



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.

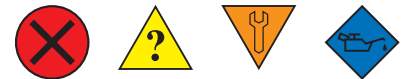
Worldwide Use

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.



Stratos Multi

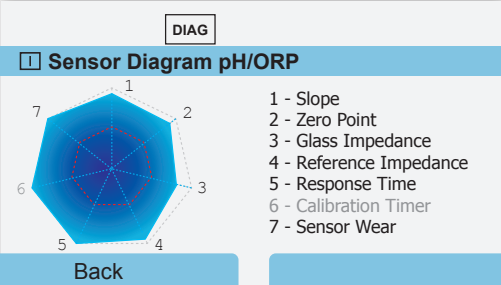
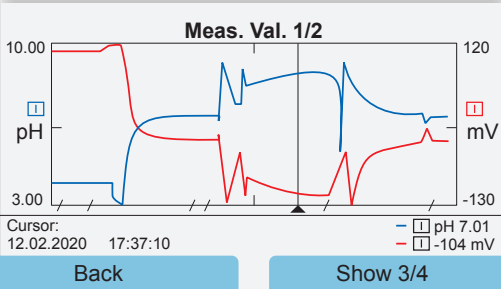
The Multiparameter Transmitter

DIAG

Logbook

F240	11/30/19	08:33	🔌	<input type="checkbox"/> Cal Mode is Active
F240	11/30/19	08:21	🔌	<input type="checkbox"/> Cal Mode is Active
F032	11/30/19	08:13	🔌	<input type="checkbox"/> Sensor Identified
F029	11/30/19	08:13	🔌	<input type="checkbox"/> No Sensor Connected
F029	11/30/19	08:05	🔌	<input type="checkbox"/> No Sensor Connected
F227	11/30/19	08:05	🔌	Power Supply ON

Back

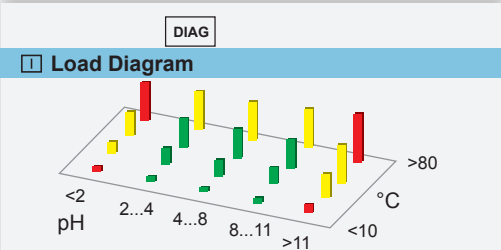
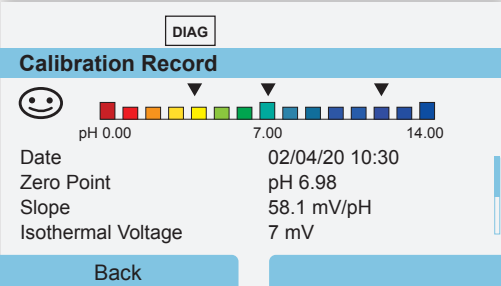


DIAG

Sensor Wear Monitor

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

Back Back to Meas.



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



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.

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.

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.

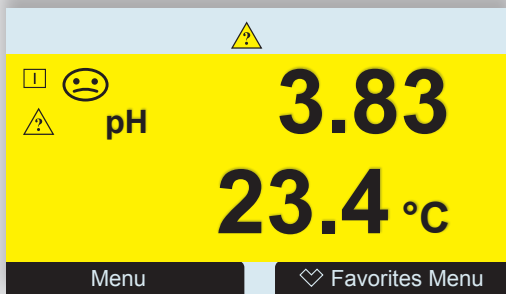


Visual Display of Sensor and Device Conditions

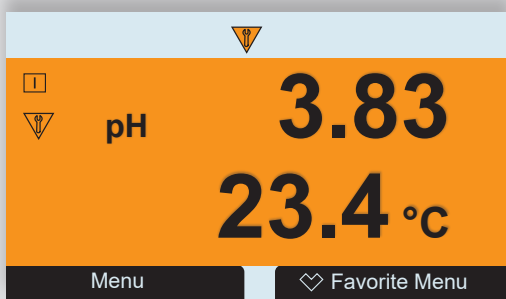
The color-coded user interface allows you to quickly ascertain the sensor condition. The display fields have different background colors based on the NE 107 status messages, so users can identify sensor conditions and device modes at a glance. The sensor monitoring system indicates the sensor's maintenance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



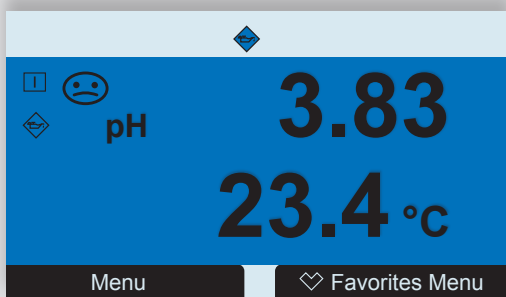
RED: NE 107 "Failure" status message



YELLOW: NE 107 "Out of Specification" status message



ORANGE: NE 107 "Function Check" status message



BLUE: NE 107 "Maintenance Required" status message

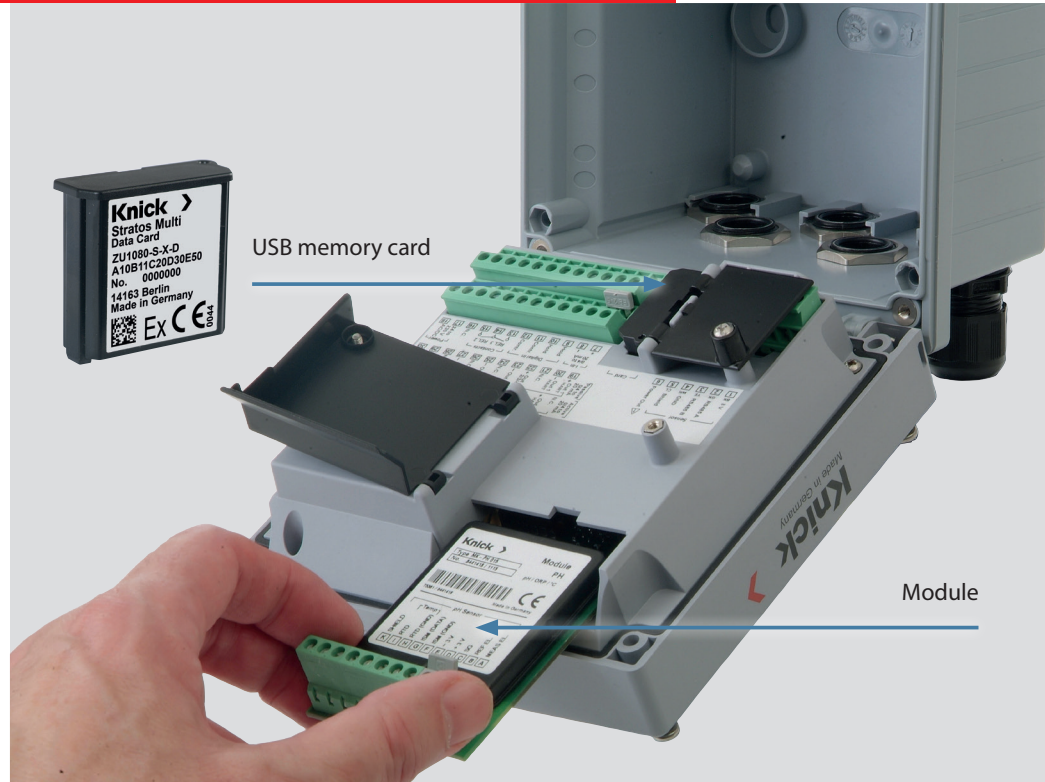
Memory Cards with USB

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.

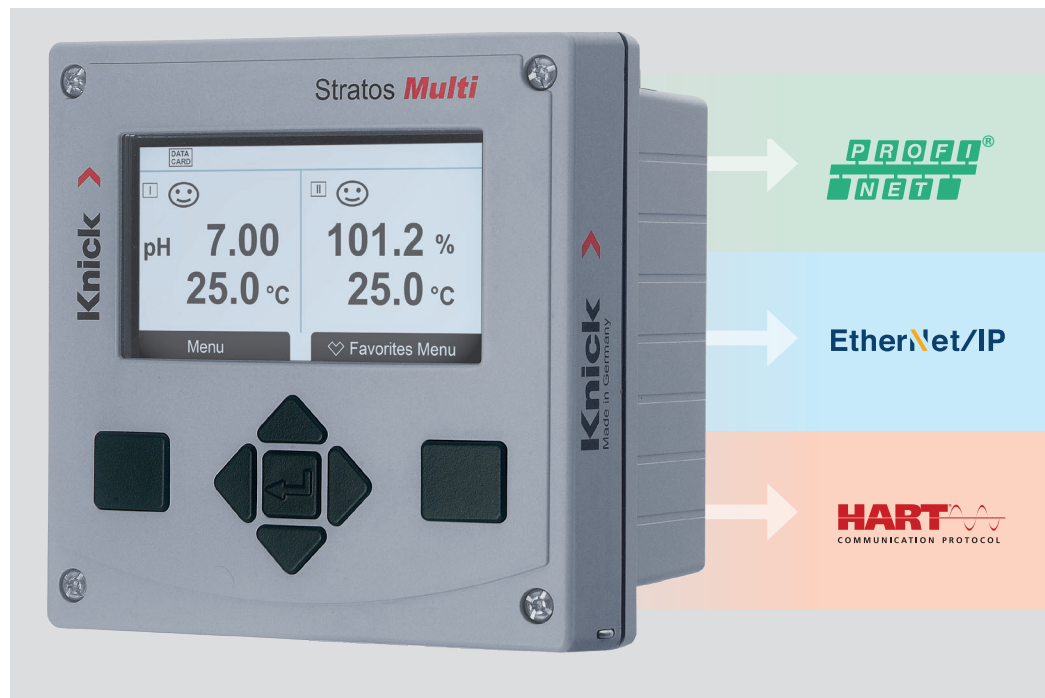


Advanced Process Control

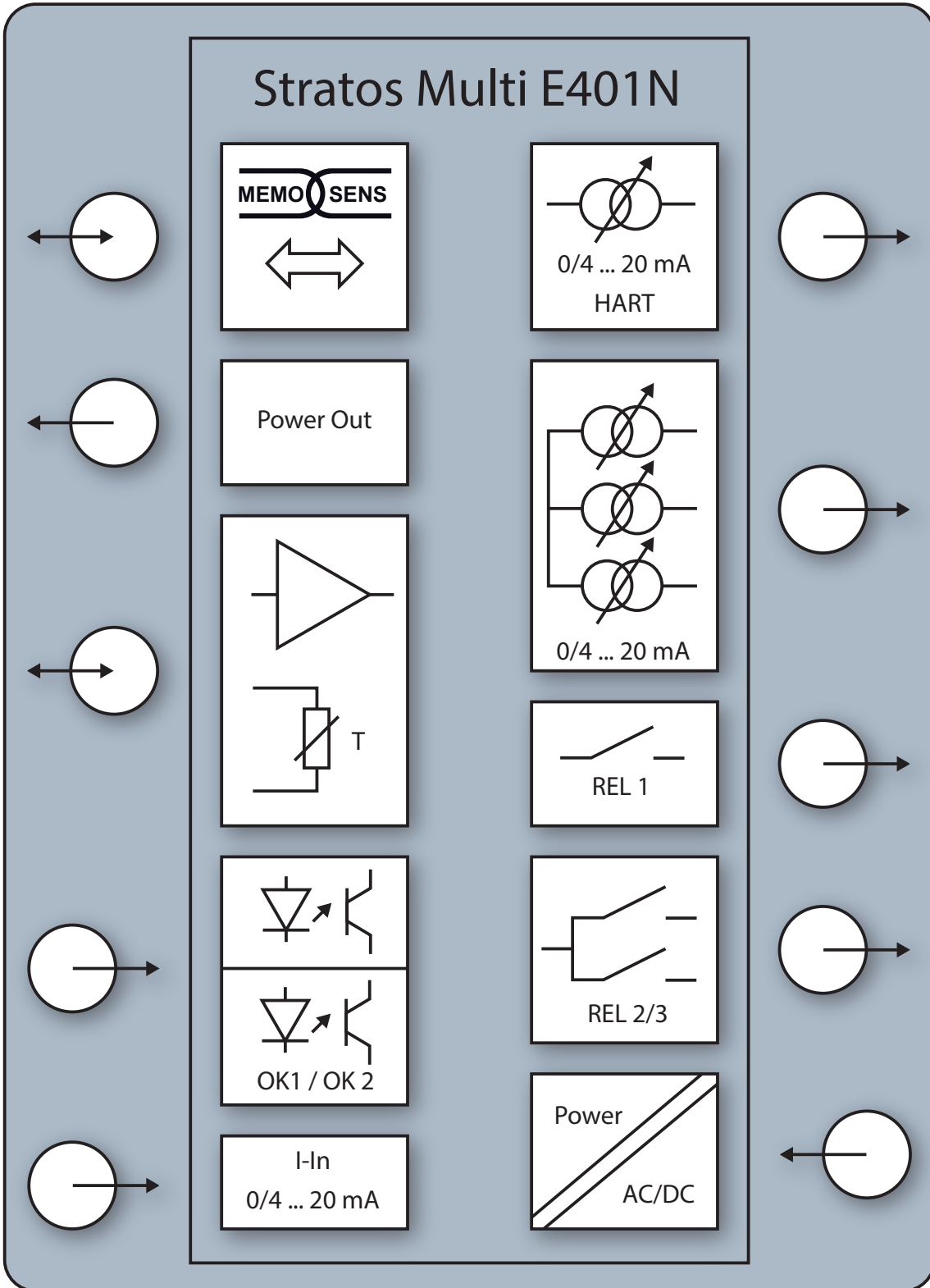
Smooth integration in Ethernet fieldbus architecture. Seamless transmission of diagnostics, measurement data, and configurations.

- PROFINET
- EtherNet/IP

Proven HART communication also enables integration in process control systems for communication and remote maintenance.



System Overview



Product Line

Stratos Multi

Stratos Multi 4-wire, multiparameter, digital basic unit, 1-channel

Order No.

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 Relay input 0 ... 2 V (AC/DC) parameter set A switching (OK1) 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	Current input 0/4 ... 20 mA at 50 Ω
TAN option FW-E051	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	0/4 ... 20 mA, floating, load resistance up to 500 Ω
Out 1, Out 2	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		
Housing	Molded enclosure	Glass fiber reinforced	

Specifications

	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 -30 ... 70 °C/-22 ... 158 °F temperature
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 Digital communication via FSK modulation of current output 1, FW-E050 Conditions Output current ≥ 3.8 and load resistance ≥ 250 Ω
Measuring Functions for pH	
Digital input	for Memosens sensors (pH, ORP, pH/ORP)

Specifications

	Terminals 1 ... 5 or MK-MS095N module	
Module input, analog	Display ranges	Temperature -20.0 ... 200.0 °C/-4 ... 392 °F pH value -2.00 ... 16.00 ORP -1999 ... 1999 mV rH value 0 ... 42.5 (with pH/ORP sensor)
	Measurement error	Depending on sensor
	Measuring ranges	Temperature -20.0 ... 200.0 °C/-4 ... 392 °F pH value -2.00 ... 16.00 ORP -1999 ... 1999 mV rH value 0 ... 42.5 (with pH/ORP sensor)
	Glass electrode input	Input resistance > 1 x 10 ¹² Ω
	Ref. temperature 25 °C/77 °F	Input current < 1 x 10 ⁻¹² A Impedance range 0.5 ... 1000 MΩ (± 20%)
Temperature input via module	Ref. electrode input	Input resistance > 1 x 10 ¹⁰ Ω
	Ref. temperature 25 °C/77 °F	Input current < 1 x 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
		Pt100 / Pt1000 / NTC 30 kΩ / NTC 8.55 kΩ / Balco 3 kΩ
		2-wire connection, adjustable
Temperature compensation	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	10 K
	Resolution	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)
		Off Linear characteristic 00.00 ... 19.99%/K Ultrapure water Table: 0 ... 95°C, user-defined in 5 K steps
pH calibration and adjustment	Ref. temperature	25 °C/77 °F
		Calibration with automatic buffer recognition (Calimatic) Manual calibration with entry of individual buffer values

Specifications

	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
Measuring Functions for Conductivity (Cond)		
Digital input	Input for Memosens sensors	

Specifications

	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 $\mu\text{S} \cdot \text{c}$... 200 $\text{mS} \cdot \text{c}$	
	4-electrode sensors: 0.2 $\mu\text{S} \cdot \text{c}$... 1000 $\text{mS} \cdot \text{c}$	
	Measurement error ¹⁾³⁾ < 1% measured value + 0.4 $\mu\text{S} \cdot \text{c}$	
Temperature input via module	Pt100 / Pt1000 / Ni100 / NTC 30 k Ω / NTC 8.55 k Ω (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 k Ω -20.0 ... 150.0 °C/-4 ... 302 °F NTC 8.55 k Ω (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 $\mu\text{S}/\text{cm}$ 00.00 ... 99.99 $\mu\text{S}/\text{cm}$ 000.0 ... 999.9 $\mu\text{S}/\text{cm}$ 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 $\text{M}\Omega \text{ cm}$
	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}

Measuring Functions for Conductivity (CondI)

Digital input	Toroidal conductivity sensors: SE 670/SE 680
---------------	--

Specifications

	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
Temperature compensation (conductivity)	
Off	Without

Specifications

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 ₂ SO 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 ₂ SO ₄ • SO ₃ (Oleum)	12 ... 45 wt% (0 ... 120 °C/32 ... 248 °F)

Specifiable concentration table

Measuring Functions for Oxygen

Digital input	Standard measurement Trace measurement TAN option FW-E016	Input for amperometric Memosens sensors
Memosens	Terminals 1 ... 5 or MK-MS095N module Display range	Temperature: -20.0 ... 150.0 °C/-4 ... 302 °F
Digital input SE 740	Input for SE 740 optical oxygen sensor Terminals 1 ... 6 Measuring range Detection limit Response time T98 Display range	Depending on sensor 0 ... 300% air saturation 0.01 vol% < 30 s (at 25 °C/77 °F, from air to nitrogen) Temperature: -10.0 ... 130.0 °C/14 ... 266 °F The sensor does not supply measured oxygen values above 80 °C/176 °F.
Module input, analog	Measurement error Standard Input range	Depending on sensor Sensors: SE 706; InPro6800; Oxyferm Measuring current -600 ... 2 nA, resolution 10 pA

Specifications

	Measurement error ¹⁾	< 0.5% measured value + 0.05 nA + 0.005 nA/K
	Trace measurement	Sensors: SE 707; InPro 6900; Oxyferm/Oxygold
	TAN option FW-E016	
	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	-20.0 ... 150.0 °C/-4 ... 302 °F
	Adjustment range	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
Calibration and adjustment	Automatic calibration in air-saturated water	
	Automatic calibration in air	

Specifications

	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
	Condl 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
	Condl Evaluation of zero point, cell factor, installation factor, Sensocheck
	Oxygen Evaluation of zero/slope, response, calibration interval, Sensocheck, and sensor wear with digital sensors
Sensor monitor	Direct display of measured sensor values:
	pH pH/voltage/temperature
	Cond Resistance/temperature
	Condl Resistance/temperature

Specifications

	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	

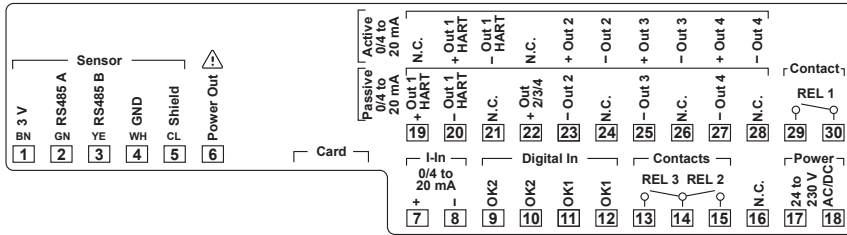
¹⁾ At rated operating conditions

²⁾ This equipment is not designed for domestic use, and is unable to guarantee adequate protection of the radio reception in such environments.

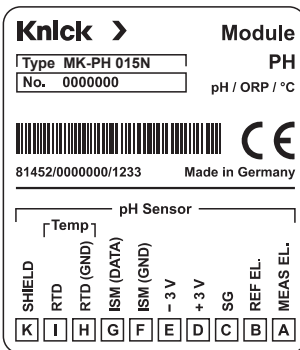
³⁾ ± 1 count, plus sensor error

⁴⁾ For temperature range -10 ... 80 °C/14 ... 176 °F

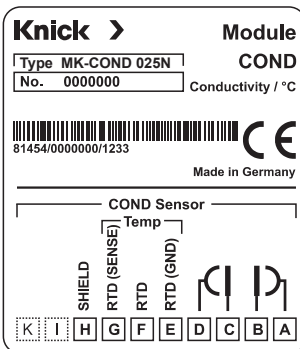
Stratos Multi E401 N Terminal Assignments



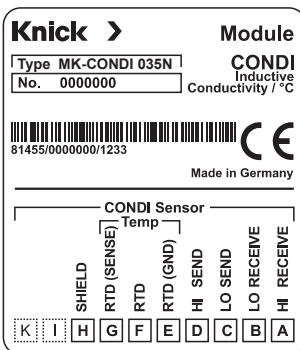
MK-PH 015N Module Terminal Assignments



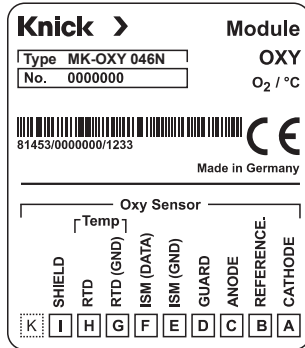
MK-COND 025N Module Terminal Assignments



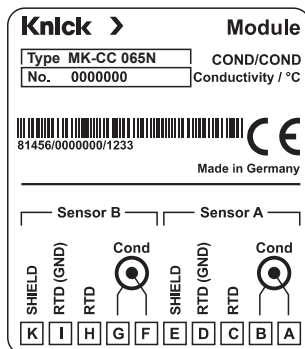
MK-COND 035N Module Terminal Assignments



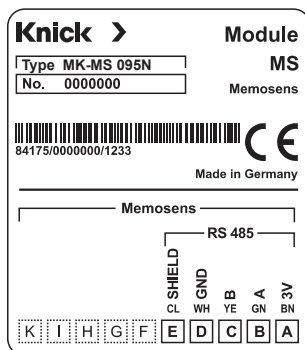
MK-OXY 046N Module Terminal Assignments



MK-CC 065N Module Terminal Assignments



MK-MS 095N Module Terminal Assignments



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.



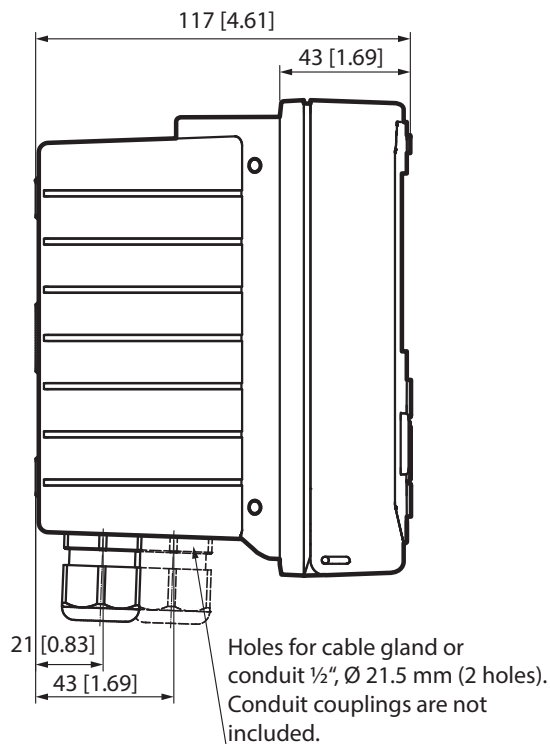
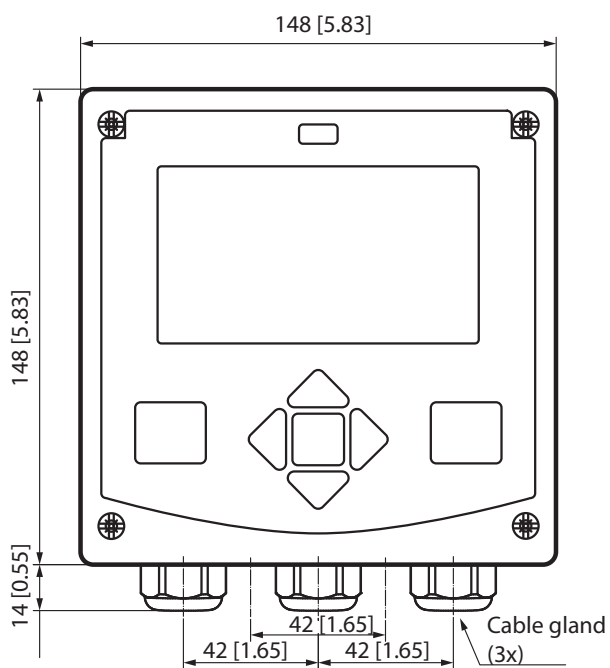
ZU 0738 Panel-Mount Kit

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

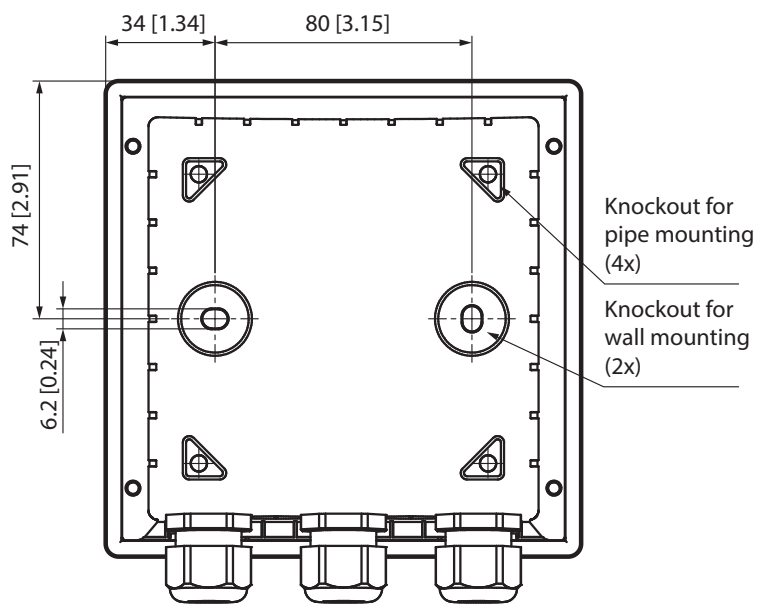


Dimension Drawings – Wall Mounting

Front and Side View

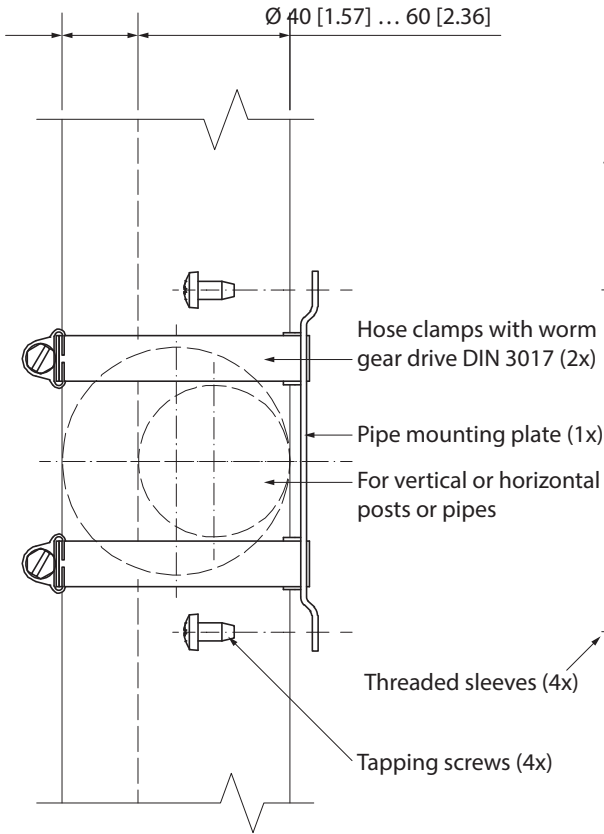


Rear View



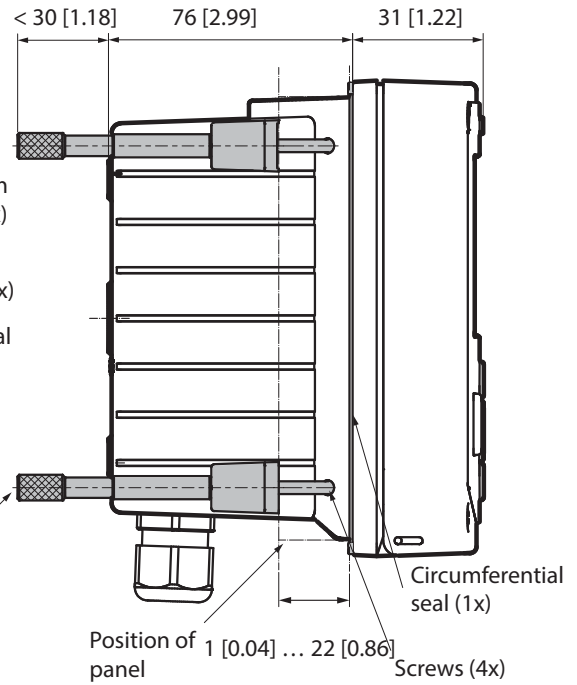
Dimension Drawings – Pipe/Panel Mounting

ZU 0274 Pipe-Mount Kit



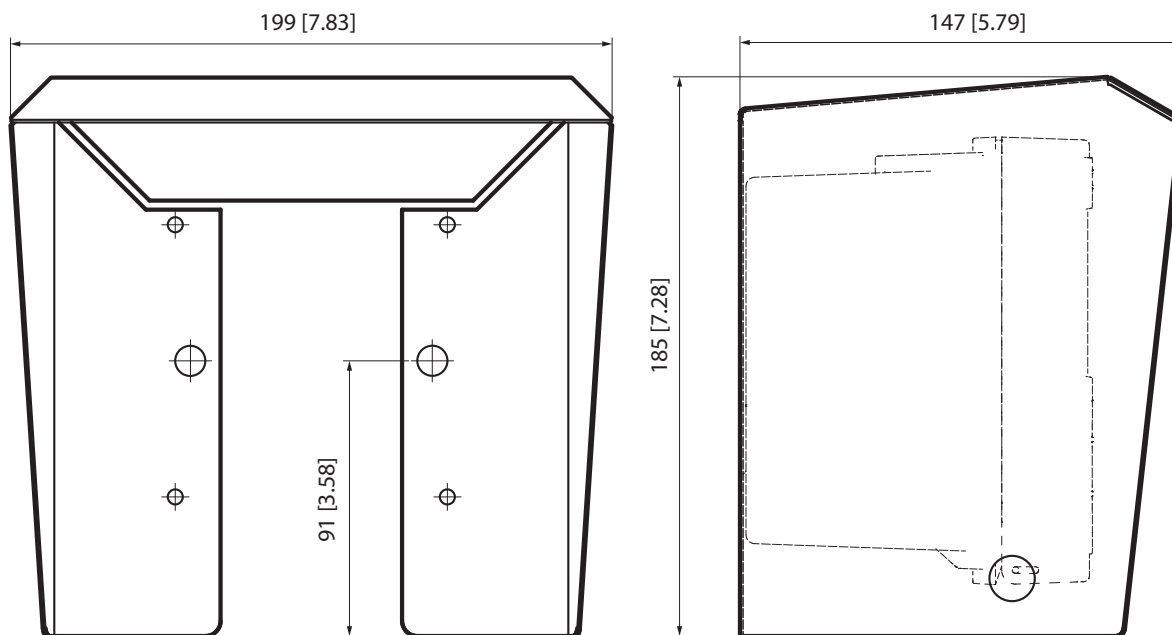
ZU 0738 Panel-Mount Kit

Panel cutout 138 x 138 mm (DIN 43700)



Dimension Drawings – Protective Hood

ZU 0737 Protective Hood



NEW ENGLAND
ETA PROCESS INSTRUMENTATION
since 1971
www.etapii.com
sales@etapii.com
tel: 978.532.1330



UPSTATE NEW YORK
MARTECH CONTROLS
since 1997
www.martechcontrols.com
sales@martechcontrols.com
tel: 315.876.9120