Technical Information TI 348C/07/en/07.03 51511756

# Oxygen Measurement COM 280

### Battery-driven pocket meter for dissolved oxygen measurement





















#### Application

COM 280 is a compact pocket meter for measuring dissolved oxygen. COM 280 is suitable for oxygen measurement in the following fields of application:

- Wastewater treatment plants
- Drinking and surface water
- Laboratory and field measurement

#### Your benefits

- Comfortable operation:
   Clear multi-function display with user guidance
- Salinity compensation for sea water measurement
- Safe and cost-effective operation:
  - Long service life with four commonly used 1.5 V batteries: approx. 3000 h
  - Automatic power-down
  - Dust and water-proof housing (IP 66)
  - 3-year warranty for the measuring instrument







Measuring principle	Oxygen measurement Dissolved oxygen is determined using the amperometric principle. The oxygen molecules of the medium diffuse through the sensor membrane and are reduced to hydroxide ions (OH <sup>-</sup> ) on the gold cathode. On the plumb anode, plumb is oxidised to plumb ions (Pb <sup>++</sup> ). The electron release from the gold cathode and the electron acceptance at the plumb anode result in a current flow, which is proportional to the concentration of dissolved oxygen in the medium under constant conditions. The transmitter transforms the current signal into the measuring units concentration in mg/l and saturation index in % sat.
Measuring system	<ul> <li>A complete measuring system comprises:</li> <li>COM 280 pocket meter</li> <li>COS 280 oxygen sensor with built-in NTC 30 temperature sensor, 3 m (9.8 ft) fixed cable and a water-proof DIN plug</li> <li>plastic bowl 50 ml for sampling</li> <li>stand used as electrode holder</li> </ul>

# Function and system design

# Input

Measured variables	Oxygen concentration, oxygen saturation, partial pressure, temperature		
Measuring ranges	Oxygen concentration Oxygen saturation Partial pressure Temperature	0 90 mg/l (ppm) 0 600% 0 1250 mbar (0 18.1 psi) –5 80 °C (23 176 °F)	
Input impedance	> 1 x $10^{12} \Omega$ (at nominal operating conditions)		
Input current	< 1 x 10 <sup>-12</sup> A (at nominal operating conditions)		

### **Power supply**

Sensor connection	via fixed cable	
Supply voltage	Batteries Service life	4 x 1,5 V alkali-manganese batteries, type AA approx. 3000 h

Reference temperature	25 °C (77 °F)		
Measured value resolution	Oxygen concentration Oxygen saturation Partial pressure Temperature	0 90 mg/l (ppm) 0 600% 0 1250 mbar ( 0 18.1 psi) –5.0 80.0 °C (23 176 °F)	1 mg/l 1% 1 mbar ±0.1 K
Measured error <sup>a</sup>	Oxygen concentration Oxygen saturation Partial pressure	$\pm 0.5\%$ of measured value $\pm 1$ d $\pm 0.5\%$ of measured value $\pm 1$ d $\pm 1\%$ of measured value $\pm 1$ dig $\pm 0.5\%$ of measured value $\pm 1$ dig $\pm 1\%$ of measured value $\pm 1$ dig	igit at 5 30 °C (41 86 °F) igit at ±10 K of T <sub>Calibration</sub> it at –5 5 °C (23 41 °F) igit at 5 30 °C (41 86 °F) it at 30 45 °C (86 113 °F)
	Temperature Temperature compensation	±0.1 K ±1 digit < 2% at 0 40 °C (32 104 °F	;) ;)
Temperature compensation	0 40 °C (32 104 °F)		
Salinity compensation	optional, preset salinity 35.0		
Ambient pressure compensation	automatically compensated by built-in pressure sensor within 500 1100 mbar (7.3 16.0 psi)		

### **Performance characteristics**

### Environment

Storage temperature	–25 +55 °C (-13 131 °F)
Relative humidity	< 100%
Climate class	2
Ingress protection	IP 66
Electrical protection class	111
Electromagnetic compatibility	Interference emission and interference immunity according to DIN EN 50081-1 / 50081-2

### Process

**Process temperature** –5 ... 80 °C (23 ... 176 °F)

a) according to DIN IEC 746 part 1, at nominal operating conditions

Dimensions	COM 280 pocket meter	H x W x D:	172 x 80 x 37 mm (6.8 x 3.2 x 1.5")
	COS 280 sensor	L x Ø:	80 x Ø 14 mm (3.2 x Ø 0.6") (shaft)
	Case	H x W x D:	115 x 355 x 305 mm (4.5 x 14.0 x 12.0")
Weight	COM 280 pocket meter	approx. 0.4 kg (0	).9 lb.)
	COS 280 sensor	approx. 0.2 kg (0.4 lb.)	
	Case (total weight)	approx. 2.3 kg (5	5.1 lb.)
Materials	COM 280 pocket meter	Housing:	PP
		Kevs:	silicon
	COS 280 sensor	Sensor shaft:	POM, stainless steel 1.4571 (AISI 316Ti)
		Temperature sensor: zirconium	
Measured value display	LC display, two lines		

### **Mechanical construction**

### Human interface



# **Certificates and approvals**

CE approval	<b>Declaration of conformity</b> The product meets the legal requirements of the harmonised European standards. Endress+Hauser confirms compliance with the standards by affixing the <b>C</b> € symbol.
	Ordering information
Order number	Oxygen pocket meter COM 280 Order no.: 51510540
	Scope of delivery
Scope of delivery	<ul> <li>The measuring set comprises:</li> <li>1 COM 280 pocket meter</li> <li>1 membrane-covered oxygen sensor COS 280 with built-in NTC 30 temperature sensor, calibration and storing vessel and protection guard, 3 m (9.8 ft) fixed cable and water-proof DIN plug</li> <li>1 plastic bottle with alkali electrolyte solution, 50 ml</li> <li>1 plastic bottle with cleaning solution, 50 ml</li> <li>1 plastic bowl 50 ml</li> <li>1 spare membrane</li> <li>1 polishing foil</li> <li>1 stand used as sensor holder</li> <li>4 alkali-manganese batteries 1.5 V</li> <li>1 solid plastic case made from PP with integrated measuring point and separate pocket for sensor and accessories</li> <li>1 Operating Instructions BA 348C/07/b4</li> </ul>
	Accessories and spare parts
Sensors	Oxygen sensor COS 280 with built-in temperature sensor, calibration and storing vessel and protection guard. With 3 m (9.8 ft) fixed cable and water-proof DIN plug. Application range 0 90 mg/l (ppm), –5 80 °C (23 176 °F)

	Order no.: 51511013
Electrolyte solutions	Electrolyte solution set COY 381. 2 plastic bottles with cleaning and electrolyte solution, 50 ml each. Order no.: 50081036
Membranes	□ Spare membranes COY 280-WP, 3 pieces. Order no.: 51511015
Polishing foils	Polishing foil COY 31-PF for cleaning of the gold cathode, 10 pieces. Order no.: 51506973

# Supplementary documentation

Pocket meter COM 280, Operating Instructions BA 348C/07/b4, Order no.: 51510873

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