Stratos Multi

The latest generation of our proven Stratos process analyzers for Memosens, digital, and analog sensors. Multiparameter functionality provides flexibility. High-resolution display for an intuitive, self-explanatory user interface. Advanced Process Control with Ethernet interfaces.

Communicative

Support for all modern Ethernet fieldbuses means that comprehensive process and diagnostic data can be transmitted directly to the process control system. In addition, the established HART communication protocol can be used.

Intuitive

Large widescreen display for a quick overview of all relevant measurement data. Self-explanatory user interface with intuitive icons and multi-color display.

Multiparameter

Freely combinable process variables pH, ORP, conductivity, and oxygen, also in 2-channel mode.

Analog sensors can of course continue to be used for all parameters.

Intuitive operation with full-text menu navigation in several languages. Icons help you to quickly ascertain the device's condition. Guided automatic calibration provides greater reliability.

Worldwide Use

Menu navigation in several languages to assist the user in correct operation. Detailed information on all operating states simplifies usage.

Available languages: German, English, French, Italian, Spanish, Portuguese, and Chinese. Easy to expand.

Status Messages According to NE 107

Standardized icons reduce the risk of confusion. All status messages for required maintenance, failure, out of specification, and function check (HOLD) are output as specified in NE 107.

PROFI®NET

EtherNet/IP

HART COMMUNICATION PROTOCOL

3-Year Warranty!

Stratos Multi
The Multiparameter Transmitter

DIAG

Logbook

F240	11/30/19	08:33		Cal Mode is Active
F240	11/30/19	08:21		Cal Mode is Active
F032	11/30/19	08:13		Sensor Identified
F029	11/30/19	08:13		No Sensor Connected
F029	11/30/19	08:05		No Sensor Connected
F227	11/30/19	08:05		Power Supply ON

Back

Meas. Val. 1/2


```
10.00                                    120
pH                                       mV
3.00                                    -130
```

Cursor:
12.02.2020   17:37:10
— pH 7.01
— -104 mV

Back   Show 3/4

DIAG

Sensor Diagram pH/ORP

1 - Slope
2 - Zero Point
3 - Glass Impedance
4 - Reference Impedance
5 - Response Time
6 - Calibration Timer
7 - Sensor Wear
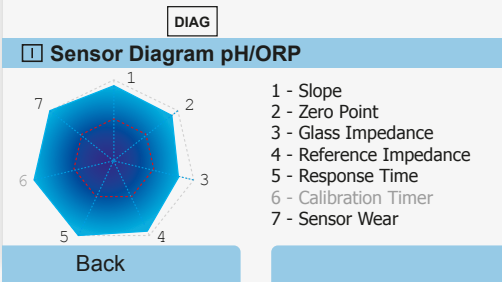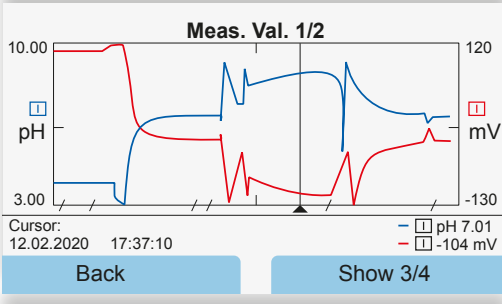
Back

DIAG

Sensor Wear Monitor

Operating Time	69 d
Wear	9.5 %
Remaining Lifetime	661 d
Temperature	22.5 °C

Back   Back to Meas.

DIAG

Calibration Record

pH 0.00   7.00   14.00

Date	02/04/20 10:30
Zero Point	pH 6.98
Slope	58.1 mV/pH
Isothermal Voltage	7 mV

Back

DIAG

Load Diagram


```
                                    >80
<2    2...4    4...8    8...11   <10    °C
pH                      >11
```

Back
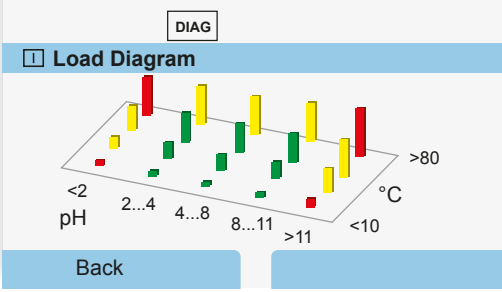
Seamless data recording

Messages and status can be recorded with the logbook, and are shown directly on the display.
The measurement recorder offers extensive data recording including graphic display.
All data can be saved on the Data Card.

Smart Diagnostics Management

At a glance, users receive information on the sensor's condition and on the remaining lifetime of the connected sensors.

Alongside CIP, SIP, autoclaving counters, and the display elements noted above, a "sensor diagram" facilitates sensor monitoring. All the relevant sensor data, such as zero point, slope, life, calibration timer, impedance, and response times are clearly presented.

Optimized Maintenance Intervals

Efficient adjustment of calibration intervals using the adaptive calibration timer. Another new feature, the load diagram, delivers information on which extreme values each sensor was exposed to.

Facts and Features

– 1- and 2-channel version with 4 current outputs and 3 freely configurable relay contacts

– Multiparameter for pH/ORP/conductivity/oxygen

– Self-explanatory, multi-lingual user interface

– TFT display with full-text menu

– 4-wire transmitter with broad-range power supply 24 ... 230 V AC/DC

– Predictive maintenance for optimal process management:
  • Sensor load diagram
  • CIP/SIP and autoclaving counter
  • Sensor diagram
  • Remaining sensor service life

– Measurement with Memosens, digital, and analog sensors

– Communication: Profinet, EtherNet/IP, HART

– Memory cards for data recording or firmware update

– Security package
  • Sensor assignment
  • User profiles
  • Access control

Process Analytics

RED: NE 107 "Failure" status message
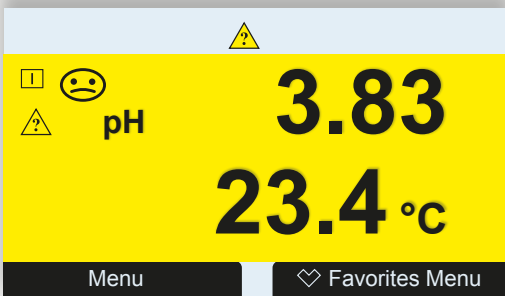
YELLOW: NE 107 "Out of Specification" status message
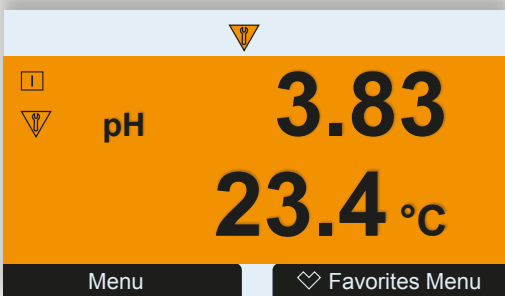
ORANGE: NE 107 "Function Check" status message

BLUE: NE 107 "Maintenance Required" status message

Reliable operation in all industrial environments with premium EPDM keypad. More dependable than a touchscreen. Rugged and UV-resistant housing with IP67. No protruding control elements.

Compact Housing and Rugged Keypad

Shock-hazard-protected electronics, even with open housing. The large terminal compartment simplifies commissioning of the device. Since all of the electronics are integrated into the front element, the rear unit can easily be removed for direct installation in the enclosure.

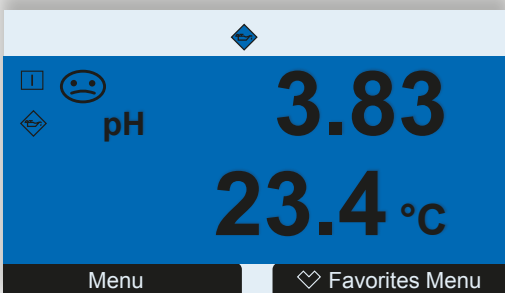The specially sealed, premium EPDM keys, a high UV resistance, and IP66/67, NEMA 4X protection make installation possible in complex ambient conditions, even outdoors. Scratch-resistant display cover made of hardened 3-mm safety glass.

Visual Display of Sensor and Device Conditions

The color-coded user interface allows you to quickly ascertain the sensor condition. The display fields have different background colors based on the NE 107 status messages, so users can identify sensor conditions and device modes at a glance. The sensor monitoring system indicates the sensor's maintenance needs using the established Sensoface and can also be configured with messages to that effect.

Memosens Sensors

Memosens sensors can easily be used with sensor cables up to 100 meters long. Since Memosens converts measured values and sensor data into digital signals in the sensor head, their transmission is not subject to the attenuation that typically affects analog signals over distance. Electromagnetic interference cannot distort the transmitted values, either.

Stratos Multi
Digital Intelligence.

Memory Cards with USB

Quick and easy data transfer between device and PC via standardized USB interface.

This makes it easy to distribute and manage measured value records, firmware updates, and device configurations.

The card slot inside the housing makes it possible to connect a range of memory cards

– Data Card:
Memory card for measured values and device configurations

– FW Update Card: Firmware update

– Firmware Repair Card:
Easy on-site update of the device firmware for troubleshooting in case of warranty claims.

USB memory card

Module
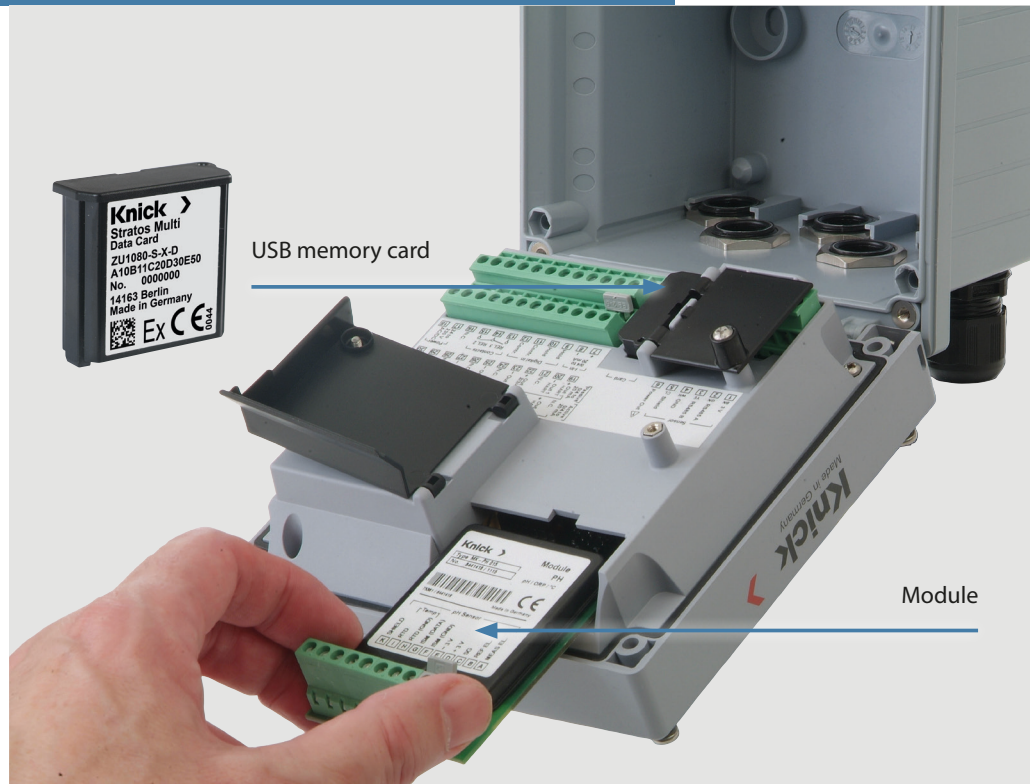
Advanced Process Control

Smooth integration in Ethernet fieldbus architecture. Seamless transmission of diagnostics, measurement data, and configurations.
– PROFINET
– EtherNet/IP
Proven HART communication also enables integration in process control systems for communication and remote maintenance.
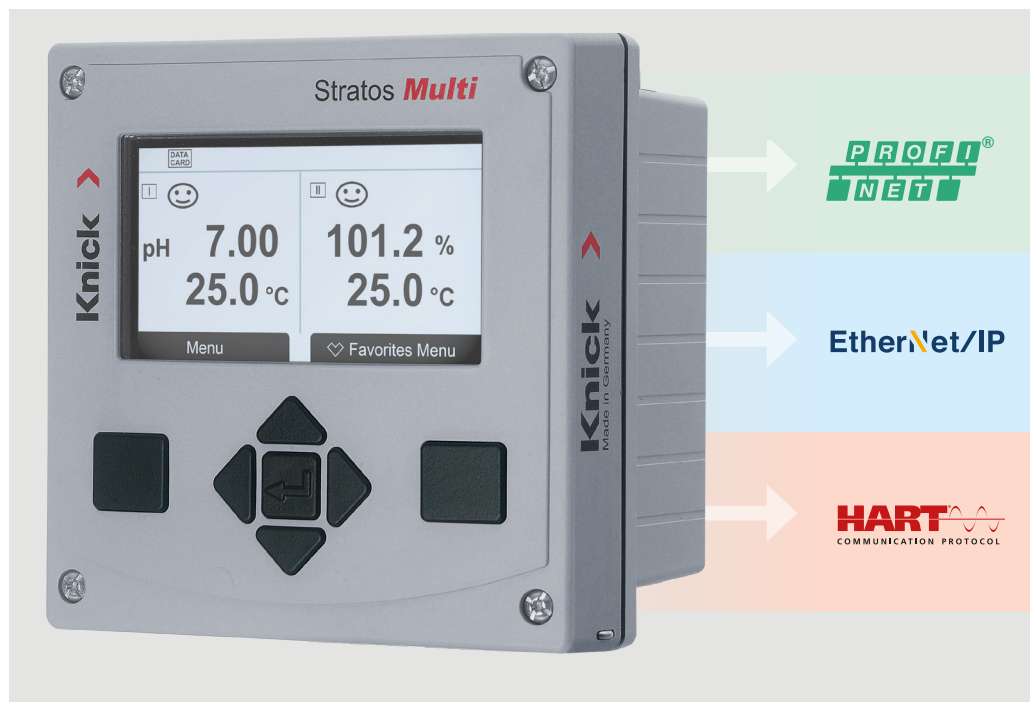
System Overview

Stratos Multi E401N

- MEMO SENS
- Power Out
- T
- OK1 / OK 2
- I-In 0/4 … 20 mA
- 0/4 … 20 mA HART
- 0/4 … 20 mA
- REL 1
- REL 2/3
- Power AC/DC
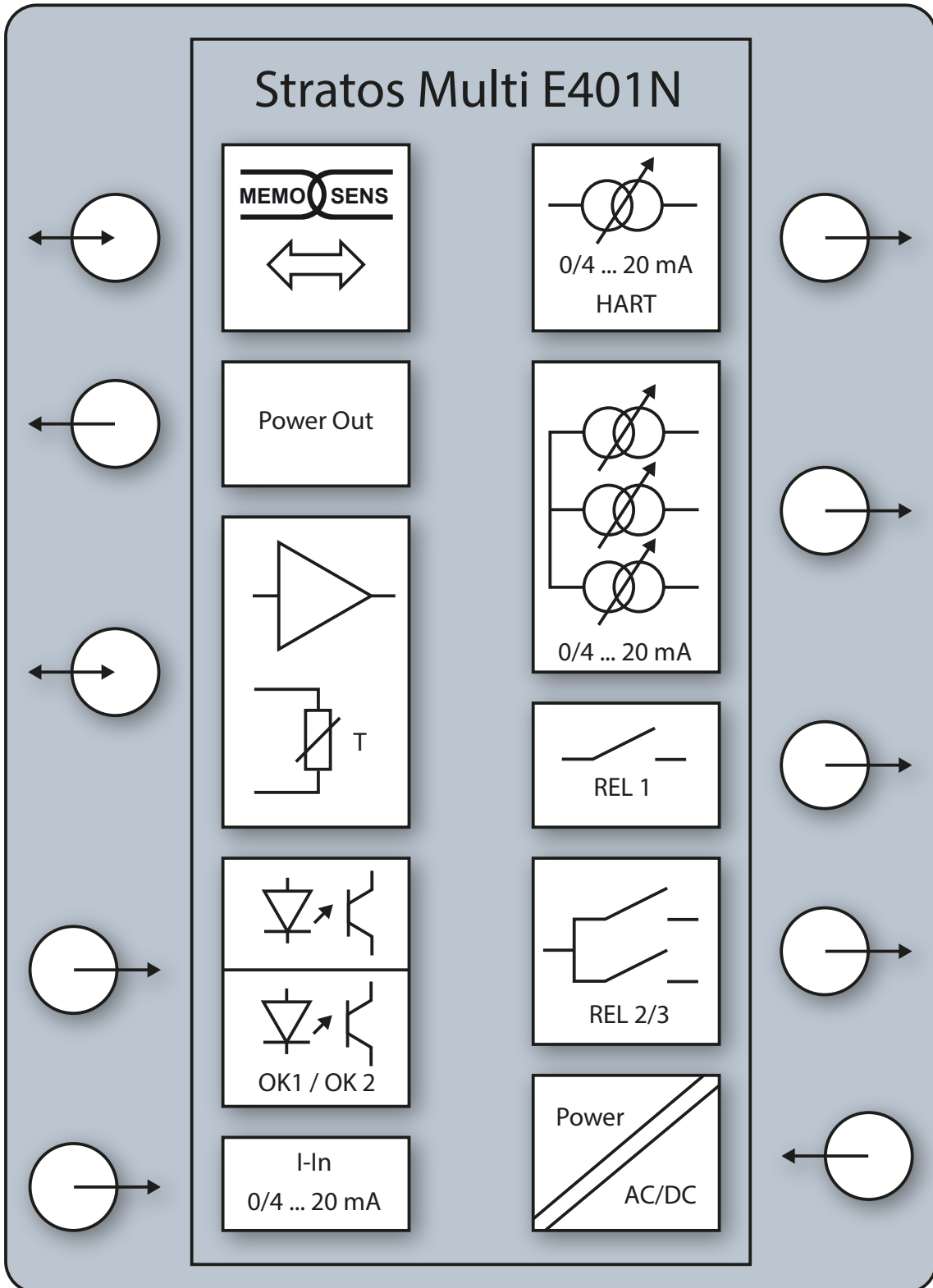
Stratos Multi

Product Line

Stratos Multi	Order No.
Stratos Multi 4-wire, multiparameter, digital basic unit, 1-channel	E401N
Stratos Multi 4-wire, multiparameter, digital basic unit, 1-channel with HART communication	E401N.010
Stratos Multi 4-wire, multiparameter, digital basic unit, 2-channel with 4 current outputs	E401N.020
Stratos Multi 4-wire, multiparameter, digital basic unit, 2-channel with HART communication	E401N.030

Measuring Module for Memosens 2-Channel Version	Order No.
Memosens measuring module, 2nd channel multiparameter	MK-MS095N

Analog Measuring Modules	Order No.
pH/ORP measuring module	MK-PH015N
Module for contacting conductivity measurement	MK-COND025N
Module for inductive conductivity measurement	MK-CONDI035N
Oxygen measuring module	MK-OXY046N
Dual conductivity measuring module, 2-channel	MK-CC065N

Product Line

Mounting Kits	Order No.
Pipe-mount kit	ZU 0274
Panel-mount kit	ZU 0738
Protective hood	ZU 0737

Add-On Functions (Firmware via TAN)	Order No.
pH buffer table: entry of individual buffer set	FW-E002
Current characteristic	FW-E006
Concentration determination for use with conductivity sensors	FW-E009
Trace oxygen measurement	FW-E016
Operation with double high-impedance pH sensors / Pfaudler sensors	FW-E017
Calculation blocks	FW-E020
HART communication	FW-E050
Current input	FW-E051
Current outputs 3 and 4	FW-E052
Parameter sets 1 to 5	FW-E102
Measurement recorder	FW-E103
Logbook, in conjunction with Data Card (Data Card ZU1080-S-N-D not included)	FW-E104
Firmware update	FW-E106

Test Sockets, Connectors, Cables	Length	Order No.
HART test socket, integrated in cable gland		ZU 0287
VP8 connector		ZU 0721
M12 socket, 8-pin		ZU 0860
VP8 ST cable (both ends with VP socket)	3 m	ZU 0710
	5 m	ZU 0711
	10 m	ZU 0712
M12 extension cord, 8-pin	10 m	CA/M12-010M12-8
Inspection Certificate 3.1		ZU0268/analysis

Product Line

Memory Cards for Stratos Multi

		ZU 1080–	S	–	N	–	

Card version	Data Card						D
	Firmware Update Card						U
	Firmware Repair Card						R

		ZU 1080–	S	–	N	–		–			

Card version	Custom Firmware Update Card (in conjunction with FW-E106)						S	
	Custom Firmware Repair Card						V	
Firmware versions	Device firmware							* * *

Specifications

Power

Power supply	80 V (– 15%) ... 230 (+ 10%) V AC; approx. 15 VA; 45 ... 65 Hz
Terminals 17, 18	24 V (– 15%) ... 60 (+ 10%) V DC; 10 W
	Overvoltage category II, protection class II, pollution degree 2
Test voltage	Type test 3 kV AC 1 min after moisture pre-treatment
	Routine test 1.4 kV for 2 s

Inputs and Outputs (SELV, PELV)

Sensor input 1	for Memosens/optical sensors (SE 740), galvanically isolated	
	Data In/Out	Asynchronous interface, RS-485, 9600/19200 Bd
	Power supply	3.08 V (3.02 ... 3.22 V)/10 mA, Ri < 1 Ω, short-circuit-proof
Input 2	For analog measuring module/Memosens module, galvanically isolated	
Data In/Out	Asynchronous interface RS-485, 9600 Bd	
Input OK1, OK2	Galvanically isolated (optocoupler)	
	Switching between parameter sets A/B, flow measurement, function check	
	Parameter set switching (OK1)	Relay input 0 ... 2 V (AC/DC) parameter set A
		Relay input 10 ... 30 V (AC/DC) parameter set B
		Control current 5 mA
	Flow (OK1)	Pulse input for flow measurement 0 ... 100 pulses per second Display, 00.0 ... 99.9 L/h
		Message via 22 mA, alarm contact or limit contacts
	Function check	Function check inactive: Switching voltage 0 ... 2 V (AC/DC) Function check active: Switching voltage 10 ... 30 V (AC/DC)
Current input TAN option FW-E051	Current input 0/4 ... 20 mA at 50 Ω	
	Input of measured pressure values from external sensors	
	Supplied current must be galvanically isolated.	
	Characteristic	Linear
	Resolution	Approx. 0.05 mA
	Measurement error[1]	< 1% current value + 0.1 mA
Power Out	Power output, short-circuit-proof, 0.5 W, for operating the SE 740 sensor	
	3.1 V (2.99 ... 3.25 V); 14 V (12.0 ... 16.0 V); 24 V (23.5 ... 24.9 V)	
Output 1, 2 Out 1, Out 2	0/4 ... 20 mA, floating, load resistance up to 500 Ω	
	Output 1: HART communication at 4 ... 20 mA	
	Output 2 galvanically connected with outputs 3 and 4	
	Failure message	3.6 mA (at 4 ... 20 mA) or 22 mA, adjustable
	Active	Max. 11 V
	Passive	Supply voltage 3 ... 24 V
	Process variable	Can be selected from all available process variables
	Start/end of scale	Configurable within selected range
	Characteristic	Linear, bi-/trilinear or logarithmic
	Output filter	PT_1 filter, filter time constant 0 ... 120 s
	Measurement error[1]	< 0.25 % current value + 0.025 mA

Specifications

Output 3, 4	0/4 … 20 mA, floating, galvanically connected to output 2	
Out 3, Out 4	Max. load resistance up to 250 Ω	
TAN option FW-E052	Failure message	3.6 mA (at 4 ... 20 mA) or 22 mA, adjustable
	Active	Max. 5.5 V
	Passive	Supply voltage 3 … 24 V
	Process variable	Can be selected from all available process variables
	Start/end of scale	Configurable within selected range
	Characteristic	Linear, bi-/trilinear or logarithmic
	Output filter	PT_1 filter, filter time constant 0 ... 120 s
	Measurement error[1]	< 0.25 % current value + 0.025 mA
Contact K1, K2, K3	Relay contact, floating	
	Contact rating with ohmic load	AC < 30 V/< 3 A/< 90 VA DC < 30 V/< 3 A/< 90 W
		Freely adjustable: Failure, maintenance required, function check, min/max limits, PID controller, rinse contact, parameter set B signaling, USP output, Sensoface
Alarm contact	Contact response	N/C (fail-safe type)
	Response delay	0000 ... 0600 s
Rinse contact	For controlling a simple cleaning system	
	Contact rating with ohmic load	AC < 30 V/< 3 A/< 90 VA DC < 30 V/< 3 A/< 90 W
	Contact response	N/C or N/O
	Interval	000.0 ... 999.9 h (000.0 h = cleaning function disabled)
	Cleaning time/ relax time	0000 ... 1999 s
Limit values	Min/max contacts, floating, interconnected	
Min/Max	Contact response	N/C or N/O
	Response delay	0000 ... 9999 s
	Setpoints	Within selected range
	Hysteresis	User-defined
PID process controller	Output via limit contacts	
	Setpoint specification	Within selected range
	Neutral zone	Depending on the process variable pH: pH 0 ... 5/0 ... 500 mV/0 ... 50 K
	P action	Controller gain Kp: 0010 ... 9999 %
	I action	Reset time Tr: 0000 ... 9999 s (0000 s = no integral action)
	D action	Rate time Td: 0000 ... 9999 s (0000 s = no derivative action)
	Controller type	Pulse length controller or pulse frequency controller
	Pulse period	0001 ... 0600 s, minimum turn-on time 0.5 s (pulse length controller)
	Max. pulse frequency	0001 ... 0180 min-1 (pulse frequency controller)

Specifications

Service functions	Current source	Current specifiable for output 1 ... 4 (00.00 ... 22.00 mA)
	Manual controller	Controller output directly specifiable (start control processes)
	Sensor monitor	Direct display of measured values (mV, temperature, resistance, ...)
	Relay test	Manual control of relay contacts

Device

Product name	Stratos Multi	
Product type	E401N	
Measurements	pH	
	ORP	
	Amperometric/optical oxygen	
	Contacting/inductive conductivity measurement	
	Dual conductivity measurement	
2 parameter sets	Parameter set A and B	
	Switchover via digital control input OK1 or manually	
Memory card	Accessory for additional functions (firmware update, measurement recorder, logbook, AuditTrail)	
	Memory size	32 MB
	Logbook	With exclusive use: approx. 20,000 entries
	Measurement recorder	With exclusive use: approx. 20,000 entries
	Connection to PC	Micro USB
	Connection to device	Plug
	Communication	USB 2.0, high-speed, 12 Mbits/s
		Data Card: MSD (mass storage device)
		FW Update Card, FW Repair Card: HID (human interface device)
	Dimensions	L 32 mm x W 12 mm x H 30 mm
Display	Graphical TFT color display, 4.3", white backlighting	
	Resolution	480 x 272 pixels
	Language	German, English, French, Spanish, Italian, Portuguese, Chinese
	Sensoface	Sensor condition indicators: happy, neutral, sad smileys
	Status indicators	Parameter setting and message icons
Keys	Softkey 1 left, softkey 2 right, arrow keys (cursor), entry (enter)	
Door contact	When door is open: electric signal and logbook entry	
Real-time clock	Different time and date formats selectable	

Stratos Multi

Specifications

Housing	Molded enclosure	Glass fiber reinforced
		Front unit material: PBT
		Rear unit material: PC
	Degree of protection	IP66/IP67/NEMA 4X outdoor (with pressure compensation) when the device is closed
	Flammability	UL 94 V-0 for external parts
	Weight	1.2 kg (1.6 kg incl. accessories and packaging)
	Mounting	Wall, pipe/post or panel mounting
	Color	Gray RAL 7001
	Dimensions	H 148 mm, W 148 mm, D 117 mm
	Panel cutout	138 mm x 138 mm to DIN 43 700
Cable glands		5 knockouts for M20 x 1.5 cable glands
		2 of 5 knockouts for NPT ½"
		or rigid metallic conduit
Terminals		Power supply, sensor, current outputs, current input, relay contacts, digital control inputs
Screw terminals		Single or stranded wires up to 2.5 mm^2
		Tightening torque min. 0.5 Nm/max. 0.6 Nm
		Spacing 5 mm
Rated operating conditions	Climatic class	3K5 according to EN 60721-3-3
	Location class	C1 according to EN 60654-1
	Ambient temperature	-20 ... 60 °C/-4 ... 140 °F
	Relative humidity	5 ... 95 %
Transport and storage	Transport/Storage temperature	-30 ... 70 °C/-22 ... 158 °F
Conformity	EMC	EN 61326-1, NAMUR NE 21
	Emitted interference	Class A (industrial applications)[2]
	Interference immunity	Industrial applications
	RoHS conformity	According to EU directive 2011/65/EU, China RoHS
	Electrical safety	EN 61010-1
		Protection against electric shock by reinforced insulation of all extra-low-voltage circuits against mains
Interfaces	HART communication	HART Version 7.x
	TAN option FW-E050	Digital communication via FSK modulation of current output 1, device identification, measured values, status, and messages
	Conditions	Output current ≥ 3.8 and load resistance ≥ 250 Ω

Specifications

Measuring Functions for pH

Digital input	for Memosens sensors (pH, ORP, pH/ORP)		
	Terminals 1 ... 5 or MK-MS095N module		
	Display ranges	Temperature	-20.0 ... 200.0 °C/-4 ... 392 °F
		pH value	-2.00 ... 16.00
		ORP	-1999 ... 1999 mV
		rH value (with pH/ORP sensor)	0 ... 42.5
	Measurement error	Depending on sensor	
Module input, analog	for analog pH and ORP sensors		
	Measuring ranges	Temperature	-20.0 ... 200.0 °C/-4 ... 392 °F
		pH value	-2.00 ... 16.00
		ORP	-1999 ... 1999 mV
		rH value (with pH/ORP sensor)	0 ... 42.5
	Glass electrode input Ref. temperature 25 °C/77 °F	Input resistance	$> 1 \times 10^{12}\ \Omega$
		Input current	$< 1 \times 10^{-12}\ A$
		Impedance range	0.5 ... 1000 MΩ (± 20%)
	Ref. electrode input Ref. temperature 25 °C/77 °F	Input resistance	$> 1 \times 10^{10}\ \Omega$
		Input current	$< 1 \times 10^{-10}\ A$
		Impedance range	0.5 ... 200 kΩ (± 20%)
	Measurement error[1)3)]	pH value < 0.02, TC: 0.002 pH/K	
		mV value < 1 mV, TC: 0.1 mV/K	
Temperature input via module	Pt100 / Pt1000 / NTC 30 kΩ / NTC 8.55 kΩ / Balco 3 kΩ		
	2-wire connection, adjustable		
	Measuring ranges	Pt100/Pt1000	-20.0 ... 200.0 °C/-4 ... 392 °F
		NTC 30 kΩ	-20.0 ... 150.0 °C/-4 ... 302 °F
		NTC 8.55 kΩ (Mitsubishi)	-10.0 ... 130.0 °C/14 ... 266 °F
		Balco 3 kΩ	-20.0 ... 130.0 °C/-4 ... 266 °F
	Adjustment range Resolution	10 K 0.1°C/0.1°F	
	Measurement error[1)3)]	< 0.5 K (< 1 K with Pt100 < 1 K with NTC > 100 °C/212 °F)	
Temperature compensation		Off	
		Linear characteristic 00.00 ... 19.99%/K	
		Ultrapure water	
		Table: 0 ... 95°C, user-defined in 5 K steps	
	Ref. temperature	25 °C/77 °F	

Stratos Multi

Specifications

pH calibration and adjustment	Calibration with automatic buffer recognition (Calimatic)		
	Manual calibration with entry of individual buffer values		
	Product calibration		
	Data entry of premeasured sensors		
	ISFET zero point (with ISFET sensor)		
	Temperature probe adjustment		
	Calculation of nominal zero		
	Max. calibration range	Asymmetry potential (zero point)	±60 mV
		Slope	80 ... 103% (47.5 ... 61 mV/pH)
	Zero offset	± 750 mV with Memosens ISFET	
Buffer sets	Knick CaliMat	2.00/4.00/7.00/9.00/12.00	
	Mettler-Toledo	2.00/4.01/7.00/9.21	
	Merck/Riedel	2.00/4.00/7.00/9.00/12.00	
	DIN 19267	1.09/4.65/6.79/9.23/12.75	
	NIST standard	1.679/4.005/6.865/9.180	
	NIST technical	1.68/4.00/7.00/10.01/12.46	
	Hamilton	2.00/4.01/7.00/10.01/12.00	
	Kraft	2.00/4.00/7.00/9.00/11.00	
	Hamilton A	2.00/4.01/7.00/9.00/11.00	
	Hamilton B	2.00/4.01/6.00/9.00/11.00	
	HACH	4.01/7.00/10.01	
	Ciba (94)	2.06/4.00/7.00/10.00	
	WTW techn. buffers	2.00/4.01/7.00/10.00	
	Reagecon	2.00/4.00/7.00/9.00/12.00	
	Specifiable buffer set	TAN option FW-E002	
ORP calibration and adjustment	ORP data entry		
	ORP adjustment		
	ORP check		
	Temperature probe adjustment		
	Max. calibration range	-700 ... 700 ΔmV	
Adaptive calibration timer	Interval	0000 ... 9999 h	

Specifications

Measuring Functions for Conductivity (Cond)

Digital input	Input for Memosens sensors		
	Terminals 1 ... 5 or MK-MS095N module		
	Measurement error	Depending on sensor	
Module input, analog	Input for analog 2- or 4-electrode sensors		
	Measuring ranges (conductance limited to 3500 mS)		
		2-electrode sensors: 0.2 µS * c ... 200 mS * c	
		4-electrode sensors: 0.2 µS * c ... 1000 mS * c	
	Measurement error[1)3)] < 1% measured value + 0.4 µS * c		
Temperature input via module	Pt100 / Pt1000 / Ni100 / NTC 30 kΩ / NTC 8.55 kΩ (Betatherm)		
	3-wire connection, adjustable		
	Measuring ranges	Pt100/Pt1000	-50.0 ... 250.0 °C/-58 ... 482 °F
		Ni100	-50.0: ... 180.0 °C/-58 ... 356 °F
		NTC 30 kΩ	-20.0 ... 150.0 °C/-4 ... 302 °F
		NTC 8.55 kΩ (Mitsubishi)	-10.0 ... 130.0 °C/14 ... 266 °F
	Resolution	0.1 °C/0.1 °F	
	Measurement error[1) 3)] < 0.5 K (< 1 K for Pt100; < 1 K for NTC > 100 °C/212 °F)		
Display ranges	Conductivity	0.000 ... 9.999 µS/cm	
		00.00 ... 99.99 µS/cm	
		000.0 ... 999.9 µS/cm	
		0.000 ... 9.999 mS/cm	
		00.00 ... 99.99 mS/cm	
		000.0 ... 999.9 mS/cm	
		0.000 ... 9.999 S/m	
		00.00 ... 99.99 S/m	
	Resistivity	00.00 ... 99.99 MΩ cm	
	Concentration	0.00 ... 99.99 %	
	Salinity	0.0 ... 45.0‰	(0 ... 35 °C/32 ... 95 °F)
	TDS	0 ... 1999 mg/l	(10 ... 40 °C/50 ... 104 °F)
	Temperature	-20.0 ... 150.0 °C/-4 ... 302 °F	
	Response time (T90)	Approx. 1 s	
USP Function	Water monitoring in the pharmaceutical industry (USP<645>) with additional specifiable limit value (%)		
	Output via a relay contact		
Calibration and adjustment	Automatic with standard cal solution		
	Calibration by entry of cell constant		
	Product calibration		
	Temperature probe adjustment		
	Permissible cell constant	00.0050 ... 19.9999 cm^{-1}	

Stratos Multi

Specifications

Measuring Functions for Conductivity (Condl)

Digital input	Toroidal conductivity sensors: SE 670/SE 680		
	Terminals 1 … 5 or MK-MS095N module		
	Measurement error	Depending on sensor	
Module input, analog	Toroidal conductivity sensors: SE 655/SE 656/SE 660		
	Measurement error[1)3)] 1% measured value + 0.005 nS/cm		
Temperature input via module	Pt100 / Pt1000 / NTC 30 kΩ		
	3-wire connection, adjustable		
	Measuring ranges	Pt100/Pt1000	-50.0 ... 250.0 °C/-58 ... 482 °F
		NTC 30 kΩ	-20.0 ... 150.0 °C/-4 ... 302 °F
	Resolution	0.1°C/0.1°F	
	Measurement error[1) 3)] < 0.5 K (< 1 K for Pt100; < 1 K for NTC > 100°C/212°F)		
Display ranges	Conductivity	000.0 … 999.9 µS/cm (not with SE 660/SE 670)	
		0.000 ... 9.999 mS/cm (not with SE 660/SE 670)	
		00.00 ... 99.99 mS/cm	
		000.0 ... 999.9 mS/cm	
		0000 ... 1999 mS/cm	
		0.000 ... 9.999 S/m	
		00.00 ... 99.99 S/m	
	Concentration	0.00 ... 9.99%/10.0 ... 100.0 %	
	Salinity	0.0 ... 45.0‰ (0 ... 35 °C/32 ... 95°F)	
	Temperature	-20.0 ... 150.0 °C/-4 ... 302 °F	
	Response time (T90)	Approx. 1 s	
USP Function	Water monitoring in the pharmaceutical industry (USP<645>) with additional specifiable limit value (%)		
	Output via a relay contact		
Calibration and adjustment	Automatic with standard cal solution		
	Calibration by input of cell factor		
	Product calibration		
	Installation factor		
	Zero correction		
	Temperature probe adjustment		
	Permissible cell factor	00.0050 ... 19.9999 cm^{-1}	
	Permissible transfer ratio	010.0 ... 199.9	
	Permissible zero offset ± 0.5 mS		
	Permissible installation factor	0.100 … 5.000	

Specifications

Temperature compensation (conductivity)	
Off	Without
Linear	Linear characteristic 00.00 ... 19.99%/K
	Adjustable reference temperature
	Reference temperature 25°C/77°F:
NLF	Natural waters acc. to EN 27888
NaCl	NaCl from 0 (ultrapure water) to 26 wt% (0 ... 120 °C/32 ... 248 °F)
HCl	Ultrapure water with HCl traces (0 ... 120 °C/32 ... 248 °F)
NH_3	Ultrapure water with NH_3 traces (0... 120 °C/32 ... 248 °F)
NaOH	Ultrapure water with NaOH traces (0 ... 120 °C/32 ... 248 °F)

Concentration determination (conductivity) TAN option FW-E009	
NaCl	0 ... 28 wt% (0 ... 100 °C/32 ... 212 °F)
HCl	0 ... 18 wt% (-20 ... 50 °C/-4 ... 122 °F)
	22 ... 39 wt% (-20 ... 50 °C/-4 ... 122 °F)
NaOH	0 ... 24 wt% (0 ... 100 °C/32 ... 212 °F)
	15 ... 50 wt% (0 ... 100 °C/32 ... 212 °F)
H_2SO_4	0 ... 37 wt% (-17.8 ... 110°C /–0.04 ... 230 °F)
	28 ... 88 wt% (-17.8 ... 115.6 °C /–0.04 ... 240.08 °F)
	89 ... 99 wt% (-17.8 ... 115.6 °C /–0.04 ... 240.08 °F)
HNO_3	0 ... 30 wt% (-20 ... 50 °C/-4 ... 122 °F)
	35 ... 96 wt% (-20 ... 50 °C/-4 ... 122 °F)
$H_2SO_4 \cdot SO_3$ (Oleum)	12 ... 45 wt% (0 ... 120 °C/32 ... 248 °F)
Specifiable concentration table	

Measuring Functions for Oxygen

Digital input	Standard measurement	Input for amperometric Memosens sensors
	Trace measurement TAN option FW-E016	
Memosens	Terminals 1 ... 5 or MK-MS095N module	
	Display range	Temperature: -20.0 ... 150.0 °C/-4 ... 302 °F
	Measurement error	Depending on sensor
Digital input SE 740	Input for SE 740 optical oxygen sensor Terminals 1 ... 6	
	Measuring range	0 ... 300% air saturation
	Detection limit	0.01 vol%
	Response time T98	< 30 s (at 25 °C/77 °F, from air to nitrogen)
	Display range	Temperature: -10.0 ... 130.0 °C/14 ... 266 °F
		The sensor does not supply measured oxygen values above 80 °C/176 °F.
	Measurement error	Depending on sensor

Stratos Multi

Specifications

Module input, analog	Standard	Sensors: SE 706; InPro6800; Oxyferm
	Input range	Measuring current -600 ... 2 nA, resolution 10 pA
	Measurement error[1]	< 0.5% measured value + 0.05 nA + 0.005 nA/K
	Trace measurement TAN option FW-E016	Sensors: SE 707; InPro 6900; Oxyferm/Oxygold
	Input range I	Measuring current -600 ... 2 nA, resolution 10 pA Automatic range selection
	Measurement error[1]	< 0.5% measured value + 0.05 nA + 0.005 nA/K
	Input range II	Measuring current -10000 ... 2 nA, resolution 166 pA Automatic range selection
	Measurement error[1]	< 0.5% measured value + 0.8 nA + 0.08 nA/K
	Polarization voltage	-400 ... -1000 mV Default –675 mV Resolution < 5 mV
	Permissible guard current	≤ 20 µA
Temperature input via module	NTC 22 kΩ/NTC 30 kΩ	
	2-wire connection, adjustable	
	Measuring range Adjustment range	-20.0 ... 150.0 °C/-4 ... 302 °F 10 K
	Resolution	0.1 °C/0.1 °F
	Measurement error[1][3]	< 0.5 K (< 1 K for Pt100; < 1 K for NTC > 100 °C/212 °F)
Operating modes	Measurement in gases Measurement in liquids	
Measuring ranges	Standard sensor (analog, Memosens, SE 740)	
	Saturation[4]	0.0 ... 600.0 %
	Concentration[4] (dissolved oxygen)	0.00 ... 99.99 mg/l (ppm)
	Volume concentration in gas	0.00 ... 99.99 vol%
	Trace sensor "01" (analog, Memosens)	
	Saturation[4]	0.000 ... 150.0 %
	Concentration[4] (dissolved oxygen)	0000 ... 9999 µg/l / 10.00 ... 20.00 mg/l 0000 ... 9999 ppb/10.00 ... 20.00 ppm
	Volume concentration in gas	000.0 ... 9999 ppm/1.000 ... 50.00 vol%
	Trace sensor "001" (analog)	
	Saturation[4]	0.000 ... 150.0 %
	Concentration[4] (dissolved oxygen)	0000 ... 9999 µg/l / 10.00 ... 20.00 mg/l 0000 ... 9999 ppb/10.00 ... 20.00 ppm
	Volume concentration in gas	000.0 ... 9999 ppm/1.000 ... 50.00 vol%
Input correction	Pressure correction	0.000 ... 9999 bar/999.9 kPa/145.0 psi (adjustable) manually or externally (via current input 0(4) ... 20 mA)
	Salinity correction	0.0 ... 45.0 g/kg

Specifications

Calibration and adjustment	Automatic calibration in air-saturated water
	Automatic calibration in air
	Saturation product calibration (with offset in SE 740)
	Zero correction
	Temperature probe adjustment
Calibration ranges	Standard sensor "10"	
	Zero point	± 2 nA
	Slope	25 ... 130 nA (at 25 °C/77 °F, 1013 mbar)
	Trace sensor "01"	
	Zero point	± 2 nA
	Slope	200 ... 550 nA (at 25 °C/77 °F, 1013 mbar)
	Trace sensor "001"	
	Zero point	± 3 nA
	Slope	2000 ... 9000 nA (at 25 °C/77 °F, 1013 mbar)
Calibration timer	0000 ... 9999 h	

Diagnostics and Statistics

Diagnostic functions	Calibration data	Calibration record
	Device self-test	Automatic memory test (RAM, FLASH, EEPROM)
	Display test	Display of all colors
	Keypad test	Check of key functions
Sensocheck	Delay: approx. 30 s	
	pH	Automatic monitoring of glass and reference electrode (can be switched off)
	Cond	Polarization detection and monitoring of cable capacitance
	CondI	Monitoring of primary and secondary coils and wires for open circuits and of primary coil and wires for short circuits
	Oxygen	With amperometric sensors only, monitoring of membrane and electrolyte and the sensor wires for short circuits and open circuits (can be switched off)
Sensoface	Provides information on the sensor condition (can be switched off; happy, neutral, or sad smileys)	
	pH	Evaluation of zero/slope, response, calibration interval, Sensocheck, wear
	Cond	Evaluation of Sensocheck
	CondI	Evaluation of zero point, cell factor, installation factor, Sensocheck
	Oxygen	Evaluation of zero/slope, response, calibration interval, Sensocheck, and sensor wear with digital sensors

Stratos Multi

Specifications

Sensor monitor	Direct display of measured sensor values:

pH	pH/voltage/temperature
Cond	Resistance/temperature
CondI	Resistance/temperature
Oxygen	Sensor current/temperature

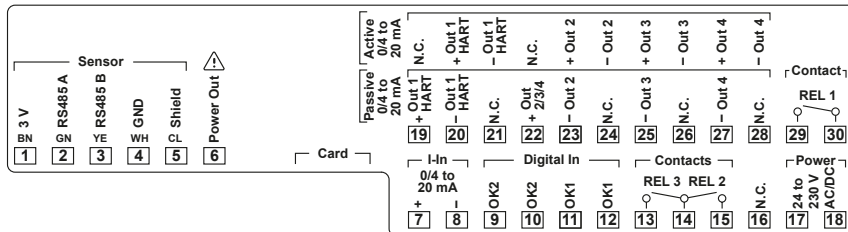|		
Measurement recorder TAN option FW-E103	2-channel measurement recorder with marking of events (failure, maintenance required, function check, limit values)	
	1 measured value per second	
	Storage capacity	1000 entries, readable on display or from memory card
	Recording	Freely selectable process variables and span
	Type of recording	Current value, min/max value, average
	Time base	10 s ... 10 h
Logbook	Recording of function calls, warning and failure messages on occurrence and disappearance with date and time, 100 events with date and time, readable on display	
	TAN option FW-E104	At least 20,000 entries in conjunction with Data Card

[1] At rated operating conditions

[2] This equipment is not designed for domestic use, and is unable to guarantee adequate protection of the radio reception in such environments.
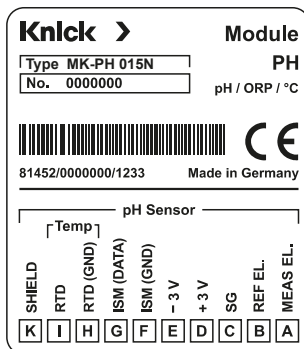
[3] ± 1 count, plus sensor error

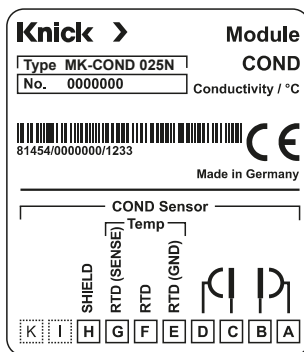[4] For temperature range -10 ... 80 °C/14 ... 176 °F
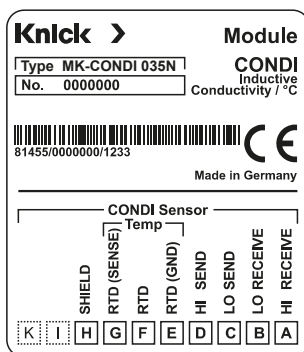
MK-OXY 046N Module Terminal Assignments

Knick › Module

Type MK-OXY 046N OXY

No. 0000000 O_2 / °C

81453/0000000/1233

Made in Germany

Oxy Sensor

Temp

K	I	H	G	F	E	D	C	B	A
SHIELD	RTD	RTD (GND)	ISM (DATA)	ISM (GND)	GUARD	ANODE	REFERENCE.		CATHODE
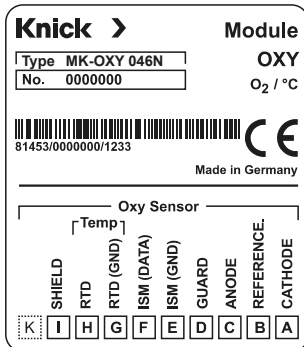
MK-CC 065N Module Terminal Assignments

Knick › Module

Type MK-CC 065N COND/COND

No. 0000000 Conductivity / °C

81456/0000000/1233

Made in Germany

Sensor B Sensor A

Cond Cond

K	I	H	G	F	E	D	C	B	A
SHIELD	RTD (GND)	RTD		SHIELD	RTD (GND)	RTD			
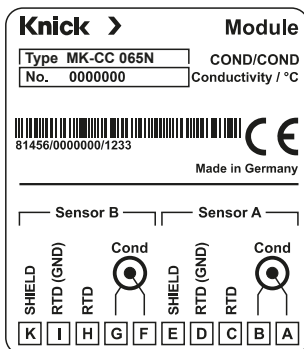
MK-MS 095N Module Terminal Assignments

Knick › Module

Type MK-MS 095N MS

No. 0000000 Memosens

84175/0000000/1233

Made in Germany

Memosens

RS 485

K	I	H	G	F	E	D	C	B	A
					SHIELD CL	GND WH	B YE	A GN	3V BN
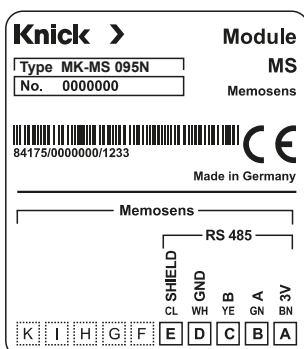
Easy Installation

- Wall-, pipe-, or panel-mount installation
- All parts are easily accessible
- Large terminal compartment

- Rear unit can be pre-installed
- Also suitable for rigid metallic conduits

- Replaceable plug-in terminals
- Replacement of electronics without new cabling

ZU 0274 Pipe-Mount Kit

For mounting on vertical or horizontal posts or pipes.

ZU 0737 Protective Hood

Additional protection from direct weather exposure and mechanical damage.
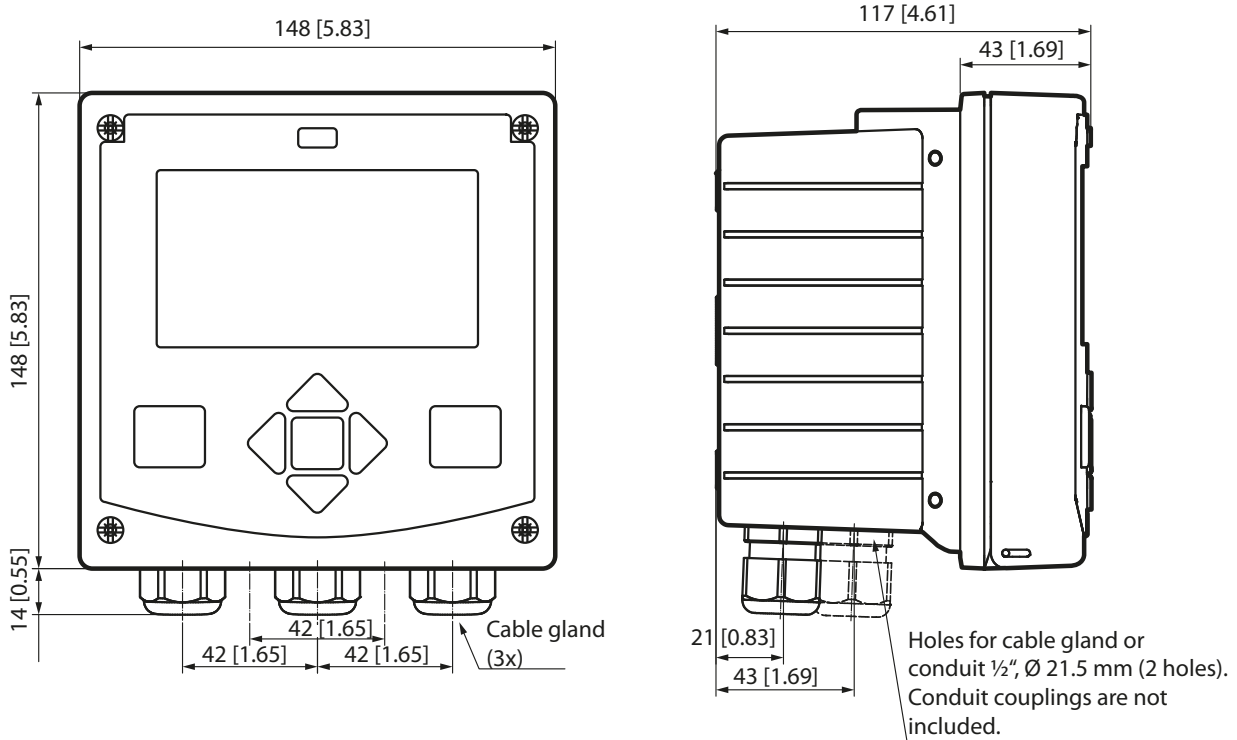
ZU 0738 Panel-Mount Kit

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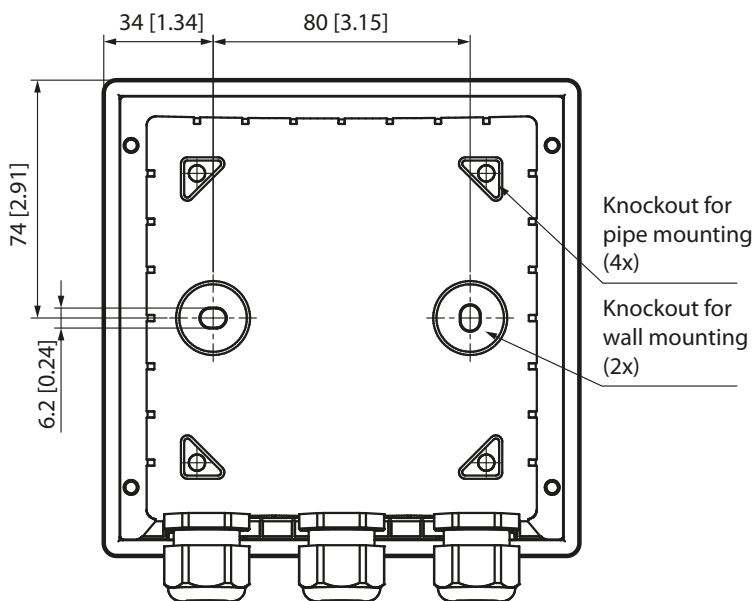
Stratos Multi

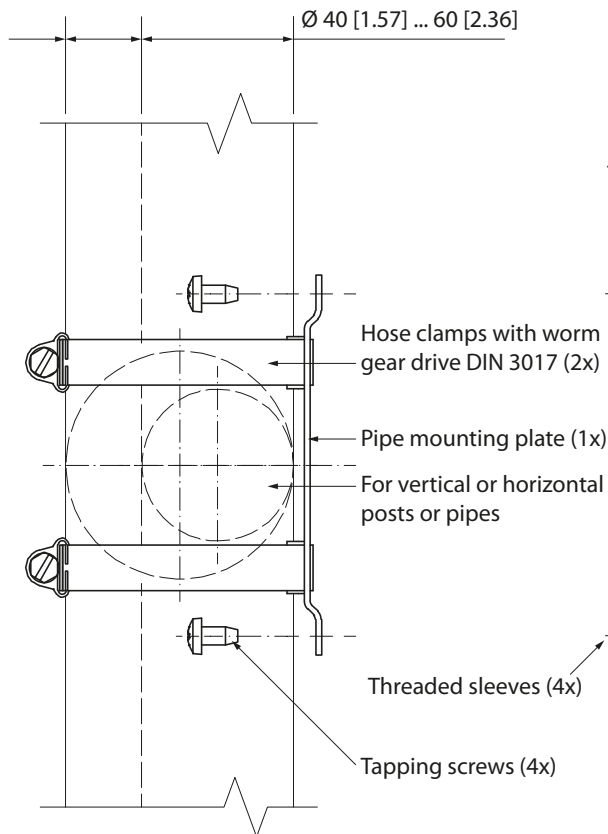**Dimension Drawings – Wall Mounting**

Front and Side View

148 [5.83]

148 [5.83]

14 [0.55]

42 [1.65]

42 [1.65]

42 [1.65]

Cable gland (3x)

117 [4.61]

43 [1.69]

21 [0.83]

43 [1.69]

Holes for cable gland or conduit ½", Ø 21.5 mm (2 holes). Conduit couplings are not included.

Rear View

34 [1.34]

80 [3.15]

74 [2.91]

6.2 [0.24]

Knockout for pipe mounting (4x)

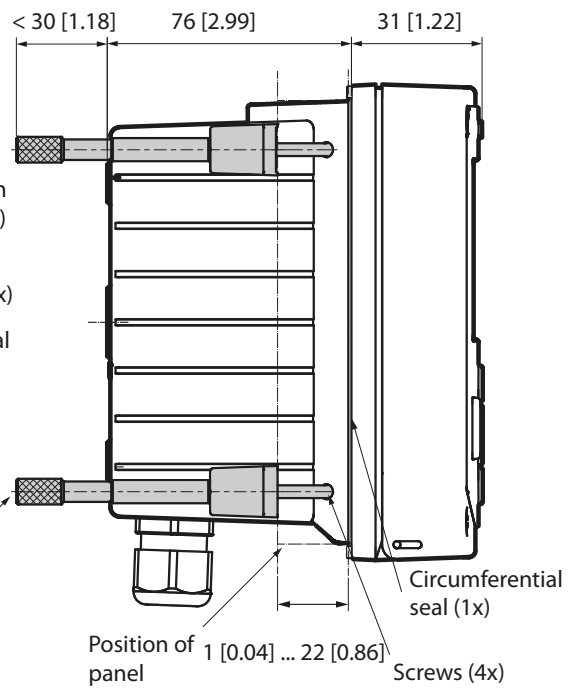Knockout for wall mounting (2x)

All dimensions in mm [inches]

24

Dimension Drawings – Pipe/Panel Mounting

ZU 0274 Pipe-Mount Kit

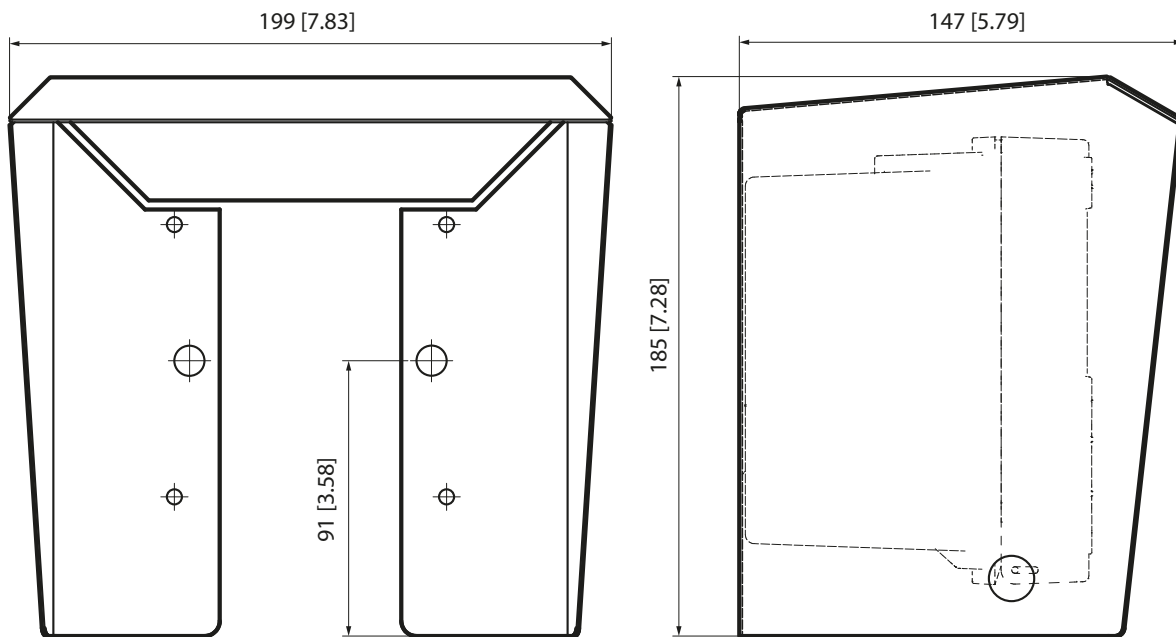**ZU 0738 Panel-Mount Kit**
Panel cutout 138 x 138 mm (DIN 43700)

Ø 40 [1.57] ... 60 [2.36]

< 30 [1.18]   76 [2.99]   31 [1.22]

Hose clamps with worm gear drive DIN 3017 (2x)

Pipe mounting plate (1x)

For vertical or horizontal posts or pipes

Threaded sleeves (4x)

Tapping screws (4x)

Circumferential seal (1x)

Position of panel   1 [0.04] ... 22 [0.86]

Screws (4x)

All dimensions in mm [inches]

Knick ›

Dimension Drawings – Protective Hood

ZU 0737 Protective Hood

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Астана +7(7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395) 279-98-46

Киргизия (996)312-96-26-47

Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12

Казахстан (772)734-952-31

Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56

Таджикистан (992)427-82-92-69

Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Ччереповец (8202)49-02-64
Ярославль (4852)69-52-93

Эл. почта kci@nt-rt.ru || Сайт: http://knick.nt-rt.ru