Installation Guide

MK-OXY045/046...

Modules for Oxygen Measurement for the Stratos Series

Read before installation.
Keep for future use.

www.knick.de

1 Safety

Also read the User Manual and the Safety Guide, and follow the safety instructions. When using Ex versions, also pay attention to the safety instructions and information contained in the other documents included in the package contents.

The user manuals, safety guide, and further product information can be downloaded from www.knick.de.

2 Intended Use

The module is used to measure oxygen in liquids and gases. It enables the simultaneous measurement of oxygen partial pressure, air pressure, and temperature with analog amperometric and digital oxygen sensors. It is also able to calculate and display the oxygen saturation index and concentration, as well as volume concentration in gases.

Detailed information can be found in the basic unit's user manual.

Note: The specifications on the module's nameplate take precedence.

3 Package Contents

- Measuring Module
- Installation Guide
- Test Report 2.2 acc. to EN 10204
- Adhesive label with terminal assignments

For Ex version:

- Attachment to certificates
- EU Declaration of Conformity
- Control Drawings

Check all components for damage upon receipt.

Do not use damaged parts.

4 Module Compatibility

Non-Ex devices

	Stratos Pro A201N	Stratos Evo A402N	Stratos Multi E4*1N
MK-OXY045N	x	x	
MK-OXY046N	x	x	x

Ex devices

	Stratos Pro A201X	Stratos Pro A201B	Stratos Evo A402B	Stratos Multi E4*1X
MK-OXY045B		x	x	
MK-OXY045X	x			x

Knick
Elektronische Messgeräte
GmbH & Co. KG

Headquarters
Beuckestraße 22 • 14163 Berlin
Germany
Phone: +49 30 80191-0
Fax: +49 30 80191-200
info@knick.de
www.knick.de

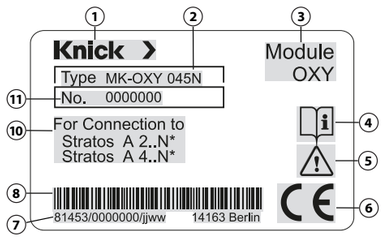
Local Contacts
www.knick-international.com

Version 2
This document was published on December 23, 2020.
The latest documents are available for download on our website under the corresponding product description.

TI-211-046-KNEN02
097266

5 Nameplate

Illustrative example

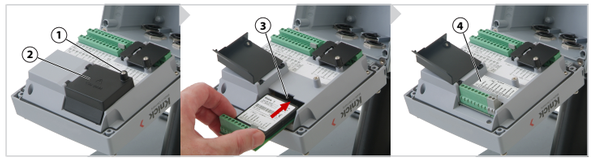


1	Name of manufacturer	6	CE mark (with identification number for Ex devices)
2	Model designation N = non-Ex device; X = Ex-device	7	Serial number/year and week of production
3	Product name	8	Manufacturer's address with barcode
4	Reminder to read the documentation	9	Reference to additional information
5	Special conditions: Read the user manual, observe the specifications, and follow the instructions in the safety guide.	10	Module compatibility
		11	Product number

6 Inserting the Module

⚠**CAUTION! Electrostatic discharge (ESD).** The modules' signal inputs are sensitive to electrostatic discharge. Take measures to protect against ESD before inserting the module and wiring the inputs.

NOTICE! Strip the insulation from the wires using a suitable tool to prevent damage.



01. Switch off the power supply to the device.
02. Open the device (loosen the 4 screws on the front).
03. Loosen screw **(1)** on the module cover **(2)** ("ESD shield") and open the cover.
04. Insert the module into the module slot **(3)**.
05. Attach the module plate sticker **(4)**.
06. Connect the sensor and any separate temperature probe.

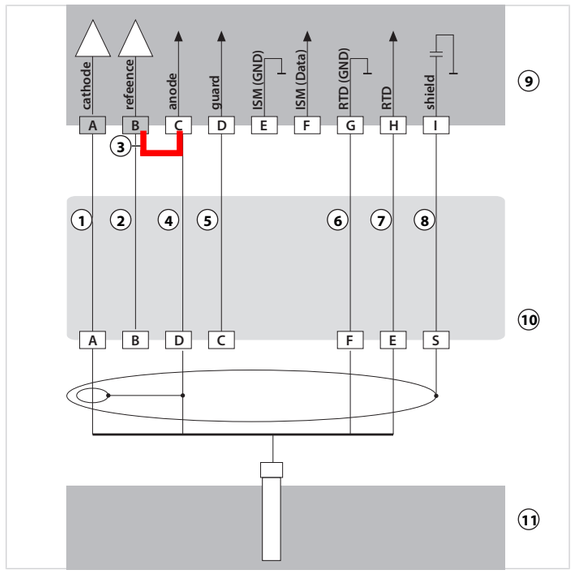
⚠**CAUTION! Risk of losing the specified ingress protection.** Fasten the cable glands and screw together the housing correctly. Observe the permissible cable diameters and tightening torques. Only use original accessories and spare parts.

07. Check whether all connections are correctly wired.
08. Close the module cover **(2)**, tighten screw **(1)**.
09. Close the device and tighten the screws on the front.
10. Switch on the power supply.

7 Wiring Examples

Example 1:

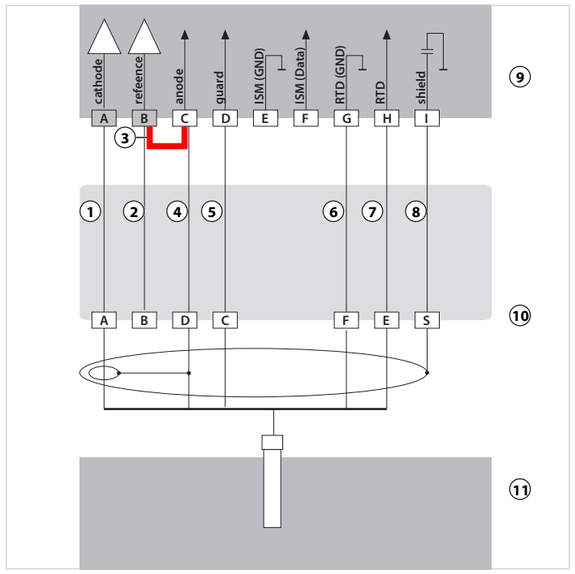
Measuring task:	Oxygen STANDARD
Sensors (example):	Type "10" (e.g., SE 706, InPro 6800)
Cable (example):	CA/VP6ST-003A (ZU 0313)



1	Core	5	Gray	9	Oxygen measuring module
2	Blue	6	Green	10	VP6 cable
3	Jumper!	7	White	11	Sensor
4	Shield	8	Outer shield		

Example 2:

Measuring task:	Oxygen TRACES (TAN required)
Sensors (example):	Type "01" (e.g., SE 707, InPro 6900)
Cable (example):	CA/VP6ST-003A (ZU 0313)

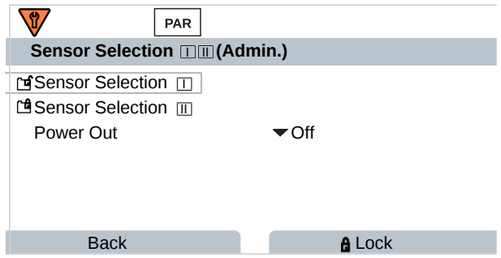


1	Core	5	Gray	9	Oxygen measuring module
2	Blue	6	Green	10	VP6 cable
3	Jumper!	7	White	11	Sensor
4	Shield	8	Outer shield		

8 Stratos Multi Configuration

⚠CAUTION! Incorrect parameter settings or adjustments can result in incorrect outputs. Stratos must therefore be commissioned by a system specialist, all its parameters must be set, and it must be fully adjusted.

01. Select a measuring function and configure the sensor:
    From within measuring mode, press the ***left softkey: Menu***.
    The menu selection opens.
02. Select Parameter Setting ▸ Sensor Selection [I] [II] .



Note: Function check (HOLD) is active.

03. Press ***enter*** to open the Sensor Selection [II] .
04. Select the module and mode, and confirm with ***enter***.
05. Set further parameters with the ***left softkey: Back***.
06. Return to measuring mode to end configuration, e.g., with the ***right softkey: Back to Meas.***.

9 Stratos Multi Messages/Troubleshooting (Excerpt)

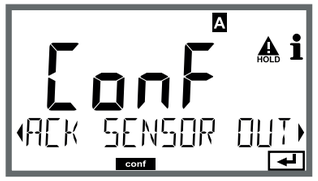
Error	Message	Remedy
	Display is blank	Press any key to wake the display following a possible auto-off. Check the voltage supply.
	No measurement, no error message	Check the sensor connection/install the module properly. Configure the measurement display.
	Sensoface	Calibrate and adjust the sensor, check the sensor connection, clean the sensor and replace if necessary, replace the sensor cable.
B073/ B078	Current I1/I2 Load Error	Check the current loop, deactivate unused current outputs
D010	Saturation %Air Range	Connect the sensor, check the sensor cable and replace if necessary, check the sensor connection, adjust the operating mode
D015	Temperature Range	
D120	Wrong Sensor	Replace the sensor, change the process variable
D121	Sensor Error	Replace the sensor

Note: More information on messages and troubleshooting can be found in the user manual for the basic unit.

10 Stratos Pro/Evo Configuration

⚠CAUTION! Incorrect parameter settings or adjustments can result in incorrect outputs. Stratos must therefore be commissioned by a system specialist, all its parameters must be set, and it must be fully adjusted.

01. Select a measuring function and configure the sensor:
    From within measuring mode, press the ***Menu*** key.
    The menu selection opens.
02. Use the ***arrow keys*** to select CONF mode.



Note: Function check (HOLD) is active.

03. Open sensor selection: PARSET A ▸ SENSOR .
04. Select and configure the sensor type.
05. To end configuration, press the ***Meas*** key until the [meas] status bar is shown on the display.

11 Stratos Pro/Evo Messages/Troubleshooting (Excerpt)

Error	Message	Remedy
	Display is blank	Check the voltage supply.
	No measurement, no error message	Check the sensor connection/install the module properly. Configure the measurement display.
	Sensoface	Calibrate and adjust the sensor, check the sensor connection, clean the sensor and replace if necessary, replace the sensor cable.
ERR 60	OUTPUT LOAD	Check the current loop, deactivate the current outputs
ERR 01	NO SENSOR	Assign device type, connect the sensor, check the sensor cable and replace if necessary, check the sensor connection
ERR 02	WRONG SENSOR	Replace the sensor, change the process variable
ERR 04	SENSOR ERROR	Replace the sensor
ERR 13	TEMPERATURE RANGE	Connect the sensor, check the sensor cable and replace if necessary, check the sensor connection, adjust the operating mode

Note: More information on messages and troubleshooting can be found in the user manual for the basic unit.

12 Specifications (Excerpt)

Module input		
Standard		
Sensors	SE 706; InPro 6800; Oxyferm	
Input range	Measuring current	Stratos Multi: -600…2 nA
		Stratos Pro/Evo: 0…600 nA
	Resolution 10 pA	
Measurement error[1]	< 0.5 % of measured value + 0.05 nA + 0.005 nA/K	
Trace measurement (TAN option) [2]		
Sensors	SE 707; InPro 6900; Oxyferm/Oxygold	
Input range I	Measuring current	Stratos Multi: -600…2 nA
		Stratos Pro/Evo: 0…600 nA
	Resolution 10 pA	
	Automatic range selection	
	Measurement error[1]	< 0.5 % of measured value + 0.05 nA + 0.005 nA/K
Input range II	Measuring current	Stratos Multi: -10,000…2 nA
		Stratos Pro/Evo: 0…10,000 nA
	Resolution 166 pA	
	Automatic range selection	
	Measurement error[1]	< 0.5 % of measured value + 0.08 nA + 0.008 nA/K
Polarization voltage	-400…-1,000 mV, preset -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 at > 100 °C / > 212 °F)
Operating modes	
Measurement in gases	
Measurement in liquids	
Measuring ranges	
Standard sensor	
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 (TAN option) [2]	
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) Manual or external (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	
Product calibration, saturation	
Zero correction	
Temperature probe adjustment	
Calibration ranges	
Standard sensor	
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

Explosion protection (MK…B/X)	See control drawings for entity parameters
Terminals	
Screw terminals	For single and stranded wires 0.2 … 2.5 mm^2
Tightening torque	0.5 … 0.6 Nm
Wiring	
Stripping length	Max. 7 mm
Temperature resistance	> 75 °C / 167 °F

Note: Further specifications can be found in the user manual for the basic unit.

1) At rated operating conditions

2) Stratos Multi: FW-E016
Stratos Pro/Evo: SW A004

3) ± 1 count, plus sensor error

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