

TRANSPARENCY AT A GLANCE:
DULCOMETER® MEASURING AND CONTROL TECHNOLOGY
FROM ProMinent.



TRANSPARENCY



ProMinent®

DULCOMETER® MEASURING AND CONTROL TECHNOLOGY: PRECISION WITH A SYSTEM.



A system that is completely in tune:

Sensory Analysis, Processing of Measuring Values, Control



Precision manufactured by us: An extensive programme for many process procedures



The highest flexibility through different types of construction for all conditions.



Complete set up of small plants and complete solutions in large plants.





DULCOMETER® DMT
Measuring transducer for
Measured Variables pH, Redox,
Chlorine, Conductivity and
Temperature

DULCOMETER® D1C and D2C –
Control characteristics P and PID.
Measured variables:
pH, ORP, Conductivity, Chlorine,
ClO₂, O₃, Br₂, T, mA, H₂O₂,
and Peracetic Acid

The new DULCOMETER®
Measuring Transducer with
icon-guided operation for the
measured variables pH,
Redox and Conductivity



DULCOMETER® Measuring and Control Technology by ProMinent provides you with an extensive system for monitoring or controlling different processes.

The individual devices:

The DULCOMETER® On-Site Measuring Transducer type DMT is a compact micro-processor controlled measuring device using a two-wire technique which means that it can be installed without a great deal of



wiring. The solid housing, IP 65 protection system and the versatile fitting possibilities mean the device can be used even in the most difficult conditions. The easy to see display provides clarity at a glance: Measured variable, measuring unit and correction variable are displayed at the same time.

DULCOMETER® D1C is a single channel control device using control characteristic P or PID for

the measured variables pH, Redox, Conductivity, Cl₂, ClO₂, O₃, Br₂, T, mA, H₂O₂, Peracetic Acid and Fluoride.

The DULCOMETER® D2C can process two measured variables at once: pH/pH, pH/chlorine, and pH/redox. The DULCOMARIN® Pool Controller measures and controls pH-value, redox potential, chlorine, records the temperature and so provides for crystal clear pool water.

DULCOMETER® D_4a gives you the compact combination of controller and dosing pump in one housing.

The new measuring transducers DULCOMETER® 2201 X pH, 2201 X Cond, 2201 X Cond I, 2401 Cond I for measuring redox potential and conductivity are suitable for universal use in different branches of industry: 4-wire devices enable the control of peripheral devices via 4-voltage-free switching contacts.

The 2-wire devices can be used in hazardous areas.

The portable Portamess® devices are designed for applications in hazardous



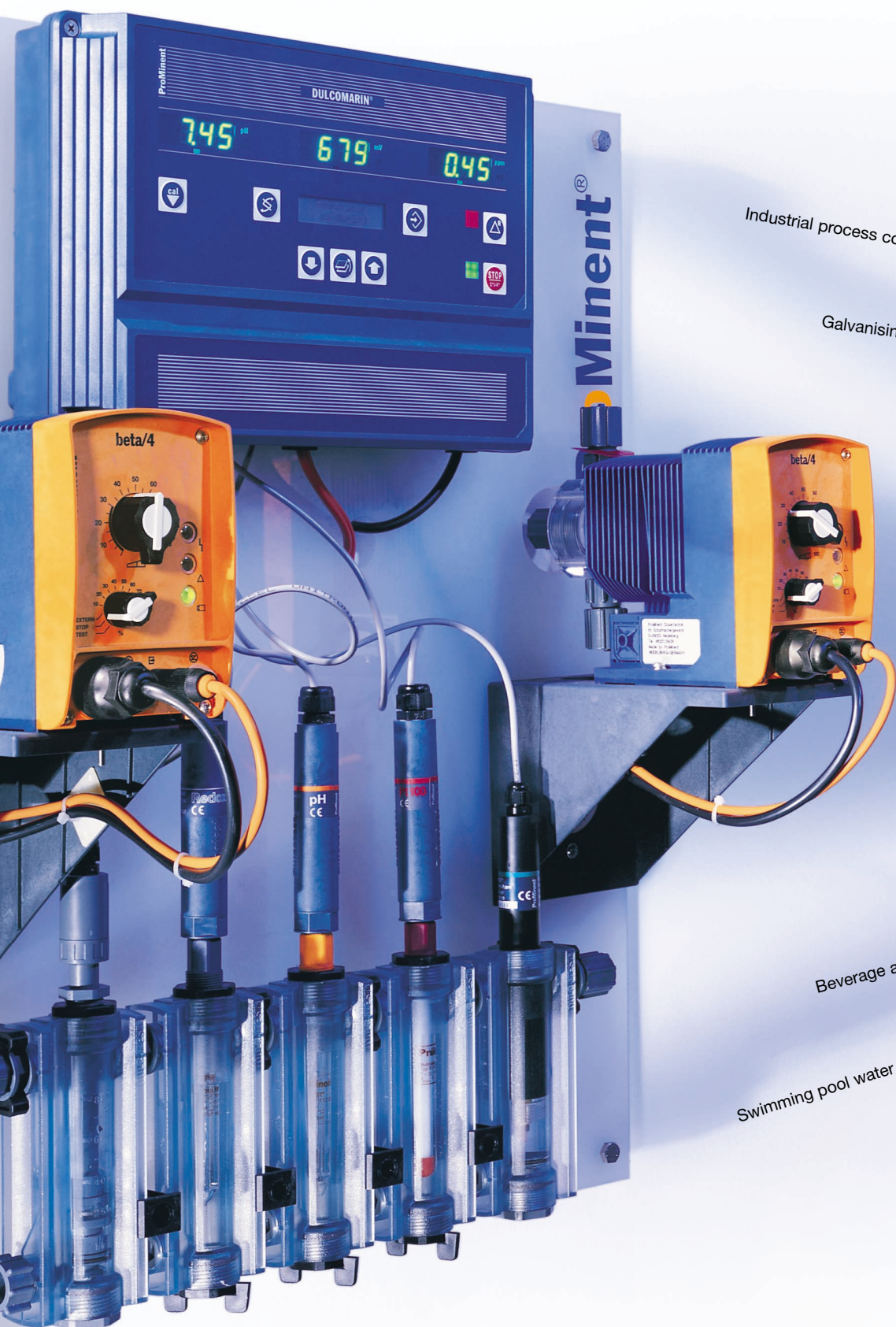
Portamess® -
the new portable
pH-Meter and
Conductivity meter

areas and non-hazardous areas e.g. in industry, in environmental protection, in food production as well as in water and waste water inspection.



Everything in one housing:
DULCOMETER® D_4a
Controller and Pump as a
space-saving unit

VARIED USE. COMPACT FORM.
VERSATILE MEASURING DEVICES FROM PROMinent.



Industrial process control

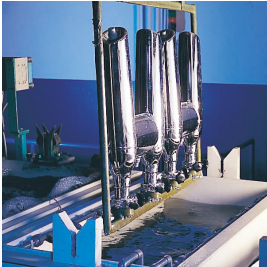
Galvanising plants and the paper industry

Chemical waste water treatment

Treatment of drinking and process water

Beverage and food industries

Swimming pool water treatment



Large selection of devices and extensive accessories for all industrial tasks e.g. in the galvanising industry



Measuring and controlling for good taste – for the beverage and food industry



DULCOSMOSE® reverse osmosis by ProMinent – simple and easy to use thanks to extensive micro-processor control with integrated conductivity measurement

Our measuring and controlling technology has found a place in almost all areas of industry, due to the extensive range of products that can be adapted to meet a range of very different requirements. Here our technology stands for a long operating life and the highest precision.

This is for example in the industrial process control of galvanising plants for the minimisation of the use of chemicals, which have an impact on the environment. DULCOMETER® devices that meet the requirements for wastewater are used to control chemical treatment of wastewater.

In the treatment of drinking and process water they ensure that as few corrective chemicals are used as possible – for the sake of the environment and health.

The tried and tested DULCOMETER® Controller takes over control in reverse osmosis plants. We offer this device with hard and software modifications so that the plant is guaranteed to run perfectly.

The input signals such as the conductivity in the permeate and the level in the permeate container control the plant.

The DULCOMETER® D1C controller is used in a modified design “Cool Control” in cooling towers for controlling desalination and biocide. Draining (desalination) is controlled dependent on the conductivity measured in the circulating water. Sterile cleanliness and the finest



“Cool Control” regulator for controlling draining in the circulating water in cooling towers



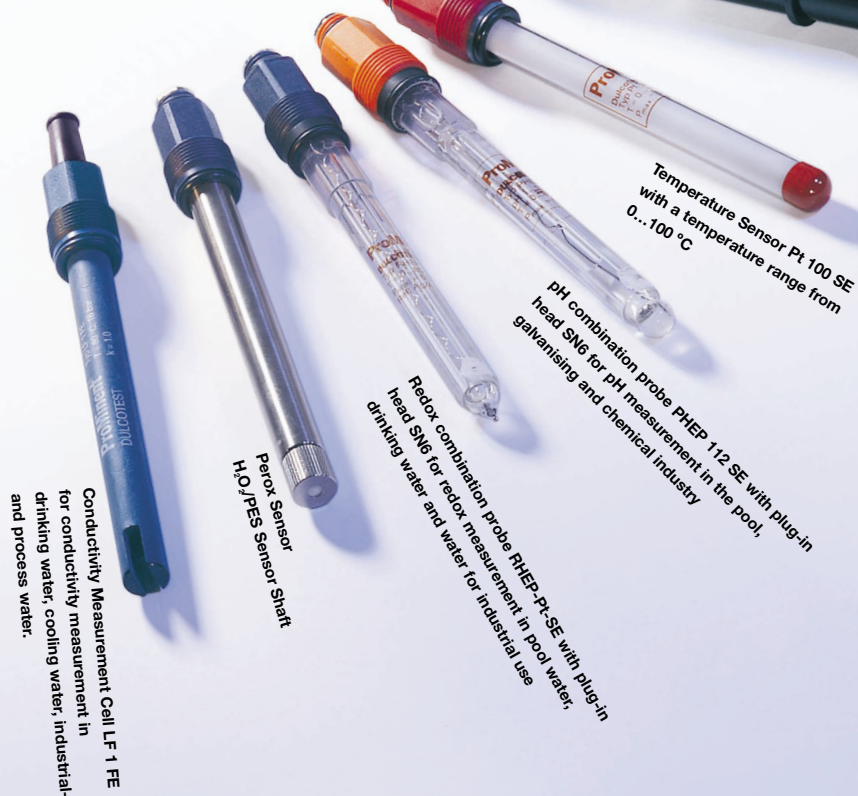
DULCOMARIN® gives you crystal clear water in the swimming pool

taste nuances are most important to the drinks and food industries. DULCOMETER® devices guarantee reliable and precise dosage.

Fun in the swimming pool starts only in absolutely clean water. To ensure that this is provided: DULCOTEST® sensors measure the pH value, redox potential, chlorine content and temperature, DULCOMARIN® pool controllers process these signals and control water treatment.

DULCOTEST® SENSOR TECHNOLOGY:
THE HIGHEST PRECISION FOR TRANSPARENT PROCESSES.

You can choose:
 Your tasks determine
 which sensors you
 choose and use from
 the DULCOTEST®
 product range.
 They provide reliable
 measuring variables
 indefinitely



Chlorine Measuring Cell CTE 1-mA for
 determining the total amount of chlorine,
 that is the free and combined chlorine

Chlorine Measuring Cell CLE 3-mA
 for the exact measurement of the
 free chlorine in the water

Chlorine Dioxide Measuring Cell CDP 1-mA
 for determining the chlorine dioxide
 content in water containing surfactants

Bromine Measuring Cell BRE 1-mA for
 measuring the bromine content in pools
 or cooling circuits

Ozone Measuring Cell OZE 3-mA for the reliable
 measurement of the ozone content in pool water,
 (free from surfactants)

Temperature Sensor Pt 100 SE
 with a temperature range from
 0...100 °C

pH combination probe PHEP-Pt-SE with plug-in
 head SN6 for pH measurement in the pool,
 galvanising and chemical industry

Redox combination probe RHEP-Pt-SE with plug-in
 head SN6 for redox measurement in pool water,
 drinking water and water for industrial use

H₂O/RES Sensor Stark

Conductivity Measurement Cell LF-1 FE
 for conductivity measurement in
 drinking water, cooling water, industrial-
 and process water.

DULCOTEST® sensors
 are very important as
 they are the first link in
 the measuring and con-
 trolling chain. They have
 to record values exactly –
 as only precise measuring
 values enable optimum
 process monitoring.

Sensors from ProMinent
 mean that you are safe:
 They are manufactured
 according to the strictest
 quality criteria in our
 works. They are easy to
 handle and reliable to use.

Type	Measured variable	Measuring and Controlling Range	Control Characteristic	Control Outputs	Analogue Output	Comment
DULCOMETER® DMT	pH	0...14 pH	–	–	4-20 mA	Two-wire technology
	Redox	-1200...+1200 mV	–	–	4-20 mA	
	Conductivity	0...200 mS/cm	–	–	4-20 mA	
	Temperature	-20...150 °C	–	–	4-20 mA	
	Chlorine	0.01...50.0 mg/l	–	–	4-20 mA	
DULCOMETER® D1C	pH	0...14 pH	P; PID	F, IL, 3P, ST	0/4-20 mA	Disturbance signal activation
	Redox	-1000...+1000 mV	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Chlorine	0...0.5/2/5/10/20 ppm	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Conductivity	0...20/200 µS/cm	P; PID	F, IL, 3P, ST	0/4-20 mA	
		0...2/200/1000 mS/cm				Temperature compensation (for pH, conductivity, ClO ₂)
	Chlorine dioxide	0...0.5/2/10/20 ppm	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Bromine	0...10 mg/l				pH correction
	Temperature	0...100 °C	P; PID	F, IL, 3P, ST	0/4-20 mA	
		32...212 °F	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Analogue signal	0/4...20 mA	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Hydrogen peroxide	0...20/200/2000 mg/l	P; PID	F, IL, 3P, ST	0/4-20 mA	
	Peracetic acid	10...100/200/2000 mg/l	P; PID	F, IL, 3P, ST	0/4-20 mA	
DULCOMETER® D2C	pH/Chlorine	0...14 pH	P; PID	F, IL	0/4-20 mA	
		0...0.5/2/5/10/20 ppm				
	pH/Redox	0...14 pH	P; PID	F, IL	0/4-20 mA	
DULCOMETER® D_4a		0...1000 mV				
	pH/pH	0...14 pH	P; PID	F, IL	0/4-20 mA	
DULCOMETER® D_4a	pH	0...14 pH	P	–	0/4-20 mA	Temperature compensation (for pH)
	Redox	0...1000 mV	P	–	0/4-20 mA	
	Chlorine	0...2 ppm; 0...20 ppm	P	–	0/4-20 mA	
DULCOMARIN®	4 measured variables in one device:		P, PI, PID	F, IL, 3P	0/4-20 mA	RS232 (for printer or PC) visualisation software for PC VS001 on request
	pH	0...14 pH				
	Redox	0...1000 mV				
	Chlorine	0...2/10 mg/l				
	Temperature	0...100 °C				
DULCOMETER® 2201 X pH	pH	0.0...14 pH	–	–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
	Redox	-1500...+1500 mV	–	–	–	
DULCOMETER® 2201 X Cond	Conductivity	000.0...999.9 mS/cm	–	–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
	Spec. resistor	00.0...999.9 MΩ cm	–	–	–	
	Salinity	0.0...45‰ (0...35 °C)	–	–	–	
DULCOMETER® 2201 X Cond I	Conductivity inductive	0...2000 mS/cm	–	–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
	Concentration	0.0...100 weight %	–	–	–	
	Salinity	0.0...45‰ (0...35 °C)	–	–	–	
			–	–	–	
DULCOMETER® 2401 Cond I	Conductivity inductive	0...2000 mS/cm	–	–	0/4-20 mA	4-wire measuring transducer for connecting the inductive sensor LF654X 2 limit value contacts, 1 alarm, 1 wash contact
	Concentration	0.0...100 weight %	–	–	–	
	Salinity	0.0...45‰ (0...35 °C)	–	–	–	
			–	–	–	
Portamess® 911 pH	pH	-2...16 pH	–	–	–	2000 h operating hours (with 3 mignon cells)
	Redox	-1300...1300 mV	–	–	–	
	Temperature	-20...120 °C	–	–	–	
Portamess® 913 pH	pH	-2...16 pH	–	–	–	Data logger serial interface
	Redox	-1300...1300 mV	–	–	–	
	Temperature	-20...120 °C	–	–	–	
Portamess® 913 X pH	pH	-2...16 pH	–	–	–	EEX Ia IIC T6
	Redox	-1300...1300 mV	–	–	–	
	Temperature	-20...120 °C	–	–	–	
Portamess® 911 Cond	Conductivity	0.01 µS/cm...1000 mS/cm	–	–	–	Dependent on the measuring cell 1000 h operating time (with 3 mignon cells)
	Temperature	-20...120 °C	–	–	–	
	Salinity	0.0...70 g/kg (0...30 °C)	–	–	–	
	TDS	0...1999 mg/l (10...40 °C)	–	–	–	
Portamess® 913 Cond	Conductivity	0.01 µS/cm...1000 mS/cm	–	–	–	Data logger serial interface
	Temperature	-20...120 °C	–	–	–	
	Salinity	0.0...70 g/kg (0...30 °C)	–	–	–	
	TDS	0...1999 mg/l (10...40 °C)	–	–	–	
Portamess® 913 X Cond	Conductivity	0.01 µS/cm...1000 mS/cm	–	–	–	EEX Ia IIC T6
	Temperature	-20...120 °C	–	–	–	
	Salinity	0.0...70 g/kg (0...30 °C)	–	–	–	
	TDS	0...1999 mg/l (10...40 °C)	–	–	–	

SERIAL SUCCESS: PROMINENT® MEASURING, CONTROLLING AND SENSOR TECHNOLOGY



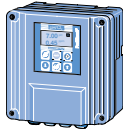
DULCOMETER® DMT

Measured variables:
pH, Redox, Conductivity,
Temperature, Chlorine



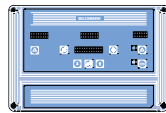
DULCOMETER® D1C

Measured variables:
pH, Redox, Chlorine, Bromine,
Chlorine Dioxide, Ozone,
Conductivity, mA, H₂O₂,
Temperature, PES, Fluoride



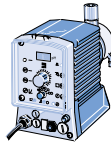
DULCOMETER® D2C

Measured variables:
pH/pH
pH/Chlorine
pH/Redox



DULCOMARIN®

Measured variables:
pH/Chlorine, pH/Redox,
pH/Redox/Chlorine,
pH/Redox/Chlorine/
Temperature



DULCOMETER® D_4a

Measured variables:
pH, Redox, Chlorine



DULCOMETER® 2201 X

Measured variables:
pH, Redox, Conductivity
for use in potentially
explosive areas

DULCOMETER® 2401 Cond I

Measured variable:
Inductive conductivity



Portamess®

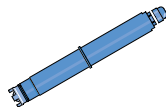
Measured variables:
pH, Redox, Conductivity for
use in potentially explosive
areas and those which are
not potentially explosive



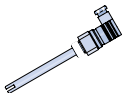
pH-combination probes



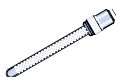
Redox-combination probes



Chlorine-/Chlorine Dioxide-/Bromine-/Ozone- Measuring Cells



Conductivity Measuring Cells



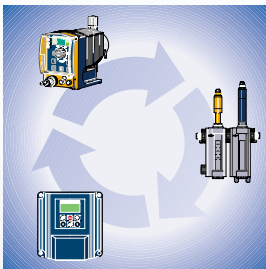
Temperature Sensors Pt 100/1000

Control Outputs	Analogue Output	Comment
–	4-20 mA	Two-wire technology
–	4-20 mA	
–	4-20 mA	
–	4-20 mA	
–	4-20 mA	
F, IL, 3P, ST	0/4-20 mA	Disturbance signal activation Temperature compensation (for pH, conductivity, ClO ₂)
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	pH correction
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	
F, IL, 3P, ST	0/4-20 mA	
F, IL	0/4-20 mA	
F, IL	0/4-20 mA	
F, IL	0/4-20 mA	
–	0/4-20 mA	Temperature compensation (for pH)
–	0/4-20 mA	
–	0/4-20 mA	
F, IL, 3P	0/4-20 mA	RS232 (for printer or PC) visualisation software for PC VS001 on request
–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
–	–	
–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
–	–	
–	–	
–	4-20 mA	2-wire measuring transducer for use in hazardous location EEx Ib (ia) IIC T6
–	–	
–	–	
–	0/4-20 mA	4-wire measuring transducer for connecting the inductive sensor LF654X 2 limit value contacts, 1 alarm, 1 wash contact
–	–	
–	–	
–	–	2000 h operating hours (with 3 mignon cells)
–	–	
–	–	
–	–	Data logger serial interface
–	–	
–	–	
–	–	EEX Ia IIC T6
–	–	
–	–	
–	–	Dependent on the measuring cell 1000 h operating time (with 3 mignon cells)
–	–	
–	–	
–	–	
–	–	Data logger serial interface
–	–	
–	–	
–	–	
–	–	EEX Ia IIC T6
–	–	
–	–	
–	–	

**WORLDWIDE – NEAR YOU:
CUSTOMER PROXIMITY AT PROMINENT.**



**ProMinent – the best connections
for optimum results**



**Precise process control
with safety from ProMinent**

Competence not only means meeting the highest quality demands.

ProMinent's proximity to all of the important industrial locations and application technology know how in all liquid processes guarantees genuine closeness to the customer. We keep in close touch with our 38 subsidiaries, as well as with up to 60 authorised representatives around the world, from our company headquarters in Heidelberg.

This gives you an experienced team of engineers at your side for all questions in respect of components and system solutions.

Worldwide!



**All complete:
DULCOTEST® in-line sensor
housing type DGM**

Delivery service, qualified advice and fast reaction spare parts service are a unique process guarantee for you. Competence with all its consequences – from product know how to security of service – quality from ProMinent.



We reserve the right to make technical alterations
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**Manufacturer's addresses and
delivery information:**

ProMinent Dosiertechnik GmbH
Im Schuhmachergewann 5–11
69123 Heidelberg
Postfach 10 17 60
69007 Heidelberg · Germany
Phone: +49 (6221) 8 42-0
Fax: +49 (6221) 8 42-419
info@prominent.de · www.prominent.de

ProMinent®