Process Analysis Systems

Chem | Energy | Pharm | Food | Water

Stratos® *Pro*

Extremely robust process analyzers with unique color-coded user interface, for all common analog and digital sensors

Process analytics with flying colors
The 2- wire devices in the Stratos® *Pro* series offer a wide range of innovative features. Alongside the high-contrast, easily legible widescreen display, the series excels with unique operator guidance featuring functional colored backlighting.

All devices are designed for connection to any customary analog or digital sensors (including contactless ones) with significantly enhanced predictive diagnostics. With their innovative enclosure technology, they are ideal for virtually any environment in both hazardous and safe areas.

Function superiority
From the wireless service interface to the complete HART communication system, the Stratos® *Pro* series offers a wide range of reliable functions for 2-wire devices. The devices can be used in multidrop mode and are certified for the handheld and asset management systems of leading manufacturers.

Unrivaled circuit technology ensures low self-heating and an extremely long service life.

Warranty
3 years!

Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender). Sensors and accessories: 1 year

Knick

Facts

- extremely robust, UV-resistant molded enclosure (IP 67)
- high-contrast widescreen display with color-guided backlighting
- protective pane made of safety glass
- intuitive operation with easy-to-understand icons and running plain-text ticker line
- logbook (200 entries)
- HART communication
- wireless service interface (not need to open the enclosure)
- 2 current outputs
- 2 parameter sets
- 2 digital inputs:
  - external HOLD release
  - external parameter set selection
- one analog input (4 to 20 mA) e.g. for external pressure compensation
- automatic sensor identification
- sensor diagnostic with wear indication, remaining lifetime, CIP/SIP counter, and adaptive calibration timer
- operation in hazardous areas (explosion-protected for gas and dust):
  2-wire: Zone 1 (FM, CSA Class I, Div 1, GOST, NEPSI, and KOSHA)
- easy wall, post/pipe, or panel mounting
- 3-year warranty

		Stratos® *Pro*	
		2-wire devices	
		Safe area	Ex Zone 1
analog	**pH measurement**	A201N-PH	A201X-PH
	Contacting conductivity measurement	A201N-COND	A201X-COND
	Multi-channel conductivity measurement	A201N-CC	
	Non-contacting conductivity measurement	A201N-CONDI	A201X-CONDI
	Dissolved-oxygen measurement	A201N-OXY	A201X-OXY
digital	**pH measurement, Memosens®**	A201N-MSPH	A201X-MSPH
	pH/pH multi-channel measurement, Memosens®		
	pH/oxy multi-channel measurement, Memosens®		
	Contacting conductivity measurement, Memosens®	A201N-MSCOND	A201X-MSCOND
	Non-contacting conductivity measurement, digital	A201N-MSCONDI	A201X-MSCONDI
	Dissolved-oxygen measurement, Memosens®	A201N-MSOXY	A201X-MSOXY

Stratos® *Pro*

New operating concept

The Stratos® *Pro* series offers a completely new and especially user-friendly operating concept. Studies have shown that operator errors more frequently lead to downtime than hardware defects or malfunctions. A user-friendly design and intuitive operation has therefore been given the highest priority in the new series.

Unique color-coded user interface

The color-guided user interface on a backlit widescreen display guarantees maximum operating safety for 4- and 2-wire devices. The unique, functional colored backlighting of the Stratos® *Pro* display changes between 6 different colors to clearly signal operating states.

The normal measuring mode is white. Information texts appear on a green screen and the diagnostic menu appears on turquoise. The orange HOLD mode 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 has a particularly noticeable red display color and is also signaled by flashing display values. Unreliable entries or false passcodes cause the entire display to blink red so that operating errors are noticeably reduced.

white: normal measuring mode

red blinking: alarm, errors

orange: HOLD mode

magenta: maintenance request

turquoise: diagnostics

green: info texts

Optimum legibility

A pin-sharp and high-contrast LC display provides optimum legibility, even in the most difficult lighting conditions. The easy-to-understand, icon-driven user interface ensures intuitive use. Instead of pixelated elements which are sometimes difficult to identify, the display utilizes high-resolution, self-explanatory icons. Longer text displays are scrolled horizontally in large, clearly legible font: a scrolling ticker line is more easily and reliably comprehended than text in jumping lines.

Knick

Robust and Reliable

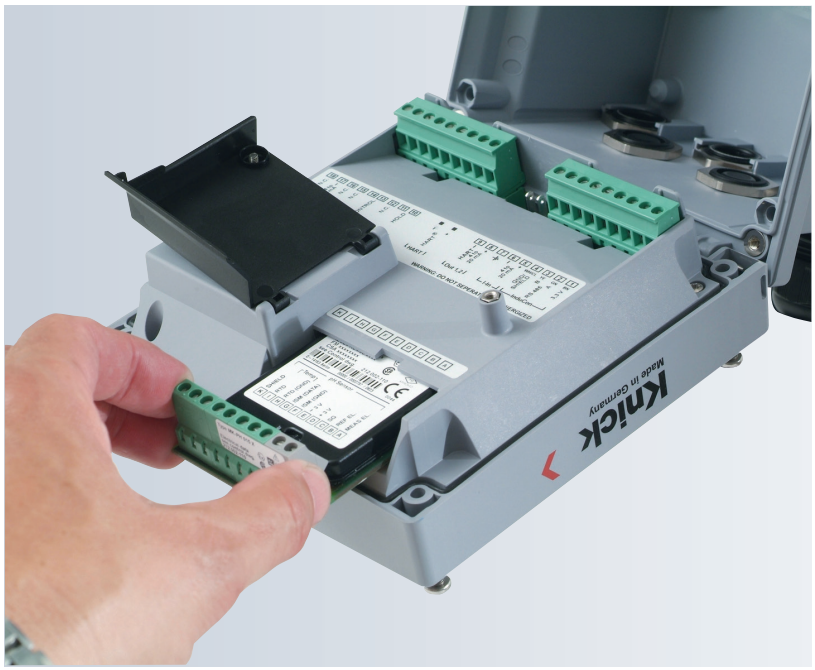
New industry design to be used for applications even under the harshest of ambient conditions: Fully encapsulated and protected in shatter-proof and corrosion-resistant plastic enclosure with outdoor approval rating.

Hard to beat

The reinforced and UV-resistant plastic enclosure of the Stratos® *Pro* supports the product functionality. There are neither prominent control elements nor those with a high mechanical load to be found on the vrtually plane, dirt-proof front panel. Injection molded, directly sealed keys are made from high-quality EPDM so that it is no longer necessary to stick films, which previously had to perform a sealing function, onto the front of the device. The high IP 67 rating is retained under all conditions – safe operation of the 2-wire versions is guaranteed in the range from –20 °C to +65°C. This also applies without exception to operation in hazardous locations.

All-round resilience

The display window of the Stratos® *Pro* is connected directly to the plastic enclosure during the innovative molding process. It is made from reinforced safety glass, is scratch-resistant and UV resistant. All the device's electronics are completely encapsulated in the door module: there are no exposed PCBs. The large rear unit can be mounted separately. All electrical connections are made by means of screw terminals in the door unit, so that if the door module is replaced, the complete cable guide can be retained in the rear unit.



All the electronics in a Stratos® Pro are encapsulated in the door module of the device. Exchangeable modules allow for different process parameters.

Stratos® *Pro*

For a broad choice of sensors

The Stratos® *Pro* series stands out thanks to its universal application options – the devices support both conventional analog as well as digital ISM sensors and contactless digital sensors such as Memosens®.

The complete range

Stratos® *Pro* facilitates the operation of almost all standard sensors available on the global market, thanks to its innovative wiring technology in 2- and 4-wire designs. The Stratos® *Pro* was designed to provide the greatest possible flexibility for the user.
Even under the harshest of ambient conditions, the devices can be used in process applications of all types to collect measured values for pH, ORP, conductivity (contacting and non-contacting) or oxygen.

For example Memosens®:
Memosens® sensors are based on a contactless connection with bidirectional signal and energy transmission. The built-in intelligence allows sensor-related data close to the process to be saved and evaluated.

In addition to digital pH measurement, Memosens® technology is now available for ORP, conductivity, and oxygen parameters.

Knick

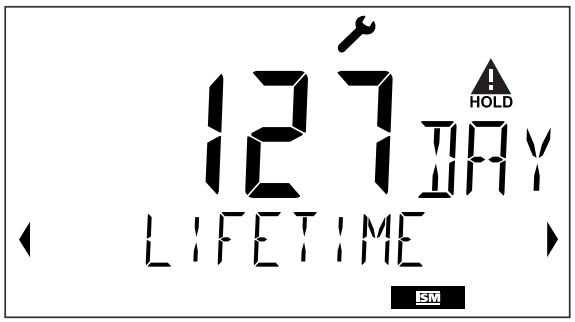
For all high-quality sensors

pH measurement
– for analog, digital and/or contactless pH sensors
– for combination electrodes as well as separate glass and reference electrodes
– a broad selection of temperature sensors (Pt 100, Pt 1000, NTC 30 kohms, NTC 8.55 kohms, or Balco 3 kohms)
– for all standard ORP metallic electrodes
– for customary ISFET sensors

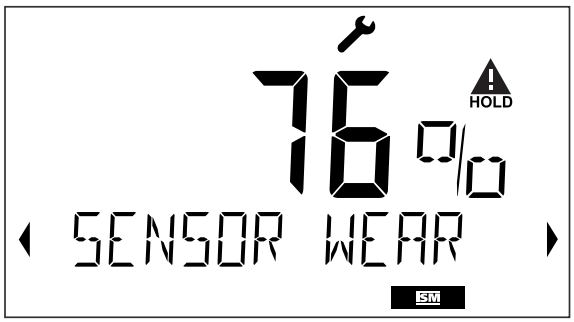
Contacting conductivity (Cond)
– for all customary 2- and 4-electrode sensors
– cell constant selectable from 0.005 to 20 cm^{-1}
– selectable temperature sensors Pt 100, Pt 1000, NTC 30 kohms, NTC 8.55 kohms

Non-contacting (inductive) conductivity (CondI)
– for a variety of conventional European and US sensors
– temperature sensors Pt 100, Pt 1000 and NTC 30 kohms

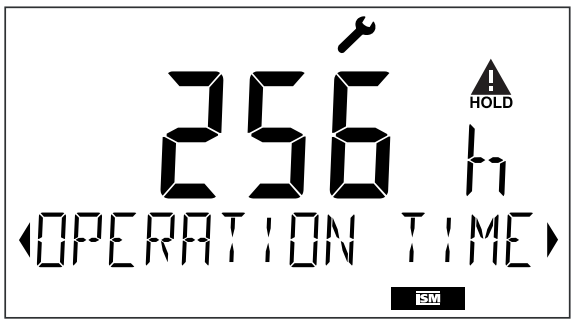
Oxygen (Oxy)
– for commercially available, amperometric sensors with or without polarization voltage
– temperature sensors NTC 22 kohms/NTC 30 kohms



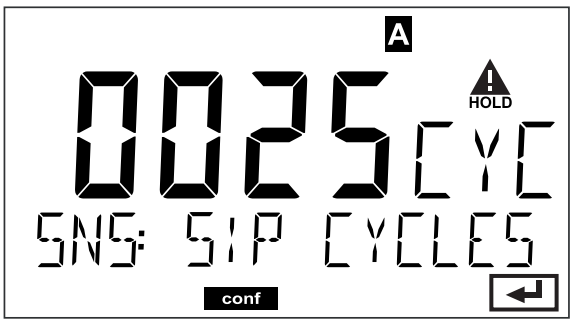
Remaining sensor lifetime



Sensor wear



Sensor operating time



CIP/SIP counter

Stratos® *Pro* 4-Wire Devices

Globally ready

The 4-wire models from Stratos® *Pro* are equipped with the VariPower® broad-range power supply unit. This facilitates the use of the same device model for power supplies of 20 to 253 V AC/DC. Reliable operation is thereby guaranteed worldwide, even with fluctuating qualities of power supplies.

– VariPower® power supply, 20 to 253 V AC/DC
– 2-channel operation with contactless sensors
– 4 relay contacts for alarm, limit values, maintenance request
– PID controller

Warranty
3 years!

Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender). Sensors and accessories: 1 year

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Product Line

Order No.

		Stratos® *Pro* A4 /	□	□	□	□	□	–	□	/	□
Type	4-wire/20 … 254 V AC/DC		**A**	**4**							
Communication	without (HART retrofittable via TAN)				**0**						
Version number	version					**1**					
Approvals	general safety						**N**				
	ATEX/IECEx/FM/CSA Zone 2/Cl 1 Div 2, GOST, NEPSI						**B**				
Process parameters	dual pH measurement (2 x Memosens® pH)								**MSPH**		**MSPH**
	pH value/oxygen measurement (Memosens® pH/oxy)								**MSPH**		**MSOXY**
	dual conductivity, analog								**CC**		**0**

Stratos® *Pro* 4-Wire Devices

Accessories (see page 500)	Order No.
Pipe-mount kit	**ZU 0274**
Panel-mount kit	**ZU 0738**
Protective hood	**ZU 0737**

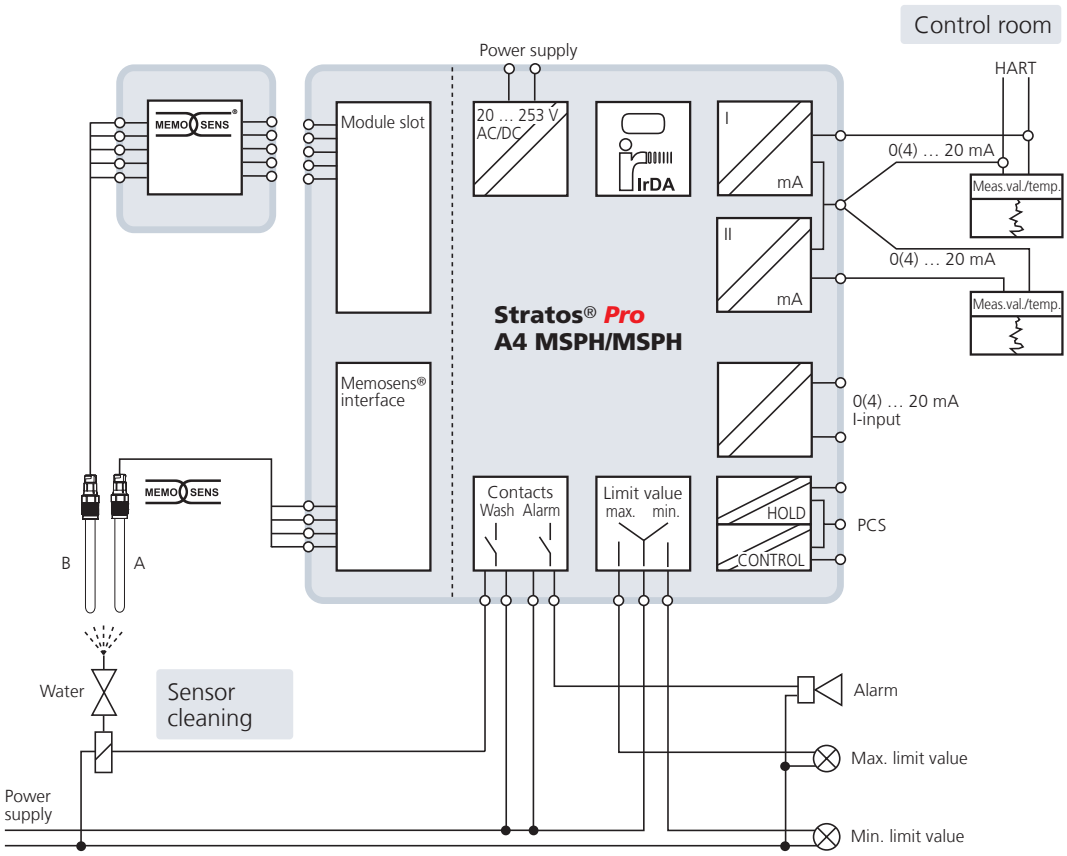
TAN Options	Order No.
HART	**SW-A001**
Logbook	**SW-A002**
Extended logbook (Audit Trail)	**SW-A003**
Trace-oxygen measurement	**SW-A004**
Current input (2 digital inputs as standard)	**SW-A005**
ISM digital (for pH and oxygen measuring channels)	**SW-A006**

Test Sockets, Connector Plugs, and Special Cables		Order No.
HART test socket	integrated in cable gland	**ZU 0287**
		
VP8 connector plug		**ZU 0721**
		
M12 device socket		**ZU 0822**
		
VP8-ST cable (both ends with VP socket)	length: 3 m length: 5 m length: 10 m	**ZU 0710** **ZU 0711** **ZU 0712**
		

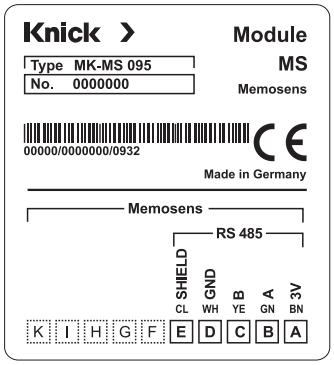
Stratos® *Pro* A4 MSPH/MSPH

Connection

Connection of Memosens® interface of 4-wire device with 2 Memosens® sensors
Model used: Stratos® *Pro* A401N–MSPH/MSPH



Terminal Assignments of Stratos® *Pro* MSPH Module



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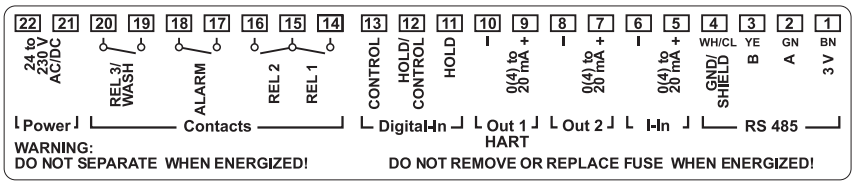
Terminal Assignments of Stratos® *Pro* 4-Wire Devices



Specifications

Inputs

Memosens® A + B	digital input for Memosens® pH sensors (glass or ISFET) or Memosens® ORP sensors		
Display range	pH value: mV: temperature:	–2.00 … 16.00 –1999 … 1999 mV –20.0 … +150.0 °C (–4 … +302 °F)	
Current input (TAN)	analog, 0/4 … 20 mA, e.g. for flow monitoring		
HOLD input	digital	0 … 2 V (AC/DC) 10 … 30 V (AC/DC)	HOLD inactive HOLD active
CONTROL input	digital	0 … 2 V (AC/DC) 10 … 30 V (AC/DC)	flow too low flow okay

Outputs

Output 1, Output 2	0/4 … 20 mA, max. 10 V, 22 mA for error message
Process variable*)	pH or mV value or temperature or differential value (CALC)
Characteristic	linear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s
Contacts	alarm, wash, limit values 1/2
Contact ratings	AC < 250 V/< 3 A/< 750 VA DC < 30 V/< 3 A/< 90 W
PID process controller	output via limit contacts 1/2
Controller type*)	pulse length controller or pulse frequency controller

Sensor standardization

pH*)	– adoption of calibration data from digital sensors – 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 zero offset	±750 mV
Adaptive calibration timer	interval 0000 … 9999 h

Stratos® *Pro* A4 MSPH/MSPH

Specifications – *continued*

Temperature compensation	
Process medium	linear –19.99 … 19.99 %/K (reference temperature 25 °C)
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	
Diagnostics 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, manual controller
Sensor monitor	display of direct sensor signals (mV/temperature/resistance, …)
Relay test	manual control of the 4 relay contacts
IrDA interface	infrared service interface for firmware updates
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	24 (–15 %) … 230 (+10 %) V AC, 45 … 65 Hz, < 12 VA 20 … 80 V DC, < 4 W overvoltage category II, protection class II
Real-time clock	different time and date formats selectable power reserve > 5 days
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3
Electrical safety	protection against electric shock by protective separation of all low-voltage circuits against mains according to EN 61010-1 CB report

Specifications – *continued*

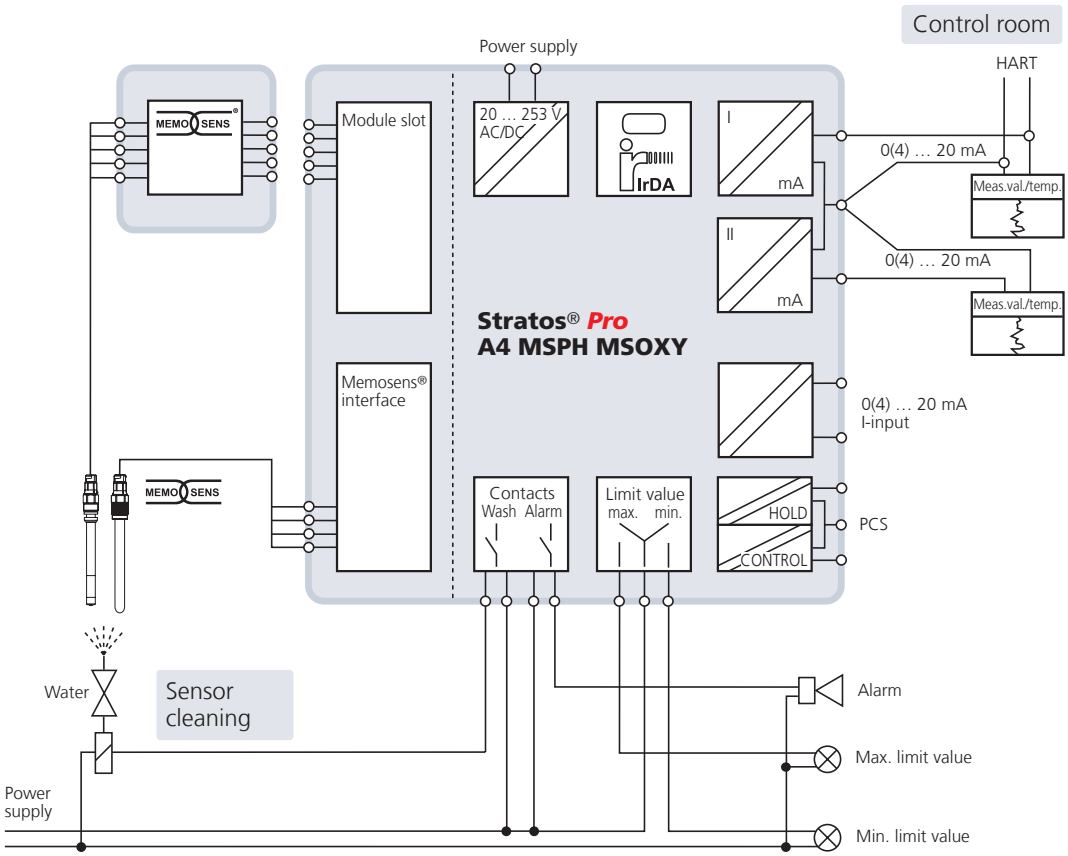
Nominal operating conditions	
Ambient temperature	–20 … +55 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	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 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^2

*) user-defined

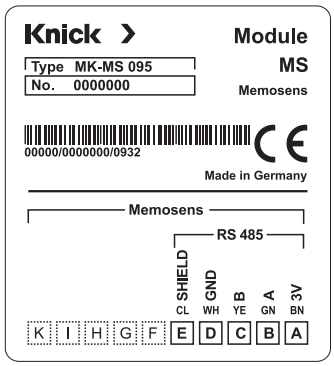
Stratos® *Pro* A4 MSPH/MSOXY

Connection

Connection of Memosens® interface of 4-wire device with a Memosens® sensor
Model used: Stratos® *Pro* A401N–MSPH/MSOXY



Terminal Assignments of Stratos® *Pro* MSOXY Module



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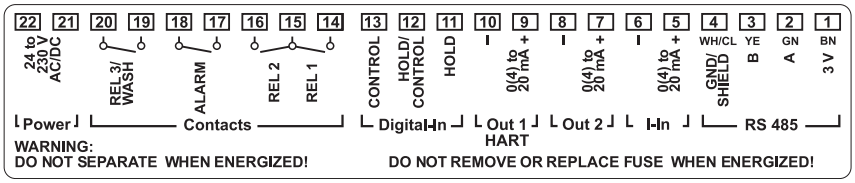
Terminal Assignments of Stratos® *Pro* 4-Wire Devices



Specifications

Inputs

RS 485 A	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 … +150.0 °C (–4 … +302 °F)
RS 485 B	digital input for Memosens® oxygen sensors
Operating modes	GAS measurement in gases DO measurement in liquids
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" (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*)	0.000 … 9.999 bars/999.9 kPa/145.0 PSI manually or through current input 0(4) … 20 mA
Salinity correction*)	0.0 … 45.0 g/kg
Current input (TAN)	analog, 0/4 … 20 mA, e.g. for external pressure compensation
HOLD input, digital	0 … 2 V (AC/DC) HOLD inactive 10 … 30 V (AC/DC) HOLD active
CONTROL input, digital	0 … 2 V (AC/DC) flow too low 10 … 30 V (AC/DC) flow okay
	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

Stratos® *Pro* A4 MSPH/MSOXY

Specifications – *continued*

Outputs

Output 1, Output 2	0/4 … 20 mA, max. 10 V, 22 mA for error message
Process variable*)	pH or mV value or O_2 saturation/O_2 concentration or temperature
Characteristic	linear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s
Contacts	alarm, wash, limit values 1/2
Contact ratings	AC < 250 V/< 3 A/< 750 VA DC < 30 V/< 3 A/< 90 W
PID process controller	output via limit contacts 1/2
Controller type*)	pulse length controller or pulse frequency controller

Sensor standardization

pH*)	– adoption of calibration data from digital sensors – 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 zero offset	±750 mV
Adaptive calibration timer	interval 0000 … 9999 h
Oxy*)	– 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 timer*)	0000 … 9999 h
Pressure correction*)	manually 0.000 … 9.999 bars/999.9 kPa/145.0 PSI

Temperature compensation

Process medium pH	linear –19.99 … 19.99 %/K (reference temperature 25 °C)

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 – *continued*

Diagnostics/Service	
Diagnostics functions	calibration data, device self-test, display test, wear
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, manual controller
Sensor monitor	display of direct sensor signals (mV/temperature/resistance, …)
Relay test	manual control of the 4 relay contacts
IrDA interface	infrared service interface for firmware updates
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	24 (–15 %) … 230 (+10 %) V AC, 45 … 65 Hz, < 12 VA 20.5 … 80 V DC, < 4 W overvoltage category II, protection class II
Real-time clock	different time and date formats selectable power reserve > 5 days
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3
Electrical safety	protection against electric shock by protective separation of all low-voltage circuits against mains according to EN 61010-1 CB report

Stratos® *Pro* A4 MSPH/MSOXY

Specifications – *continued*

Nominal operating conditions

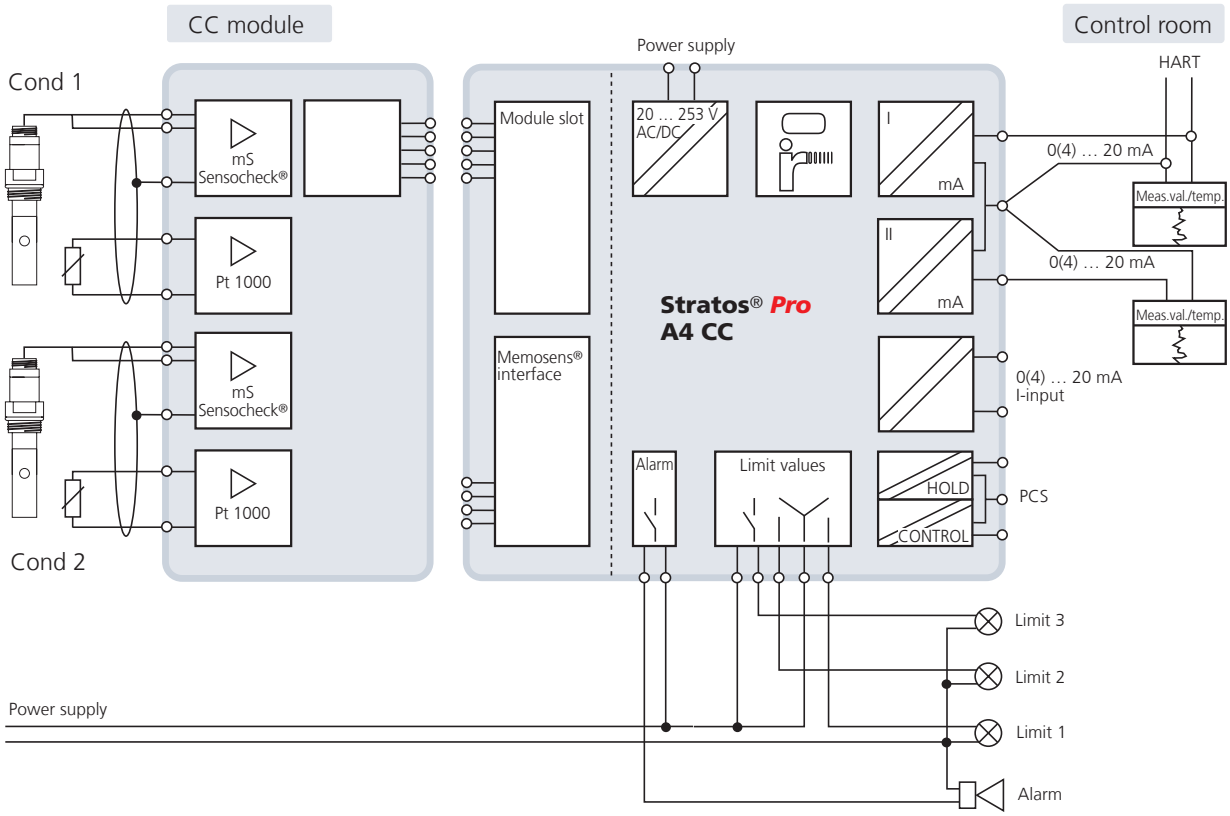
Ambient temperature	–20 … +55 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, ☐ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

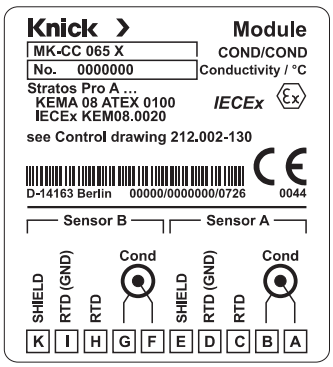
Stratos® *Pro* A4 CC

Connection

Connection of CC module with two 2-electrode sensors
Model used: Stratos® *Pro* A401N–CC/0



Terminal Assignments of Stratos® *Pro* CC Module



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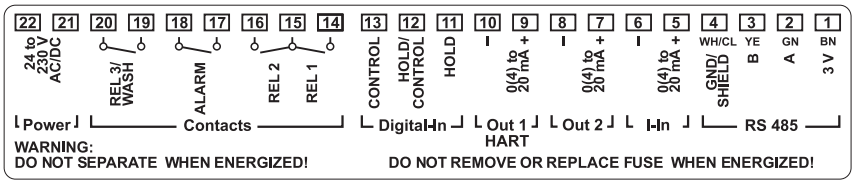
Terminal Assignments of Stratos® *Pro* 4-Wire Devices



Specifications

Inputs

Conductivity	two inputs for 2-electrode sensors			
Effective ranges	0 … 30000 µS · c			
Measuring ranges*)	conductivity	0.000 … 9999 µS/cm		
	resistivity	00.00 … 99.99 Mohms · cm		
Temperature compensation*) (reference temperature 25 °C)	linear 00.00 … 19.99 %/K (user-defined reference temperature) natural waters to EN 27888 ultrapure water with traces of NaCl, HCl, or NH_3 and NaOH			
Calculations (CALC)	[C1]	Difference	A – B	0.000 … 9999 µS/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 VBG 450, NaOH alkalization	[pH]
	[C7]	pH value	other alkalizing agents, specifiable factors	[pH]
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/50 ohms, 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, alarm contact or limit contacts		

Outputs

Output 1, Output 2	0/4 … 20 mA, max. 10 V, 22 mA for error message
Process variable*)	conductivity, resistivity, concentration, temperature or CALC
Characteristic	linear and bilinear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

Stratos® *Pro* A4 CC

Specifications – *continued*

Outputs – *continued*

Contacts	alarm, limit values 1/2/3
Contact ratings	AC < 250 V/< 3 A/< 750 VA DC < 30 V/< 3 A/< 90 W

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^{-1}

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
Conditions	output current ≥ 3.8 mA load resistance ≥ 250 ohms

Diagnostics/Service

Diagnostics 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®
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 (00.00 … 22.00 mA)
Sensor monitor	direct display of measured values from sensor for validation: resistance/temperature
Relay test	manual control of the 4 relay contacts
IrDA interface	infrared service interface for firmware updates

Specifications – *continued*

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	24 (–15 %) … 230 (+10 %) V AC, 45 … 65 Hz, < 12 VA 20.5 … 80 V DC, < 4 W overvoltage category II, protection class II
Real-time clock	different time and date formats selectable power reserve > 5 days
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3 (particular requirements for transmitters)
Electrical safety	protection against electric shock by protective separation of all low-voltage circuits against mains according to EN 61010-1 CB report

Nominal operating conditions

Ambient temperature	–20 … +55 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
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 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^2

*) user-defined

Stratos® *Pro* 2-Wire Devices

Unique features

A number of outstanding technological properties make the Stratos® *Pro* series the new benchmark for 2-wire analyzers.

Colored screen backlighting has been implemented for the first time in this device class, with the lowest possible power consumption.

In contrast to all 2-wire devices previously available on the world market, 2 digital inputs are available as well as an analog input plus a second output for another measured value.

– the new benchmark for 2-wire devices
– full functionality with 2-wire supply
– permissible environment –20 °C to +65 °C, also for hazardous-area applications
– operation of contactless sensors

Warranty
3 years!

Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender). Sensors and accessories: 1 year

Knick

Product Line

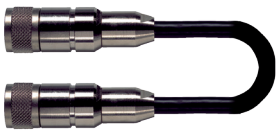
Order No.

		Stratos® *Pro* A2 /	☐	☐	☐	☐	☐	–	☐	–	☐
Type	2-wire/4 … 20 mA		**A**	**2**							
Communication	without (HART retrofittable via TAN)				**0**						
Version number	version					**1**					
Approvals	General Safety						**N**				
	ATEX/IECEx/FM/CSA Zone 2/Cl 1 Div 2, GOST, NEPSI, KOSHA						**B**				
	ATEX/IECEx/FM/CSA Zone 1/Cl 1 Div 1, GOST, NEPSI, KOSHA						**X**				
	other approvals						**Z**				
Process parameters	Memosens® pH/ORP								**MSPH**		
	Memosens® conductivity								**MSCOND**		
	Memosens® inductive conductivity								**MSCONDI**		
	Memosens® oxygen								**MSOXY**		
	dual conductivity, analog								**CC**		
	pH-/ORP value, analog								**PH**		
	conductivity, analog								**COND**		
	inductive conductivity, analog								**CONDI**		
	oxygen, analog								**OXY**		
Options	without 2nd current output										**0**
	with 2nd current output										**1**

Stratos® *Pro* 2-Wire Devices

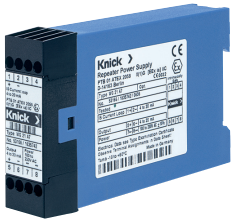
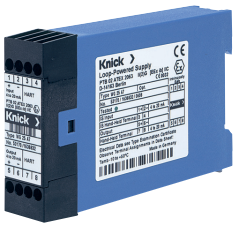
Accessories (see page 500)	Order No.
Pipe-mount kit	**ZU 0274**
Panel-mount kit	**ZU 0738**
Protective hood	**ZU 0737**

TAN Options	Order No.
HART	**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**

Test Sockets, Connector Plugs, and Special Cables		Order No.
HART test socket	integrated in cable gland	**ZU 0287**
		
VP8 connector plug		**ZU 0721**
		
M12 device socket		**ZU 0822**
		
VP8-ST cable (both ends with VP socket)	length: 3 m length: 5 m length: 10 m	**ZU 0710** **ZU 0711** **ZU 0712**
		

Knick

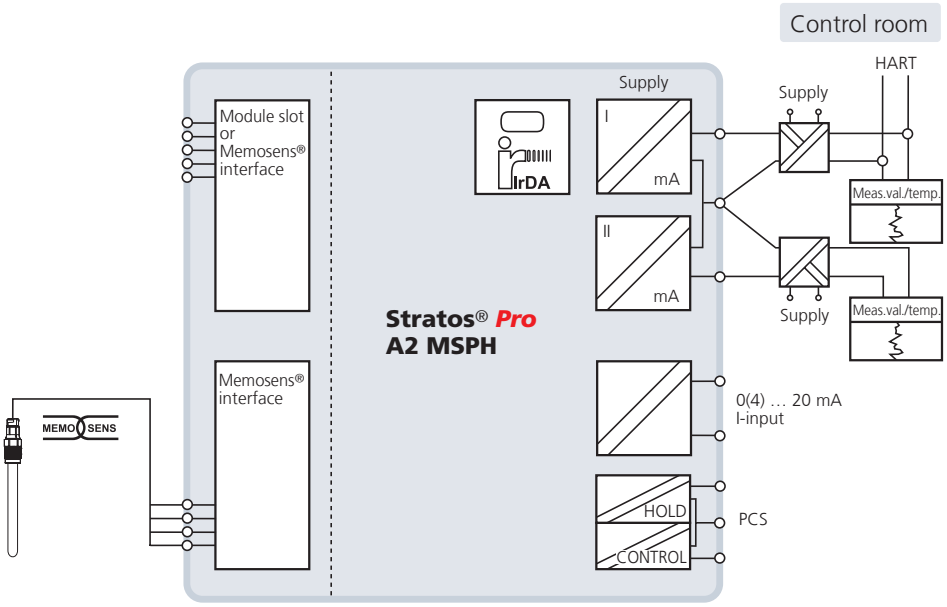
Repeater Power Supply

		Order No.
	Power supply/isolator for 24 V AC/DC	**WG 20 A2**
	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, 24 V DC, HART, output: 0/4 … 20 mA, 0 … 10 V	**A 20100 F0**

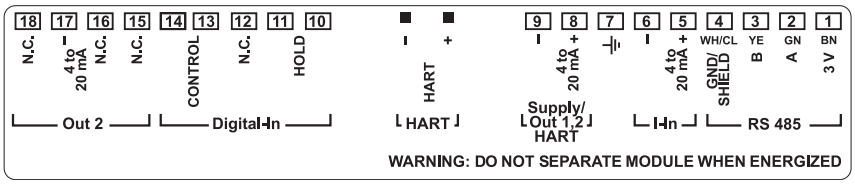
Stratos® *Pro* A2 MSPH

Connection

Connection of Memosens® interface of 2-wire device with a Memosens® sensor
Model used: Stratos® *Pro* A201N–MSPH–1



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

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*)	pH or mV value or temperature
Characteristic	linear or bilinear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

Sensor standardization

Operating modes*)	– adoption of calibration data from digital sensors – 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
ISFET	operating point ±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

Stratos® *Pro* A2 MSPH

Specifications – *continued*

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

Diagnostics 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, …)
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx		Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
Explosion protection (A2xxB)	IECEx		Ex nL IIC T4 / Ex tD A22 IP5X T 85 °C
	ATEX		II 3 G Ex nL IIC T4 / II 3 D Ex tD A22 IP5X T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85 °C, Type 4X
	NEPSI		Ex nL IIC T4 / DIP A22 TA,T6

Specifications – *continued*

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

Nominal operating conditions

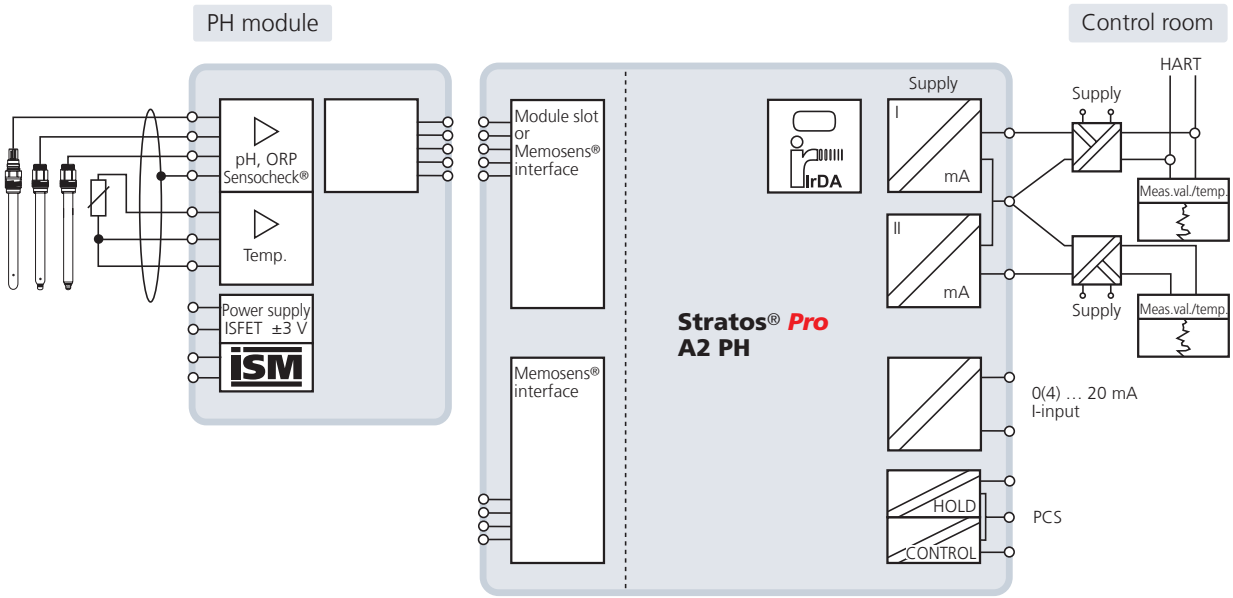
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

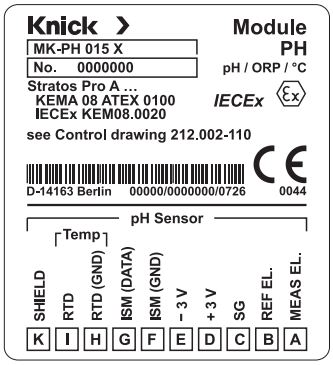
Stratos® *Pro* A2 PH

Connection

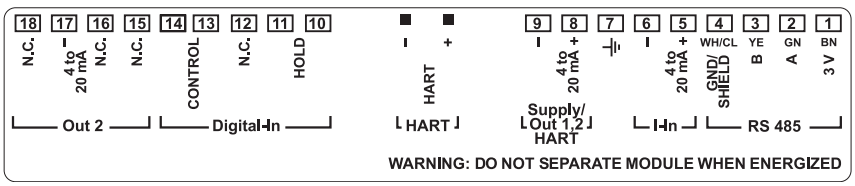
Connection of the PH with any desired analog sensor or with ISM or ISFET sensors
Model used: Stratos® *Pro* A201N–PH–1



Terminal Assignments of Stratos® *Pro* PH Module



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

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 kohms		
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*)	PT_1 filter, filter time constant: 0 … 120 s
Power output	for operating an ISFET adapter ±3 V/0.5 mA

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 ±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

Stratos® *Pro* A2 PH

Specifications – *continued*

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

Diagnostics 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 …)
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx		Ex ib[ia] IIC T / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
	GOST		1Exib[ia]IICT4 / 0ExiaIICT4 / DIP A20 TA 85 °C / DIP A21 TA 85 °C
	KOSHA		Ex ib[ia] IIC T4
Explosion protection (A2xxB)	IECEx		Ex nA II T4 / Ex tD A22 IP5X T 85 °C
	ATEX		II 3 G Ex nA II T4 / II 3 D Ex tD A22 IP5X T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85 °C, Type 4X
	NEPSI		Ex nA II T4 / DIP A22 TA,T6
	GOST		2ExnAIIT4 / DIP A22 TA 85 °C

Specifications – *continued*

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

Nominal operating conditions

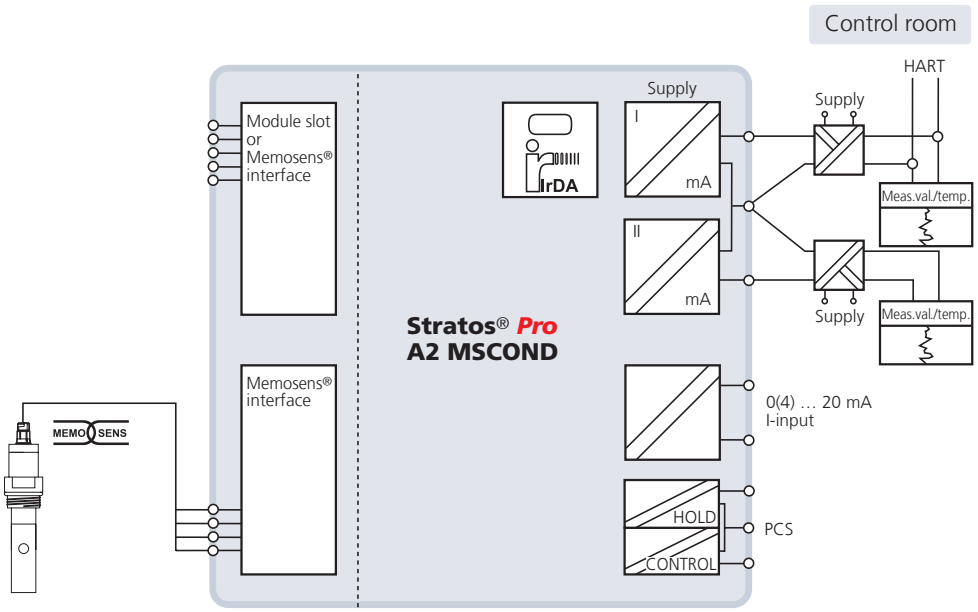
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

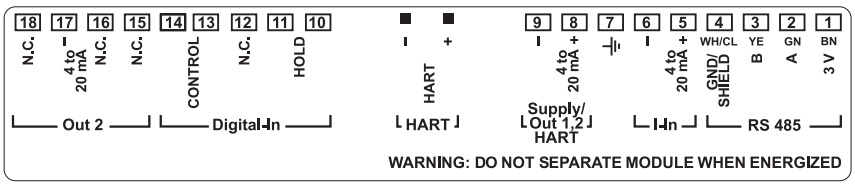
Stratos® *Pro* A2 MSCOND

Connection

Connection of Memosens® interface of 2-wire device with a Memosens® sensor
Model used: Stratos® *Pro* A201N–MSCOND–1



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

Specifications

Inputs

RS 485	input for Memosens® conductivity sensors		
Measuring ranges*)	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*) (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_3		
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_2SO_4	0.00 … 9.99 % by wt	(–17 … +110 °C)
	HNO_3	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)	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 at output 1, supply voltage 14 … 30 V
Process variable*)	conductivity, resistivity, concentration, salinity, or temperature
Characteristic	linear or logarithmic
Output filter*)	PT_1 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

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

Stratos® *Pro* A2 MSCOND

Specifications – *continued*

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

Diagnostics 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
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx		Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
Explosion protection (A2xxB)	IECEx		Ex nL IIC T4 / Ex tD A22 IP5X T 85 °C
	ATEX		II 3 G Ex nL IIC T4 / II 3 D Ex tD A22 IP5X T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85 °C, Type 4X
	NEPSI		Ex nL IIC T4 / DIP A22 TA,T6

Specifications – *continued*

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

Nominal operating conditions

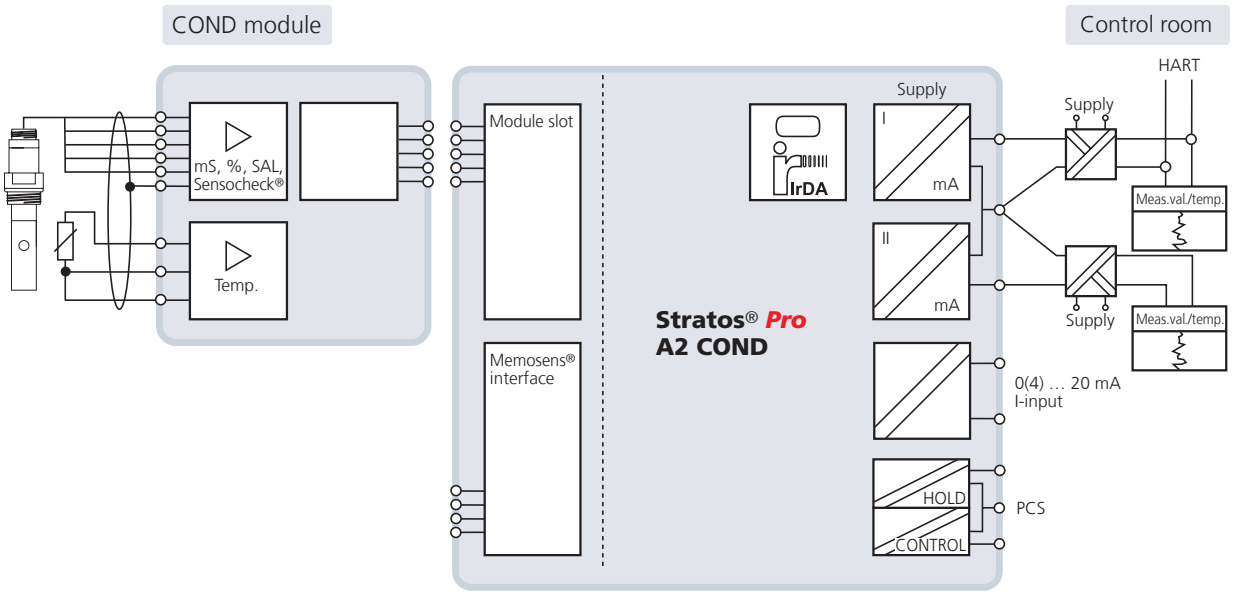
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

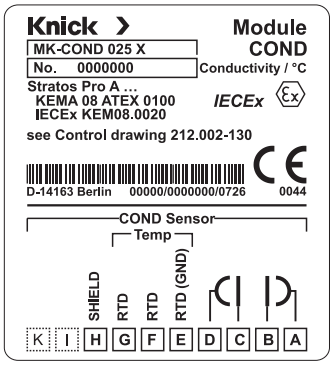
Stratos® *Pro* A2 COND

Connection

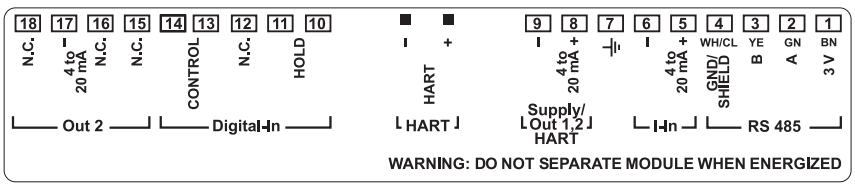
Connection of COND module with 2- or 4-electrode sensors
Model used: Stratos® *Pro* A401N–COND/0



Terminal Assignments of Stratos® *Pro* COND Module



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

Specifications

Inputs

Conductivity	input for 2-electrode and 4-electrode sensors		
Effective ranges	2-electrode sensors	0.2 µS · c … 200 mS · c	
	4-electrode sensors	0.2 µS · c … 1000 mS · c	
Measuring ranges*)	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 compensation*) (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_3		
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_2SO_4	0.00 … 9.99 % by wt	(–17 … +110 °C)
	HNO_3	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*)	conductivity, resistivity, concentration, salinity, or temperature
Characteristic	linear, bilinear, or logarithmic
Output filter*)	PT_1 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)

Stratos® *Pro* A2 COND

Specifications – *continued*

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

Diagnostics 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
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx	Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX	II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
		II 1 D Ex iaD 20 IP6x T85°C / II 2 D Ex iaD 21 IP6x T85°C
	FM	C/US NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C I/2/Ex nA IIC T4 / 22/Ex tD T85°C; Type 4X
		US IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US I/2/AEx nA IIC T4 / 22/AEx tD T85°C, Type 4X
	CSA	IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI	Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
	GOST	1Exib[ia]IICT4 / 0ExiaIICT4 / DIP A20 TA 85°C / DIP A21 TA 85°C

Specifications – *continued*

Approvals – *continued*

Explosion protection (A2xxB)	IECEx		Ex nA II T4 / Ex tD A22 IP5X T 85 °C
	ATEX		II 3 G Ex nA II T4 / II 3 D Ex tD A22 IP5X T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85°C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85°C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85°C, Type 4X
	NEPSI		Ex nA II T4 / DIP A22 TA,T6
	GOST		2ExnAIIT4 / DIP A22 TA 85°C

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

Nominal operating conditions

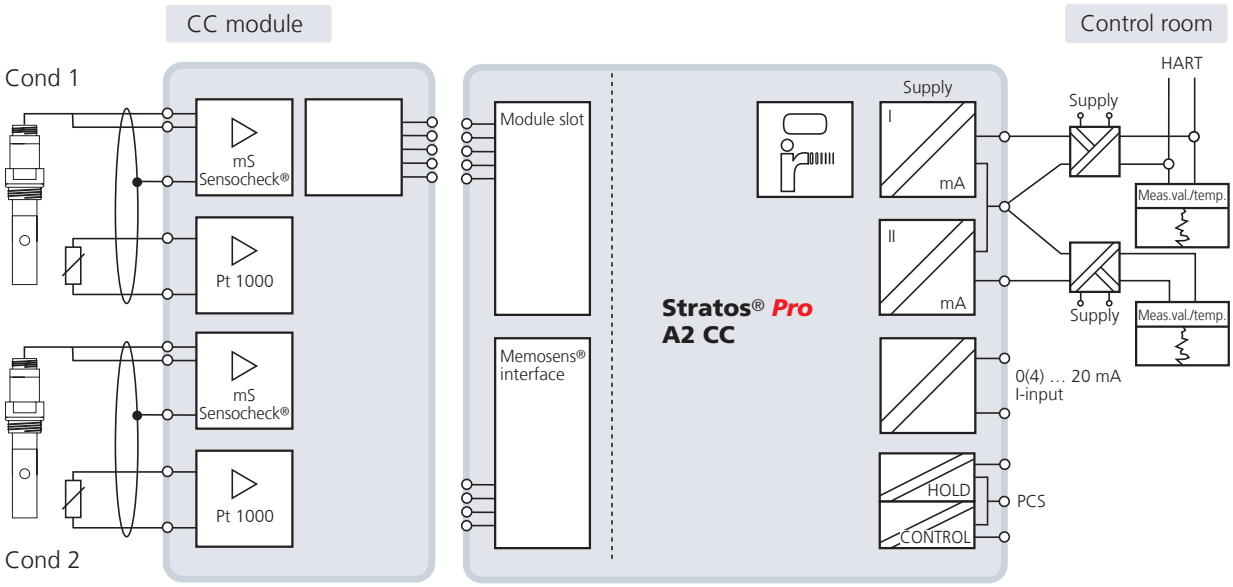
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 67/NEMA 4X outdoor
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm²

*) user-defined

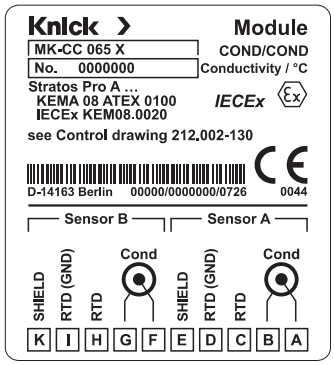
Stratos® *Pro* A2 CC

Connection

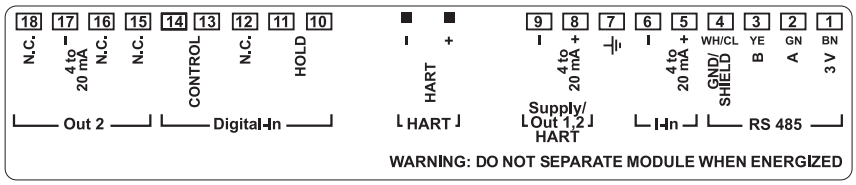
Connection of CC module with two 2-electrode sensors
Model used: Stratos® *Pro* A201N–CC–1



Terminal Assignments of Stratos® *Pro* CC Module



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

Specifications

Inputs

Conductivity	2 inputs for 2-electrode sensors			
Effective ranges	0 … 30000 µS · c			
Measuring ranges*)	conductivity	0.000 µS/cm … 9999 µS/cm		
	resistivity	00.00 … 99.99 Mohms · cm		
Temperature compensation*) (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_3			
Calculations (CALC)	[C1]	Difference	A – B	0.000 … 9999 µS/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 VBG 450, NaOH alkalization	[pH]
	[C7]	pH value	other alkalizing agents, specifiable factors	[pH]
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*)	conductivity, resistivity, concentration, temperature, or CALC
Characteristic	linear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

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^{-1}

Stratos® *Pro* A2 CC

Specifications – *continued*

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	
Diagnostics 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
IrDA interface	infrared service interface for firmware updates
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
EMC	EN 61326-1 (general requirements) emitted interference: class B (residential area) immunity to interference: industry EN 61326-2-3

Specifications – *continued*

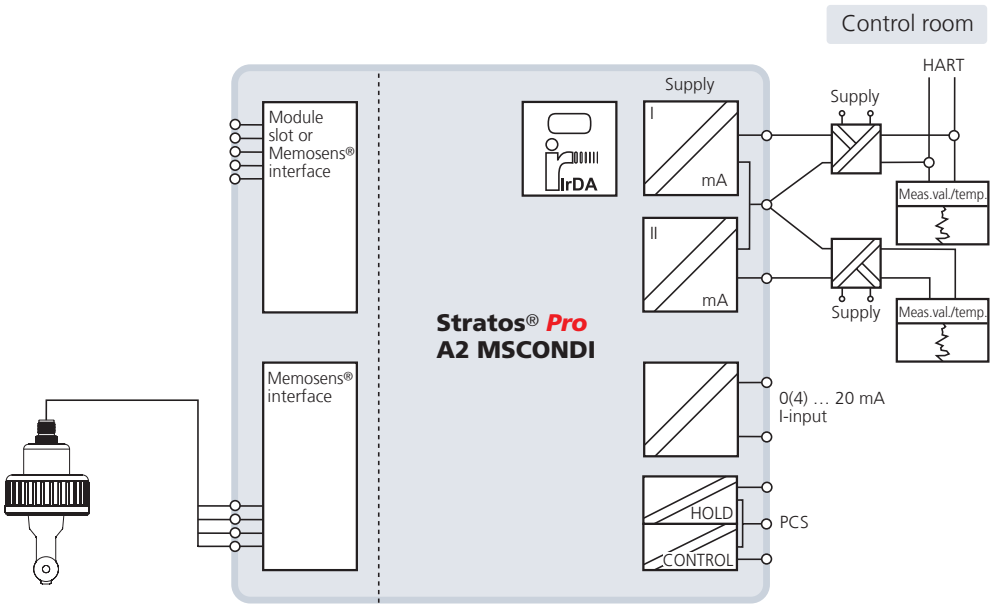
Nominal operating conditions	
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, ☐ 30 … 45 mm – panel mounting
Dimensions (mm)	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 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^2

*) user-defined

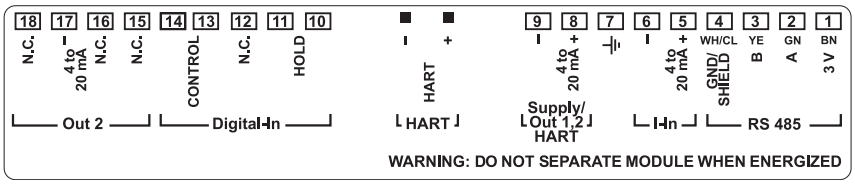
Stratos® *Pro* A2 MSCONDI

Connection

Connection of Memosens® interface of 2-wire device with a digital sensor
Model used: Stratos® *Pro* A201N–MSCONDI–1



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Knick

Specifications

Inputs

RS 485	input for digital electrodeless conductivity sensor SE 670 or contactless Memosens® conductivity sensors		
Display ranges*)	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*) (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_2SO_4	0–26 % by wt (–17 °C) … 0–37 % by wt (110 °C)	
	[05] HNO_3	0–30 % by wt (–20 °C) … 0–30 % by wt (50 °C)	
	[06] H_2SO_4	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_3	35–96 % by wt (–20 °C) … 35–96 % by wt (50 °C)	
	[09] H_2SO_4	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*)	conductivity, resistivity, concentration, salinity, or temperature
Characteristic	linear, bilinear, or logarithmic
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

Stratos® *Pro* A2 MSCONDI

Specifications – *continued*

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

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

Diagnostics 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
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx	Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX	II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
		II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI	Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6

Specifications – *continued*

Approvals – *continued*

Explosion protection (A2xxB)	IECEx		Ex nL IIC T4 / Ex tD A22 IP5X T 85 °C
	ATEX		II 3 G Ex nL IIC T4 / II 3 D Ex tD A22 IP5X T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85 °C, Type 4X
	NEPSI		Ex nL IIC T4 / DIP A22 TA,T6

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

Nominal operating conditions

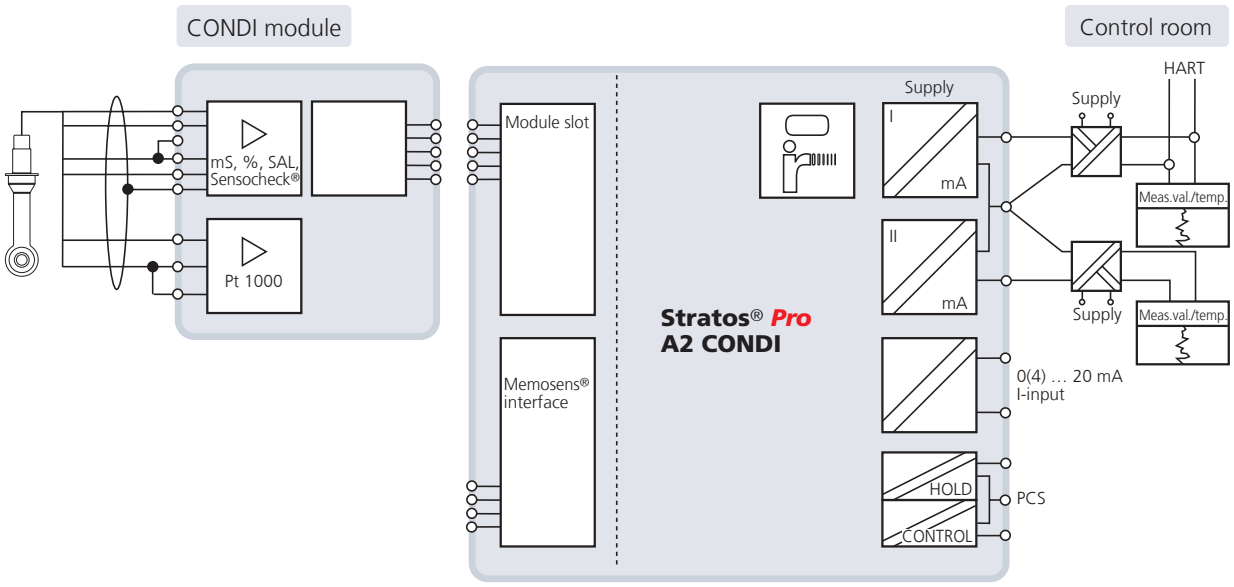
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

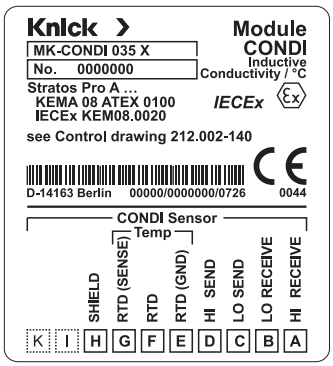
Stratos® *Pro* A2 CONDI

Connection

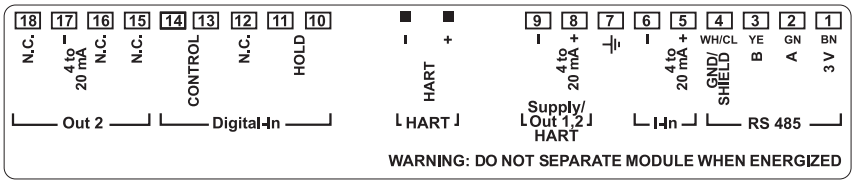
Connection of CONDI module with electrodeless sensors
Model used: Stratos® *Pro* A201N–CONDI–1



Terminal Assignments of Stratos® *Pro* CONDI Module



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Specifications

Inputs

Conductivity	input for electrodeless 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_2SO_4	0–26 % by wt (–17 °C) … 0–37 % by wt (110 °C)	
	HNO_3	0–30 % by wt (–20 °C) … 0–30 % by wt (50 °C)	
	H_2SO_4	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_3	35–96 % by wt (–20 °C) … 35–96 % by wt (50 °C)	
	H_2SO_4	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*)	PT_1 filter, filter time constant: 0 … 120 s

Stratos® *Pro* A2 CONDI

Specifications – *continued*

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^{-1}
Permissible transfer ratio	1.00 … 199.99
Permissible zero offset	±0.5 mS

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

Diagnostics 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)
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx	Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX	II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
		II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C I/2/Ex nA IIC T4 / 22/Ex tD T85°C; Type 4X
		US IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI	Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
	GOST	1Exib[ia]IICT4 / 0ExiaIICT4 / DIP A20 TA 85 °C / DIP A21 TA 85 °C

Specifications – *continued*

Approvals – *continued*

Explosion protection (A2xxB)	IECEx	Ex nA II T4 / Ex tD A22 IP5X T 85 °C	
	ATEX	II 3 G Ex nA II T4 / II 3 D Ex tD A22 IP5X T85 °C	
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	C/US	Class I,II,III Div 2, GP A,B,C,D,E,F,G T4, Type 4X
		C	Ex nA II T4 / DIP/II,III/2/EFG, Type 4X
		US	AEx nA II T4 / II, III/22/AEx tD 22, T85 °C, Type 4X
	NEPSI	Ex nA II T4 / DIP A22 TA,T6	
	GOST	2ExnAIIT4 / DIP A22 TA 85 °C	

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

Nominal operating conditions

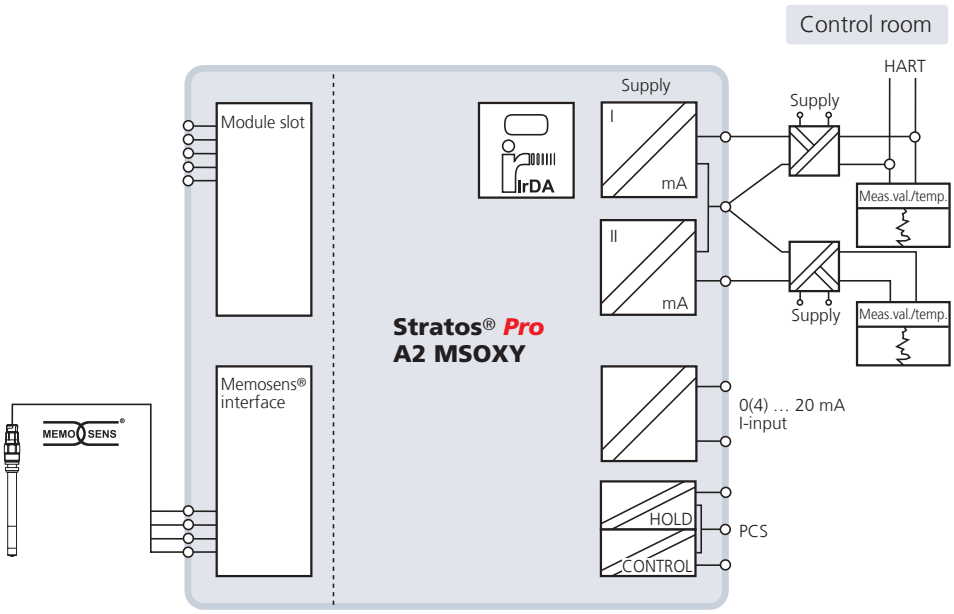
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 67/NEMA 4X outdoor
Weight	approx. 1.2 kg (1.6 kg incl. accessories and packaging)
Connections	terminals, conductor cross section max. 2.5 mm²

*) user-defined

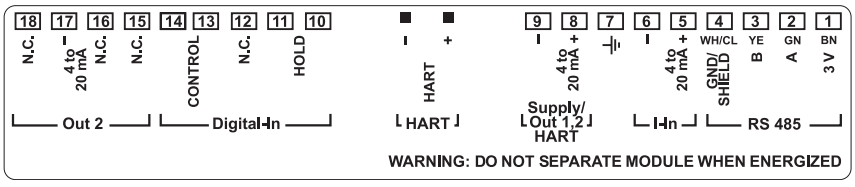
Stratos® *Pro* A2 MSOXY

Connection

Connection of Memosens® interface of 2-wire device with a Memosens® sensor
Model used: Stratos® *Pro* A201N–MSOXY–1



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



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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 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" (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*)	0.000 … 9.999 bars/999.9 kPa/145.0 PSI manually or through current input 0(4) … 20 mA		
Salinity correction*)	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)	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*)	O_2 saturation/O_2 concentration or temperature
Characteristic	linear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

Stratos® *Pro* A2 MSOXY

Specifications – *continued*

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 ±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 timer*)	0000 … 9999 h
Pressure correction*)	manually 0.000 … 9.999 bars/999.9 kPa/145.0 PSI

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

Diagnostics 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)
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx	Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX	II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
		II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA	IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
		Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI	Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6

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Specifications – *continued*

Approvals – *continued*

Explosion protection (A2xxB)	IECEx		Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6

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

Nominal operating conditions

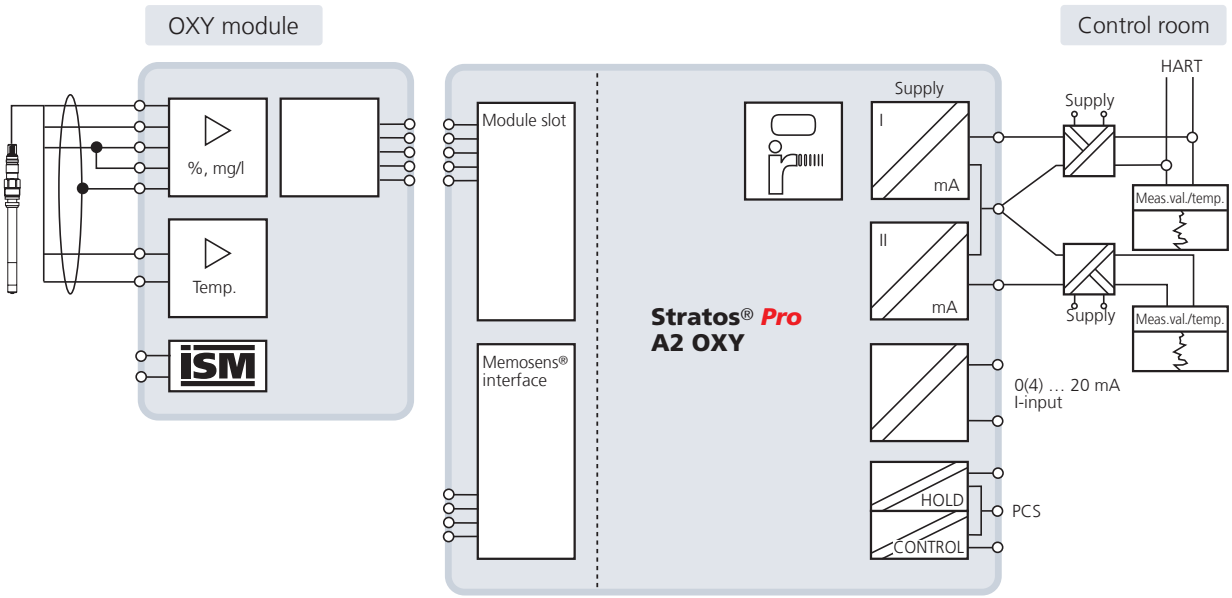
Ambient temperature	–20 … +65 °C
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
Enclosure	molded enclosure, PBT/PC, glass-reinforced
Assembly	– wall mounting – pipe mounting: Ø 40 … 60 mm, □ 30 … 45 mm – panel mounting
Dimensions (mm)	H x W x D: 148 x 148 x 117
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 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^2

*) user-defined

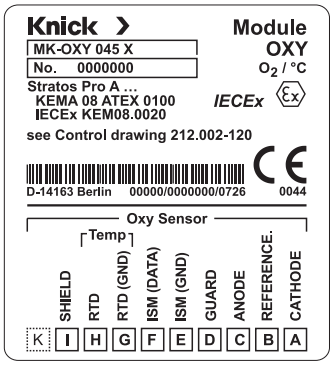
Stratos® *Pro* A2 OXY

Connection

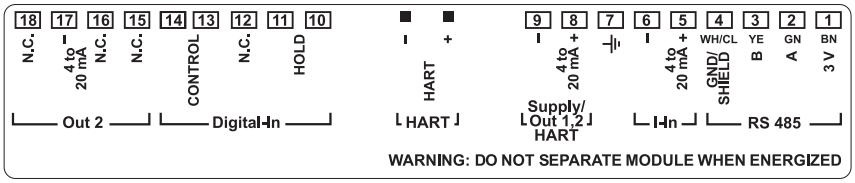
Connection of OXY module with SE 706 oxygen sensors, Mettler Toledo InPro 6800, Hamilton OXYFERM
Model used: Stratos® *Pro* A201N–OXY–1



Terminal Assignments of Stratos® *Pro* OXY Module



Terminal Assignments of Stratos® *Pro* 2-Wire Devices



Specifications

Inputs

O_2 standard	sensors SE 703, SE 706 and SE 707 (Mettler Toledo InPro 6800, Hamilton OXYFERM)		
O_2 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*)

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[1,2,3)]	< 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	0.000 … 9.999 bars/999.9 kPa/145.0 PSI manually or through current input 0(4) … 20 mA		
Salinity correction	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)	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	

Stratos® *Pro* A2 OXY

Specifications – *continued*

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*)	O_2 saturation/O_2 concentration or temperature
Characteristic	linear
Output filter*)	PT_1 filter, filter time constant: 0 … 120 s

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 ±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*)	0000 … 9999 h
Pressure correction*)	manually 0.000 … 9.999 bars/999.9 kPa/145.0 PSI

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

Diagnostics 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

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Specifications – *continued*

Diagnostics/Service – *continued*

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)
IrDA interface	infrared service interface for firmware updates

Approvals

Explosion protection (A2xxX)	IECEx		Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
	GOST		1Exib[ia]IICT4 / 0ExiaIICT4 / DIP A20 TA 85 °C / DIP A21 TA 85 °C
	KOSHA		Ex ib[ia] IIC T4
Explosion protection (A2xxB)	IECEx		Ex ib[ia] IIC T4 / zone 0 Ex ia IIC T4 / Ex iaD 20 IP 6X T 85 °C
	ATEX		II 2(1) G Ex ib[ia] IIC T4 / II 1 G Ex ia IIC T4
			II 1 D Ex iaD 20 IP6x T85 °C / II 2 D Ex iaD 21 IP6x T85 °C
	FM	C/US	NI/I/2/ABCD/T4 / S/II,III/2/FG/T4, Type 4X
		C	IS/I,II,III/1/ABCDEFG/T4 / I/0/Ex ia IIC T4, Entity, Type 4X
		C	I/2/Ex nA IIC T4 / 22/Ex tD T85 °C; Type 4X
		US	IS/I,II,III/1/ABCDEFG/T4 / I/0/AEx ia IIC T4, Entity, Type 4X
		US	I/2/AEx nA IIC T4 / 22/AEx tD T85 °C, Type 4X
	CSA		IS, Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			AIS Class I,II,III Div 1, GP A,B,C,D,E,F,G T4, Entity, Type 4X
			Class I, Zone 1, AEx ia IIC T4, Entity, Type 4X
	NEPSI		Ex ib[ia] IIC T4 / Ex ia IIC T4 / DIP A20 TA,T6
	GOST		1Exib[ia]IICT4 / 0ExiaIICT4 / DIP A20 TA 85 °C / DIP A21 TA 85 °C
	KOSHA		Ex ib[ia] IIC T4

Stratos® *Pro* A2 OXY

Specifications – *continued*

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
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
Transport/Storage temperature	–20 … +70 °C
Relative humidity	10 … 95 %, not condensing
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 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^2

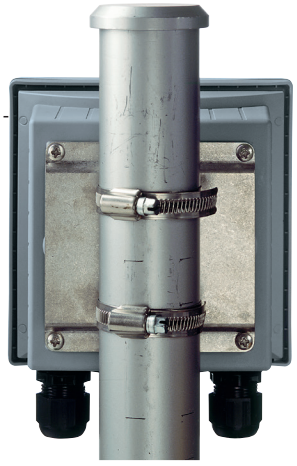
*) user-defined

Stratos® *Pro*

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

ZU 0274 pipe-mount kit
For assembly on vertical or horizontal pipes or posts.



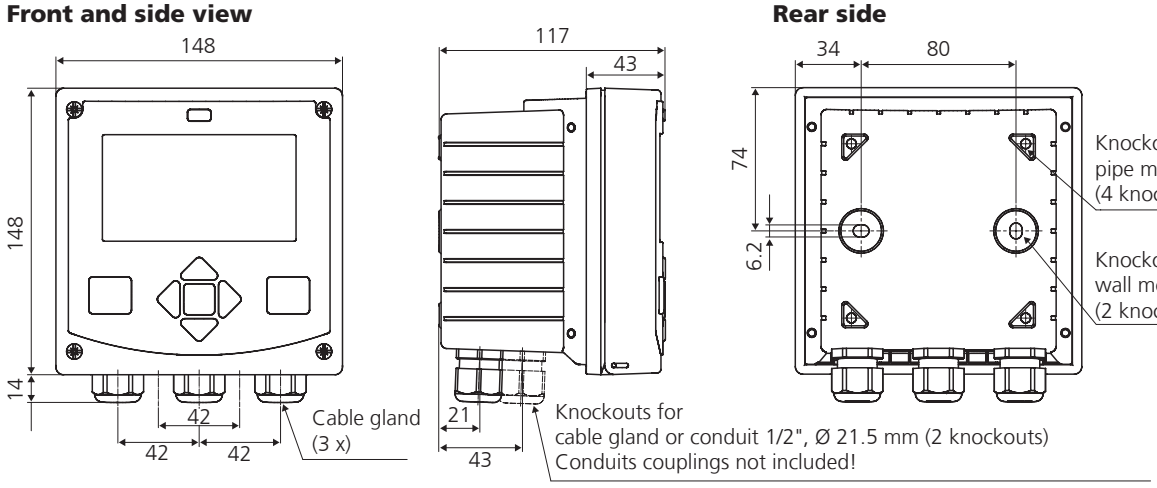
ZU 0737 protective hood
Additional protection from direct weather exposure and mechanical damage.

ZU 0738 panel-mount kit
For mounting in standardized panel cutout138 x 138 mm (DIN 43700), sealed against panel.

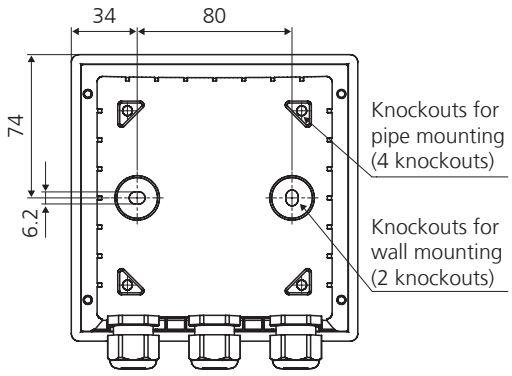
Knick

Dimension Drawings

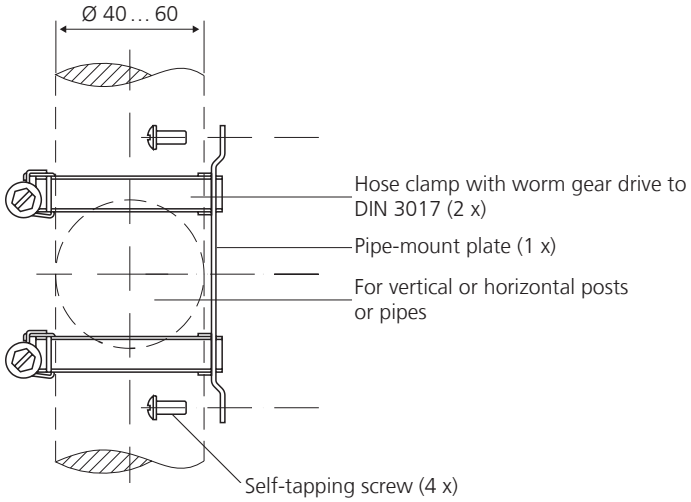
Front and side view



Rear side

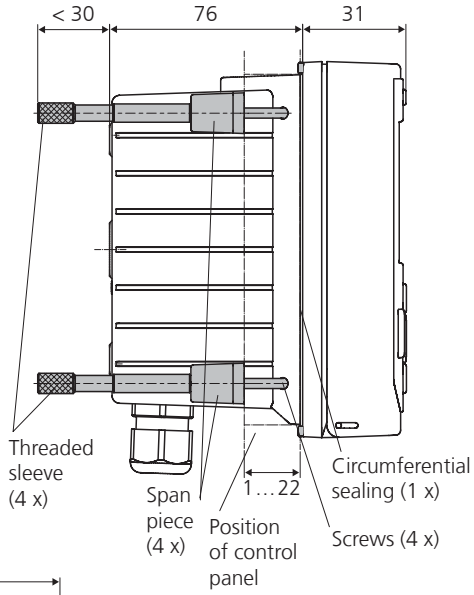


Pipe-mount kit ZU 0274

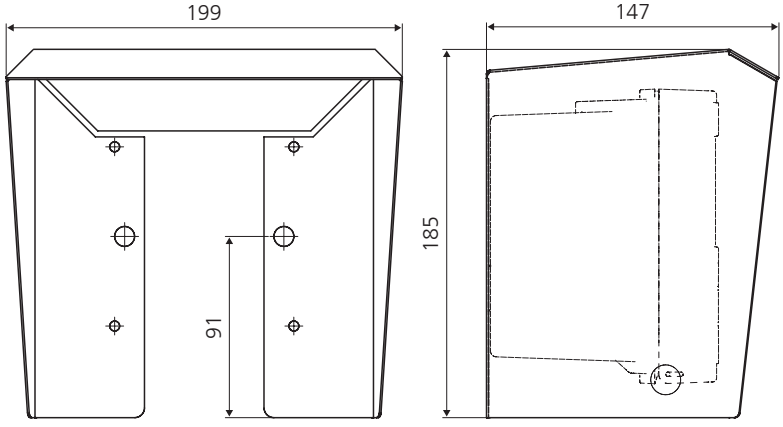


Panel-mount kit ZU 0738

Control panel cutout 138 x 138 mm (DIN 43700)



Protective hood ZU 0737



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