\*)

manually 0.000 ... 9.999 bars/999.9 kPa/145.0 PSI

## Diagnostics/Service

## Diagnostic functions

calibration data, device self-test, display test

## Sensoface

provides information on the sensor condition  
(zero point, slope, calibration interval, and sensor wear)

## Logbook (TAN)

100 events with date and time

## Extended logbook (TAN)

Audit Trail: 200 events with date and time

## FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

## Service functions

current source

## Sensor monitor

display of direct sensor signals (sensor current, temperature, current input)

## Approvals

## Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 MSOXY

## Specifications

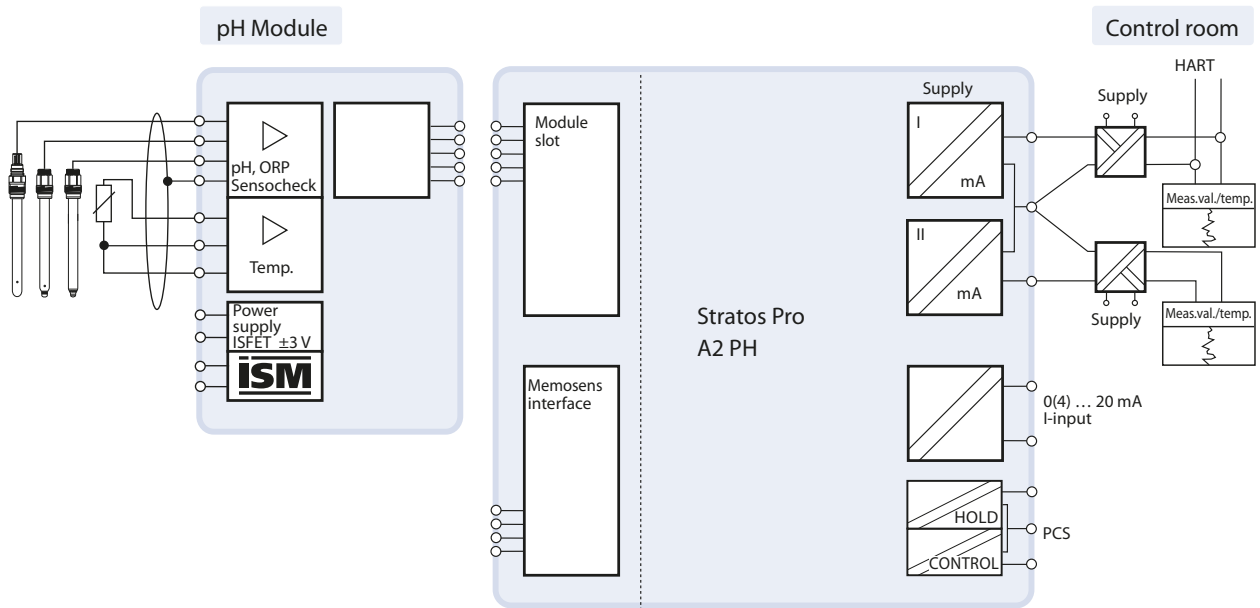
### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3
<b>Rated operating conditions</b>	
Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Ingress protection	IP 66/67/NEMA 4X
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x B x T 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2,5 mm <sup>2</sup>

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

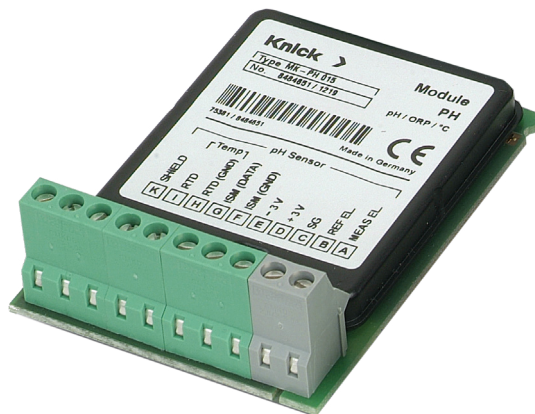
**Connection**

Connection of the PH with any desired analog sensor or with ISM or ISFET sensors  
 Model used: Stratos Pro A201N-PH-0



**Terminal Assignments of Stratos Pro MK-PH-015 Module**

<b>Knick</b>		<b>Module</b>	
MK-PH 015 X		PH	
No. 0000000		pH / ORP / °C	
Stratos Pro A ...		IECEx	
KEMA 08 ATEX 0100			
IECEx KEM08.0020			
see Control drawing 212.002-110			
D-14163 Berlin 00000/0000000/0726		0044	
pH Sensor			
[Temp]			
SHIELD	RTD	RTD (GND)	ISM (DATA)
K	I	H	G
			ISM (GND)
			- 3 V
			+ 3 V
			SG
			REF. EL.
			MEAS. EL.
			A



# Stratos Pro A2 PH

## Specifications

### Inputs

pH/mV	input for pH sensors (glass or ISFET) or ORP sensors		
Display range	pH value: -2.00 ... +16.00 ORP: -1999 ... +1999 mV		
ISM (TAN)	interface for operation with ISM (digital sensors)		
Temperature	Pt 100 / Pt 1000 / NTC 30 kOhm		
Display range for temperature	-20.0 ... 150.0 (200,0) °C / -4.0 ... 302.0 (392.0) °F		
Current input (TAN)	analog, 0/4 ... 20 mA for external temperature signal		
HOLD input, digital		0 ... 2 V (AC/DC) 10 ... 30 V (AC/DC)	HOLD inactive HOLD active
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC) 10 ... 30 V (AC/DC)	parameter set A parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V		
Process variable*}	pH or mV value or temperature		
Characteristic	linear or bilinear		
Output filter*}	PT1 filter, filter time constant: 0 ... 120 s		
Power output	for operating an ISFET adapter ±3 V/0.5 mA		



**Specifications**

## Sensor standardization

## Operating modes

– calibration with Calimatic automatic buffer recognition  
 – manually, data entry or using the product  
 buffer sets: Knick, Mettler Toledo, Merck/Riedel de Haen, Ciba (94), NIST, HACH, WTW, Hamilton, Reagecon, user-defined buffer table

## ISFET

operating point  $\pm 200$  mV

## ORP calibration range

–700 ... 700 mV

## Adaptive calibration timer

interval 0000 ... 9999 h

## Temperature compensation

## TC of process medium

linear: –19.99 ... 19.99 %/K, reference temperature 25 °C  
 table: 0 ... 100 °C, user-defined in 5-K steps

## Communication

HART communication  
(TAN)

HART version 6  
 digital communication by FSK modulation of output current 1  
 device identification, measured values, status and messages, parameter setting, calibration, records

## Diagnostics/Service

## Diagnostic functions

calibration data, device self-test, display test

## Sensocheck

automatic impedance monitoring of glass and reference electrode

## Sensoface

information on the sensor condition  
 (zero/slope, response time, calibration interval, Sensocheck)

## Logbook (TAN)

100 events with date and time

## Extended logbook (TAN)

Audit Trail: 200 events with date and time

## FDA CFR 21 Part 11

– access control by editable passcodes  
 – logbook entry and flag via HART in the case of configuration changes  
 – message and logbook entry when enclosure is opened

## Service functions

current source

## Sensor monitor

display of direct sensor signals (mV/temperature/resistance ...)

## Approvals

## Explosion protection

see Ex certificate and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 PH

## Specifications

### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... +70 °C
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3

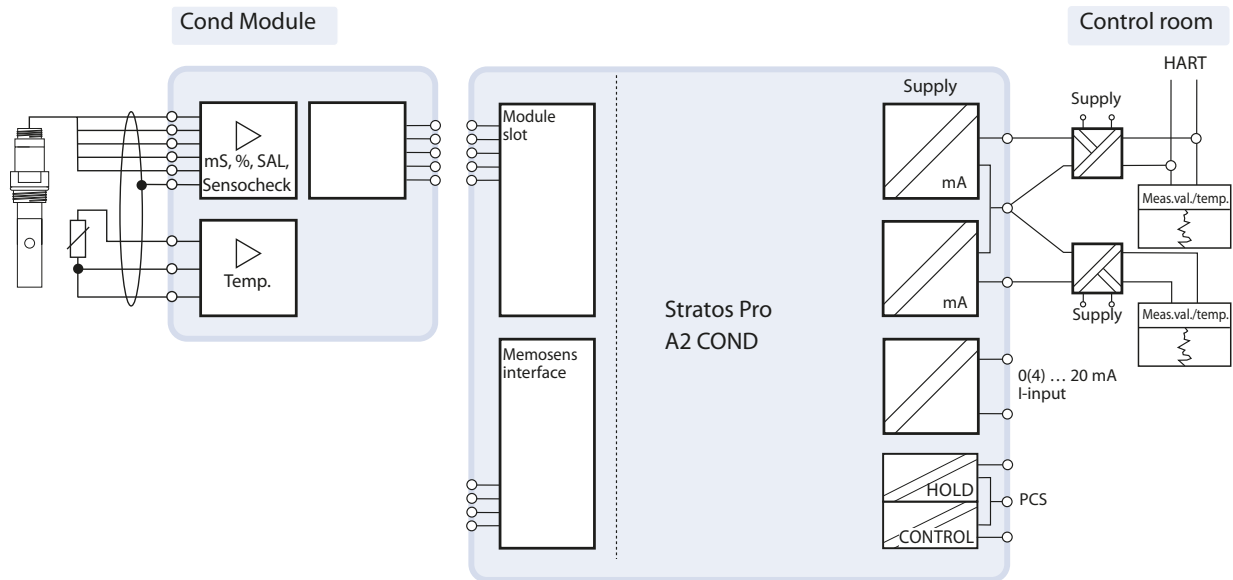
### Rated operating conditions

Ambient temperature	-20 ... +65 °C
Relative humidity	10 ... 95 %
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm to DIN 43700
Ingress protection	IP 66/67/NEMA 4X outdoor
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

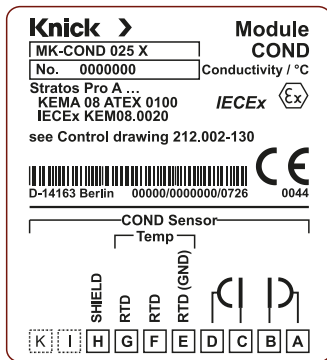
\*) user defined

**Connection**

Connection of COND module with 2- or 4-electrode sensors  
 Model used: Stratos Pro A201N-COND-0



**Terminal Assignments of Stratos Pro COND Module**



# Stratos Pro A2 COND

## Specifications

### Inputs

Conductivity	input for 2-electrode and 4-electrode sensors		
Effective ranges	2-electrode sensors	0.2 $\mu\text{S} \cdot \text{cm}$ ... 200 $\text{mS} \cdot \text{cm}$	
	4-electrode sensors	0.2 $\mu\text{S} \cdot \text{cm}$ ... 1000 $\text{mS} \cdot \text{cm}$	
Measuring ranges <sup>*)</sup>	conductivity	0.000 $\mu\text{S}/\text{cm}$ ... 999.9 $\text{mS}/\text{cm}$	0.000 ... 99.99 $\text{S}/\text{m}$
	resistivity	00.00 ... 99.99 Mohms $\cdot \text{cm}$	
	concentration	00.00 ... 9.99 %	
	salinity	0.0 ... 45.0 ‰ (0 ... 35 °C)	
Temperature compensation <sup>*)</sup> reference temperature 25 °C	linear 00.00 ... 19.99 %/K (user-defined reference temperature) natural waters to EN 27888 NaCl from 0 (ultrapure water) to 26 % by wt (0 ... 120 °C) ultrapure water with traces of NaCl, HCl, or NH <sub>3</sub>		
Concentration determination	NaCl	0.00 ... 9.99 % by wt	(0 ... 100 °C)
	HCl	0.00 ... 9.99 % by wt	(-20 ... 50 °C)
	NaOH	0.00 ... 9.99 % by wt	(0 ... 100 °C)
	H <sub>2</sub> SO <sub>4</sub>	0.00 ... 9.99 % by wt	(-17 ... 110 °C)
	HNO <sub>3</sub>	0.00 ... 9.99 % by wt	(-17 ... 50 °C)
Temperature	Pt 100 / Pt 1000 / NTC 30 kohms / NTC 8.55 kohms (Betatherm) / Ni 100		
Measuring range	Pt:	-50.0 ... 250.0 °C / -58.0 ... 482.0 °F	
	NTC:	-20.0 ... 150.0 °C / -4.0 ... 302.0 °F	
	Ni 100:	-50.0 ... 180.0 °C / -58.0 .. 356.0 °F	
Current input (TAN)	analog, 0/4 ... 20 mA for external temperature signal		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC)	parameter set A
		10 ... 30 V (AC/DC)	parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	
Outputs			
Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V		
Process variable <sup>*)</sup>	conductivity, resistivity, concentration, salinity, or temperature		
Characteristic	linear, bilinear, or logarithmic		
Output filter <sup>*)</sup>	PT1 filter, filter time constant: 0 ... 120 s		
USP function	water monitoring in the pharmaceutical industry (USP) with additional user-defined limit value (%), output via 22 mA and HART (TAN)		

**Specifications**

Sensor standardization

Operating modes

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

Communication

HART communication (TAN)

HART version 6  
digital communication by FSK modulation of output current 1  
device identification, measured values, status and messages, parameter setting, calibration, records

Diagnostics/Service

Diagnostic functions

calibration data, device self-test, display test

Sensocheck

polarization detection and monitoring of cable capacitance

Sensoface

provides information on the sensor condition, Sensocheck

Logbook (TAN)

100 events with date and time

Extended logbook (TAN)

Audit Trail: 200 events with date and time

FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

Service functions

current source

Sensor monitor

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

Approvals

Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 COND

## Specifications

### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface®, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... +70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3

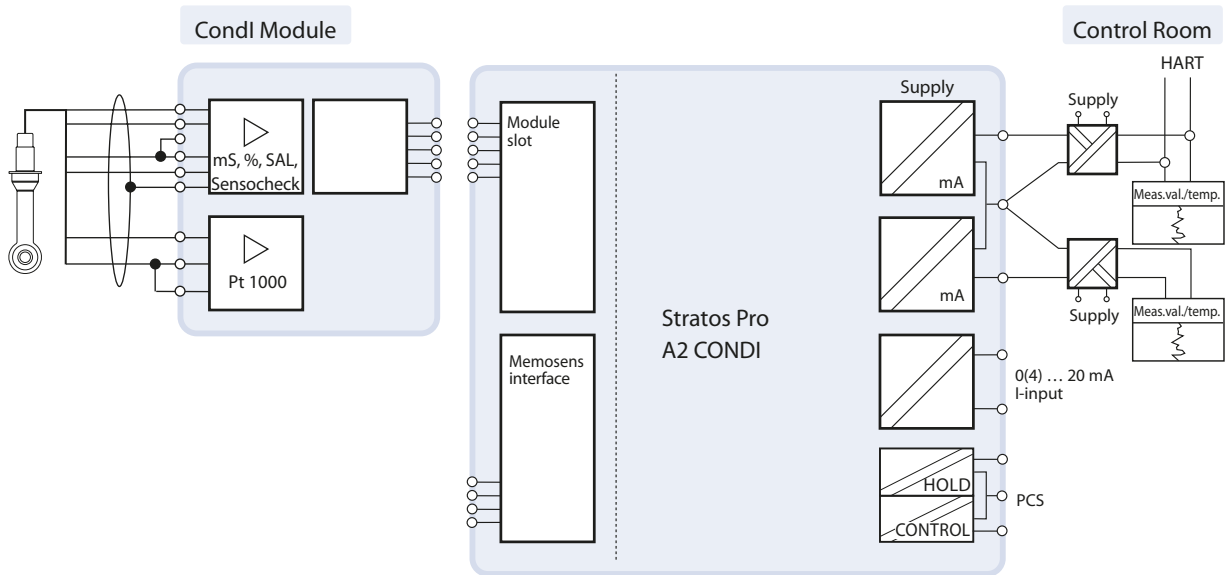
### Rated operating conditions

Ambient temperature	-20 ... +65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Ingress protection	IP 66/67/NEMA 4X
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

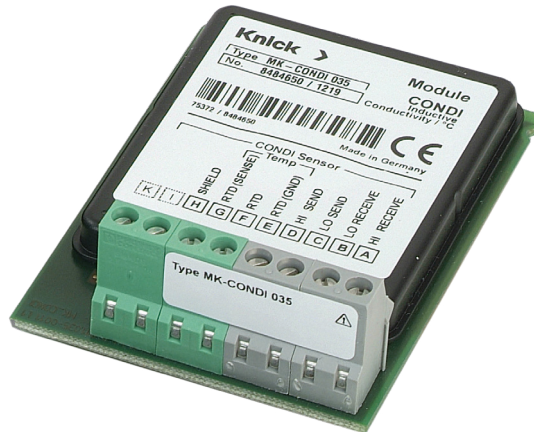
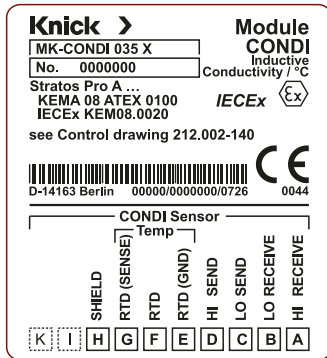
\*<sup>1</sup>) user-defined

**Connection**

Connection of CONDI module with toroidal sensors  
 Model used: Stratos Pro A201N-CONDI-0



**Terminal Assignments of Stratos Pro CONDI Module**



# Stratos Pro A2 CONDI

## Specifications

### Inputs

Conductivity	input for toroidal conductivity sensors		
Effective ranges	conductivity	0.000 ... 1999 mS/cm	
	concentration	0.00 ... 100.0 % by wt	
	salinity	0.0 ... 45.0 ‰	
Temperature compensation*) (reference temperature 25 °C)	linear 00.00 ... 19.99 %/K (user-defined reference temperature) NaCl from 0 to 26 % by wt (0 ... 120°C) natural waters to EN 27888		
Concentration determination	NaCl	0–26 % by wt (0 °C) ... 0–28 % by wt (100 °C)	
	HCl	0–18 % by wt (–20 °C) ... 0–18 % by wt (50 °C)	
	NaOH	0–13 % by wt (0 °C) ... 0–24 % by wt (100 °C)	
	H <sub>2</sub> SO <sub>4</sub>	0–26 % by wt (–17 °C) ... 0–37 % by wt (110 °C)	
	HNO <sub>3</sub>	0–30 % by wt (–20 °C) ... 0–30 % by wt (50 °C)	
	H <sub>2</sub> SO <sub>4</sub>	94–99 % by wt (–17 °C) ... 89–99 % by wt (115 °C)	
	HCl	22–39 % by wt (–20 °C) ... 22–39 % by wt (50 °C)	
	HNO <sub>3</sub>	35–96 % by wt (–20 °C) ... 35–96 % by wt (50 °C)	
	H <sub>2</sub> SO <sub>4</sub>	28–88 % by wt (–17 °C) ... 39–88 % by wt (115 °C)	
	NaOH	15–50 % by wt (0 °C) ... 35–50 % by wt (100 °C)	
Temperature	Pt 100 / Pt 1000 / NTC 30k		
Measuring range	Pt:	–50.0 ... 250.0 °C / –58.0 ... 482.0 °F	
	NTC:	–20.0 ... 150.0 °C / –4.0 ... 302.0 °F	
Current input (TAN)	analog, 0/4 ... 20 mA for external temperature signal		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC)	parameter set A
		10 ... 30 V (AC/DC)	parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V		
Process variable*)	conductivity, concentration, salinity, or temperature		
Characteristic	linear, bilinear, or logarithmic		
Output filter*)	PT1 filter, filter time constant: 0 ... 120 s		
Communication			
HART communication (TAN)	HART version 6 digital communication by FSK modulation of output current 1 device identification, measured values, status and messages, parameter setting, calibration, records		



**Specifications**

## Sensor standardization

## Operating modes

- input of cell factor with simultaneous display of selected process variable and temperature
- input of conductivity of calibration solution with simultaneous display of cell factor and temperature
- product calibration
- zero adjustment
- temperature probe adjustment

## Permissible cell factor

0.100 ... 19.999 cm<sup>-1</sup>

## Permissible transfer ratio

1.00 ... 199.99

## Permissible zero offset

±0,5 mS

## Diagnostics/Service

## Diagnostic functions

calibration data, device self-test, display test

## Sensocheck

monitoring of primary and secondary coils and lines for open circuit and short circuit

## Sensoface

provides information on the sensor condition (zero point, Sensocheck)

## Logbook (TAN)

100 events with date and time

## Extended logbook (TAN)

Audit Trail: 200 events with date and time

## FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

## Service functions

current source

## Sensor monitor

display of direct sensor signal (resistance/temperature)

## Approvals

## Explosion protection

see Ex certificates and EU declaration of conformity or [www.knick.de](http://www.knick.de)

# Stratos Pro A2 CONDI

## Specifications

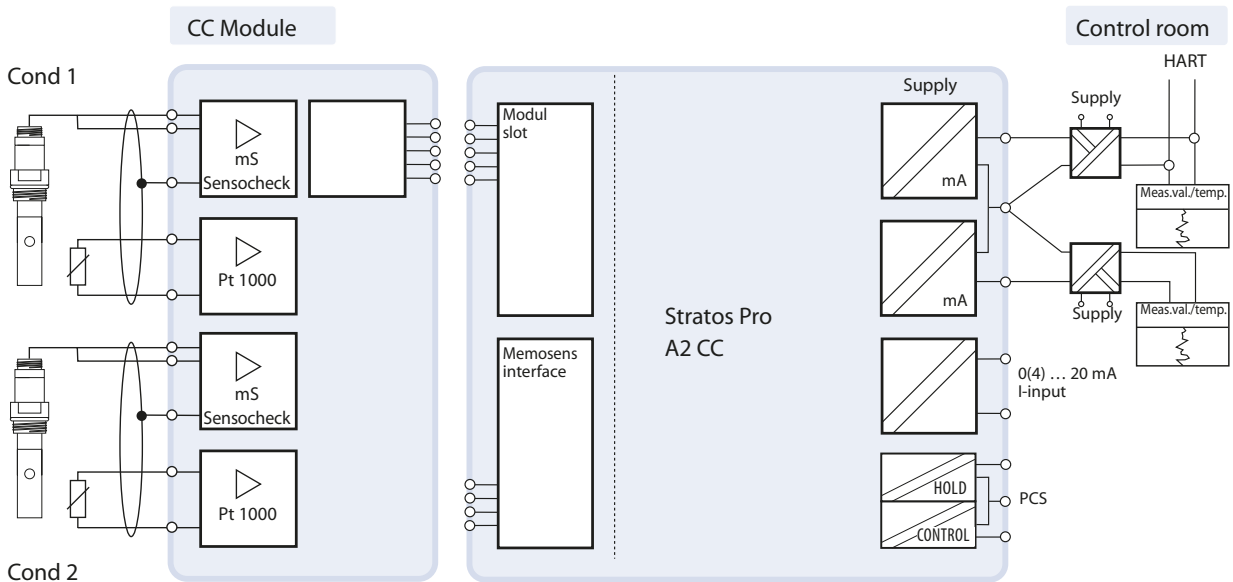
### Device data

Display	LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface, status indication, alarm indication
Keypad	keys: meas, info, 4 cursor keys, enter
Power supply	see Outputs 1/2
Real-time clock	different time and date formats selectable power reserve > 5 days
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3
<b>Nominal operating conditions</b>	
Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Ingress protection	IP 66/67/NEMA 4X outdoor
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

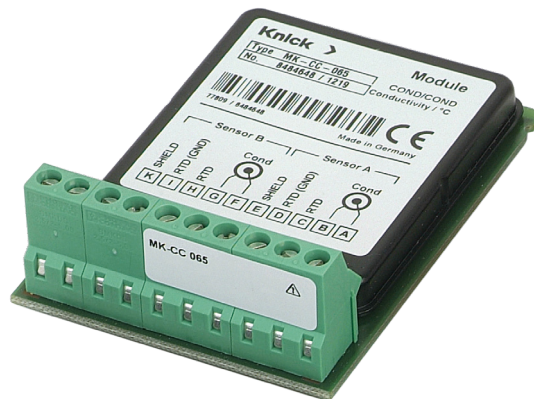
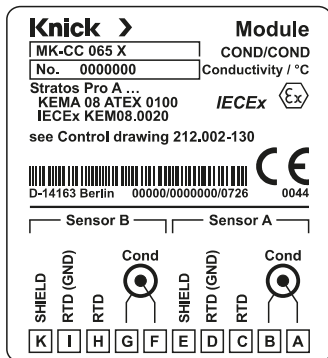
<sup>\*)</sup> user-defined

**Connection**

Connection of CC module with two 2-electrode sensors  
 Model used: Stratos Pro A201N-CC-0



**Terminal Assignments of Stratos Pro CC Module**



# Stratos Pro A2 CC

## Specifications

### Inputs

Conductivity	2 inputs for 2-electrode sensors	
Measuring range	0 ... 30000 $\mu\text{S} \cdot \text{cm}$	
Display range <sup>*)</sup>	conductivity	0.000 ... 9999 $\mu\text{S}/\text{cm}$ 00.00 ... 99,99 $\mu\text{S}/\text{cm}$ 000.0 ... 999,9 $\mu\text{S}/\text{cm}$ 0000 ... 9999 $\mu\text{S}/\text{cm}$
	resistivity	00.00 ... 99.99 $\text{M}\Omega \cdot \text{cm}$

Temperature compensation <sup>*)</sup> (reference temperature 25 °C)	linear 00.00 ... 19.99 %/K (user-defined reference temperature) natural waters to EN 27888 NaCl from 0 (ultrapure water) to 26 % by wt (0 ... 120 °C) ultrapure water with traces of NaCl, HCl, or NH <sub>3</sub>
---	---

Calculations (CALC)	-C1-	Difference	A - B	[ $\mu\text{S}/\text{cm}$ ]
	-C2-	Ratio	A / B	00.00 ... 19.99
	-C3-	Passage	B / A · 100	000.0 ... 199.9 %
	-C4-	Rejection	(A - B) / A · 100	-199.9 ... 199.9 %
	-C5-	Deviation	(B - A) / A · 100	-199.9 ... 199.9 %
	-C6-	pH value	acc. to directive VGB S-006	[pH]
	-C7-	pH value	variable, specifiable factors	[pH]
	-C8-	USER SPEC	DAC (Degassed Acid Conductivity)	[ $\mu\text{S}/\text{cm}$ ]
	-C9-	ALCALISING	Concentration of the alkalizing agent (VGB S-006)	

Temperature	Pt 1000 2-wire connection, adjustable
-------------	--

Measuring range	-50,0 ... 200,0 °C / -58,0 ... 392,0 °F
-----------------	---

Current input (TAN)	analog, 0/4 ... 20 mA, e.g. for flow monitoring
---------------------	---

HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive
	10 ... 30 V (AC/DC)	HOLD active

CONTROL input, digital e.g. flow monitoring	level relay input for external monitoring equipment
--	---

flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA
------	--

### Outputs

Output 1, Output 2	4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V
--------------------	--

Process variable <sup>*)</sup>	conductivity, resistivity, concentration, temperature, or CALC
--------------------------------	--

Characteristic	linear
----------------	--------

Output filter <sup>*)</sup>	PT1 filter, filter time constant: 0 ... 120 s
-----------------------------	---

**Specifications**

## Sensor standardization

## Channel A/B

input of cell constant with simultaneous display of selected process variable and temperature

## Permissible cell constant

0.0050 ... 1.9999 cm<sup>-1</sup>

## Communication

## HART communication (TAN)

HART version 6  
digital communication by FSK modulation of output current 1  
device identification, measured values, status and messages, parameter setting, calibration, records

## Diagnostics/Service

## Diagnostic functions

calibration data, device self-test, display test

## Sensocheck

polarization detection and monitoring of cable capacitance  
delay approx. 30 s

## Sensoface

provides information on the sensor condition, Sensocheck, flow monitoring

## Logbook (TAN)

100 events with date and time

## Extended logbook (TAN)

Audit Trail: 200 events with date and time

## FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

## Service functions

current source for output 1 and 2 (3.80 ... 22.00 mA)

## Sensor monitor

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

## Device data

## Display

LC display with colored backlighting,  
main display, secondary display, plain-text ticker line, icons,  
Sensoface, status indication, alarm indication

## Keypad

keys: meas, info, 4 cursor keys, enter

## Power supply

see Outputs 1/2

## Real-time clock

different time and date formats selectable  
power reserve > 5 days

## Transport/Storage temperature

–20 ... 70 °C / – 4 ... 158 °F

## EMC

EN 61326-1 (general requirements)  
emitted interference: class B (residential area)  
immunity to interference: industry EN 61326-2-3

# Stratos Pro A2 CC

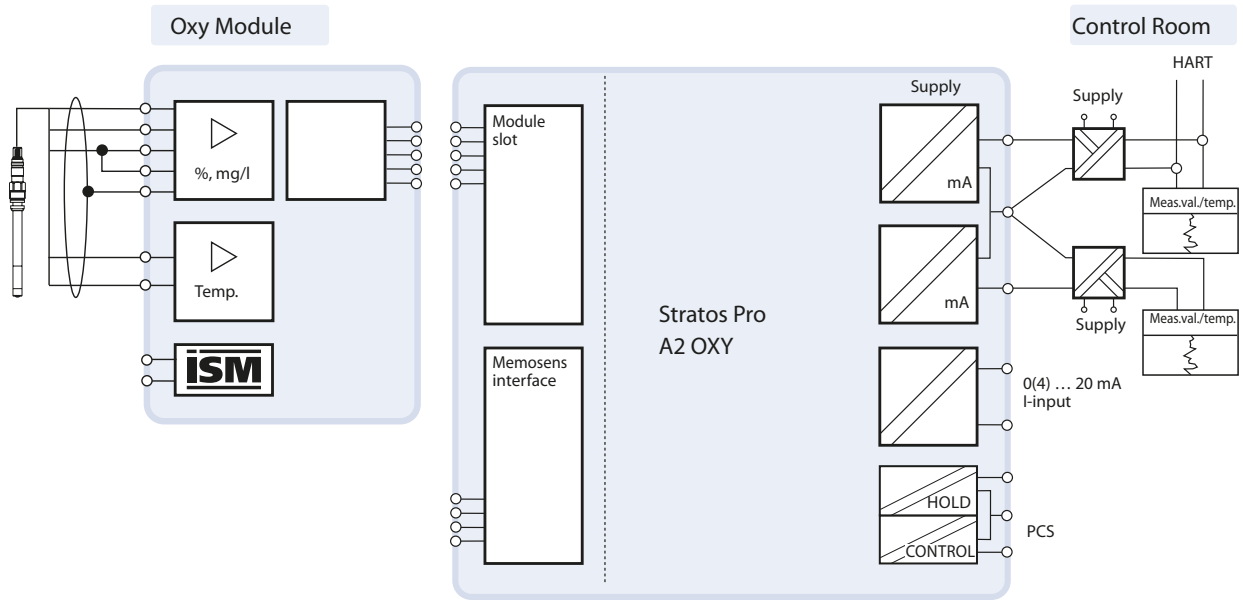
## Specifications

Nominal operating conditions	
Ambient temperature	-20 ... 65 °C / -4 ... 149 °F
Relative humidity	10 ... 95 %
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	- wall mounting - pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm - panel mounting
Dimensions (mm)	H x W x D 148 x 148 x 117
Cable glands	3 knockouts for cable glands M20 x 1.5 2 knockouts for 1/2" NPT or rigid metallic conduit
Control panel cutout	138 mm x 138 mm according to DIN 43700
Ingress protection	IP 66/67/NEMA 4X outdoor
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm <sup>2</sup>

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

**Connection**

Connection of OXY module with SE 706 oxygen sensors, Mettler Toledo InPro 6800, Hamilton Oxyferm  
 Model used: Stratos Pro A201N-OXY-0

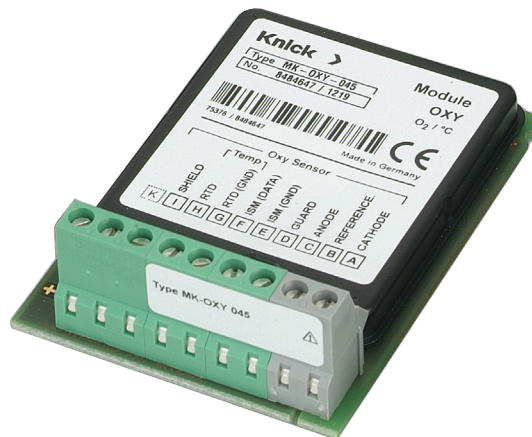


**Terminal Assignments of Stratos Pro Oxy Module**

**Knick** > **Module OXY**  
 MK-OXY 045 X  
 No. 00000000  
 Stratos Pro A ...  
 KEMA 08 ATEX 0100  
 IECEX KEM08.0020  
 see Control drawing 212.002-120  
 D-14163 Berlin 00000/00000000/0726 0044

IECEX CE

Oxy Sensor  
 [Temp]  
 SHIELD RTD RTD (GND) ISM (DATA) ISM (GND) GUARD ANODE REFERENCE CATHODE  
 [K] [I] [H] [G] [F] [E] [D] [C] [B] [A]



# Stratos Pro A2 OXY

## Specifications

### Inputs

O <sub>2</sub> standards	sensors SE 703, SE 706 and SE 707 (Mettler Toledo InPro 6800, Hamilton Oxyferm)		
O <sub>2</sub> trace measurement (TAN)	sensors SE 706/707, Mettler Toledo InPro 6800/6900/6950 and Hamilton Oxyferm/Oxygold		
Operating modes	GAS	measurement in gases	
	DO	measurement in liquids	
Input ranges <sup>*)</sup>			
Polarization voltage	0 ... -1000 mV, default -675 mV (resolution < 5 mV)		
Measuring current	-600 (-10000) ... 2 nA, resolution 10 pA (166 pA)		
Permissible guard current	≤ 20 µA		
Measurement error <sup>1,2,3)</sup>	< 0.5 % meas. val. + 0.05 nA + 0.005 nA/K		
Display ranges with standard sensors "10"	saturation 0.0 ... 600.0 % concentration 0.00 ... 99.99 mg/l (ppm) volume concentration in gas 0.00 ... 99.99 vol %		
Display ranges with trace sensors "01"	saturation 0.000 ... 150.0 % concentration 0 ... 9999 µg/l (ppb)/10.00 ... 20.00 mg/l (ppm) volume concentration in gas 0 ... 9999 ppm (vol)/1.000 ... 50.00 vol %		
Display ranges with subtrace sensors "001"	saturation 0.000 ... 150.0 % concentration 0.0 ... 9999 µg/l (ppb)/10.00 ... 20.00 mg/l (ppm) volume concentration in gas 0.0 ... 9999 ppm (vol)/1.000 ... 50.00 vol %		
Input correction			
Pressure correction <sup>*)</sup>	0.000 ... 9.999 bars/999.9 kPa/145.0 PSI manually or through current input 0(4) ... 20 mA		
Salinity correction <sup>*)</sup>	0,0 ... 45,0 g/kg		
ISM (TAN)	interface for operation with ISM (digital sensors)		
Temperature	NTC 22 kohms/NTC 30 kohms		
Display range	-20.0 ... 150.0 °C / -4.0 ... 302.0 °F		
Current input (TAN)	analog, 0/4 ... 20 mA for external pressure compensation		
HOLD input, digital	0 ... 2 V (AC/DC)	HOLD inactive	
	10 ... 30 V (AC/DC)	HOLD active	
CONTROL input, digital	parameter set selection	0 ... 2 V (AC/DC) 10 ... 30 V (AC/DC)	parameter set A parameter set B
	flow	pulse amplitude 10 ... 30 V DC pulse input for flow measurement 0 ... 100 pulses/s display: 00.00 ... 99.99 l/h message via 22 mA, alarm contact or limit contacts	



**Specifications****Outputs**

Output 1, Output 2

4 ... 20 mA current loops, 22 mA for error message, HART communication (TAN) at output 1, supply voltage 14 ... 30 V

Process variable<sup>\*)</sup>O<sub>2</sub> saturation/O<sub>2</sub> concentration or temperature

Characteristic

linear

Output filter<sup>\*)</sup>

PT1 filter, filter time constant: 0 ... 120 s

**Communication**

HART communication (TAN)

HART version 6  
digital communication by FSK modulation of output current 1  
device identification, measured values, status and messages, parameter setting, calibration, records**Sensor standardization**Operating modes<sup>\*)</sup>

- adoption of calibration data from digital sensors
- automatic calibration in air
- automatic calibration in air-saturated water
- product calibration
- zero calibration

Calibration range standard sensor "10"

zero point ±2 nA  
slope 25 ... 130 nA (at 25 °C, 1013 mbars)

Calibration range trace sensor "01"

zero point ±2 nA  
slope 200 ... 550 nA (at 25 °C, 1013 mbars)

Calibration range subtraces sensor "001"

zero point ±3 nA  
slope 2000 ... 9000 nA (at 25 °C, 1013 mbars)Calibration timer<sup>\*)</sup>

0000 ... 9999 h

Pressure correction<sup>\*)</sup>

manually 0.000 ... 9.999 bars/999.9 kPa/145.0 PSI

**Diagnostics/Service**

Diagnostic functions

calibration data, device self-test, display test

Sensocheck

monitoring of membrane and electrolyte and the sensor wires for short circuits or open circuits

Sensoface

provides information on the sensor condition (zero/slope, calibration interval, Sensocheck® and sensor wear)

Logbook (TAN)

100 events with date and time

Extended logbook (TAN)

Audit Trail: 200 events with date and time

FDA CFR 21 Part 11

- access control by editable passcodes
- logbook entry and flag via HART in the case of configuration changes
- message and logbook entry when enclosure is opened

Service functions

current source

Sensor monitor

display of direct sensor signals (sensor current, impedance, temperature, current input)

# Stratos Pro A2 OXY

## continued - Specifications

### Approvals

Explosion protection see Ex certificate and EU declaration of conformity or [www.knick.de](http://www.knick.de)

### Device data

Display LC display with colored backlighting, main display, secondary display, plain-text ticker line, icons, Sensoface®, status indication, alarm indication

Keypad keys: meas, info, 4 cursor keys, enter

Power supply see Outputs 1/2

Real-time clock different time and date formats selectable  
power reserve > 5 days

Transport/Storage temperature -20 ... +70 °C / -4 ... 158 °F

EMC EN 61326-1 (general requirements)  
emitted interference: class B (residential area)  
immunity to interference: industry EN 61326-2-3

### Nominal operating conditions

Ambient temperature -20 ... +65 °C / -4 ... 149 °F

Relative humidity 10 ... 95 %

Enclosure molded enclosure, PBT/PC, glass-reinforced

Assembly  
- wall mounting  
- pipe mounting: Ø 40 ... 60 mm, □ 30 ... 45 mm  
- panel mounting

Dimensions (mm) H x W x D 148 x 148 x 117

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

Control panel cutout 138 mm x 138 mm according to DIN 43700

Ingress protection IP 66/67/NEMA 4X

Weight approx. 1.2 kg (1.6 kg incl. accessories and packaging)

Connections terminals, conductor cross section max. 2.5 mm<sup>2</sup>

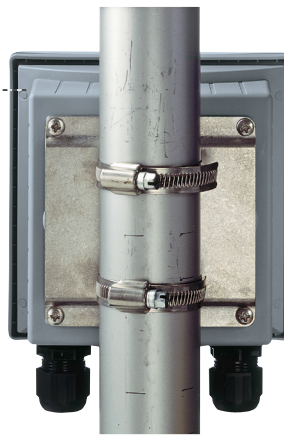
\*1) user-defined

## Simple Installation

- wall, post/pipe, or panel mounting
- all parts are easily accessible
- large terminal compartment
- pre-installation of rear unit possible
- also suitable for rigid metallic conduits/replaceable screw terminals
- replacement of electronics without new cabling

### Pipe-mount kit ZU 0274

For assembly on vertical or horizontal pipes or posts.



### Protective hood ZU 0737

Additional protection from direct weather exposure and mechanical damage.



### Panel-mount kit ZU 0738

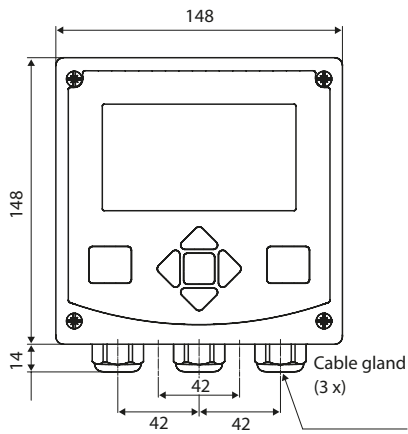
For mounting in standardized panel cutout 138 x 138 mm (DIN 43700), sealed against panel.



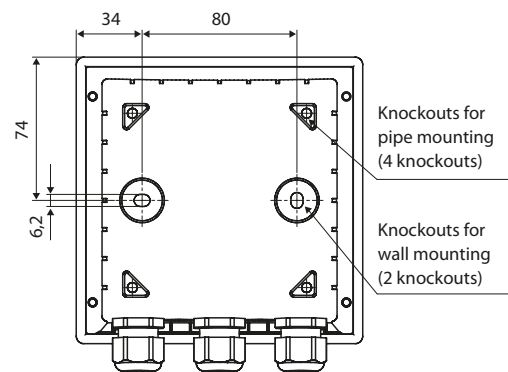
# Stratos Pro

## Dimension Drawings

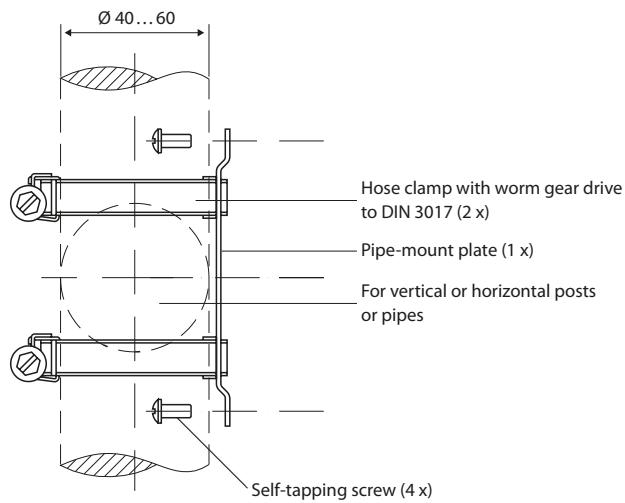
### Front and side view



### Rear side

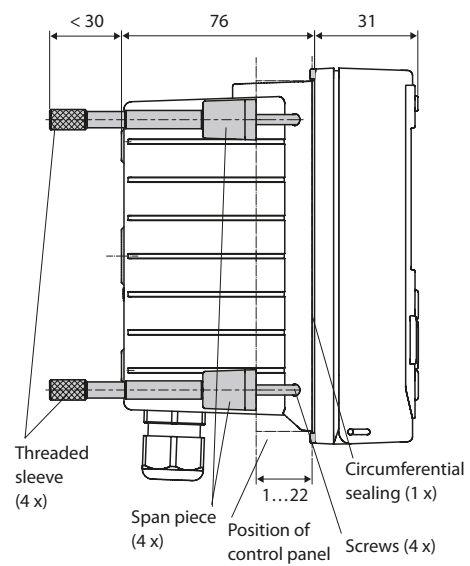


### Pipe-mount kit ZU 0274

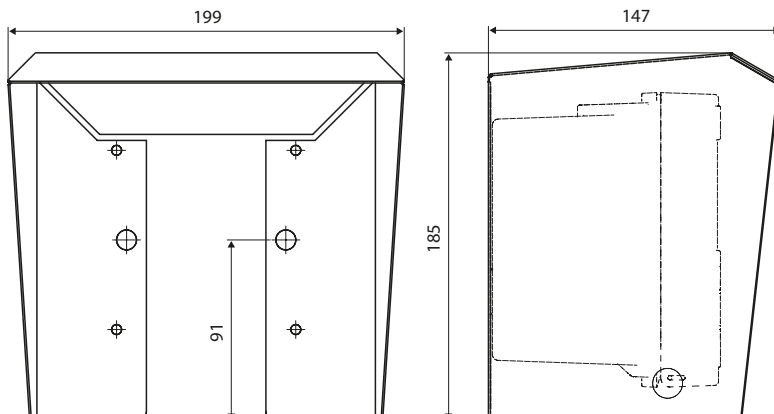


### Panel-mount kit ZU 0738

Control panel cutout 138 x 138 mm (DIN 43700)



### Protective hood ZU 0737



All dimensions in mm