DULCOTEST Sensors

Table of Contents

"DULCOTEST Sensors" T.O.C.

CATALOG SECTION TABS

product overview					
solenoid-driven metering pumps					
motor-driven metering pumps					
pump spare parts & accessories					
DULCOMETER instrumentation	 D1Cb/c DACb DACb Dulcometer Compact AEGIS II DMT SlimFlex 5 MicroFlex 				
DULCOTEST sensors	 Amperometric sensors Potentiometric sensors Potentiostatic sensors Conductometric sensors 				
polymer blending & dry feed solutions	 ProMix[™] - M ProMix[™] - S (In-line Controls) ProMix[™] - C ProMix[™] - M ProMdry[™] (Batch & In-line Controls) 				

DULCOTEST[®]

Overview: Sensors

DULCOTEST Sensors

DULCOTEST Sensors supply exact, reliable and application-specific measured values in real time for the purpose of effectively monitoring or controlling processes. The sensors can be optimally integrated in the ProMinent® control circuit together with controllers and metering pumps. Many different types of fitting are available for optimum integration in specific processes. The measurement methods

- Potentiometry (pH, ORP, fluoride)
- Amperometry (disinfectant)
- Conductivity (salinity, alkalinity, acidity)

cover the most important measurement parameters found in water treatment applications. The sensors are stable in the long term, require minimum maintenance and are easy to install, calibrate and service.

Potentiometric DULCOTEST Sensors

The DULCOTEST Sensors pH and ORP sensors represent a comprehensive range of sensors for solving all measurement tasks. The range of applications extends from simple use in water treatment systems through to industrial process applications with demanding requirements in terms of temperature, pressure as well as resistance to soiling and chemicals.

- Long service life ensured by premium glass guality and an optimum combination of automated and manual production
- Precise and reliable measurement for efficient processes and maximum process reliability
- Tailored process integration guaranteed by special versions with individual installation lengths, cable lengths and connectors
- Short delivery and storage times ensure optimum electrode life

Amperometric DULCOTEST Sensors

The amperometric sensors of the DULCOTEST Sensors product line supply measured values for the most diverse range of disinfectants such as e.g. chlorine, bromine, chlorine dioxide, ozone. The selective and exact measured values ensure maximum process reliability and are made available round the clock in real time either for monitoring or controlling applications. ProMinent sets standards with its sensor systems: Innovative sensors such as for chlorite, total chlorine, peracetic acid, hydrogen peroxide and dissolved oxygen enhance the product range. The sensors are available for different measuring ranges, in different connection variants for DULCOMETER measuring and control devices and as special versions for specific applications.

DULCOTEST Sensors for Electrolytic Conductivity

The comprehensive product line of DULCOTEST Sensors conductivity sensors ensures the right

sensor is selected with optimum price/performance ratio in applications ranging from simple water treatment through to intricate industrial process waste water processing. 27 different types of sensor tailored to the most diverse range of requirements: Measuring range, temperature, chemical resistance, soiling compatibility and process integration

- From simple conductometric 2-electrodes through to inductive high-end sensors Precise and reliable measurement for efficient process control and maximum process reliability
- Long service life and long maintenance intervals reduce downtimes and increase the availability of the measured values
- Completely preassembled fitting and sensor sets for simple, fast and flawless installation







Overview: Sensors

Selection Guide DULCOTEST Sensors pH Sensors



Selection Guide: Amperometric Sensors

Measured variable	Applications	measuring range	Connection to DULCOMETER®	Sensor type
		0.01–100		CLE 3-mA-xppm,
Free chlorine	Drinking water, swimming pool	ppm	D1C, DAC	CLE 3.1-mA-xppm
	Drinking water, swimming pool water, in situ			
Free chlorine	electrolysis (without diaphragm)	0.02-10 ppm	D1C, DAC	CLO 1-mA-xppm
	Hot water up to 70 °C (legionella), in situ			
Free chlorine	electrolysis (without diaphragm)	0.02-2 ppm	D1C, DAC	CLO 2-mA-2ppm
Free chlorine	Drinking water, swimming pool	0.01-50 ppm	DMT	CLE 3-DMT-xppm
				CLE 3-CAN-xppm,
Free chlorine	Drinking water, swimming pool	0.01–10 ppm	DULCOMARIN® II	CLE 3.1-CAN-
Free chlorine	Drinking water, swimming pool	0.05-5 ppm	COMPACT	CLB 2-µA-xppm

Overview: Sensors

Measured variable	Annlications	Graduated	Connection to	Sensor type
	Cooling water, swimming pool water,	measuring	DOLOOMETEN®	ochioti type
Total available	whirlpool water, bromine with bromorganic			
bromine	disinfectants (e.g. BCDMH)	0.2–10 ppm	D1C, DAC	BRE 1-mA-xppm
	Cooling water, swimming pool water, whirl-		,	
Total available	pool water, bromine with inorganic bromine			
bromine	compounds (e.g. NaBr/HOCI)	0.2–10 ppm	D1C, DAC	BRE 2-mA-xppm
	Cooling water, swimming pool water, whirl-		,	
Total available	pool water with bromorganic or inorganic			BRE 3-CAN-10
bromine	bromine compounds	0.02-10 ppm	DULCOMARIN® II	ppm
Free and bound	Cooling water, process water, waste water,			
bromine	water with higher pH values (stable)	0.02-20 ppm	D1C, DAC	CBR 1-mA-xppm
			D1C, DAC,	
Chlorine dioxide	Drinking water	0.01–10 ppm	DULCOMARIN® II	CDE 2-mA-xppm
			D1C, DAC,	
Chlorine dioxide	Bottle washer system	0.02–2 ppm	DULCOMARIN® II	CDP 1-mA
	Hot water up to 60 °C, cooling water, waste		D1C, DAC,	
Chlorine dioxide	water, irrigation water	0.01-10 ppm	DULCOMARIN® II	CDR 1-mA-xppm
			D1C, DAC,	

Selection Guide DULCOTEST Sensors ORP Sensors



DULCOTEST sensors

pH Sensors With SN6 or Vario Pin

Series:

PHE	pН	sensor										
	Pro	operties:										
	Х	wit	h soli	d ele	ctrolyte and circular gap diaphragm							
	Κ	wit	h inse	ensit	ve plastics shaft							
	Ν	refillable KCI electrode										
	Е	Puncture electrode										
	R	wit	h PF1	ΓE ci	rcular diaphragm							
	P	pre	essure	e tigh	t up to 87.0 psi (6 bar)							
	D	2 c	eram	ics c	iaphragms (double junction)							
	S	SW	immir	ng p	DOI Electrode							
	F	res	sistani	i lo r	ydrolluonic acid							
		Sn	ocial		unment.							
		т	ltomp	orat	uro up to 212 $^{\circ}$ E (100 $^{\circ}$ C) alkali resistant							
		ч Ц	with	built	in temporature dauge							
			vortic	ouiit Sol to	horizontal installation							
		L	vertic									
			рнr	nea	suring range:							
			112	рН	measuring range: 1 - 12							
				Ele	ctrical connection to electrode:							
				S	Plug for coax connector SN6							
				V	Vario Pin plug							
					Internal thread:							
		E Internal thread PG 13.5 for installation										
					L without, laboratory electrode refillable with KCI							
					Diaphragm:							
					3D 3 ceramics diaphragms							
PHE	X	Т	112	S	E 3D							



PHES 112 SE

pH range: 1-12	
Temperature: 32-140 °F (0-60 °C)	
Max. pressure: 7.25 psi (0.5 bar)	
Min. conductivity: >150 µS/cm	
Diaphragm: Ceramic	
Installation length: 4.72" (120 ±3 mm), thread PG 13.5	
Typical applications: Swimming pool, atmospheric pressure installation, potable wa	iter,
lightly contaminated waste water.	
F	Part No.

PHES 112 SE

pk_6_016

ProMinent

ProMinent® DULCOTEST Sensors

pH Combination Sensors With SN6

120 ±3

PHEP 112 SE

	pH range: 1-12
	Temperature: 32-176 °F (0-80 °C)
	Max. pressure: 87 psi (6 bar)
	Min. conductivity: >150 µS/cm
	Diaphragm: Ceramic
	Installation length: 4.72" (120 ±3 mm), thread PG 13.5
	Mounting hole: min \emptyset 0.6" (14.5 mm)
3	Typical uses: Swimming pools under pressure for higher temperatures and pressures, po- table and industrial water, lightly soiled wastewater and the electroplating and chemical
	industries Part No.

pk_6_019



120 ±3

PHEP-H 314 SE

PHEPT 112 VE

PHEPT 112 VE

PHEP 112 SE

pH range:	3-14 (Note: use below pH 3 shortens the service life)	
Temperature:	32-212 °F (0-100 °C)	
Max. pressure:	87 psi (6 bar) at 77 °F (25 °C)	
	43.5 psi (3 bar) at 212 °F (100 °C)	
Min. conductivi	ty: 150 μS/cm	
Diaphragm: cer	amic	
Insertion length	: 4.72" (120 ±3 mm), screw-in thread PG 13.5	
Shank diameter	r: 0.47" (12 mm) min. diam.	
Typical applicat alkaline media	ions: monitoring or control of chemical processes with neutral to h and temperatures up to 100 °C	nighly-
		Part No.
PHEP-H 314 S	SE	1024882
	pH range: Temperature: Max. pressure: Min. conductivi Diaphragm: cer Insertion length Shank diamete Typical applicat alkaline media a	 pH range: 3-14 (Note: use below pH 3 shortens the service life) Temperature: 32-212 °F (0-100 °C) Max. pressure: 87 psi (6 bar) at 77 °F (25 °C) 43.5 psi (3 bar) at 212 °F (100 °C) Min. conductivity: 150 µS/cm Diaphragm: ceramic Insertion length: 4.72" (120 ±3 mm), screw-in thread PG 13.5 Shank diameter: 0.47" (12 mm) min. diam. Typical applications: monitoring or control of chemical processes with neutral to falkaline media and temperatures up to 100 °C PHEP-H 314 SE

Technical data and conditions for use as type PHEP 112 SE, however, with integrated Pt 100

enclosed in glass shaft and Vario Pin plug with gold plated contacts.

pk_6_019



pk_6_068

DULCOTEST



Part No.

1004571

pH Combination Sensors With SN6



pk_6_017

ProMinent



pH Combination Sensors With SN6



PHEN 112 SE

pH range: 1-12 Temperature: 32-176 °F (0-80 ° Max. pressure: Atmospheric pro Min. conductivity: >150 μS/cm Diaphragm: Ceramic	C) essure	
KCl electrolyte, refillable		
Installation Length: 4.72" (120 =	±3 mm)	
Typical applications: Waste wat	ter	
Supplied without PE storage co	ontainer and tubing	
		Part No.
PHEN 112 SE		305090
Accessories:		
PE storage container with con	nectors and tubing	305058
We recommend installation app	prox. 1.5 - 3 ft. (0.5-1 m) above sample fluid level	
KCl solution 3 molar	250 ml	791440
KCl solution 3 molar	1000 ml	791441

pk_6_022

120 ±3	120 ±3	

max. 20

pk_6_021

pk_6_007

DULCOTES⁻

pH Combination Sensors With SN6



pH Sensors with Fixed Cable

Series

pk_6_023

Series)									
PHE	pH s	sensor	ensor							
	Pro	perties	perties							
	K	with ins	ensitive	plastics	shaft					
	N	N refillable KCI electrode								
	D	with do	vith double diaphragm (double injection)							
		Special equipment								
		T with built in temperature gauge								
			pH measuring range							
			112	pH mea	asureme	ent range	e: 112			
				Electr	ical co	nnectio	n to el	ectr	ode	
				F	fixed ca	able elec	trode			
					Interna	al threa	d			
					E	Internal	thread			
				L without, laboratory electrode refillable						
		Cable diameter								
						3	cable d	iame	eter 3 mm	
						5	cable d	iame	eter 5 mm	
							Cable	lenç	gth	
							01	cab	le length in meters	
								Ele	ctrical connection at device	
			S SN6							
								В	BNC without connector	
								L.		
		-		-	_					
PHE	K	Г	112	F	E	3	1	S		

pH sensor, gel-filled, with coax cable and device plug, no internal thread.

Device plug

SN6

BNC

Cable length

3.3 ft. (1 m)

9.8 ft. (3 m)

Type PHES 112 F

PHES 112 F 301 S

PHES 112 F 303 B

Туре



pk_6_024

Part No.

304976

pH Combination Sensors With SN6

120 ±3

PHEE	112 S
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pH range: 1-12 Temperature: 32-140 °F (0-60 °C) Max. pressure: Atmospheric pressure operation Diaphragm: 3 ceramic diaphragms No internal mounting thread Typical applications: pH measurement in foodstuffs, e.g. meat, cheese non sterilisable	
	Part No.
PHEE 112 S	791094
Accessories	
Cleaning fluid Pepsin/hydrochloric acid 250 ml	791443

pk_6_025



Type PHEK 112 F

pH Combination Sensors With Fixed Cable

pH combination probe with plastic shaft, glass stem, fixed coax cable and connector, no internal thread.

Туре	Cable length	Device plug	Part No.
PHEK 112 F 301 B	3.3 ft. (1 m)	BNC	304996
Further types on request	•		



Type PHE 112 FE

Туре	Cable length	Device plug	Part No.
PHE 112 FE 303 S	9.8 ft. (3 m)	SN6	304984
PHE 112 FE 310 S	32.8 ft. (10 m)	SN6	304985
PHE 112 FE 303 B	9.8 ft. (3 m)	BNC	304988
Further types on reau	iest.		



Туре	Cable length	Connector	Part No.
PHED 112 FE 303 B	9.8 ft. (3 m)	BNC	741038
Further types on request.			

Temperature Sensors



pk_6_026

ORP Identcode Description

Identity Code Description (Type description)



ORP Combination Sensors With SN6



pk_6_031



ORP Combination Sensors With SN6



DULCOTES

ORP Combination Sensors With SN6



RHFN-Pt-SF

KCl solution 3 molar

Temperature: 32-176 °F	(0-80 °C)
Max. pressure: Atmospl	neric pressure operation
Min. conductivity: >150	μS/cm
Diaphragm: Ceramic	
KCI electrolyte, refillable	
Installation length: 4.72	' (120 ±3 mm)
Typical applications: Wa	aste water
Supplied without PE sto	rage container and tubing
RHEN-Pt-SE	
Accessories:	
PE storage container wi	th connectors and tubing
We recommend installat	tion approx. 1.6 - 3.3 ft. (0.5-1 m) above sample fluid
KCI solution 3 molar	250 ml
KCI solution 3 molar	1000 ml

ORP Sensors With Fixed Cable





Type RHES-Pt-F

ORP combination probes with Pt electrode probe gel-filled, with glass shaft, without internal mounting thread.

Туре	Cable length	Connector	Part No.
RHES-Pt-F 303 B	9.8 ft. (3 m)	BNC	304983

Type RHEK-Pt-F

ORP sensor with plastic shaft, Pt electrode with cover. Fixed coax cable and device plug, no internal mounting thread

The coar cable and device plug, no internal mounting thread.					
Туре	Cable length	Connector	Part No.		
RHEK-Pt-F 301 S	3 ft. (1 m)	SN6	304997		

Part No. 305091

305058

791440

791441

level.

Fluoride Sensors

DULCOTEST Sensors fluoride electrodes are ion-selective electrodes based on the potentiometic measurement principle. They are designed for determining the concentration of fluoride anions in aqueous solutions. These electrodes have been optimised for use in monitoring the fluoridation of potable water in waterworks. Corresponding conditions must be observed.

FLEP 010

A 4-20 mA measurement transducer, a reference electrode and a temperature sensor for temperature compensation are required as well as the fluoride electrode.Measured variable: Fluoride ion concentration

Reference method:	photometric, see section 5.4.5: DT2A and DT2B photometers
Measurement range with measurement transducer:	0.05-10.00 mg/l
pH range:	5.5-9.5
Temp. range:	34-95 °F (1-35 °C)
Max. Pressure:	100 psi (no pressure surges)
Intake flow:	recommended 5.3 gph (20 l/h): 2.6-26.4 gph (10 - 200 l/h)
Conductivity range:	> 100 µS/cm
Response time T95 (open):	< 30 s (for conc. > 0.5 ppm)
Enclosure rating:	IP 65
Shelf life:	approx. 6 months
Length when fitted:	4.72" (120 mm)
Shaft diameter:	0.472" (12 mm)
Typical application:	monitoring the fluoridation of potable water
Measurement and control equipment:	D1C
in-line probe housing:	DLG IV

pk_6_095

equipment: in-line prob

FLEP 010 (fluoride sensor)*

Accessories
Accessiones

4-20 mA measurement transducer FPV1**	1028280
Sensor cable	7740215
Reference electrode, REFP-SE	1018458
Temperature sensor, Pt 100	305063
Polishing paste	559810

* replaces flouride sensor (part no. 1010311)

** replaces transducer (part no. 1009962)

Part No.

Overview: Amperometric Sensors

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For optimum functioning of chlorine, bromine, chlorine dioxide and ozone sensors please note the following guidelines:

- Use DULCOMETER measurement and control systems.
- Install only in ProMinent[®] DGM or DLG III in-line probe fittings.
- Defined flow between 7.9-15.8 gph (30-60 l/h).
 - Chlorine measurement must only take place when pH is stable.
- Regular calibration with a Photometer (e.g. Type DT 1).

Important:

Amperometric sensors are not electrically isolated. When installing in external appliances (e.g. PLC), you should electrically isolate the supply voltage and the analog input signal.

Summary of features:

- High zero point stability
- Compact design
- Integrated temperature correction
- Simple to install
- Simple to maintain
- Short running-in period
- Measurement signal virtually unaffected by flow

		Graduated measuring		
Measured variable	Applications	range	DULCOMETER®	Sensor type
				CLE 3-mA-xppm,
Free chlorine	Drinking water, swimming pool	0.01-100 ppm	D1C, DAC	CLE 3.1-mA-xppm
	Drinking water, swimming pool water,			
Free chlorine	in situ electrolysis (without diaphragm)	0.02-10 ppm	D1C, DAC	CLO 1-mA-xppm
	Hot water up to 70 °C (legionella), in situ elec-			
Free chlorine	trolysis (without diaphragm)	0.02-2 ppm	D1C, DAC	CLO 2-mA-2ppm
Free chlorine	Drinking water, swimming pool	0.01–50 ppm	DMT	CLE 3-DMT-xppm
Free chlorine	Drinking water, swimming pool	0.01–10 ppm	DULCOMARIN® II	CLE 3-CAN-xppm, CLE 3.1-CAN-xppm
Free chlorine	Drinking water, swimming pool	0.05-5 ppm	COMPACT	CLB 2-µA-xppm
	Cooling water, process water, waste water,			
Free chlorine	water with higher pH values (stable)	0.01-10 ppm	D1C, DAC	CBR 1-mA-xppm
Total available chlorine	Swimming pool water with chlorine-organic disinfectants	0.02–10 ppm	D1C, DAC	CGE 2-mA-xppm
Total available chlorine	Swimming pool water with chlorine-organic disinfectants	0.01–10 ppm	DULCOMARIN® II	CGE 2- CAN-xppm
Total chlorine	Drinking, service, process and cooling water	0.01–10 ppm	D1C, DAC	CTE 1-mA-xppm
Total chlorine	Drinking, service, process and cooling water	0.01–10 ppm	DMT	CTE 1-DMT-xppm
Total chlorine	Drinking, service, process and cooling water	0.01–10 ppm	DULCOMARIN® II	CTE 1-CAN-xppm
Combined chlorine	Swimming pool water	0.02–2 ppm	DAC	CTE 1-mA-2 ppm + CLE 3.1-mA-2 ppm
Combined chlorine	Swimming pool water	0.01–10 ppm	DULCOMARIN® II	CTE 1-CAN-xppm + CLE 3.1-CAN-xppm
Total available bromine	Cooling water, swimming pool water, whirl- pool water, bromine with bromorganic disin- fectants (e.g. BCDMH)	0.2–10 ppm	D1C, DAC	BRE 1-mA-xppm
Total available	Cooling water, swimming pool water, whirl-			
bromine	pool water bromine with inorganic bromine			
	compounds (e.g. NaBr/HOCI)	0.2–10 ppm	D1C, DAC	BRE 2-mA-xppm
Total available bromine	Cooling water, swimming pool water, whirl- pool water with bromorganic or inorganic bromine compounds	0.02-10 ppm	DULCOMARIN® II	BRE 3-CAN-10 ppm
Free and bound	Cooling water, process water, waste water,	0.02-20 ppm		

Overview: Amperometric Sensors

		Graduated		
Measured variable	Applications	measuring range	Connection to DULCOMETER®	Sensor type
			D1C, DAC,	
Chlorine dioxide	Drinking water	0.01–10 ppm	DULCOMARIN® II	CDE 2-mA-xppm
			D1C, DAC,	
Chlorine dioxide	Bottle washer system	0.02–2 ppm	DULCOMARIN® II	CDP 1-mA
	Hot water up to 60 °C, cooling water, waste		D1C, DAC,	
Chlorine dioxide	water, irrigation water	0.01-10 ppm	DULCOMARIN® II	CDR 1-mA-xppm
			D1C, DAC	
Chlorite	Drinking, wash water	0.02–2 ppm	DULCOMARIN® II	CLT 1-mA-xppm
	Drinking, service, process, swimming pool			
Ozone	water	0.02–2 ppm	D1C, DAC	OZE 3-mA-xppm
Dissolved oxygen	Drinking, surface water	2–20 ppm	D1C, DAC	DO 1-mA-xppm
	Activated sludge tank, sewage treatment			
Dissolved oxygen	plant	0.1–10 ppm	D1C, DAC	DO 2-mA-xppm
Peracetic acid	CIP, antiseptic food filling process	1–2,000 ppm	D1C, DAC	PAA 1-mA-xppm
				Perox sensor
Hydrogen peroxide	Clear water, fast control	1–2,000 ppm	PEROX controller	PEROX-H2.10-P
Hydrogen peroxide	Process, swimming pool water	0.5–2,000 ppm	D1C, DAC	PER1-mA-xppm

Overview: Amperometric Sensors Selection Guide

			Selection	Guide					
		CLE 3	CLE 3.1	CLO 1	CLO 2	CLB 2	CBR 1	CGE 2	CTE 1
Measured variable	Free chlorine	x	x	x	x	x	x		
	Total available chlorine (cyanuric acid derivatives)							x	x
	Total chlorine							х	x
Selectivity of free chlorine	raised		x						
	yes	x		x	x	x	x		
	no							х	x
Application	Public swimming pools	x	x			x		(x)	
	Private swimming pools	x	x	x		x		x	
	Drinking water	x	x		x	x			х
	Cooling water						x		x
	Waste water						X		x
Disinfectant	chlorine gas, hypochlorite, electrolysis with diaphragm	x	x	x	x	x	x		x
	electrolysis without diaphragm			x	x	x			
	chlorine-containing cyanuric acid derivatives							x	
Specifications	Measuring range [ppm]	0.01-100	0.01-10	0.02-2	0.02-2	0.05-5	0.01-10	0.02-10	0.01-10
	pH range	5.5-8	5.5-8	5-9	5-9	5-9	5-9.5	5.5-9.5	5.5-9.5
	Temperaturer (°F)	41-113	41-113	41-113	41-158	41-113	41-113	41-113	41-113
	(°C)	5-45	5-45	5-45	5-70	5-45	5-45	5-45	5-45
	Max. pressure [bar]	1	1	8	8	8	1	3	3
Installation	open outlet	X	X	x	X	X	X	X	X
	direct installation in the circuit			x	x	x			

Note: Interference, such as film-forming substances, chemical residue, flow, conductivity

CLE 3-mA

Measured variable:

Measurement of free chlorine

Chlorine Sensors





Ø 25

pk_6_039

Analysis:	DPD 1	
pH range:	5.5-8.0 (up to pH 8.5 with D1C pH correction)	
Temperature range:	41-113 °F (5-45 °C) temperature compensated	
Max. pressure:	14.5 psi (1 bar)	
Flow:	7.9-14.9 gph (30-60 l/h) in DGM or DLG III	
Power supply:	16-24 V DC (two-wire technology)	
Output signal:	4-20 mA = measurement range (un-calibrated) Warning: no electrical isolation!	
Typical applications:	CLE 3-mA-0.5 ppm, potable water CLE 3-mA-2/5/10 ppm, swimming pool, potable, industri process water (surfactant free)	al,
Measurement and control devices:	D1C, DAC, DULCOMARIN [®] (2/10 ppm only)	
In-line probe housing:	DGM, DLG III	
		Part No.
CLE 3-mA-0.5 ppm set, w	ith 100 ml electrolyte	792927
CLE 3-mA-2 ppm set, with	100 ml electrolyte	792920
CLE 3-mA-5 ppm set, with	100 ml electrolyte	1033392
CLE 3-mA-10 ppm set, wit	th 100 ml electrolyte	792919
CLE 3-mA-20 ppm set, wit	th 100 ml electrolyte	1002964

CLE 3.1-mA

CLE 3-mA-50 ppm set, with 100 ml electrolyte

CLE 3-mA-100 ppm set with 100 ml electrolyte

Measured variable:	free chlorine (hypochlorous acid HOCI) where there is a high rate of combined chlorine and/or in the case of pH values up to 8.5 (with D1C pH correction)
Reference method:	DPD1
Measurement range:	0.01-0.50 mg/l (CLE 3.1-mA-0.5 ppm) 0.02-2.00 mg/l (CLE 3.1-mA-2 ppm) 0.01-5.00 mg/l (CLE 3.1-mA-5 ppm) 0.1-10.0 mg/l (CLE 3.1-mA-10 ppm)
pH range:	5.5-8.0 (up to pH 8.5 with D1C pH correction)
Temp. range:	41-113 °F (5-45 °C) temperature compensated
Max. pressure:	14.5 psi (1 bar)
Inflow:	7.9-14.9 gph (30-60 l/h) in the DGM or DLG III
Supply voltage:	16-24 V DC (two wire technology)
Output signal:	4-20 mA = measurement range (uncalibrated) Important: not electrically isolated!
Typical applications:	swimming pool, industrial and process water with higher pro- portions of combined chlorine and/or higher pH values to pH 8.5
Measurement and	
control equipment:	D1C, DAC, DULCOMARIN®
In-line probe housing:	DGM, DLG III
	Part No.

CLE 3 1-mA-0.5 ppm set with 100 mL electrolyte	1020530
	1010000
CLE 3.1-mA-2 ppm set, with 100 mi electrolyte	1018369
CLE 3.1-mA-5 ppm set, with 100 ml electrolyte	1019398
CLE 3.1-mA-10 ppm set, with 100 ml electrolyte	1018368



pk_6_039

1020531

Chlorine Sensors



Ø25

CLE 3-DMT

Measuring cell for use with the DMT "chlorine" measurement transducer.

Measured variable:	Free chlorine (hypochlorous acid HOCI)	
Reference method:	DPD1	
Measurement range:	0.01-5.0 mg/l 0.05-50 mg/l	
Supply:	From the DMT measurement transducer (3.3 VDC)	
Output signal:	Un-calibrated, not temperature compensated	
Temp. measurement:	Via integrated Pt 1000: compensation carried out in DMT	
Measuring cell output:	5-pin plug	
Other data as for CLE-3 n	nA.	
		Part No.

CLE 3-DMT-5 ppm set with 100 ml electrolyte	1005511
CLE 3-DMT-50 ppm set with 100 ml electrolyte	1005512
Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorir	e sensors

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorine sensor into the DLM III in-line probe housing.

CLE 3-CAN

CLE 3-CAN-10 ppm set with 100 ml electrolyte

into the DLM III in-line probe housing.

Sensors for connection to a CAN interface (e.g. DULCOMARIN[®] II swimming pool controller)

Measured variable:	free chlorine (h	nypochlorous a	cid)	
Reference method:	DPD 1			
Measurement range:	0.01 -10 mg/l			
Power supply:	via CAN interfac	ce (11-30 V)		
Temperature measurement:	via installed dig	ital semiconduc	ter element	
Output signal:	uncalibrated, isolated	temperature	compensated,	electrically
Compatibility:	CAN-Open bus	systems		
Additional data see CLE 3-mA				
				Part No.

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorine sensors



pk_6_096

pk_6_038

ProMinent

DULCOTEST

Chlorine Sensors



CLO 1-mA

Measured variable:	Free chlorine (hypochlorous acid HOCI)	
Reference method:	DPD1	
pH range:	5-9	
Temperature:	41-113 °F (5-45 °C)	
Max. pressure:	116 psi (8 bar)	
Intake flow:	7.9-15.9 gph (30-60 l/h) (in DGM or DGL III), constant fl dependent signal	ow as flow-
Power supply:	16-24 V DC (2-wire)	
Output signal:	4-20 mA = Measuring range, temperature-compensate uncalibrated, not electrically isolated	d,
Typical applications:	Swimming pool, uncontaminated drinking water and in service water, and can also be used together with diap electrolysis processes	dustrial hragm-free
Measurement and		
control equipment:	D1C, DAC	
In-line probe fitting:	DGM, DLG III to 140 °F (60 °C), special fitting for 140-1 70 °C) on request	58 °F (60-
Measuring principle:	amperometric, 3 electrodes, no diaphragm	
	Measuring range	Part No.
CLO 1-mA-2 ppm	0.02-2.0 ppm	1033871
CLO 1-mA-2 ppm	0.10-10.0 ppm	1033870
CLO 2-mA		
Measured variable:	Free chlorine (hypochlorous acid HOCI)	
Reference method:	DPD1	



Measured variable:	Free chlorine (hypochlorous acid HOCI)		
Reference method:	DPD1		
pH range:	5-9		
Temperature:	41-158 °F (5-70 °C)		
Max. pressure:	116 psi (8 bar)		
Intake flow:	7.9-15.9 gph (30-60 l/h) (in DGM or DGL III), constant flow as flow- dependent signal		
Power supply:	16-24 V DC (2-wire)		
Output signal:	4-20 mA = Measuring range, temperature-compensated, uncalibrated, not electrically isolated		
Typical applications:	Hot water up to 158 °F (70 °C), combatting legionella, uncontaminated drinking water and industrial service water, can, also be used together with diapgragm-free electrolysis processes		
Measurement and			
control equipment:	D1C, DAC		
In-line probe fitting:	DGM, DLG III to 140 °F (60 °C), special fitting for 140-158 70 °C) on request	3 °F (60-	
Measuring principle:	amperometric, 3 electrodes, no diaphragm		
	Measuring range	Part No.	
CLO 2-mA-2 ppm	0.02-2.0 ppm	1033878	

ProMinent[®]

Chlorine Sensors



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221

CLB 2-µA

Measured variable:	Free chlorine (hypochlorous acid HOCI)	
Reference method:	DPD1	
pH range:	5-9	
Temperature:	41-113 °F (5-45 °C)	
Max. pressure:	116 psi (8 bar)	
Intake flow:	7.9-15.9 gph (30-60 l/h) (in DGM or DGL III), constant flo needed as flow-dependent signal	w
Power supply:	16-24 V DC (2-wire)	
Output signal:	Non-amplified primary current signal, non-temperature- compensated, uncalibrated, not electrically isolated	
Typical applications:	Private swimming pool, can also be used together with Diaphragm-free electrolysis processes for the generation rine	of chlo-
Measurement and		
control equipment:	Compact controller	
In-line probe fitting:	DGM, DLG III	
Measuring principle:	amperometric, 3 electrodes, no diaphragm	
	Measuring range	Part No.
CLB 2-µA-5 ppm	0.05-5.0 ppm	1038902

CBR 1-mA

CBR 1-mA-10 ppm

Measured variable:	Free chlorine (hypochlorous acid HOCI), fre	e bromine,	
Reference method:	DPD1		
pH range:	5-9.5		
Temperature:	41-113 °F (5-45 °C)		
Max. pressure:	14.5 psi (1 bar)		
Intake flow:	7.9-15.9 gph (30-60 l/h) (in DGM or DGL II)		
Power supply:	16-24 V DC (2-wire)		
Output signal:	4-20 mA = Measuring range, temperature-compensated, uncalibrated, not electrically isolated		
Typical applications:	Cooling water, Process water, Waste water, Water with high high higher pH values (stable pH)		
Measurement and			
control equipment:	D1C, DAC		
In-line probe fitting:	DGM, DLG III		
Measuring principle:	amperometric, 2 electrodes, diaphragm-covered		
	Measuring range	Part No.	
CBR 1-mA-0.5 ppm	0.015 ppm	1038016	
CBR 1-mA-2 ppm	0.02-2 ppm	1038015	

0.10-10 ppm

ProMinent[®]

1038014

CBR_1

Chlorine Sensors

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Measured variable of organic combined chlorine and free chlorine (total available chlorine)



CGE 2-mA

pH range:

Flow:

Measured variable:

DPD1 Reference method: 0.02-2.00 mg/l (CGE 2-mA-2 ppm) Measurement range: 0.1-10.0 mg/l (CGE 2-mA-10 ppm) 5.5-9.5 Temperature range: 41-113 °F (5-45 °C) temperature compensated 43.5 psi (3 bar) Max. pressure: 7.9-15.9 gph (30-60 l/h) in DGM or DLG III Power supply: 16-24 V DC (two-wire technology) Output signal: 4-20 mA = measurement range (un-calibrated) Warning: no electrical isolation! Typical applications: Swimming pools and in water with high pH-value Measurement and control devices: D1C, DAC, DULCOMARIN® In-line probe housing: DGM. DLG III

Total available chlorine: sum of organically combined chlorine

(e.g. combined in cyanuric acid) and free chlorine

	Part No.
CGE 2-mA-2 ppm set, with 50 ml electrolyte	792843
CGE 2-mA-10 ppm set, with 50 ml electrolyte	792842

Chlorine Sensors



CGE 2-CAN

Probe for connection to a CANopen interface (e.g. DULCOMARIN® II swimming pool controller)

Measured variable:	total available chlorine: sum of organically combined chlorine (e.g. combined in cyanuric acid) and free chlorine
Reference method:	DPD1
Range:	0.01-10.00 ppm
pH range:	5.5-9.5
Temp. range:	5-45 °C (temperature compensated)
Max. pressure:	3 bar
Incident flow;	30-60 l/h (with DGMa or DLG III)
Supply:	via CAN interface (11-30 V)
Temperature measurement:	via built-in digital semiconductor device
Output signal:	calibrated, temperature-compensated, electrically-isolated
Compatibility:	CANopen bus systems
See CGE 2-mA for other info	rmation
	Part No

CGE 2-CAN-10 ppm c/w with 100 ml of electrolyte 1024420 Note: a mounting kit (Part No. 815079) is required for the initial installation of the chlorine probe in the DLG III in-line probe housing.

pk_6_084



pk_6_040

Measured variable of total chlorine

CTE 1-mA

Measured variable:	total chlorine	
Reference method:	DPD4	
Measurement range:	0.010.50 mg/l (CTE 1-mA-0.5 ppm) 0.02 2.00 mg/l (CTE 1-mA-2 ppm) 0.05 5.00 mg/l (CTE 1-mA-5 ppm) 0.110.0 mg/l (CTE 1-mA-10 ppm)	
pH range:	5.59.5	
Temperature range:	545 °C (temperature compensated)	
Max. pressure:	3 bar	
Flow:	3060 l/h (in DGM or DLG III)	
Power supply:	1624 V DC (two-wire technology)	
Output signal:	420 mA = measurement range (un-calibrated) Warning: no electrical isolation!	
Typical applications:	CTE 1-mA-0.5 ppm, potable water CTE 1-mA-2/5/10 ppm: Potable, process, industria water. In swimming pools in combination with CLE mining combined chlorine.	l and cooling 3.1 for deter-
Measurement and control devices:	D1C, DAC, DULCOMARIN [®] (2/10 ppm only)	
In-line probe housina:	DGM. DLG III	
		Part No
CTE 1-mA-0.5 ppm set,	with 50 ml electrolyte	74068

	i arrito.
CTE 1-mA-0.5 ppm set, with 50 ml electrolyte	740686
CTE 1-mA-2 ppm set, with 50 ml electrolyte	740685
CTE 1-mA-5 ppm set, with 50 ml electrolyte	1003203
CTE 1-mA-10 ppm set, with 50 ml electrolyte	740684
CTE 1-mA-20 ppm set, with 50 ml electrolyte	7792910
Viton O-ring for CTE membrane cap	7781269

DULCOTEST

CTE 1-CAN-10 ppm set with 100 ml electrolyte

sensors into the DLM III in-line probe housing

Chlorine Sensors



CTE 1-DMT

Measuring cell for use with the DMT "chlorine" measurement transducer.

Measured variable:	Total chlorine
Reference method:	DPD4
Measurement range:	0.01-10.0 mg/l
Power supply:	From the DMT measurement transducer (3.3 VDC)
Output signal:	Un-calibrated, not temperature compensated
Temperature measurement:	Via integrated Pt 1000: compensation carried out in DMT
Sensor output:	5-pin plug
Other data as for CTE 1 m	A

CTE 1-DMT-10 ppm set with 50 ml electrolyte 1007540 Note: An assembly set 815079 is required for DLG III for initial installation of chlorine measuring cells.

pk_6_015



Ten Out

CTE 1 -CAN	
Sensor for connection to a C	AN interface
Measured variable:	total chlorine
Reference method:	DPD 4
Measurement range:	0.01 -10 mg/l
Power supply:	via CAN interface (11-30 V)
Temperature measurement:	via installed digital semiconducter element
Output signal:	uncalibrated, temperature compensated, electrically isolated
Compatibility:	CAN-Open bus systems
Additional data see CLE 3-m	Ą
	Part No.

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorine

257

pk_6_084

Part No.

Bromine Sensors

The following bromating agents are used as disinfectants:

Organic brominating agent

- a) DBDMH (1.3-dibrom-5.5-dimethyl-hydantoin) e. g. sold as Albrom 100®
- b) BCDMH (1-bromine-3-chlorine-5.5-dimethyl-hydantoin) e.g. sold as Brom-Sticks®

These bromating agents are solid and are metered as saturated solutions via brominators.

Inorganic free bromine

For measuring DBDMH or free bromine as a bromating agent in the measurement range: 0.2 -10 ppm bromine the BRE 2-mA-10 ppm sensor is recommended along with DPD1-method calibration.

Alternatively, to measure BCDMH in the same measurement range, the BRE 1-mA-10 ppm sensor is recommended along with DPD4-method calibration.

Typical applications are in swimming pools, Jacuzzis and cooling systems. Particularly in cooling systems the quality of the sample water must be tested and, where applicable, compatibility with other chemicals employed (e.g. corrosion inhibitors). Dissolved copper (>0.1 mg/l) will interfere with the measurement.

Photometric DPD measurement is the recommended method for calibrating the bromine sensor (e.g. with DT 1), calculated and displayed as bromine. If bromine is determined as "chlorine" with DPD, note when selecting the measurement range that you need to lower the result by a factor of 2.25.

Bromine measured variable

Measured variable:	Total available bromin (free and organic bou	ne Ind bromine)
Bromine chemicals:	DBDMH (1.3-dibromin BCDMH (1-bromine-3- free bromine	e 5.5-dimethyl hydantoin) -chlorine-5.5-dimethyl hydantoin),
Reference method:	DBDMH, free bromine BCDMH:	: DPD1 DPD4
Measurement range:	DBDMH free bromine: BCDMH:	0.2-10.0 mg/l with type BRE 2-mA-10 ppm 0.2-10.0 mg/l with type BRE 1-mA-10 ppm
pH dependence:	if pH 7 changes to pH a) in the case of DBDI b) in the case of BCDI	8 the sensor sensitivity is reduced accordingly MH and free bromine by approx. 10 % MH by approx. 25 %
Temperature range:	41-113 °F (5-45 °C)	
Max. pressure:	43.5 psi (3 bar)	
Sample flow:	7.9-15.9 gph (30-60 l/ł	n) in DGM or DLG III
Voltage:	16-24 V DC (two-wire	technology)
Output signal:	4-20 mA = measureme Warning: not electrica	ent range (not calibrated) Ily isolated!
Typical applications:	Swimming pools / white seawater	rlpools and cooling water; can also be used in
Measurement and		
control device:	D1C, DAC	
In-line probe housing:	DGM, DLG III	
		Part No

	Fart NO.
BRE 1-mA-2 ppm kit with 50 ml electrolyte	1006894
Measurement range relates to BCDMH	
BRE 1-mA-10 ppm kit with 50 ml electrolyte	1006895
Measurement range relates to BCDMH	
BRE 2-mA-10 ppm kit with 50 ml electrolyte	1020529
Measurement range relates to DBDMH, free bromine	
BRE 1-mA-0.5 ppm kit with 50 ml electrolyte	1041697
BRE 2-mA-2 ppm kit with 50 ml electrolyte	1033391

Note: Requires assembly kit (Part No. 815079) for the initial installation of the brominesensors into the DLM III in-line probe housing. Signal leads, see sensor technology accessories.



pk_6_074

ProMinent

Chlorine Dioxide Sensor Overview

Sensor type	CDE 2-mA	CDE 3-mA	CDP 1-mA	CDR 1-mA
Application	Drinking water	Hot water circuits	Bottle Washer system	Cooling water, waste water, Agriculture
Measurement range	0.01-10	0.01-0.50	0.02-2	0.01-10
Temperature	41-113 °F (5-45 °C)	41-140 °F (5-60 °C)	50-113 °F (10-45 °C)	33.8-131 °F (1-55 °C)
Max. pressure	14.5 psi (1.0 bar)	14.5 psi (1.0 bar)	43.5 psi (3.0 bar)	43.5 psi (3.0 psi)
pH range	4-11	4-11	5.5-10.5	1.0-10.0
Response time	120 sec	120 sec	60 sec	180 sec
Run-in time	2-6 hrs	2-6 hrs	4-12 hrs	2-6 hrs
Surfactant-resistance	no	no	yes	yes
Contamination resistance	no	no	under certain conditions	yes

Cross sensitivity CDE <2% to Chlorine and Ozone interference

Chlorine Dioxide Sensors

CDE 2-mA

3

Measured variable:	Chlorine dioxide (ClO2)
Reference method:	DPD1
Measurement range:	0.01 - 0.50 mg/l (CDE 2-mA-0.5 ppm)
	0.02-2.00 mg/l (CDE 2-mA-2 ppm)
	0.1-10.0 mg/l (CDE 2-mA-10 ppm)
Cross sensitivity:	to chlorine <2 %
pH range:	CIO2 stability range
Temperature range:	5-41-113 °F (45 °C) temperature compensated, no significant temperature fluctuations
Max. pressure:	14.5 psi (1 bar)
Flow:	7.9-15.9 gph (30-60 l/h) in DGM or DLG III
Power supply:	16-24 V DC (two-wire technology)
Output signal:	4-20 mA = measurement range (un-calibrated)
	Warning: no electrical isolation!
Typical applications:	Potable, industrial, process water (surfactant free)
Measurement and control	device: D1C, DAC
In-line probe housing:	DGM, DLG III
	Part No.

CDE 2-mA-0.5 ppm set, with 100 ml electrolyte	792930
CDE 2-mA-2 ppm set, with 100 ml electrolyte	792929
CDE 2-mA-10 ppm set, with 100 ml electrolyte	792928

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorine sensors into the DLM III in-line probe housing.

CDE 2.1-mA

Technical data: as Type CDE 2-mA, but maximum temperature 140 °F (60 °C) Typical application: chlorine dioxide treatment to combat legionella

CDE 2.1-mA

0.5 ppm comes complete with 100 ml of electrolyte

Order on request

Note: a mounting kit (Part No. 815079) is required for the initial installation of the Chlorine dioxide probe in the DLG III in-line probe housing.

Chlorine Dioxide Sensors



CDP 1-mA-2 ppm (CIO₂-process probe)

Applications:	Bottle washing machines and water containing surfactants
Measured variable:	Chlorine dioxide (CIO ₂)
Reference method:	DPD1
Measurement range:	0.02-2.00 mg/l
pH range:	5.5-10.5
Temperature range:	50-113 °F (10-45 °C) short term periods 131 °F (55 °C) with exter- nal temperature correction via Pt 100 (no internal temperature correction!)
Temperature variation	
speed:	Up to 10 K/min
Max. pressure:	43.5 psi (3 bar) no pressure surges
Flow:	7.9-15.9 gph (30-60 l/h) in DGM
Supply voltage:	16-24 V DC (two-wire technology)
Output signal:	4-20 mA = measurement range (un-calibrated) Warning: no electrical isolation!
Type application:	Process water containing surfactants (bottle washing machines)
Measuring and control device:	D1C, DAC with automatic temperature compensation only
In line probe housing:	DGM, DLG III
	Probe housing quote on request.
	Part No.

CDP 1-mA-2 ppm set with 100 ml electrolyte 1002149

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorine dioxide sensors into the DLM III in-line probe housing.

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Chlorine Dioxide Sensors



CDR 1-mA-2 ppm

Measured variable:	Chlorine dioxide (CIO ₂)	
Reference method:	DPD1	
pH range:	1-10	
Temperature range:	1-131 °F (-17-7 °C) short term periods 140 °F (60 °C)	
Max. pressure:	44 psi (3 bar) no pressure surges	
Respones time T ₉₀ :	2-3 min	
Intake flow:	8-16 gph (30-61 l/h)	
Supply Voltage:	16-24 VDC	
Output signal:	4-20 mA (temperature compensated, not calibrated)	
Measuring and control device:	D1C, DAC	
In line probe housing:	DGMa / DLGIII	
	Measuring ranges	Part No.
CDR 1-mA-0.5 ppm	0.01-0.50 ppm	1033762
CDR 1-mA-2 ppm	0.02-2.00 ppm	1033393
CDR 1-mA-10 ppm	0.01-10 ppm	1033404

pk_6_083

Chlorite Sensors

223



pk_6_040

Measured variable:	chlorite anion (CIO $_{2}$)	
Reference method:	DPD method Chlorite in presence of chlorine dioxide	
Measurement range:	0.020-0.500 mg/l (CLT 1-mA-0.5 ppm) 0.10-2.00 mg/l (CLT 1-mA-2 ppm)	
pH range:	6.5-9.5	
Temp. Range:	33.8-104 °F (1-40 °C) temperature compensated	
max. pressure:	1 bar	
Intake flow:	7.9-15.9 gph (30-60 l/h) in DGM or DLG III	
Power supply:	16-24 V DC (two-wire)	
Output signal:	4-20 mA = measurement range (uncalibrated) Important not electrically isolated!	
Model Use:	Monitoring potable water treated with chlorine dioxide Selective measurement of chlorite in presence of chlor chlorine and chlorate is also possible.	or similar. ine dioxide,
Measurement and		
control equipment:	D1C, DAC	
In-line probe housing:	DGM, DLG III	
		Part No.
CLT 1-mA-0.5 ppm set v	vith 50 ml electrolyte	1021596

Measured variable chlorite CLT 1-mA

CLT 1-mA-2 ppm set with 50 ml electrolyte 1021595

Note: You require assembly kit (Part No. 815079) for the initial installation of the chlorite sensors into the DLM III in-line probe housing.

We recommend the DT4 photometer for calibration of the chlorite sensor.

Ozone Sensors



OZE 3-mA

Measured variable	$\Omega_{zone}(\Omega)$	
Reference method:	DPD4	
Measurement range:	0.02-2.00 mg/l	
pH range:	Ozone stability range	
Temperature range:	41-104 °F (5-40 °C) temperature compensated, no significant Temperature fluctuations	
Max. pressure:	1 bar	
Flow:	7.9-15.9 gph (30-60 l/h) in DGM or DLG III	
Power supply:	16-24 VDC (two-wire technology)	
Output signal:	4-20 mA = measurement range (un-calibrated)	
	Warning. no electrical isolation:	
Typical applications:	Swimming pools, potable, industrial, pi	rocess water, surfactant free
Measurement and		
control devices:	D1C, DAC	
In-line probe housing:	DGM , DLG III	
		Part No.
OZE 3-mA-2 ppm set, wit	th 100 ml electrolyte	792957

pk_6_039

ProMinent[®]

OZE 3-mA-2 ppm set, with 100 ml electrolyte

Note: You require assembly kit Part No. 815079 for the initial installation of the ozone sensors into the DLM III in-line probe housing.

Dissolved Oxygen Sensors

pk_6_050_1



The measured variable "dissolved oxygen" gives the quantity of the gaseous physical dissolved oxygen in its aqueous phase in mg/l (ppm).

The "dissolved oxygen" is thereby an important parameter for controlling the quality of surface water and water which needs to be oxygenated for use in aqua culture and aqua zoos. The dissolved oxygen is also used to control processes in sewage plants and waterworks.

The following sensors are assigned to the different applications and can be supplied separately as 4-20 mA-transmitters to central controllers or together with the D1C as a stand alone solution.

DO 1-mA

Measured variable: dissolved oxygen Calibration: of oxygen in air Measurement range: 0-20 ma/l Reproducibility of measurement: ± 0.5 % of measurement limit value 32-122 °F (0 -50 °C) Temp. range: Max. pressure: 14.5 psi (1 bar) minimum: 0.16 ft./s (0.05 m/s) Velocity of sample water: Enclosure rating: IP 68 Power supply: 12-30 V DC Output signal: 4-20 mA. Measurement range calibrated, temperature corrected and electrically isolated Process integration: a) immersion, suspended on cable with or without mountain bracket for cable Immersion of immersion pipe b) Immersion pipe with 1.97" (50 mm) outside 1. diameter and 1-1/4" (31.75 mm) internal thread (provided by the customer). Connection via immersion pipe adapter PVC immersion pipe with 1.97" (50 mm) 2. outside diameter (provided by the customer). Connection via standard PVC adhesive union (provided by the customer). In-flow operation to order C) Typical applications Fish and shrimp farming. Conditioning of water in large aquaria in zoological systems. Control of oxygen input in waterworks Appraisal of the biological status of surface waters

 Part No.

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 1020532

DULCOTES

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ProMinent® DULCOTEST Sensors

Dissolved Oxygen Sensors

260 mm

DO 2-mA

Measured variable:	dissolved oxygen
Calibration:	of oxygen in air
Measurement range:	0-10 mg/l
Reproducibility of	
measurement:	\pm 0.5 % of measurement limit value
Temp. Range:	32-122 °F (0 -50 °C)
Max. pressure:	14.5 psi (1 bar)
Velocity of sample water:	minimum: 0.16 ft./s (0.05 m/s)
Enclosure rating:	IP 68
Supply voltage:	12-30 V DC
Output signal:	4-20 mA. Measurement range calibrated, temperature corrected and electrically isolated
Process integration:	as float with venturi grooves to increase the flow of sample water for the self-cleaning of the sensor part. Supplied with adapter for connection to PVC-pipes with outside diameter: 1.97" (50 mm) and railing bracket, also for PVC pipes with outside diameter: 1.97" (50 mm). The customer must provide the straight PVC tube and a 45 ° standard elbow for gluing to PVC pipes (outside diameter 50 mm).
Typical application	Control of the oxygen input in activated sludge pools (sewage plant) for the purpose of energy conservation

DO 2-mA-10 ppm



pk_6_012

Part No.

Dissolved Oxygen Sensors

DO 3-mA

Measured variable:	dissolved oxygen
Calibration:	on atmospheric oxygen or by reference measurement in the process water
Measurement accuracy:	±0.1 ppm (mg/l)
Response time sensor t_{90} :	< 60 S at 77 °F (25 °C) from air to nitrogen
Temperature:	32-122 °F (0 -50 °C)
Temperature correction:	integrated Pt1000, fed to the outside
Max. pressure:	29 psi (2 bar)
Intake flow:	measurement even possible wothout flow
Supply voltage:	18-30 V DC
Electrical connection:	Fixed cable, 32.8 Ft (10 m)
Output signal:	4-20 mA. Measurement range calibrated, temperature corrected and galvanically isolated
Process integration:	a) Immersion by immersion pipe (PVC, d40/DN 32, provided by the customer). The connection is possible using the immersion pipe adapter (reducing nipple, order no. 356924) and the 45° angle (order no. 356335). Both parts are included in the scope of delivery: and can be ordered as an accessory (also see Accessories).
	b) Installation into ProMinent bypass fittings, type DGMa with mounting kit 791818 and type DLG III with mounting kit 815079
Measuring & control equipment:	DACb as of firmware 02.01.01.02 with complete calibration functionality and all correction vari- ables (temperature, salinity, air pressure, height above sea level). Displayed units: [ppm] and [% oxygen saturation] DACa, AEGIS II, D1C: calibration only possible by the input of a reference concentration determined from the process water. Only temperature correction variable. Displayed unit: [ppm]
Typical applications:	Control of oxygen input into the aeration tank (clarification plant), control of oxygen input in water works, breeding of fish and shrimps, conditioning of the water of large aquaria in zoos, assessment of the biological condition of surface water.
Resistance to:	Contaminated water and the following chemical compounds: carbon dioxide, hydrogen sulfide, sulfur dioxide, ethylene oxide and against gamma sterilization.
Interference by:	Oxidant (e.g. chlorine, chlorine dioxide, ozone) and many organic solvents (e.g. chloroform, toluene, acetone)
Measuring priciple, technology:	Optical: Measurement of the relaxation time of a pulsed fluorescence beam

DO 2-mA-10 ppm



Part No.

ProMinent[®]

ProMinent® DULCOTEST Sensors

Peracetic Acid Sensors

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The DULCOTEST Sensors PAA 1 sensor models are membrane-covered amperometric 2-electrode sensors for the selective measurement of peracetic acid. Peracetic acid is used as a disinfectant particularly in the food and beverage industries as well as in the cosmetic, pharmaceutical and medical industries. The continuous measurement and control of the peracetic acid is essential to comply with demanding disinfection requirements and for quality control. Unlike with the sensors in the earlier Perox PES system the PAA 1-mA can be used with the D1Ca controller. Commissioning and maintenance is greatly simplified The sensors can even be used in the presence of surfactants (tensides).

PAA 1-mA

Measured variable:	peracetic acid	
Reference method:	titration	
Measurement range	10-200 mg/l (PAA 1-mA-200 ppm) 100-2000 mg/l (PAA 1-mA- 2000 ppm)	
pH range:	1-9 (peracetic acid stability range)	
Temp. range:	33.8113 °F (1-45 °C) temperature compensated	
Admissible temperature fluctuation:	0.3 °/min	
Response time T _{oo}	3 min.	
Max. Pressure.:	43.5 psi (3 bar) at 86 °F (30 °C), in DGM	
Intake flow:	7.9-15.9 gph (30- 60 l/h) with DGM or DLG III in- housing	line probe
Power supply	16-24 V DC (two wire)	
Output signal:	4-20 mA measurement range (uncalibrated) Important not electrically isolated	
Typical application:	scouring in Cleaning in Place (CIP) and rinsing st also designed for use in the presence of cationic ionic tensides. Selective measurement of perace well as hydrogen peroxide is possible.	ystems, c and an- etic acid as
Measurement and control		
equipment:	D1C, DAC	
In-line probe housing:	DGM, DLG	
		Part No.
PAA 1-mA-200ppm		1022506
PAA 1-mA-2000ppm		1022507

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pk_6_083

Hydrogen Peroxide Sensors

The DULCOTEST Sensors PEROX and PER1 probes are membrane-covered amperometric sensors for online determination of hydrogen peroxide concentration. Because it is totally biologically degradable, hydrogen peroxide is frequently used as a disinfectant and oxidant in water treatment and production:

- Chemical bleaching in the timber, paper, textile and mineral salt industries
- · Organic synthesis in the chemical, pharmaceutical and cosmetics industries
- Oxidation of drinking water, landfill seepage water, contaminated ground water
- Disinfection of cooling water, service water and production water in the pharmaceutical and food and beverages industries, and in swimming pools
- * Deodorization (gas scrubber) in municipal and industrial wastewater purification plants
- Dechlorination in chemical processes

Sensors are selected using the following decision table:

Requirement	Туре	Туре
	PER1	PEROX
Probe matrix contaminated by dirt or chemicals	suitable due to impermeable diaphragm	more susceptible due to permeable diaphragm
Electrical interference due to interference potentials in the measured medium	immune as counter electrode is separated from process	more susceptible as counter electrode is in the medium
Temperature range	up to 122 °F (50 °C)	up to 104 °F (40 °C)
Ease of handling during installation and maintenance	suitable due to temperature compensation and transducer integrated in sensor	separate temperature sensor and transducer
Response time for H_2O_2 for fast control	sluggish $T_{_{90}} = 6-8 \text{ min}$	fast $T_{_{90}}$ = 20 s
Rapid temperature changes	sluggish due to integrated temperature sensor	fast due to separate temperature sensor
Long process cycles with no H_2O_2 present	unsuitable	suitable due to pulsed polarisation technology
Range can vary in phases by several orders of magnitude, or is not clear at time of ordering	selection of suitable sensor necessary	suitable as range can be manually selected at the sensor transducer
Cost per channel	lower	higher

Hydrogen Peroxide Sensors

Operating conditions

Requirement	Туре	Туре
	PER1	PEROX
Measured variable	hydrogen peroxide	hydrogen peroxide
Calibration	photometric with DT4 hand-held photometer, see Chap. 5.4.4	photometric with DT4 hand-held photometer, see Chap. 5.4.4
Ranges	2.0-200.0 mg/l 20-2.000 mg/l different sensors	1-20, 10-200, 100-2000 selectable
pH range	2.5-11	2.5-10
Temperature	0-50 °C	0-40 °C (0-30 °C at > 1.000 ppm)
Permissible temperature changes	< 0.3 °C/min	< 1 °C/min (with external temp. measurement) see O.I.
Sensor response time	T ₉₀ approx. 480 sec	T ₉₀ approx. 20 sec
Reproducible accuracy	≥1 ppm or better than ± 5% of measured value	better than 5 % referred to range full scale value
Min. conductivity	0.05-5.00 mS/cm	with 20 mg/l range: 5 μS/cm 200 mg/l range: 200 μS/cm up to 1.000 mg/l: 500 μS/cm up to 2.000 mg/l: 1 mS/cm
Sampled water flow	5.3-26.4 gph (20-100 l/h) with DGMa	15.9 gph (60 l/h) recommended
Max. operating pressure	0-14.5 psi (0-1 bar)	29 psi (2 bar)
Supply	16-24 VDC (2-wire system)	16-24 VDC (3-wire system)
Output signal	4-20 mA, temperature compensated, uncalibrated, not electrically isolated	4-20 mA, temperature compensated, uncalibrated, not electrically isolated
Typical applications	swimming pool, treatment of contaminated wastewater, treatment of process media from production	treatment of clear and chemically uncontaminated water, control systems with necessarily short response times
Measurement and control device	DACH 7	DACH 1
In-line probe housing	DGM, DLG	DGM, DLG

	Fart NO.
Perox sensor PEROX-H2.10-P	792976
Perox transducer PEROX-micro-H1.20-mA	1034100
PER 1- mA - 200 ppm	1022509
PER - mA - 2000 ppm	1022510
PER 1- mA - 50 ppm	1030511

Conductivity Sensors



LFT 1FE

LFT_1FE Ø 12

Measurement range:	0.01-20 mS/cm
Cell constant k:	$1 \text{ cm}^{-1} \pm 5\%$
Temperature	
compensation:	Pt 100
Fluid temperature:	32-176 °F (0-80 °C)
Max. pressure:	232 psi (16 bar)
Electrode material:	Special graphite
Shaft material:	Ероху
Thread:	PG 13.5
Installation length:	120 ± 3 mm
Electrical connection:	5 m fixed cable (2 x 0.5 mm ²)
Typical applications:	Drinking, cooling, industrial water. The sensors in the LF series are not wholly suitable for the measurement of cleaning solutions containing surfactants or liquids containing solvents.
	Part No.
LFT 1FE	1001374

ProMinent

ProMinent[®]

ProMinent® DULCOTEST Sensors

Conductivity Sensors



TUC1

LFTK 1 FE

Measurement range:	0.01-20 mS/cm
Cell constant k:	1 cm ⁻¹ ± 5%
Temperature	
compensation:	Pt 1000
Fluid temperature:	32-176 °F (0-80 °C)
Max. pressure:	232 psi (16 bar)
Electrode material:	Special graphite
Shaft material:	Ероху
Thread:	PG 13.5
Installation length:	120 ± 3 mm
Electrical connection:	5 m fixed cable (2 x 0.5 mm ²)
Typical applications:	Drinking, cooling, industrial water. The sensors in the LF series are not wholly suitable for taking measurements in cleaning so- lutions containing surfactants or liquids containing solvents
	Part No.
LFTK 1 FE	1046132

Measuring Points for Turbidity

The new DULCOTEST Sensors measuring points for turbidity in the DULCO turb C range with versions TUC1, TUC2, TUC3 and TUC4, are compact online turbidity measuring points, consisting of a sensor, inline flow fitting and measuring device. The measuring device permits the measured value to be displayed, calibration, transmission of the measured value via a 4-20 mA signal and the indication of limit value transgressions and device faults. The measuring cuvette integrated in the measuring device enable the device to operate in the bypass of the process line. The visual measuring unit does not come into contact with the sample medium.

The intended application is the treatment of drinking water, whereby the DULCO turb C can be used in all treatment stages of raw water, from filter monitoring to measurement of fine turbidity in dispensed drinking water. It is also possible to monitor the turbidity of slightly contaminated process water and waste water, as well as treated water from the food and beverage industry up to a turbidity value of 1,000 NTU. Compared with the TUC 1 / TUC 2, the measuring stations TUC 3 / TUC 4 include an ultrasound-based self-cleaning function. This helps in particular to extend the service intervals particularly when used with the types of water that form films.

The measuring principle is identical to light scatter measurements. The light beam that is beamed into the measuring cuvette filled with sample water is dispersed on turbidity particles and the scattered light is measured at right angles (90°) to the beamed in light (Nephelometric measurement). The measuring unit for the turbidity measurement can be given as NTU (Nephelometric Turbidity Unit) or as FNU (Formazin Nephelometric Unit). The measuring process of types TUC1/TUC3 (infrared light) corresponds to the globally applicable standard ISO 7027 and the European Standard DIN EN 27027. The measuring process of types TUC3/TUC4 (achromatic light) corresponds to the US American standard USEPA 180.1.

Measuring Points for Turbidity

Measurement range:	0 1,000.0 NTU			
Accuracy	\pm 2 % of the displayed value or \pm 0.02 NTU below 40 NTU, depending on which value is the greater			
	\pm 5 % of the displayed value abo	\pm 5 % of the displayed value above 40 NTU		
Resolution:	0.0001 NTU below 10 NTU	0.0001 NTU below 10 NTU		
Response time:	configurable			
Display:	Multiple row LCD display with ba	Multiple row LCD display with background lighting		
Alarm relay:	Two programmable alarms, 120-	240 VAC, 2 A For	m C relay	
Output signal:	4-20 mA, 600 Ω , not electrically of interference, overvoltage cate	4-20 mA, 600 Ω , not electrically isolated: dual-isolated, degree of interference, overvoltage category II		
Communication interfa	ce: Bi-directional RS-485, Modbus			
Max. pressure:	Integrated pressure regulating va psi), based on the flow rate Flow	alve regulates 138 1.6-15.9 gph (6 -	0 kPa (200 · 60 l/h)	
Temperature:	33.8-122 °F (1-50 °C)			
Material that				
contacts with the medi	a: Polyamide (PA), silicone, polypro borosilicate glass	Polyamide (PA), silicone, polypropylene (PP), stainless steel, borosilicate glass		
Voltage supply:	100 - 240 VAC, 47-63 Hz, 80 VA	100 - 240 VAC, 47-63 Hz, 80 VA		
Ambient conditions:	Not suitable for outdoor use			
	Maximum altitude 1.24 miles ab	Maximum altitude 1.24 miles above sea level		
	Maximal 95 % relative air humid	ity (non-condensii	ng).	
Enclosure rating:	IP 66			
Standard:	USEPA 180.1 with the "Infrared" 27027 with the "Achromatic ligh	USEPA 180.1 with the "Infrared" version, ISO 7027 or DIN EN 27027 with the "Achromatic light" version		
Dimensions H x W x D:	34" x12" x 12" (35 x 30 x 30 cm)			
Shipping weight:	5.5 lbs. (2.5 kg)			
		Ultrasonic		
	Standard	cleaning	Part no.	
TUC 1	Infrared: ISO 7027, DIN EN 27027	No	1037696	
TUC 2	Achromatic light: US EPA 180.1	No	1037695	
TUC 3	Infrared: ISO 7027, DIN EN 27027	Yes	1037698	
TUC 4	Achromatic light: US EPA 180.1	Yes	1037697	
Spare parts				
			Part no.	
Drying agent			1037701	
Cuvette TUC 1 / TUC 2			1037877	
Cuvette TUC 3 / TUC 4			1037878	
Infrared lamp TUC 1 / TUC 3 103770			1037702	
Achromatic light lamp	TUC 2 / TUC 4		1037703	
Hose kit			1037879	
Pressure regulating val	lve		1037885	
Accessories				

	Part no.
Calibration set	1037699
Flow control	1037880

117

Measurement Transmitter 4 - 20 mA (Two Wire)

Advantages:

- Safer signal transfer, even across large distances
- Interference free 4-20 mA signal
- Simple installation directly onto sensor

Typical applications: Measurement signal transfer over large distances, or to transfer signals subject to disturbance (e.g. pH, redox) in conjunction with D1C, D2C and DULCOMARIN[®] measurement and control systems, or for direct connection to PC/PLC.

pH measurement transmitter 4-20 mA, type pH V1

Measurement range:	pH 014
Accuracy:	better than pH 0.1 (typical ±pH 0.07)
Socket:	SN6
Input resistance:	10 ¹² Ω
Signal output:	420 mA \approx -500+500 mV \approx pH 15.451.45 not calibrated, not electrically isolated
Power supply:	1824 V DC
Ambient temperature:	-550 °C, non-condensing
Enclosure rating:	IP 65
Dimensions:	141 mm length, 25 mm Ø

Part No. 809126

Redox measurement transmitter 4-20 mA, type RH V1

Technical data as for pH t	ransmitter, but:
Measurement range:	01000 mV
Accuracy:	better than ± 0.5 mV (typical ± 3 mV)
Input resistance:	> 5 x 10 ¹¹ Ω
Signal output:	$420 \text{ mA} \approx 0+1000 \text{ mV}$ not electrically isolated

Part No.

809127

Ø 25

pk_5_064

Temperature measurement transmitter 4-20 mA, type Pt 100 V1

Technical data as for pH transmitter, but:

Measurement range:	0100 °C
Accuracy:	better than ± 0.5 °C (typical ± 0.3 °C)
Input resistance:	~ 0 Ω
Signal output:	$420 \text{ mA} \approx 0+100 \text{ °C}$ not electrically isolated

Part No. 809128

Signal Cables



pk_6_054





pk_6_056

pk_6_055





General guidelines:

- Ensure that signal leads are as short as possible.
- Ensure signal leads are separated from power cables running parallel to them.
- Use pre-assembled combined signal leads wherever possible.

Signal leads for pH/ORP measurement

- Pre-assembled to facilitate installation
- · Factory tested to ensure function reliability
- IP 65

Design	Description	Pa	art No.
2 x SN6	coax Ø 5 mm	3 ft. (0.8 m) - SS	305077
	coax Ø 5 mm	6 ft. (2.0 m) - SS	304955
	coax Ø 5 mm	15 ft. (5.0 m) - SS	304956
	coax Ø 5 mm	30 ft. (10.0 m) - SS	304957
SN6 - open end	coax Ø 5 mm	6 ft. (2.0 m) - S	305030
	coax Ø 5 mm	15 ft. (5.0 m) - S	305039
	coax Ø 5 mm	30 ft. (10.0 m) - S	305040
SN6 - BNC	coax Ø 3 mm	30 ft. (10.0 m) - SB	305099

Signal leads for electrodes with Vario Pin plug

Pre-assembled 6-core signal lead with Vario Pin plug for connection to electrode type PHEPT 112 VE.

	Part No.
Vario Pin signal lead VP 6-ST/ 2 m	1004694
Vario Pin signal lead VP 6-ST/ 5 m	1004695
Vario Pin signal lead VP 6-ST/10 m	1004696

SN6 coax connector

K 74 crimping pliers and a soldering iron are required for connecting coax connectors to cables.

	Part No.
SN6 coaxial plug for 5 mm Ø coaxial signal lead	304974
SN6 coaxial plug for 3 mm Ø coaxial signal lead	7304975

LK coax signal cable

For pH and ORP measurements.

	Part No.
Coax low noise 5 mm Ø, black	723717
Coax low noise 3 mm Ø, black	723718
Please specify length with order.	

Signal Cables

Signal leads for DMT type chlorine measuring cells

The signal lead is required for connection of DMT type measuring cells to the DMT transducer.

		Part No.
Universal cable, 5-pin round plug; 5-core	6 ft. (2 m)	1001300
Universal cable, 5-pin round plug; 5-core	15 ft. (5 m)	1001301
Universal cable, 5-pin round plug; 5-core	30 ft. (10 m)	1001302

Cable accessories for CAN-type chlorine sensors

	Part No.
T-distributors M12 5 pole CAN	1022155
Moving load M12-joint	1022154
Moving load M12-plug	1022592
Connecting cable - CAN M12 5 pole 0.5 m	1022137
Connecting cable - CAN M12 5 pole 1 m	1022139
Connecting cable - CAN M12 5 pole 2 m	1022140
Connecting cable - CAN M12 5 pole 5 m	1022141
Connecting cable - CAN, sold in meters	1022160
Plug-CAN M12 5 pole Screw terminal	1022156
Coupling-CAN M12 5 pole Screw terminal	1022157

Signal leads for Pt 100/Pt 1000 (2 x 0.5 mm²)

			Part No.
Length	15 ft. (5 m)	SN6 - open ended	1003208
Length	30 ft. (10 m)	SN6 - open ended	1003209
Length	60 ft. (20 m)	SN6 - open ended	1003210

Sensor adapters

4-core, shielded, Ø 6.2 mm

	Part No.
SN6 male to BNC male	7305024
SN6 female to BNC female	7305065
SN6 male to SN6 male	7305025

LKT signal lead for conductivity measuring cells

	Part No.
Please specify length with order.	723712

Two-wire signal lead (2 x 0.25 mm²; Ø 4 mm)

For -mA type chlorine/bromine/chlorine dioxide/ozone measuring cells and pH, ORP; Pt 100, conductivity transducers.

	Part No.
Please specify length with order.	7740215

pk_1_085

pk_6_054

pk_6_055

Buffer Solutions

pH Quality Buffer Solutions

Accuracy $\pm pH$ 0.02 (± 0.05 at pH 10). The shelf life depends upon frequency of use and the amount of chemical drag-in.

Alkaline buffer solutions can react with CO2 if left open. This will affect their values, therefore close after use. Buffer solutions should be replaced a maximum of three months after opening. The solution contains a biocide to prevent bacteria forming.



Capacity	Part No.
50	506251
250	791436
1,000	506256
50	506252
50	506253
250	791437
1,000	506258
50	506254
1,000	506259
50	506255
250	791438
1,000	506260
	Capacity 50 250 1,000 50 250 1,000 50 1,000 50 250 1,000





Accuracy \pm 5 mV. Their shelf life depends on how often they are used and how strong the carry-over of chemicals is.

Buffer solutions should be replaced a max. of 3 months after first opening. *Important: The ORP buffer solution 465 mV is an irritant!*

	Capacity	Part No.
ORP buffer 465 mV	50	506240
ORP buffer 465 mV	250	791439
ORP buffer 465 mV	1,000	506241
ORP buffer 220 mV	50	506244
ORP buffer 220 mV	1,000	506245



3 Molar KCI Solutions

3-molar KCl solution is most suited for the storage of pH and ORP sensors (e.g., in sensor quills) and as an electrolyte for refillable sensors (e.g., PHEN, RHEN). We only recommend using the KCl solution saturated with AgCl for the old design of the refillable sensors with reference electrodes without a large AgCl reservoir.

	Capacity	Part No.
KCl solution, 3 molar	50	505533
KCl solution, 3 molar	250	791440
KCl solution, 3 molar	1,000	791441

Electrolyte Solutions



pk_6_058

ProMinent



pk_6_061



Cleaning solutions

Pepsin/hydrochloric acid cleaning solutions:

For cleaning pH electrode diaphragms contaminated with protein.

	Part No
250 ml	791443

Conductivity calibration solution

For the accurate calibration of conductivity sensors we recommend using calibration solutions with known conductivity levels.

			Part No.
Buffer sol.	LF 1413 myS/cm	250 ml	1027655
Buffer sol.	LF 1413 myS/cm	1000 ml	1027656
Buffer sol.	LF 12,88 mS/cm	250 ml	1027657
Buffer sol.	LF 12,88 mS/cm	1000 ml	1027658

Electrolyte for chlorine, bromine, chlorine dioxide and ozone measuring cells

	Part No.
CLE all chlorine measuring cells electrolyte, 100 ml	506270
CDM 1 type chlorine dioxide	
measuring cells electrolyte, 100 ml	506271
CDE chlorine dioxide measuring cells electrolyte, 100 ml	506272
OZE ozone measuring cells electrolyte, 100 ml	506273
Electrolyte for measuring cells types CGE/CTE/BRE, 50 ml	792892
Electrolyte for chlorine dioxide measuring cells type CDP, 100 ml	1002712
Electrolyte for peracetic acid sensors, type PAA 1, 100 ml	1023896
Electrolyte for chlorine probes, Type CLT 1, 50 ml	1022015

Membrane Caps

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Spare membrane caps, accessory sets for chlorine, bromine, chlorine dioxide and ozone sensors

	Part No.
Membrane cap for types CLE II T, CDM 1 and OZE 1	790486
Membrane cap for types: CLE 2.2, CLE 3, CDE 1.2, CDE 2, OZE 2 and OZE 3:	700499
	190400
this membrane cap for CGE/CTE 1 (2/5/10 ppm) and BRE 1	792862
Membrane cap for CTE 1 (0.5 ppm);	
this membrane cap is blue	741274
Membrane cap for CDP 1; this membrane cap is black	1002710
Membrane cap for PAA 1	1023895
Membrane cap for CLT 1	1002710
Accessory set for CGE 2/CTE 1 (2/5/10 ppm) and BRE 1 (2 membrane caps + 50 ml electrolyte)	740048
Accessory set CTE 1 (0.5 ppm) (2 membrane caps + 50 ml electrolyte)	741277
Accessory set for CDP 1	
(2 membrane caps + 100 ml electrolyte)	1002744
Accessory kit CLT 1	1022100
Accessory kit PAA 1	1024022

pk_6_075

DGMa Sensor Housings



DGM modular in-line probe housing

To accept conductivity, Pt 100, pH or ORP probes with PG 13.5 screw-in thread, or amperometric sensors with R 1" screw-in thread.

Advantages:

- Simple to assemble (already mounted on panel up to max. 7 units)
- Simple retrofit expansion possibility (see expansion modules)
- Module for monitoring flow of sampled water
- Simple to calibrate measured variables due to low sample water volume
- Ball valve on either end for adjusting and impeding flow

Each fully-assembled DGM is equipped with a single sampling cock.

Material:	Transparent PVC (all modules) FPM (seals) PP (calibration cup) PVC white (mounting panel)
Max. temperature:	140 °F, (60 °C)
Max. pressure:	87 psi, (6 bar) / 86 °F, (30 °C) 14.5 psi, (1 bar) / 140 °F, (60 °C) 29 psi, (2 bar),(with flow monitor, 86 °F, (30 °C))
Flow volume:	Up to 21 gph, (80 l/h),(10.5 gph, (40 l/h recommended))
Flow sensor:	Reed contact max. switch power 3 W max. switch voltage 175 V max. switch current 0.25 A max. operating current 1.2 A max. contact resistance 150 m Ω
Switch hysteresis:	approx. 20 %
Enclosure rating:	IP 65
Applications:	Potable, swimming pool water or water of similar quality with no suspended solids
Assembly:	Max. 5 modules pre-assembled onto baseboard: more than 5 modules, pre-assembled onto baseboard as custom version, priced accordingly.FPM = Fluorine Rubber



pk_6_071

Sampling tap for DGM

for PG 13.5 and 25 mm modules designed as a convenient ball valve.

	Part No.
PG 13.5 sampling tap	1004737
25 mm sampling tap	1004739

Expansion modules for DGM

For simple retrofit to an existing DGM.

	Part No.
Flow expansion module with scale in I/h	1023923
Flow expansion module with scale in gph	1023973
Flow sensor for flow expansion module (optional)	791635

DGMa Identcode

DGM	Series	s Versi	on:								
	Α	Series	Series								
		Flow	monitor module:								
		0	None								
		1	With I/	/ith I/h scale							
		2	With g	th gph scale							
		3	With fl	th flow monitor, I/h scale							
		4	With fl	With flow monitor, gph scale							
			Number of PG 13.5 modules:								
			0	None				NOTE: Add 15 mm mounting set for PHEP/BHEP			
			1	One P	PG 13.5 module			sensors			
			2	Two P	o PG 13.5 modules						
			3	Three	Three PG 13.5 modules						
			4	Four PG 13.5 modules							
				Number of 25 mm modules:							
				0	None						
				1	One 2	5 mm ı	nodule	* * 25 mm mounting set needed, P/N 791818			
				2	2 Two 25 mm modules*			s*			
				Material:							
					T Transparent PVC						
						Seal material:					
						0	Viton®				
							Conn				
							0	1/2" x 3/8" tubing adapters			
							1	PVC half-union connections with 1/4" MNPT adapter			
DGM	Α	0	0	0	т	0	0				

Recommended accessories:	Part No.
reference potential plug with SS pin	791663
flow sensor (spare)	791635
calibration cup (spare)	791229
Sampling Tap for PG 13.5 module	1004737
Sampling Tap for 25 mm module	1004739
Mounting set for 15 mm (PHEP/RHEP)	791219
Mounting set for 25 mm module	
(CLE, CTE, CGE, CDE, CDP, 0ZE)	791818
Bubble disperser for CI sensor	740207
Bubble disperser for pH/ORP sensors	791703

DULCOTEST

DLG Sensor Housings



pk_6_063



pk_6_070



To accept 2 electrodes (conductivity, Pt 100, pH or ORP electrodes) with PG 13.5 screw-in thread, as well as a sensor with R1 thread (amperometric sensors) with integrated stainless steel pin as liquid reference potential.

The DLG III is fitted with a plastic ball valve on the input side for stopping and adjusting the sample water flow.

Material:	Rigid PVC
Transparent housing cup:	Polyamide
Ball valve material:	Rigid PVC
Max. pressure:	1 bar
Max. temperature:	55 °C
DLG III A with PVC hose conr	nectors for 8/5 mm (

DLG III A with PVC hose connectors for 8/5 mm Ø PE tubing	914955
DLG III B with PVC adhesive connectors for 16 mm $Ø$ DN 10 pipe	914956
Assembly kit for fitting amperometric sensors	815079

DLG IV type in-line probe housing

To take 4 electrodes (pH, ORP, Pt 100, conductivity) with PG 13.5 threaded connector, with integrated stainless steel pin as liquid reference potential. Bracket for wall mounting

Material:	Hard PVC or PP	
Transparent housing:	Polyamide	
Max. pressure:	1 bar	
Max. temperature:	55 °C for PVC version 80 °C for PP version	
Sample water connector:	Union with d 16/DN 10 insert	
		Part No.
DLG IV PVC for Ø 16/DN 10 p	1005332	
DLG IV PP for Ø 16/DN 10 p	ipe work connector	1005331

Sensor Holders	
7	CPVC holder (for pH/ORP)
	CPVC universal in-line sensor holder with 3/4" MNPT, 5" (127 mm) long body.
	PVDF holder (for pH/ORP)
	PVDF universal in-line sensor holder with 3/4" MNPT, 5" (127 mm) long body.
	Stainless steel holder (for pH/ORP)

Stainless steel universal in-line sensor holder with 3/4" MNPT, 5" (127 mm)long body. 7500194

PG 13.5 Submersible holder (for pH/ORP)

CPVC Waterproof sensor holder with	
1-1/2" NPT, 5" (127 mm) long body.	7744693

CPVC holder (for 25 mm sensors)

CPVC universal in-line sensor holder with 2" MNPT, 5" (127 mm) long body.

7500005

7500192

7500139

Part No.

25 mm Submersible holder (consult factory for details)

CPVC Waterproof sensor holder 1-1/2" FNPT, 5" (127 mm) long body.

