

Process Analysis Systems

Chem

Energy

Pharm

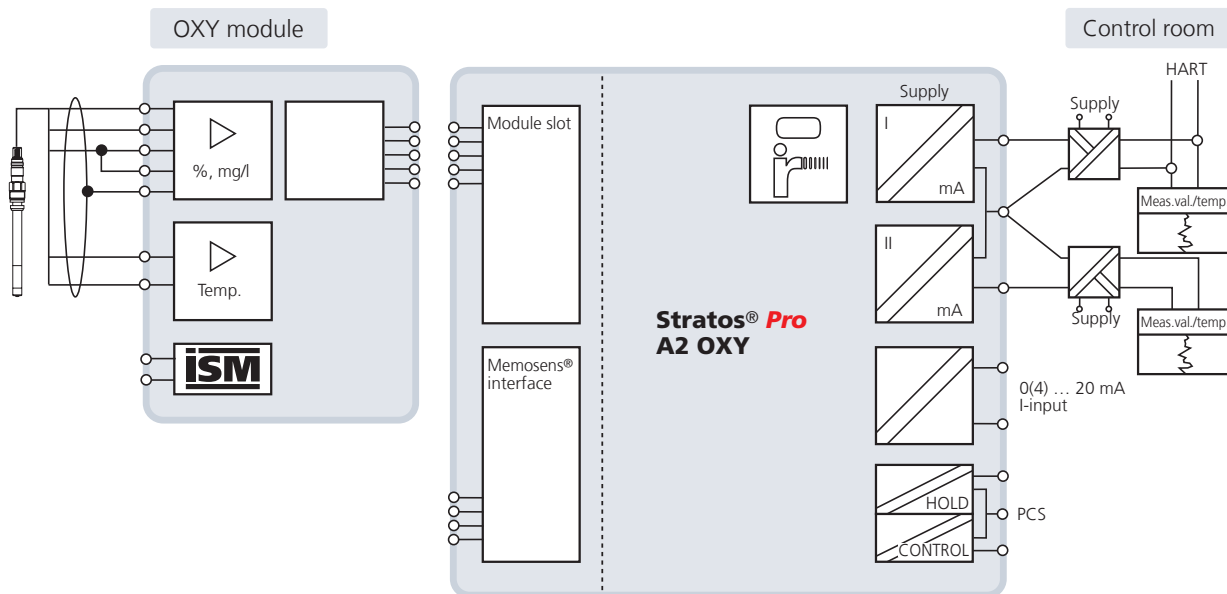
Food

Water

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

Knick		Module																																																			
MK-OXY 045 X		OXY																																																			
No. 0000000		O ₂ / °C																																																			
Stratos Pro A ...		IECEX Ex																																																			
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<table border="1"> <tr> <td colspan="10">Oxy Sensor</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Temp</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>SHIELD</td> <td>RTD</td> <td>RTD (GND)</td> <td>ISM (DATA)</td> <td>ISM (GND)</td> <td>GUARD</td> <td>ANODE</td> <td>REFERENCE</td> <td>CATHODE</td> </tr> <tr> <td>K</td> <td>I</td> <td>H</td> <td>G</td> <td>F</td> <td>E</td> <td>D</td> <td>C</td> <td>B</td> <td>A</td> </tr> </table>				Oxy Sensor																					Temp										SHIELD	RTD	RTD (GND)	ISM (DATA)	ISM (GND)	GUARD	ANODE	REFERENCE	CATHODE	K	I	H	G	F	E	D	C	B	A
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Terminal Assignments of Stratos® Pro 2-Wire Devices

18	17	16	15	14	13	12	11	10				9	8	7	6	5	4	3	2	1	
N.C.	4 to 20 mA	N.C.	N.C.	CONTROL	N.C.	N.C.	HOLD					-	+	4 to 20 mA	Supply/Out 12	4 to 20 mA	WH/CL	YE	GN	BN	
Out 2		Digital-In		HART		Supply/Out 12		I-In		RS 485		HART									

WARNING: DO NOT SEPARATE MODULE WHEN ENERGIZED



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

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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*)	<ul style="list-style-type: none"> – 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
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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



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

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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