



OPTISENS PAC 050 Technical Datasheet

OPTISENS 050 Converter for pH+ORP

- Easy-to-use, reliable converter of the OPTISENS 050 series for use in water analysis
- Integrated controller and temperature compensation
- Excellent price/performance ratio

OPTISENS 050 Converter for the measurement of pH and ORP

Thanks to the combination of the practical, low cost OPTISENS 050 hardware and the versatile OPTISENS PAS 1000 electrodes, the PAC 050 is ideally suited for a wide range of water analysis measurement tasks. Measurement is carried out using the potentiometric principle and can, depending on the connected electrode, be switched between the pH value and ORP voltage.



- Backlit, two-line alphanumeric liquid crystal display
- Membrane keyboard

Highlights

- 1 input for an OPTISENS PAS 1000 sensor
- 1 analogue output (switchable between the measured value or steady controller)
- Integrated controller and two limit switches and an alarm relay to activate solenoid valves, dosing pumps, etc.
- Temperature compensation either manually or using temperature sensor
- Semiautomatic two-point calibration and monitoring of slope and zero point
- Simple, text-guided device operation
- Excellent price/performance ratio

Industries

- Water industry
- Power plants
- Food industry
- Metal industry and mining
- Paper industry
- Chemical industry

Applications

- Generally, in all water applications
- Monitoring and control of water neutralisation processes/disinfection
- Quality control of water (including steam and cooling water)
- Process control
- Dosage of precipitant

Options and variants



OPTISENS 050 Compact design and two enclosure variants:

The PAC 050 has two enclosure designs available to offer flexible use in various installation situations:

- PAC 050 R for installation in control cabinets/panels
- PAC 050 W for wall installation and panels (also suitable for outdoor installations – protection class IP 65)

Other options:

- Serial interface RS 485
- External Profibus DP module



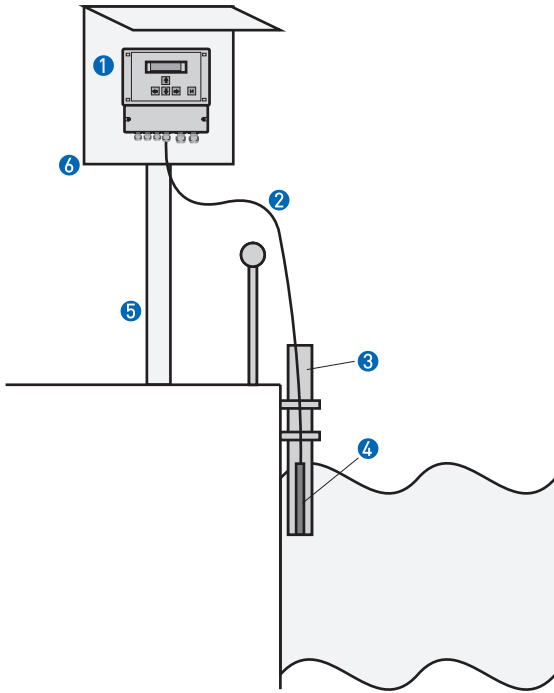


Electrodes of the OPTISENS PAS 1000 series:

An OPTISENS electrode of the PAS 1000 series can be connected to each PAC 050. The high precision electrodes are available in various versions and materials and can thus cover a wide area of use. Special versions and other measurement ranges are available on request.

- PAS 1000 pH Combined electrode with ceramic diaphragm
- PAS 1000 pH Combined electrode with ceramic diaphragm, including Pt100
- PAS 1000 pH Combined electrode with Teflon diaphragm
- PAS 1000 pH Combined electrode with Teflon diaphragm, including Pt100
- PAS 1000 pH 120 mm ORP combined electrode with platinum electrode

pH measuring system as outdoor installation on an open basin



- ① PAC 050 W Converter
- ② PAW 1000 Sensor cable
- ③ MAA 1000 Immersion assembly
- ④ PAS 1000 Combined electrode
- ⑤ Mounting post
- ⑥ Mounting plate with weather protection

Technical data

Measuring system

Measuring principle	Potentiometric measurement
Application range	pH and ORP measurement in liquids
Modular design	A complete measuring system consists of:
	- PAC 050 Converter,
	- Electrodes of the OPTISENS PAS 1000 series,
	- MAA 1000 Assembly,
	- Cables and connecting elements.

Converter

Rack-mount enclosure (R)	PAC 050 R for installation in control cabinets/panels
Field housing (W)	PAC 050 W for wall installation and mounting on panels
	[also suitable for outdoor installations – protection class IP 65]

Communication

Analogue output	0/4...20 mA analogue output
Relay	Three potential-free contacts (2 x controller, 1 x alarm);
	Freely programmable
Digital communication	RS485 interface (option),
	Profibus DP module (acyclic -> DP-V1) as accessory
Temperature compensation	Manual or automatic with Pt100

Display

LCD display	LCD display, two-line, 2 x 16 characters, backlit,
Display of:	Measured value with unit
	Temperature with unit
	Switching states of the relays
	Status of sensor, calibration
Operating elements	Membrane keypad with five keys
Operating language	German, English, Swedish, Dutch, Spanish, French, Polish, Czech

Measuring accuracy

	$\leq \pm 0.01 \text{ pH} / , \pm 1 \text{ mV}$
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Operating conditions

Ambient temperature	0...+50°C / 32...+122°F
Air humidity	0...90% (at 40°C / 104°F), non-condensing
Storage temperature	-20...+65°C / -4...+149°F

Materials

Enclosure	PAC 050 R: Noryl PAC 050 W: ABS
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Electrical connection

Power supply	230 VAC +/- 10%, 50/60 Hz, alternatively 117 VAC or 24 VAC
Power consumption	10 VA
Connections	PAC 050 R: Screw terminals for cables of max. 1.5 mm ² PAC 050 W: Spring clips for cables of max. 1.5 mm ²
Internal fuse	PAC 050 R: None PAC 050 W: 230 V: 63 mA slow-blow 117 V: 125 mA medium time-lag 24 V: 800 mA slow-blow

Measuring range

	0.00...14.00 pH / -1.500...1.500 mV
Temperature measuring range	-30.0...+140.0°C

Controller

Controller variants	ON/OFF controller, optionally with hysteresis
(switchable)	P controller as pulse pause, pulse frequency or steady controller PI controller as pulse pause, pulse frequency or steady controller
Switching points	Two set points with adjustable direction
Hysteresis	Freely adjustable within the measurement range
P range XP	Freely adjustable within the measurement range
Integral time TN	0...2000 s
Minimum pulse	0.1...9.9 s
Pulse + pause time	2...99 s
Pulse frequency	0.0...72 corresponds to 0...7200 pulses/hr.
Switch-on delay	0...200 s
Limit values/alarm function	Min. and max. limit value and delay time NC contact, NO contact, pulse or permanent contact
Dosage control	0... 90 min

Inputs and outputs

Relay	Three potential-free contacts (2 x controller, 1 x alarm), 6 A, 250 V, max. 550 VA
Analogue output	0/4...20 mA galvanically isolated, Max. load 500 Ohm
Analogue inputs	1 input for pH or ORP, 1 input for Pt100
Digital input	External controller stop or flow measurement
Digital interface (option)	RS485, Baud rate 9600, data format 8 bit, One Start bit and one Stop bit, no parity

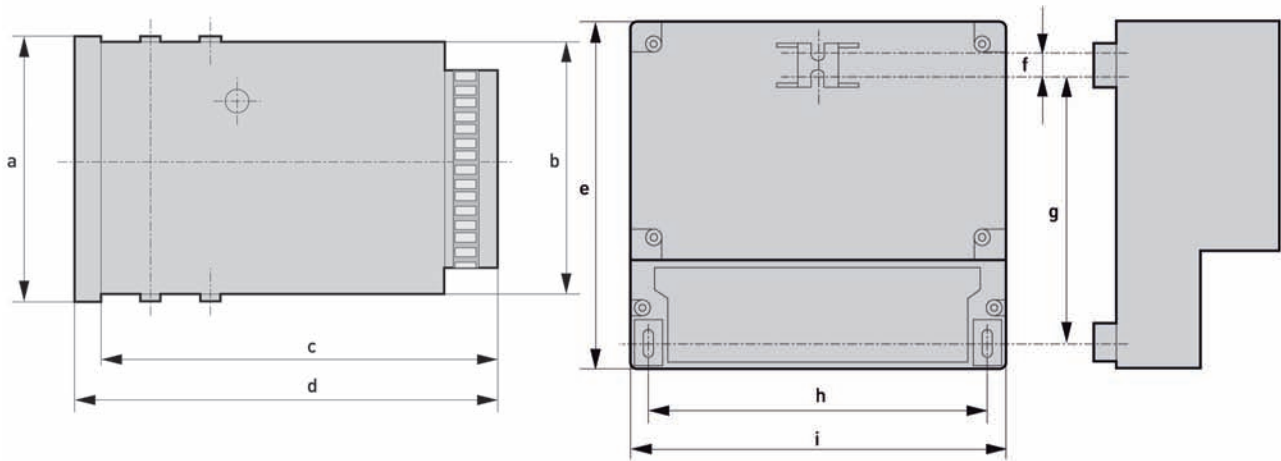
Protection class

CAC 050 R	IP 54 (Front), IP 30 (Enclosure)
CAC 050 W	IP 65

Approvals

Non-Ex	Standard
Approval symbol	CE
EMC (2004/108/EC)	Interference emission to EN 55011:1998 + A1:1999+A2:2002 Immunity to EN 61000-6-2:2001
Low Voltage Directive (2006/95/EC)	Safety requirements for electrical measurement, control and laboratory units according to EN 61010-1:2002-08
Calibration	
	Semiautomatic two-point calibration (for pH) with automatic detection of the calibration solutions in any order

Dimensions and Weight



Dimensions	
a	96 mm x 96 mm
b	90 mm x 90 mm
c	129 mm
d	137 mm
e	160 mm
f	15 mm
g	120 mm
h	151 mm
i	165 mm

Weight	
Rack-mount enclosure	0.75 kg
Wall-mount enclosure	0.95 kg

Order structure

VGA A	4	Type/Housing converter
	0	none
	1	OPTISENS PAC 050 R
	2	OPTISENS PAC 050 W
		Sensor input
	0	none
	1	1 x OPTISENS PAS 1000 Sensor
		Signal output
	0	none
	1	1 x 0/4-20 mA
	5	1 x 0/4-20 mA + RS 485
		Relais
	0	none
	3	2 x freely programmable, 1 x alarm
		Language
	0	none
	1	english and german
		Approvals
	0	none
		Power supply
	0	none
	1	220 ... 240 V AC, 50/60 Hz
	2	115 ... 130 V AC, 50/60 Hz
	3	24 V AC, 50/60 Hz
		Options
	0	none
		Documentation
	0	none
	1	english
	2	german
VGA A	4	Order code

Accessories

Order number	Designation
VGA Z C 08000	Stainless steel mounting post, 1700 height, with horizontal bar
VGA Z C 08010	Mounting plate with sunshield for OPTISENS converter
VGA Z C 08020	Temperature sensor Pt100 G 120 PG for OPTISENS 050 converter
VGA Z C 08030	Cable for OPTISENS 050 temp. sensor (3 m)
VGA Z C 08040	Profibus DP module for OPTISENS 050 converter



KROHNE Product Overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Mass flowmeters
- Ultrasonic flowmeters
- Vortex flowmeters
- Flow controllers
- Level measuring instruments
- Pressure gauges
- Temperature measuring instruments
- Water solutions & analysis
- Oil and gas turnkey solutions

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