



DID – DOSING INSTRUMENTATION DIGITAL

Measurement and control of up to 3 water quality parameters

General

Monitoring of typical water quality parameters as well as precise control of disinfectant addition or pH adjustment is essential for many water treatment processes. Bus interface as well as data logging functionalities and intuitive user interface are a must for M&C today.

The new Grundfos by s::can DID systems are the perfect combination of s::can's state-of-the-art digital sensor technology and Grundfos' experience in PID controlling of dosing and disinfection processes. DID systems are designed to match perfectly with Grundfos dosing pumps, gas dosing systems as well as systems for the generation and dosing of chlorine dioxide and hypochlorite.

Characteristics and main features

DID systems are available as pre-assembled systems with bypass flow cell or as kits for applications with tank-immersed sensors.

Variants with bypass flow cell are intended for monitoring and control of disinfectants, pH, ORP, conductivity and temperature. The water flow through the cell is kept at an appropriate level by a flow restrictor. Lack of water is detected by a flow switch and leads to an alarm. A shut-off ball valve and a sampling cock complete the hydraulic installation, which is compatible with Grundfos standard hoses.

System configurations for tank immersion are available with up to 2 sensors for pH, ORP and conductivity, and always include temperature measurement. These variants allow measurement of water parameters directly in the tank or basin without the need for a bypass line and flow cell. The controller unit can either be fixed directly at a wall or back plate, or mounted on a DIN rail in a cabinet.

CU 382 control unit

- Intuitive plain-text operation
- Data logger functionality
- Up to 3 controller outputs, freely assignable
- Modbus included
- Modbus sensor interface
- Data interchange with USB stick
- Wide-range power supply

Sensors

- Modbus interface to CU 382 control unit
- Onboard storage of calibration data
- Temperature compensation included for all sensors
- Long service intervals
- Pre-calibrated (pH, ORP, conductivity sensor)
- 1-2 sensor variants per parameter for all applications and measuring ranges
- Diaphragm-covered amperometric sensor principle for disinfectant sensors
- Low pH dependency for free-chlorine sensors

Pre-assembled measuring system

- Automatic setting of the water flow and detection of missing water flow in systems with flow cell
- Sensor carrier included in systems for tank installation
- 7.5 m of cable included in systems for tank installation (extension cables are available in lengths up to 20 m)
- Sensor guard included in systems for tank installation

Technical data

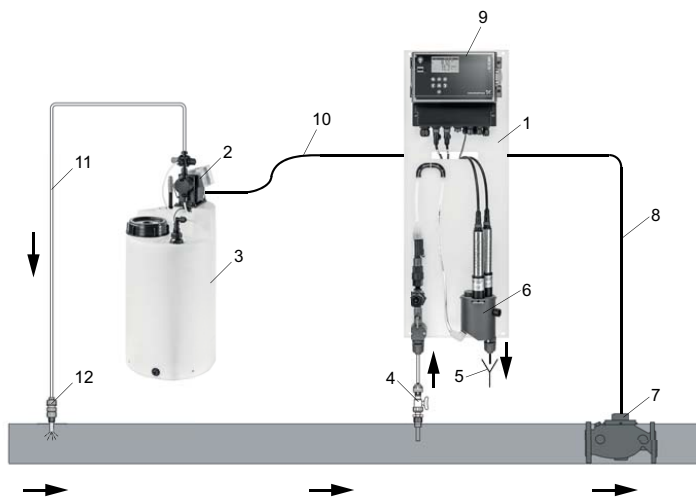
CU 382 control unit

Electronics	High-speed 32 bit Cortex M4 processor
Display	128 x 64 graphical display, 70 x 40 mm viewing area, transreflective, white background
Memory	512 MB, industrial grade SLC
Data logger	Internal memory, downloadable via USB stick
Outputs/inputs	3 x 4-20 mA outputs 1 x 4-20 mA input 2 x potential-free outputs 1 alarm relay 2 x potential-free inputs
Interfaces	RS-485 Modbus
Ambient temperature	-20 to +45 °C
Permissible relative air humidity	5 to 90 %, non-condensing
Voltage	100-240 V, 50/60 Hz
Enclosure class	IP65

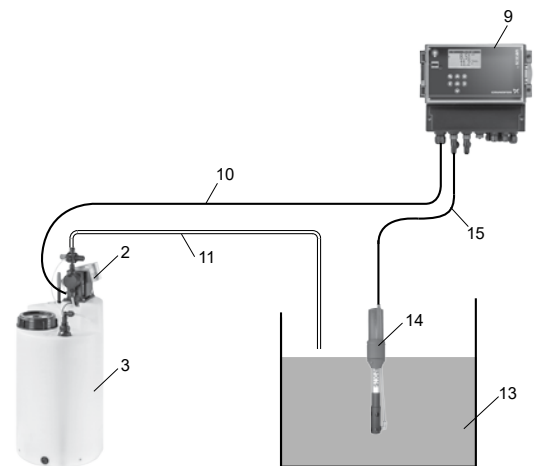
Sensors

Measured parameter	Free chlorine	Total chlorine	ClO ₂	H ₂ O ₂	PAA	pH	ORP	Conductivity
Operating temperature	+5 to +45 °C	+5 to +45 °C	+5 to +50 °C	+5 to +45 °C	+5 to +45 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Max. operating pressure (depending on installation)	3 bar	3 bar	1.0 bar	1.0 bar	1.0 bar	0-10 bar	0-10 bar	0-20 bar
Min. flow rate/flow speed	30 l/h	30 l/h	30 l/h	30 l/h	30-100 l/h	0.01-3 m/s	0.01-3 m/s	0.01-3 m/s
Response time t ₉₀	2 min	2 min	1 min	8 min	5 min at 10 °C 1.5 min at 50 °C	30 s	30 s	60 s
Measuring range	0-2 ppm 0-20 ppm	0-2 ppm 0-20 ppm	0-2 ppm 0-20 ppm	0-200 ppm 0-2000 ppm	0-200 ppm 0-2000 ppm	pH 2-12	-2000 to +2000 mV	0-500000 µS/cm

Typical setup of DID, dosing system and flowmeter



Installation scheme: DID with bypass flow cell



Installation scheme: DID for tank immersion

Legend

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|--------------------------------|--|--|
| 1 DID with bypass flow cell | 6 Bypass flow cell for one or three sensors with sample water extraction | 11 Dosing line |
| 2 SMART Digital dosing pump | 7 Flowmeter | 12 Injection unit |
| 3 Dosing tank | 8 Signal cable to CU 382 control unit | 13 Tank |
| 4 Sample water extraction | 9 CU 382 control unit | 14 Sensor with carrier and guard |
| 5 Sample water outlet to drain | 10 Control cable to pump | 15 Signal cable: sensor to CU 382 control unit |