DOSATRONIC®
MANAGEMENT IN WATER

II. Sensors

2.3 Amperometric Sensors

2.3.1 DOSA*Sens* Chlorine Sensor **CL2.2**

Chlorine sensor with membrane-covered, amperometric 2-electrode system. For the measurement of free inorganic chlorine at constant pH.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(ClO)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), chlorine generated by membrane-electrolysis
- Calibration: at the controller, via analytical chlorine determination by DPD-1 method
- Interferences: ClO_2 is being registered with factor 9 of its measured value; O_3 is registered; with membrane-less chlorine electrolysis interferences may occur
- resolution: 0,001; 0,01 ppm (depends on type)
- pH range: 6 … 8
- Pressure range: 0 … 1 bar, no pressure surges or fluctuations
- Temperature range: 0 … 45 °C (no ice crystals in the measuring water)
- Integrated automatic temperature compensation (avoid temperature jumps!)
- Absence of the disinfectant: max. 24 h
- Response time: T_{90} ca. 30 sec
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal
- Material: PVC-U and semipermeable membrhmane

Einsatzgebiete:

- Salt or Seawater to about 26% salinity, free of surfactants and with constant pH

Lieferumfang:

- **CL2.2:** Sensor, Membrankappe, Elektrolyt

Bestellung:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CL2.2**N**	0,05 … 20,00	0,01	0 … -2000 mV 1 kΩ	±5 … ±15 VDC 10 mA	3326024
CL2.2**MA2**	0,005 … 2,00	0,001	4 … 20 mA	12 … 30 VDC R_L 50Ω … 900 R_L	3326032
CL2.2**MA20**	0,05 … 20,00	0,01			3326013
CL2.2**MA2-M12**	0,005 … 2,00	0,001			3326008
CL2.2**MA20-M12**	0,05 … 20,00	0,01			3326009

Additional technical data:

Type:	Slope:	Connection :	Special characteristics :
CL2.2**N**	-100 mV/ppm	4-pin socket	-
CL2.2**MA2**	8,0 mA/ppm	2-pin terminal (2 x 1 mm^2)	Connection only to a controller with galvanically separated power supply .
CL2.2**MA20**	0,8 mA/ppm		
CL2.2**MA2-M12**	8,0 mA/ppm	5-pin M12 connector	
CL2.2**MA20-M12**	0,8 mA/ppm		

Spare parts:

Spare parts :	For sensor type:	Item number :
Membrane cap M20.2	**CL2.2**	9026001
Electrolyte ECL2.1 for CL2.2	**CL2.2** (100 ml)	9026058

Accessories:

Type:	For sensor type :	Item number :
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator** 4 … 20 mA, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.2 DOSA*Sens* Chlorine Sensor **CL4.2**

Chlorine sensor with membrane-covered, amperometric 2-electrode system. For the measurement of free inorganic chlorine at constant pH.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(ClO)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), chlorine generated by membrane-electrolysis
- Calibration: at the controller, via analytical chlorine determination by DPD-1 method
- Interferences: ClO_2 is being registered with factor 9 of its measured value; O_3 is registered; with membrane-less chlorine electrolysis interferences may Occur
- pH range: 6 … 8
- Pressure range: 0 … 1 bar, no pressure surges or fluctuations
- Temperature range: 0 … 45 °C (no ice crystals in measurement water)
- Integrated automatic temperature compensation
- Response time: T_{90} ca. 30 seconds
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U and semipermeable membrane

Areas of application:

- Fresh water free of surfactants and with constant pH

Scope of supply:

- DOSA*Sens* **CL4.2**: sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CL4.2**H**	0.005 … 2.000	0.001	0 …-2000 mV 1 kΩ	±5 … ± 15 V DC 10 mA	3326210
CL4.2**DW**	0.005 … 5.00	0.001			3326211
CL4.2**N**	0.05 … 20.00	0.01			3326212
CL4.2**L**	0.5 … 200.0	0.1			3326213
CL4.2**H-An**	0.005 … 2.000	0.001		9 …30 V DC approx. 20 … 56 mA	3326215
CL4.2**N-An**	0.05 … 20.00	0.01			3326216
CL4.2**L-An**	0.5 … 200.0	0.1			3326217
CL4.2**H-M0c**	0.005 … 2.000	0.001	Modbus RTU		3326225
CL4.2**N-M0c**	0.05 … 20.00	0.01			3326226
CL4.2**L-M0c**	0.5 … 200.0	0.1			3326227

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Ordering data:

Type:	Measuring range:	Resolution: ppm	Output signal:	Power supply:	Item number:
CL4.2**MA0,5**	0.01 … 0.50	0.01	4 … 20 mA	12…30 VDC R_L: 50 … 900 Ω	3326240
CL4.2**MA2**	0.01 … 2.00	0.01			3326241
CL4.2**MA5**	0.01 … 5.00	0.01			3326242
CL4.2**MA10**	0.01 … 10.00	0.01			3326243
CL4.2**MA20**	0.01 … 20.00	0.01			3326244
CL4.2**MA-100**	0.1 … 100	0.1			3326245
CL4.2**MA-200**	0,1 … 200	0,1			3326246
CL4.2**MA0,5-M12**	0.01 … 0.50	0.01	4 … 20 mA	12…30 VDC R_L: 50 … 900 Ω	3326250
CL4.2**MA2-M12**	0.01 … 2.00	0.01			3326251
CL4.2**MA5-M12**	0.01 … 5.00	0.01			3326252
CL4.2**MA10-M12**	0.01 … 10.00	0.01			3326253
CL4.2**MA20-M12**	0.01 … 20.00	0.01			3326254
CL4.2**MA-100-M12**	0.1 … 100	0.1			3326255
CL4.2**MA-200-M12**	0.1 … 200	0.1			3326256

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CL4.2**H**	-1000 mV/ppm	4-pole plug	Connection only to a controller with galvanically separated power supply.
CL4.2**DW**	-300 mV/ppm		
CL4.2**N**	-100 mV/ppm		
CL4.2**L**	-10 mV/ppm		
CL4.2**H-An**	-1000 mV/ppm		
CL4.2**N-An**	-100 mV/ppm		
CL4.2**L-An**	-10 mV/ppm		
CL4.2**H-M0c**	Modbus RTU	M12 male	
CL4.2**N-M0c**			
CL4.2**L-M0c**			
CL4.2**MA0,5**	32.0 mA/ppm	2-pole terminal	Connection only to a controller with galvanically separated power supply.
CL4.2**MA2**	8.0 mA/ppm		
CL4.2**MA5**	3.20 mA/ppm		
CL4.2**MA10**	1.6 mA/ppm		
CL4.2**MA20**	0.8 mA/ppm		
CL4.2**MA-100**	0.16 mA/ppm		
CL4.2**MA-200**	0.08 mA/ppm		

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Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CL4.2**MA0,5-M12**	32.0 mA/ppm	M12 male	-
CL4.2**MA2-M12**	8.0 mA/ppm		
CL4.2**MA5-M12**	3.20 mA/ppm		
CL4.2**MA10-M12**	1.6 mA/ppm		
CL4.2**MA20-M12**	0.8 mA/ppm		
CL4.2**MA-100-M12**	0.16 mA/ppm		
CL4.2**MA-200-M12**	0.08 mA/ppm		

Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M20.2	**CL4.2** all types	9026001
Electrolyte ECL1	**CL4.2** all types	9026050

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator** 4 … 20 mA, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.3 DOSA*Sens* Chlorine Sensor **CC1**

Chlorine sensor with membrane-covered, amperometric 3-electrode system. For the measurement of free chlorine on the basis of iso-cyanuric acid, also in seawater.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(ClO)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), electrolytically generated chlorine, and organic combined chlorine based on iso-cyanuric acid (tested up to an iso-cyanuric acid concentration of 500 mg/l)
- in the presence of isocyanuric acid, the sensor measures the total bound organic chlorine (within the isocyanuric acid) and the free chlorine already released from it
- Calibration: at the controller, via analytical chlorine determination by DPD 1 method. Observe the isocyanuric acid concentration when determining the free chlorine
- Interferences: ClO_2 is 100 % detected, O_3 is detected
- pH range: 4 … 12, greatly reduced pH dependence
- Pressure range: 0… 0.5 bar, no pressure surges and/or fluctuations
- Temperature range: 0 … 45 °C, (no ice cristals in test water allowed)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 2 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, PEEK, stainless steel 1.4571, microporous hydrophilic membrane

Areas of application:

- Fresh water and seawater; surfactants are tolerated in part

Scope of supply:

- DOSA*Sens* Chlorine Sensor **CC1**:
  sensor, membrane cap, electrolyte for use in fresh water use

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CC1**H**	0.005 … 2.000	0.001	0 … -2000 mV 1 kΩ	±5 … ±15 V DC 10 mA	3326102
CC1**N**	0.05 … 20.00	0.01			3326090
CC1**H-An**	0.005 … 2.000	0.001	0 … +2000 mV 1 kΩ	9 … 30 V DC 20 … 56 mA	3426600
CC1**N-An**	0.05 … 20.00	0.01			3426601
CC1**H-M0c**	0.005 … 2.000	0.001	Modbus RTU		3426610
CC1**N-M0c**	0.05 … 20.00	0.01			3426611

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Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CC1**MA2**	0.01 … 2.00	0.01	4 … 20 mA	12 … 30 V DC R_L 50Ω … R_L 900Ω	3326094
CC1**MA5**	0.01 … 5.00	0.01			3326096
CC1**MA10**	0.01 … 10.00	0.01			3326095
CC1**MA20**	0.01 … 20.00	0.01			3326107
CC1**MA2-M12**	0.01 … 2.00	0.01	4 … 20 mA	12 … 30 V DC R_L 50Ω … R_L 900Ω	3426615
CC1**MA5-M12**	0.01 … 5.00	0.01			3426616
CC1**MA10-M12**	0.01 … 10.00	0.01			3426617
CC1**MA20-M12**	0.01 … 20.00	0.01			3426618

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CC1**H**	-1000 mV/ppm	4-pole plug	Connection only to a controller with galvanically separated power supply.
CC1**N**	-100 mV/ppm		
CC1**H-An**	-1000 mV/ppm		
CC1**N-An**	-100 mV/ppm		
CC1**H-M0c**	-1000 mV/ppm	M12 male	-
CC1**N-M0c**	-100 mV/ppm		
CC1**MA2**	8.0 mA/ppm	2-pole terminal	Connection only to a controller with galvanically separated power supply.
CC1**MA5**	3.2 mA/ppm		
CC1**MA10**	1.6 mA/ppm		
CC1**MA20**	0.8 mA/ppm		
CC1**MA2-M12**	8.0 mA/ppm	M12 male	
CC1**MA5-M12**	3.2 mA/ppm		
CC1**MA10-M12**	1.6 mA/ppm		
CC1**MA20-M12**	0.8 mA/ppm		

Spare parts:

Spare part:	Item number:
Membrane cap M48.2	9026020
Electrolyte ECC1.1/GEL	9026075

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.4 DOSA*Sens* Chlorine Sensor **CS4**

Chlorine sensor with membrane-covered, amperometric 3-electrode system. For the measurement of free inorganic chlorine with reduced pH-dependence.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(OCl)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), electrolytically generated chlorine
- Calibration: at the controller, via analytical chlorine determination by DPD-1 method
- Interferences: 75 % of ClO_2-concentration, 80 % of O_3–concentration, combined chlorine may increase the measuring value
- pH range: 4 … 9
- Pressure range: 0 … 3.0 bar, no pressure surges and/or fluctuations,
- Temperature range: 0 … 45 °C
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 2 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, PEEK, stainless steel 1.4571, microporous hydrophilic membrane

Areas of application:

- Fresh water, surfactants are partially tolerated

Scope of supply:

- DOSA*Sens* Chlorine Sensor **CS4**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CS4**H**	0.005 … 2.000	0.001	0 … -2000 mV 1 kΩ	±5 … ±15 V DC 10 mA	3426300
CS4**N**	0.05 … 20.00	0.01			3426301
CS4**L**	0.5 … 200.0	0.1			3426302
CS4**H-An**	0.005 … 2.000	0.001		9 … 30 V DC 20 … 56 mA	3426320
CS4**N-An**	0.05 … 20.00	0.01			3426321
CS4**L-An**	0.5 … 200.0	0.1			3426322
CS4**H-M0c**	0.005 … 2.000	0.001	ModBus RTU		3426360
CS4**N-M0c**	0.05 … 20.00	0.01			3426361
CS4**L-M0c**	0.5 … 200.0	0.1			3426362

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Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CS4**MA2**	0.01 … 2.00	0.01	4 … 20 mA	12…30 V DC R_L: 50Ω … 900Ω	3426303
CS4**MA5**	0.01 … 5.00	0.01			3426304
CS4**MA10**	0.01 … 10.00	0.01			3426305
CS4**MA20**	0.01 … 20.00	0.01			3426306
CS4**MA200**	0.5 … 200.0	0.1			3426307
CS4**MA2-M12**	0.01 … 2.00	0.01	4 … 20 mA	12…30 V DC R_L: 50Ω … 900Ω	3426313
CS4**MA5-M12**	0.01 … 5.00	0.01			3426314
CS4**MA10-M12**	0.01 … 10.00	0.01			3426315
CS4**MA20-M12**	0.01 … 20.00	0.01			3426316
CS4**MA200-M12**	0.5 … 200.0	0.1			3426317

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CS4**H**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
CS4**N**	-100 mV/ppm		
CS4**L**	-10 mV/ppm		
CS4**H-An**	-1000 mV/ppm		
CS4**N-An**	-100 mV/ppm		
CS4**L-An**	-10 mV/ppm		
CS4**H-M1c**	Modbus RTU	M12 female	
CS4**N-M1c**			
CS4**L-M1c**			
CS4 **MA2**	8.0 mA/ppm	2-pole terminal	Connection only to a controller with galvanically separated power supply.
CS4 **MA5**	3.2 mA/ppm		
CS4 **MA10**	1.6 mA/ppm		
CS4 **MA20**	0.8 mA/ppm		
CS4 **MA200**	0.08 mA/ppm		
CS4 **MA2-M12**	8.0 mA/ppm	M12 female	
CS4 **MA5-M12**	3.2 mA/ppm		
CS4 **MA10-M12**	1.6 mA/ppm		
CS4 **MA20-M12**	0.8 mA/ppm		
CS4 **MA200-M12**	0.08 mA/ppm		

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Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M48.4E	CS4 all types	9026023
Electrolyte ECS2.1	CS4 all types	9026060

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.5 DOSA*Sens* Chlorine Sensor **CS4-…-SW**

Chlorine sensor with membrane-covered, amperometric 3-electrode system. For the measurement of free inorganic chlorine with reduced pH-dependence in sea water.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(OCl)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), electrolytically generated chlorine
- Calibration: at the controller, via analytical chlorine determination by DPD-1 method
- Interferences: 75 % of ClO_2-concentration, 80 % of O_3–concentration, combined chlorine may increase the measuring value
- pH range: 4 … 9
- Pressure range: 0 … 3.0 bar, no pressure surges and/or fluctuations,
- Temperature range: 0 … 45 °C
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 2 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, PEEK, stainless steel 1.4571, microporous hydrophilic membrane

Areas of application:

- Sea water at 10 µS/cm … 50 mS/cm, surfactants are partially tolerated

Scope of supply:

- **DOSA***Sens* Chlorine Sensor **CS4-…-SW**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CS4**H-SW**	0.005 … 2.000	0.001	0 … -2000 mV 1 kΩ	±5 … ±15 V DC 10 mA	3426900
CS4**N-SW**	0.05 … 20.00	0.01			3426901
CS4**L-SW**	0.5 … 200.0	0.1			3426902
CS4**H-An-SW**	0.005 … 2.000	0.001		9 … 30 V DC 20 … 56 mA	3426920
CS4**N-AnSW**	0.05 … 20.00	0.01			3426921
CS4**L-An-SW**	0.5 … 200.0	0.1			3426922
CS4**H-M0c-SW**	0.005 … 2.000	0.001	ModBus RTU		3426960
CS4**N-M0c-SW**	0.05 … 20.00	0.01			3426961
CS4**L-M0c-SW**	0.5 … 200.0	0.1			3426962

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Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CS4**MA2-SW**	0.01 … 2.00	0.01	4 … 20 mA	12…30 V DC R_L: 50Ω … 900Ω	3426903
CS4**MA5-SW**	0.01 … 5.00	0.01			3426904
CS4**MA10-SW**	0.01 … 10.00	0.01			3426905
CS4**MA20-SW**	0.01 … 20.00	0.01			3426906
CS4**MA200-SW**	0.5 … 200.0	0.1			3426907
CS4**MA2-M12-SW**	0.01 … 2.00	0.01	4 … 20 mA	12…30 V DC R_L: 50Ω … 900Ω	3426913
CS4**MA5-M12-SW**	0.01 … 5.00	0.01			3426914
CS4**MA10-M12-SW**	0.01 … 10.00	0.01			3426915
CS4**MA20-M12-SW**	0.01 … 20.00	0.01			3426916
CS4**MA200-M12-SW**	0.5 … 200.0	0.1			3426917

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CS4**H-SW**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
CS4**N-SW**	-100 mV/ppm		
CS4**L-SW**	-10 mV/ppm		
CS4**H-An-SW**	-1000 mV/ppm		
CS4**N-An-SW**	-100 mV/ppm		
CS4**L-An-SW**	-10 mV/ppm		
CS4**H-M1c-SW**	Modbus RTU	M12 female	
CS4**N-M1c-SW**			
CS4**L-M1c-SW**			
CS4 **MA2-SW**	8.0 mA/ppm	2-pole terminal	Connection only to a controller with galvanically separated power supply.
CS4 **MA5-SW**	3.2 mA/ppm		
CS4 **MA10-SW**	1.6 mA/ppm		
CS4 **MA20-SW**	0.8 mA/ppm		
CS4 **MA200-SW**	0.08 mA/ppm		
CS4 **MA2-M12-SW**	8.0 mA/ppm	M12 female	
CS4 **MA5-M12-SW**	3.2 mA/ppm		
CS4 **MA10-M12-SW**	1.6 mA/ppm		
CS4 **MA20-M12-SW**	0.8 mA/ppm		
CS4 **MA200-M12-SW**	0.08 mA/ppm		

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Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M48.4S	CS4 all types, for use in sea water	9026026
Electrolyte ECS2.1	CS4 all types	9026060

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.6 DOSA*Sens* Chlorine Sensor **AS2, AS3**

Sensor for the measurement of free, inorganic chlorine with open measuring cell. Optional with cleaning device.

Produktbeschreibung:

- Measurand(s): free chlorine made of chlorine bleaching or chlorine gas and electrolytically generated chlorine
- Calibration: at the controller, via analytical determination by DPD-1 method,
- Interferences: ozone, chlorine dioxide, chlorite are also registered
- pH range: 5 … 9
- Pressure range: 0 … 8 bar
- Temperature range: 0 … 50 °C (AS2), 0 … 70 °C (AS3)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 30 s
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h (with RV1 increased to approx. 45 l/h)
- with the cleaning decice (RV1) there is a restriction of the measuring range to 0,7 or 7 ppm
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U (AS2), PEEK (AS3)

Areas of application:

- Fresh water, especially drinking water, up to max. 70 °C

Scope of supply:

- DOSA*Sens* Chlorine Sensor **AS2, AS3**:
  sensor, electrolyte hull, electrolyt

Ordering data:

Type: (up to 50°C)	**Measuring range*:** ppm	**Resolution:** ppm	**Output signal:**	**Power supply:**	**Item number:**
AS2**H-CL**	0.005 ... approx.. 2,00	0.001	0 ... -2000 mV 1 kΩ	±5 … ± 15 V DC 10 mA	3326128
AS2**N-CL**	0.03 ... approx. 20.00	0.01			3326110
AS2**H-CL-An**	0.005 ... approx. 2.00	0.001		9 … 30 V DC 20 … 56 mA	3426750
AS2**N-CL-An**	0.03 ... approx. 10.00	0.01			3426751
AS2**H-CL-M0c**	0.005 ... approx. 2.00	0.001	Modbus RTU		3426770
AS2**N-CL-M0c**	0.03 ... approx. 20.00	0.01			3426771

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29-08-2018

Ordering data:

Type: (up to 50°C)	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
AS2**MA1-CL**	0.03 ... approx. 1.00	0.01	4 ... 20 mA	12 ... 30 V DC RL 50Ω ... RL 900Ω	3326111
AS2**MA2-CL**	0.03 ... approx. 2.00	0.01			3326113
AS2**MA5-CL**	0.03 ... approx. 5.00	0.01			3326112
AS2**MA10-CL**	0.03 ... approx. 10.00	0.01			3326115
AS2**MA20-CL**	0.03 ... approx. 20.00	0.01			3326116
AS2**MA1-CL-M12**	0.03 ... approx. 1.00	0.01			3426790
AS2**MA2-CL-M12**	0.03 ... approx. 2.00	0.01			3426791
AS2**MA5-CL-M12**	0.03 ... approx. 5.00	0.01			3426792
AS2**MA10-CL-M12**	0.03 ... approx. 10.00	0.01			3426793
AS2**MA20-CL-M12**	0.03 ... approx. 20.00	0.01			3426794
Type: (up to 70°C)	**Measuring range:** ppm	**Resolution:** ppm	**Output signal:**	**Power supply:**	**Item number:**
AS3**H-CL**	0.005 ... approx. 2.00	0.001	0 ... -2000 mV 1 kΩ	±5 … ± 15 V DC 10 mA	3326126
AS3**N-CL**	0.03 ... approx. 20.00	0.01			3326120
AS3**H-CL-An**	0.005 ... approx. 2.00	0.001		9 … ± 30 V DC 20 … 56 mA	3426700
AS3**N-CL-An**	0.03 ... approx. 20.00	0.01			3426701
AS3**H-CL-M0c**	0.005 ... approx. 2.00	0.001	Modbus RTU		3426720
AS3**N-CL-M0c**	0.03 ... approx. 20.00	0.01			3426721
AS3**MA1-CL**	0.03 ... approx. 1.00	0.01	4 ... 20 mA	12 ... 30 VDC RL 50Ω ... RL 900Ω	3326121
AS3**MA2-CL**	0.03 ... approx. 2.00	0.01			3326123
AS3**MA5-CL**	0.03 ... approx. 5.00	0.01			3326122
AS3**MA10-CL**	0.03 ... approx. 10.00	0.01			3326125
AS3**MA20-CL**	0.03 ... approx. 20.00	0.01			3326127
AS3**MA1-CL-M12**	0.03 ... approx. 1.00	0.01			3426740
AS3**MA2-CL-M12**	0.03 ... approx. 2.00	0.01			3426741
AS3**MA5-CL-M12**	0.03 ... approx. 5.00	0.01			3426742
AS3**MA10-CL-M12**	0.03 ... approx. 10.00	0.01			3426743
AS3**MA20-CL-M12**	0.03 ... approx. 20.00	0.01			3426744

Additional technical data:

Type: (up to 50°C)	Slope:	Connection:	Special characteristics:
AS2**H-CL**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
AS2**N-CL**	-100 mV/ppm		
AS2**H-CL-An**	-1000 mV/ppm		
AS2**N-CL-An**	-100 mV/ppm		
AS2**H-CL-M0c**	Modbus RTU	M12 female	
AS2**N-CL-M0c**			
AS2**MA1-CL**	16 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply.
AS2**MA2-CL**	8.0 mA/ppm		
AS2**MA5-CL**	3.2 mA/ppm		
AS2**MA10-CL**	1.6 mA/ppm		
AS2**MA20-CL**	0.8 mA/ppm		
AS2**MA1-CL-M12**	16 mA/ppm	M12 female	
AS2**MA2-CL-M12**	8.0 mA/ppm		
AS2**MA5-CL-M12**	3.2 mA/ppm		
AS2**MA10-CL-M12**	1.6 mA/ppm		
AS2**MA20-CL-M12**	0.8 mA/ppm		
Type: (up to 70°C)	**Slope:**	**Connection:**	**Special characteristics:**
AS3**H-CL**	-1000 mV/ppm	4-pole plug	Connection only to a controller with galvanically separated power supply.
AS3**N-CL**	-100 mV/ppm		
AS3**H-CL-An**	-1000 mV/ppm		–
AS3**N-CL-An**	-100 mV/ppm		
AS3**H-CL-M0c**	Modbus RTU	M12 male	
AS3**N-CL-M0c**			
AS3**MA1-CL**	16 mA/ppm	2-pole terminal	Connection only to a controller with galvanically separated power supply.
AS3**MA2-CL**	8.0 mA/ppm		
AS3**MA5-CL**	3.2 mA/ppm		
AS3**MA10-CL**	1.6 mA/ppm		
AS3**MA20-CL**	0.8 mA/ppm		
AS3**MA1-CL-M12**	16 mA/ppm	M12 male	
AS3**MA2-CL-M12**	8.0 mA/ppm		
AS3**MA5-CL-M12**	3.2 mA/ppm		
AS3**MA10-CL-M12**	1.6 mA/ppm		
AS3**MA20-CL-M12**	0.8 mA/ppm		

Spare parts:

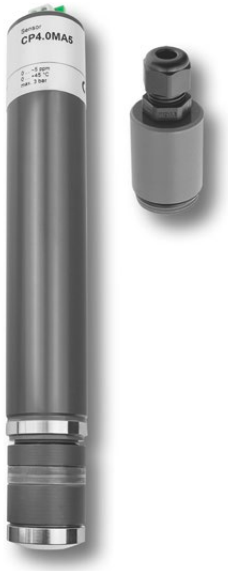
Spare part:	For sensor type:	Item number:
Abrasive paper S3	AS (all types),	9026103
Electrolyte hull PVC	AS2 (all types)	9026154
Electrolyte hull PEEK	AS3 (all types)	9026220
Electrolyte EAS1/Gel	AS (all types)	9026066

Accessories:

Type:	For sensor:	Item number:
DOSA*Sens* Cleaning device **RV1**	AS (all types), *with RV1 there is a restriction of the measuring range to 0,7 or 7 ppm	9026180
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.7 DOSA*Sens* Chlorine Sensor **CP4.0**

Chlorine sensor with membrane-covered, amperometric 3-electrode system. For the measurement of total chlorine with greatly reduced pH-dependence.



Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(ClO)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), electrolytically generated chlorine
- Calibration: at the controller, via analytical chlorine determination by DPD-4 method (DPD-1 + DPD-3)
- Interferences: ClO_2 is registered with 100 %, O_3 is measured with a slope of approx. 130% (factor 1.3 with regard to the chlorine slope)
- Resolution: depending on the sensor type 0.1 …0.001 ppm
- pH range: 4 … 12 (linear decrease with approx. 5 % per increasing pH-unit)
- Pressure range:
  - 0.5 bar, no pressure surges and/or fluctuations (without securing collar)
  - 3,0 bar, no pressure surges and/or fluctuations (with securing collar)
- Temperature range: 0 … 45 °C (no ice crystals are allowed in the water)
- Sensor with automatic temperature compensation
- Response time: T90 approx. 3 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 15 … 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male, or Modbus RTU with M12 male
- Material: microporous hydrophilic membrane, PVC-U, Peek, stainless steel 1.4571

Areas of Application:

- Swimming-pool-, drinking-water, surfactants are partially tolerated

Scope of supply:

- DOSA*Sens* Chlorine Sensor **CP4.0**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CP4.0**H**	0,005 … 2,000	0,001 ppm	0 … -2000 mV/ 1 kΩ	±5 … ± 15 V DC 10 mA	3226300
CP4.0**N**	0,05 … 20,00	0,01 ppm			3226301
CP4.0**MA0,5**	0,05 … 0,50	0,01 ppm	4 … 20 mA	12 … 30 V DC R_L: 50Ω … 900Ω	3226310
CP4.0**MA2**	0,01 … 2,00	0,01 ppm			3226311
CP4.0**MA5**	0,01 … 5,00	0,01 ppm			3226312
CP4.0**MA10**	0,01 … 10,00	0,01 ppm			3226313
CP4.0**MA20**	0,01 … 20,00	0,01 ppm			3226314

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28-08-2018

Ordering data:

Typ:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CP4.0**MA0,5-M12**	0,05 … 0,50	0,01 ppm	4 … 20 mA	12 … 30 V DC R_L: 50Ω … 900Ω	3226320
CP4.0**MA2-M12**	0,01 … 2,00	0,01 ppm			3226321
CP4.0**MA5-M12**	0,01 … 5,00	0,01 ppm			3226322
CP4.0**MA10-M12**	0,01 … 10,00	0,01 ppm			3226323
CP4.0**MA20-M12**	0,01 … 20,00	0,01 ppm			3226324
CP4.0**H-An**	0,005 … 2,000	0,001	0 … -2000 mV/ (max. -2500 mV) 1 kΩ	9 … 30 V DC ca. 20 … 56 mA	3226330
CP4.0**N-An**	0,05 … 20,00	0,01			3226331
CP4.0**H-M0c**	0,005 … 2,000	0,001	Modbus RTU		3226340
CP4.0**N-M0c**	0,05 … 20,00	0,01			3226341

Additional technical data:

Type:	Slope:	Connection:	Special charateristics:
CP4.0**H**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
CP4.0**N**	-100 mV/ppm		
CP4.0**MA0,5**	32.0 mA/ppm	2-pole terminal	
CP4.0**MA2**	8.0 mA/ppm		
CP4.0**MA5**	3.2 mA/ppm		
CP4.0**MA10**	1.6 mA/ppm		
CP4.0**MA20**	0.8 mA/ppm		
CP4.0**MA0,5-M12**	32.0 mA/ppm	M12 female	
CP4.0**MA2-M12**	8.0 mA/ppm		
CP4.0**MA5-M12**	3.2 mA/ppm		
CP4.0**MA10-M12**	1.6 mA/ppm		
CP4.0**MA20-M12**	0.8 mA/ppm		
CP4.0**H-An**	-1000 mV/ppm	4-pin plug	-
CP4.0**N-An**	-100 mV/ppm		
CP4.0**H-M0c**	Modbus RTU	5-pin plug	
CP4.0**N-M0c**			

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28-08-2018

Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M48.4E	CP**4.0**	9026023
Electrolyte ECP1.4/GEL salt water)	CP**4.0**	9026074

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator** 4 … 20 mA, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.8 DOSA*Sens* Chlorine Sensor **CP4.0-SW**

Chlorine sensor with membrane-covered, amperometric 3-electrode system. For the measurement of total chlorine with greatly reduced pH-dependence. Suitable for Seawater.

Product description:

- Measurand(s): NaClO (sodium hypochlorite), $Ca(ClO)_2$ (calcium hypochlorite), Cl_2 (chlorine gas), electrolytically generated chlorine
- Calibration: at the controller, via analytical chlorine determination by DPD-4 method (DPD-1 + DPD-3)
- Interferences: ClO_2 is registered with 100 %, O_3 is measured with a slope of approx. 130% (factor 1.3 with regard to the chlorine slope)
- Resolution: depending on the sensor type 0.1 …0.001 ppm
- pH range: 4 … 12 (linear decrease with approx. 5 % per increasing pH-unit)
- Pressure range:
  - 0.5 bar, no pressure surges and/or fluctuations (without securing collar)
  - 3,0 bar, no pressure surges and/or fluctuations (with securing collar)
- Temperature range: 0 … 45 °C (no ice crystals are allowed in the water)
- Sensor with automatic temperature compensation
- Response time: T_{90} approx. 5 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 15 … 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male, or Modbus RTU with M12 male
- Material: microporous hydrophilic membrane, PVC-U, Peek, stainless steel

Areas of Application:

- Seawater, brine (15 % NaCl) surfactants are partially tolerated

Scope of supply:

- DOSA*Sens* Chlorine Sensor **CP4.0-SW**: sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CP4.0**H-SW**	0,005 … 2,000	0,001	0 … -2000 mV/ 1 kΩ	±5 … ± 15 V DC 10 mA	3226350
CP4.0**N-SW**	0,05 … 20,00	0,01			3226351
CP4.0**MA0,5-SW**	0,05 … 0,50	0,01	4 … 20 mA	12 … 30 V DC R_L: 50Ω … 900Ω	3226360
CP4.0**MA2-SW**	0,01 … 2,00	0,01			3226361
CP4.0**MA5-SW**	0,01 … 5,00	0,01			3226362
CP4.0**MA10-SW**	0,01 … 10,00	0,01			3226363
CP4.0**MA20-SW**	0,01 … 20,00	0,01			3226364

Ordering data:

Typ:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CP4.0**MA0,5-SW-M12**	0,05 … 0,50	0,01	4 … 20 mA	12 … 30 V DC R_L: 50Ω … 900Ω	3226370
CP4.0**MA2-SW-M12**	0,01 … 2,00	0,01			3226371
CP4.0**MA5-SW_M12**	0,01 … 5,00	0,01			3226372
CP4.0**MA10-SW-M12**	0,01 … 10,00	0,01			3226373
CP4.0**MA20-SW-M12**	0,01 … 20,00	0,01			3226374
CP4.0**H-An-SW**	0,005 … 2,000	0,001	0 … -2000 mV/ (max. -2500 mV) 1 kΩ	9 … 30 V DC ca. 20 … 56 mA	3226380
CP4.0**N-An-SW**	0,05 … 20,00	0,01			3226381
CP4.0**H-M0c-SW**	0,005 … 2,000	0,001	Modbus RTU		3226390
CP4.0**N-M0c-SW**	0,05 … 20,00	0,01			3226391

Additional technical data:

Type:	Slope:	Conductivity: µS/cm (brine)	Connection:	Special charateristics:
CP4.0**H-SW**	-1000 mV/ppm	approx. 10 … 200	4-pin plug	Connection only to a controller with galvanically separated power supply.
CP4.0**N-SW**	-100 mV/ppm			
CP4.0**MA0,5-SW**	32,0 mA/ppm		2-pole terminal	
CP4.0**MA2-SW**	8,0 mA/ppm			
CP4.0**MA5-SW**	3,2 mA/ppm			
CP4.0**MA10-SW**	1,6 mA/ppm			
CP4.0**MA20-SW**	0,8 mA/ppm			
CP4.0**MA0,5-SW-M12**	32,0 mA/ppm		M12 female	
CP4.0**MA2-SW-M12**	8,0 mA/ppm			
CP4.0**MA5-SW-M12**	3,2 mA/ppm			
CP4.0**MA10-SW-M12**	1,6 mA/ppm			
CP4.0**MA20-SW-M12**	0,8 mA/ppm			
CP4.0**H-An-SW**	-1000 mV/ppm		4-pin plug	-
CP4.0**N-An-SW**	-100 mV/ppm			
CP4.0**H-M0c-SW**	Modbus RTU		5-pin plug	
CP4.0**N-M0c-SW**				

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08-04-2019

Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M48.4S	CP**4.0-SW**	9026026
Electrolyte ECP1.4/GEL Solewasser)	CP**4.0** all	9026074

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer for** calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.9 DOSA*Sens* Chlorine Sensor **CN1.1**

Checks for the absence of chlorine in drinking water in order to protect equipment; operating period in water without chlorine maximum four weeks.

Product description:

- Measurand(s): NaOCl (sodium hypochlorite),Cl_2 (chlorine gas), electrolytically generated chlorine
- Examination: by means of analytic determination of chlorine by DPD 1 method
  Calibrate the sensor with chlorinated water, establish a separate measurement circuit if required
- Interferences: ClO_2, O_3, bound chlorine may increase the value measured, reducing agent may cause slope loss
- Resolution: 0.001 ppm
- pH range: 6.5 … 9
- Pressure range: 0… 0.5 bar, no pressure surges and/or fluctuations
- Temperature range: 0 … 40 °C, (not any ice cristall in water)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 2 min
- Absence of the disinfectant: max. 4 weeks
- Flow rate: approx. 30 l/h, low flow dependence
- Shaft length: standard 195 mm, and 205 mm (Modbus version)
- Connection: standard 4-pole plug, Modbus RTU M12 male
- Material: PVC-U, PEEK, stainless steel 1.4571, microporous membrane

Areas of application:

- Check for the absence of chlorine in water

Scope of supply:

- DOSA*Sens* Chlorine Sensor **CN1.1**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CN1.1**H-An**	0.005 … 2.000	0.001	0 … -2000 mV (max. -2500 mV) 1 kΩ	9 … 30 VDC approx. 20 … 56 mA	3326620
CN1.1**N-An**	0.05 … 20	0.1			3326621
CN1.1**H-M0c**	0.005 … 2.000	0.001	Modbus RTU		3326610
CN1.1**N-M0c**	0.05 … 20.00				3326612

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03-04-2019

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CN1.1**H-An**	-1000 mV/ppm	4-pole plug	-
CN1.1**N-An**	-100 mV/ppm		
CN1.1**H-M0c**	Modbus RTU	M12 male	
CN1.1**H-M0c**	Modbus RTU		

Spare parts:

Spare part:	For sensor type:	Item number:
Membrane cap M48.2G	**CN1.1** (all types)	9026021
Electrolyte EMST1/GEL	**CN1.1** (all types)	9026053

Accessories:

Type:	For sensor type:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH	90231000

2.3.10 DOSA*Sens* Chlorine dioxide Sensor **CD4.2**

Sensor for the measurement of chlorine dioxide. Membrane-covered, amperometric 2-electrode system.

Product description:

- Measurand(s): chlorine dioxide
- Calibration: at the controller, am Controller, via analytical chlorine-dioxide determination by DPD-1 method
- Interferences: Cl_2 is being registered with factor 0,03 of ist measured value, O_3 is also registered
- pH range: 1 … 11
- Pressure range: 0 …1 bar, no pressure surges and/or fluctuations
- Temperature range: 0 … 45 °C (no ice crystals in measurement water)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 15 s
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version),
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, semipermeable membrane

Areas of application:

- Fresh water, surfactants must not be contained

Scope of supply:

- DOSA*Sens* Chlorine dioxide Sensor **CD4.2**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD4.2**H**	0.005 ... 2.000	0.001	0 ... -2000 mV 1 kΩ	±5 … ±15 VDC 10 mA	3326450
CD4.2**N**	0.05 ... 20.00	0.01			3326451
CD4.2**H-An**	0.005 ... 2.000	0.001		9 … 30 VDC 20 … 56 mA	3326455
CD4.2**N-An**	0.05 ... 20.00	0.01			3326456
CD4.2**H-M0c**	0.005 ... 2.000	0.001	Modbus RTU		3326465
CD4.2**N-M0c**	0.05 ... 20.00	0.01			3326466
CD4.2**MA0,5**	0.005 ... 0.500	0.001	4 ... 20 mA	12 ... 30 VDC RL 50Ω ... 900Ω	3326480
CD4.2**MA2**	0.05 ... 2.00	0.01			3326481
CD4.2**MA5**	0.05 ... 5.00	0.01			3326482
CD4.2**MA10**	0.05...10.00	0.01			3326483
CD4.2**MA0,5-M12**	0.005 ... 0.500	0.001			3326490

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD4.2**MA2-M12**	0.05 ... 2.00	0.01	4 ... 20 mA	12 ... 30 VDC RL 50Ω ... 900Ω	3326491
CD4.2**MA5-M12**	0.05 ... 5.00	0.01			3326492
CD4.2**MA10-M12**	0.05...10.00	0.01			3326493

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CD4.2**H**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply
CD4.2**N**	-100 mV/ppm		
CD4.2**H-An**	-1000 mV/ppm		-
CD4.2**N-An**	-100 mV/ppm		
CD4.2**H-M0c**	Modbus RTU	M12 female	
CD4.2**N-M0c**			
CD4.2**MA0.5**	32.0 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply
CD4.2**MA2**	8.0 mA/ppm		
CD4.2**MA5**	3.2 mA/ppm		
CD4.2**MA10**	1.6 mA/ppm		
CD4.2**MA0.5-M12**	32.0 mA/ppm	M12 female	
CD4.2**MA2-M12**	8.0 mA/ppm		
CD4.2**MA5-M12**	3.2 mA/ppm		
CD4.2**MA10-M12**	1.6 mA/ppm		

Spare parts:

Spare part:	for sensor type:	Item number:
Membrane cap M20.2	**CD4.2** (all types)	9026001
Electrolyte ECD4 – ECD7/W	**CD4.2** (all types)	9026073

Accessories:

Type:	for sensor:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator** 4 … 20 m, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH, chlorine dioxide	90231060

Subject to technical modifications and printing errors. Images may vary slightly from actual product.
29-08-2018

2.3.11 DOSA*Sens* Chlorine dioxide Sensor **CD7**

Sensor for the measurement of chlorine dioxide, amperometric 2-electrode system with surfactant-resistant membrane.

Product description:

- Measurand(s): Chlorine dioxide
- Calibration: at the controller, via analytical chlorine dioxide determination by DPD-1 method
- Interferences: O_3 is measured with a 25-times higher sensitivity as ClO_2 , Cl_2 does not interfere
- pH range: 1 … 11
- Pressure range: 0 … 1 bar, no pressure surges and/or fluctuations
- Temperature range: 0 … 50 °C, (no ice crystals in test water allowed)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 90s
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, stainless steel 1.4571, semipermeable membrane

Areas of application:

- All types of water treatment

Scope of supply:

- DOSA*Sens* Chlorine dioxide Sensor **CD7**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD7**H**	0.005 ... 2.000	0.001	0 ... -2000 mV 1 kΩ	±5 … ±15 VDC 10 mA	3326049
CD7**N**	0.05 ... 20.00	0.01			3326044
CD7**L**	0.5 ... 200.0	0.1			3326087
CD7**H-An**	0.005 ... 2.000	0.001		9 … 30 VDC 20 … 56 mA	3326560
CD7**N-An**	0.05 ... 20.00	0.01			3326561
CD7**L-An**	0.5 ... 200.0	0.1			3326562
CD7**H-M0c**	0.005 ... 2.000	0.001	Modbus RTU		3226620
CD7**N-M0c**	0.05 ... 20.00	0.01			3226621
CD7**L-M0c**	0.5 ... 200.0	0.1			3226622

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18-10-2018

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD7**MA0.5**	0 ... 0.50	0.01	4 ... 20 mA	12 ... 30 VDC RL 50Ω ... 900Ω	3326045
CD7**MA2**	0 ... 2.00	0.01			3326046
CD7**MA5**	0 ... 5.00	0.01			3326047
CD7**MA10**	0 ... 10.00	0.01			3326048
CD7**MA20**	0 ... 20.00	0.01			3326086
CD7**MA200**	0.5 ... 200.00	0.1			3326104
CD7**MA0.5-M12**	0 ... 0.50	0.01			3226610
CD7**MA2-M12**	0 ... 2.00	0.01			3226611
CD7**MA5-M12**	0 ... 5.00	0.01			3226612
CD7**MA10-M12**	0 ... 10.00	0.01			3226613
CD7**MA20-M12**	0 ... 20.00	0.01			3226614
CD7**MA200-M12**	0.5 ... 200.00	0.1			3226615

Additional technical data:

Typ:	Slope:	Connection:	Special characteristics:
CD7**H**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
CD7**N**	-100 mV/ppm		
CD7**L**	-10 mV/ppm		
CD7**H-An**	-1000 mV/ppm		-
CD7**N-An**	-100 mV/ppm		
CD7**L-An**	-10 mV/ppm		
CD7**H-M0c**	Modbus RTU	M12 female	
CD7**N-M0c**			
CD7**L-M0c**			
CD7**MA0.5**	32.0 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply.
CD7**MA2**	8.0 mA/ppm		
CD7**MA5**	3.2 mA/ppm		
CD7**MA10**	1.6 mA/ppm		
CD7**MA20**	0.8 mA/ppm		
CD7**MA200**	0.08 mA/ppm		
CD7**MA0.5-M12**	32.0 mA/ppm	M12 female	
CD7**MA2-M12**	8.0 mA/ppm		
CD7**MA5-M12**	3.2 mA/ppm		
CD7**MA10-M12**	1.6 mA/ppm		
CD7**MA20-M12**	0.8 mA/ppm		
CD7**MA200-M12**	0.08 mA/ppm		

Spare parts:

Spare part:	for sensor:	Item number:
DOSA*Sens* **Membrane cap** M7.1N	**CD7** (all types except CD7L + CD7 MA200)	9026010
DOSA*Sens* **Membrane cap** M7.1L	**CD7L + DC7 MA200**	9026012
DOSA*Sens* **Electrolyte** ECD4 - ECD7/W	**CD7** (all types)	9026073

Accessories:

Type:	for sensor :	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH, chlorine dioxide	90231060

2.3.12 DOSA*Sens* Chlorine dioxide Sensor **CD10**

Sensor for the measurement of chlorine dioxide. Membrane-covered, amperometric, 2-electrode measuring system.

Product description:

- Measurand(s): chlorine dioxide
- Calibration: at the controller, via analytical chlorine dioxide determination by DPD-1 method
- Interferences: Cl_2 does not interfere, O_3 is measured with factor 25 to ClO_2
- pH range: 2 … 11
- Pressure range: 0 …1 bar, no pressure surges and/or fluctuations
- Temperature range: 0 … 50 °C, (not any ice crystal in water)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 60 s
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h, low flow-dependence
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U, semipermeable membrane

Areas of application:

- Fresh water, surfactants will be tolerated

Scope of supply:

- DOSA*Sens* Chlorine dioxide Sensor **CD10**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD10**H**	0.005 ... 2.000	0.001	0 ... -2000 mV 1 kΩ	±5 … ±15 VDC 10 mA	3426200
CD10**N**	0.05 ... 20.00	0.01			3426201
CD10**H-An**	0.005 ... 2.000	0.001		9 … 30 VDC 20 … 56 mA	3426210
CD10**N-An**	0.05 ... 20.00	0.01			3426211
CD10**H-M0c**	0.005 ... 2.000	0.001	Modbus RTU		3426220
CD10**N-M0c**	0.05 ... 20.00	0.01			3426221
CD10**MA2**	0.005 ... 2.000	0.001	4 ... 20 mA	12 ... 30 VDC R_L 50Ω ... 900Ω	3426205
CD10**MA5**	0.05 ... 5.00	0.01			3426206
CD10**MA10**	0.05...10.00	0.01			3426207
CD10**MA20**	0.05...20.00	0.01			3426208

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30-08-2018

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
CD10**MA2-M12**	0.005 ... 2.000	0.001	4 ... 20 mA	12 ... 30 VDC RL 50Ω ... 900Ω	3426230
CD10**MA5-M12**	0.05 ... 5.00	0.01			3426231
CD10**MA10-M12**	0.05...10.00	0.01			3426232
CD10**MA20-M12**	0.05...20.00	0.01			3426233

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
CD10**H**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
CD10**N**	-100 mV/ppm		
CD10**H-An**	-1000 mV/ppm		–
CD10**N-An**	-100 mV/ppm		
CD10**H-M0c**	Modbus RTU	M12 female	
CD10**N-M0c**			
CD10**MA2**	8.0 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply.
CD10**MA5**	3.2 mA/ppm		
CD10**MA10**	1.6 mA/ppm		
CD10**MA20**	0.8 mA/ppm		
CD10**MA2-M12**	8.0 mA/ppm	M12 female	
CD10**MA5-M12**	3.2 mA/ppm		
CD10**MA10-M12**	1.6 mA/ppm		
CD10**MA20-M12**	0.8 mA/ppm		

Spare parts:

Spare part:	for sensor type:	Item number:
Membrane cap M10N+G	**CD10** (all types)	9026017
Electrolyte ECD4 – ECD7/W	**CD10** (all types)	9026073

Accessories:

Type:	for sensor:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV **Simulator** and mA **Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH, chlorine dioxide	90231060

2.3.13 DOSA*Sens* Chlorine dioxide Sensor **AS2, AS3**

Sensor for the measurement of chlorine dioxide with open measuring cell. Optional with cleaning device.

Product description:

- Measurand(s): chlorine dioxide
- Calibration: at the controller, via analytical determination by DPD-1 method
- Interferences: ozone, chlorine, chlorite are registered with less than 2%
- pH range: 1 … 9, Pressure range: 0 … 8 bar
- Temperature range: 0 … 50 °C (AS2), 0 … 70 °C (AS3)
- Automatic temperature compensation
- Response time: T_{90} approx. 30 s
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h (with RV1 increased to approx. 45 l/h)
- with the cleaning decice (RV1) there is a restriction of the measuring range to 0,7 or 7 ppm
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug; for mA-version 2-pole terminal, M12 male or Modbus RTU with M12 male
- Material: PVC-U (AS2), PEEK (AS3)

Areas of application:

- Fresh water, especially drinking water, up to max. 70 °C

Scope of supply:

- **DOSA***Sens* Chlorine dioxide Sensor **AS2, AS3**:
  sensor, electrolyte hull, electrolyte

Ordering data:

Type: (bis 50°C)	**Measuring range*:** ppm	**Resolution:** ppm	**Output signal:**	**Power supply:**	**Item number:**
AS2**H-CD**	0.005 ... approx. 2.00	0.001	0 ... -2000 mV 1 kΩ	±5 … ±15 V DC 10 mA	3326154
AS2**N-CD**	0.03 ... approx. 10.00	0.01			3326150
AS2**H-CD-An**	0.005 ... approx. 2.00	0.001		9 … 30 V DC ca. 20 … 56 mA	3426800
AS2**N-CD-An**	0.03 ... approx. 10.00	0.01			3426801
AS2**H-CD-M0c**	0.005 ... approx. 2.00	0.001	Modbus RTU		3426820
AS2**N-CD-M0c**	0.03 ... approx. 10.00	0.01			3426821
AS2**MA1-CD**	0.03 ... approx. 1.00	0.01	4 ... 20 mA	12 ... 30 V DC R_L 50Ω ... R_L 900Ω	3326151
AS2**MA2-CD**	0.03 ... approx. 2.00	0.01			3326152
AS2**MA5-CD**	0.03 ... approx. 5.00	0.01			3326153
AS2**MA1-CD-M12**	0.03 ... approx. 1.00	0.01	4 ... 20 mA	12 ... 30 V DC R_L 50Ω ... R_L 900Ω	3426840
AS2**MA2-CD-M12**	0.03 ... approx. 2.00	0.01			3426841
AS2**MA5-CD-M12**	0.03 ... approx. 5.00	0.01			3426842

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29-08-2018

Ordering data:

Type: (bis 70°C)	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
AS3**H-CD**	0.005 ... approx. 2.00	0.001	0 ... -2000 mV 1 kΩ	±5 … ±15 VDC 10 mA	3326164
AS3**N-CD**	0.03 ... approx. 10.00	0.01			3326160
AS3**H-CD-An**	0.005 ... approx. 2.00	0.001		9 … 30 V DC ca. 20 … 56 mA	3426850
AS3**N-CD-An**	0.03 ... approx. 10.00	0.01			3426851
AS3**H-CD-M0c**	0.005 ... approx. 2.00	0.001	Modbus RTU		3426870
AS3**N-CD-M0c**	0.03 ... approx. 10.00	0.01			3426871
AS3**MA1-CD**	0.03 ... approx. 1.00	0.01	4 ... 20 mA	12 ... 30 VDC R_L 50Ω ... R_L 900Ω	3326161
AS3**MA2-CD**	0.03 ... approx. 2.00	0.01			3326162
AS3**MA5-CD**	0.03 ... approx. 5.00	0.01			3326163
AS3**MA1-CD-M12**	0.03 ... approx. 1.00	0.01			3426890
AS3**MA2-CD-M12**	0.03 ... approx. 2.00	0.01			3426891
AS3**MA5-CD-M12**	0.03 ... approx. 5.00	0.01			3426892

Additional technical data:

Type: (up to 50°C)	Slope:	Connection:	Special characteristics:
AS2**H-CD**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
AS2**N-CD**	-100 mV/ppm		
AS2**H-CD-An**	-1000 mV/ppm		-
AS2**N-CD-An**	-100 mV/ppm		
AS2**H-CD-M0c**	Modbus RTU	M12 female	
AS2**N-CD-M0c**			
AS2**MA1-CD**	16 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply.
AS2**MA2-CD**	8.0 mA/ppm		
AS2**MA5-CD**	3.2 mA/ppm		
AS2**MA1-CD-M12**	16 mA/ppm	M12 female	
AS2**MA2-CD-M12**	8.0 mA/ppm		
AS2**MA5-CD-M12**	3.2 mA/ppm		

Additional technical data:

Type: (up to 70°C)	Slope:	Connection:	Special characteristics:
AS3**H-CD**	-1000 mV/ppm	4-pin plug	Connection only to a controller with galvanically separated power supply.
AS3**N-CD**	-100 mV/ppm		
AS3**H-CD-An**	-1000 mV/ppm		-
AS3**N-CD-An**	-100 mV/ppm		
AS3**H-CD-M0c**	Modbus RTU	M12 female	
AS3**N-CD-M0c**			
AS3**MA1-CD**	16 mA/ppm	2 pole terminal	Connection only to a controller with galvanically separated power supply.
AS3**MA2-CD**	8.0 mA/ppm		
AS3**MA5-CD**	3.2 mA/ppm		
AS3**MA1-CD-M12**	16 mA/ppm	M12 female	
AS3**MA2-CD-M12**	8.0 mA/ppm		
AS3**MA5-CD-M12**	3.2 mA/ppm		

Spare parts:

Spare part:	for sensor type:	Item number:
Abrasive paper S3	AS (all types)	9026103
Electrolyte hull PVC	AS2 (all types)	9026154
Electrolyte hull PEEK	AS3 (all types)	9026220
Electrolyte EAS1/Gel	AS (all types)	9026066

Accessories:

Type:	for sensor:	Item number:
DOSA*Sens* Cleaning device **RV1**	AS (all types), *with RV1 there is a restriction of the measuring range to 0,7 or 7 ppm	9026180
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Sensor simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Sensor simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* mV Simulator and mA tester	all sensors with mV signal or mA signal	21131105
DOSA*Control* Photometer for calibration	chlorine, total chlorine, isocyanuric, pH, chlorine dioxide	90231060

2.3.14 **DOSA***Sens* open amperometric Sensor **KC**

Sensor for the measurement of the free inorganic chlorine, chlorine dioxide or ozone.

Product description:

- Measurand(s): Natriumhypochlorit (NaOCl), Calciumhypochlorit ($Ca(OCl)_2$), chlorine gas (Cl_2), electrolytically produced chlorine, chlorine dioxide, ozone
- pH range: 5 … 9
- Pressure range: 6 bar
- Flow rate: 30 … 40 l/h (min.)
- Shaft length: 120 mm (12 mm Ø)
- Material: glass body with gold electrode

Areas of application:

- Drink-, service- and industrial water, legionella bacteria

Scope of supply:

- **DOSA***Sens* open amperometric Sensor **KC**

Ordering data:

Type:	**Measuring range:** mg/l	**Resolution:** ppm	**recommended controller/measuring instrument:**	**Item number:**
KCL (free chlorine)	0,01 … 20,00	0,01	**DOSA***Control* **DCW 105** (ehemals: DOSAControl DC 96-CL, CLD und O_3, DOSAControl DCW 100-CL, CLD und O_3, DOSAControl DCW 300-CL, CLD und O_3,)	2189200
KCLD (chlorine dioxide)	0,01 … 4,00			2189201
KCOZ (ozone)				2189202

Additional technical data:

Type:	**Temperatur range:** ^0C	**Installation:** Threats	**Connection:**	**Particulary:**
KCL (free chlorine)	5 … 70	PG 13,5	5-pin screwed connectors	In conjunction with a **DOSA***Control* **DCW 105**, it is possible to run the sensor with a automatically cleaning function.
KCLD (chlorine dioxide)				
KCOZ (ozone)				

2.3.15 DOSA*Sens* Chlorite Sensor **MST1**

Sensor for the measurement of chlorite. Membrane-covered, amperometric 3-electrode measuring system.

Product description:

- Measurand(s): Chlorite from acid/chlorite process, chlorine/chlorite-process chlorite/oxidant-process
- Calibration: at the controller, via analytical determination of chlorite
- Interferences: Mn^{2+}, nitrite, Fe^{2+}
- No cross-interference to chlorine dioxide, chlorine and chlorate
- pH range: 6 … 9
- Pressure range: 0 … 5 bar, without outgassing, no pressure surges and/or fluctuations
- Temperature range: 0 … 40 °C (not any ice crystal in water)
- Integrated automatic temperature compensation
- Response time: T_{90} approx. 1 min.
- Absence of the disinfectant: max. 24 h
- Flow rate: approx. 30 l/h
- Shaft length: standard 175 mm, and up to 220 mm in length (mA-Version)
- Connection: standard 4-pole plug or Modbus RTU with M12 male
- Material: PVC, Peek, stainless steel 1.4571, membrane

Areas of application:

- Fresh water

Scope of supply:

- DOSA*Sens* Chlorite Sensor **MST1**:
  sensor, membrane cap, electrolyte

Ordering data:

Type:	Measuring range: ppm	Resolution: ppm	Output signal:	Power supply:	Item number:
MST1H-**An**	0.05 … 2.000	0.001	0 ... -2000 mV (max. -2500 mV) 1 kΩ	9 … 30 VDC approx. 20 … 56 mA	3326420
MST1N-**An**		0.01			3326421
MST1H-**M0c**		0.001	Modbus RTU		3326410
MST1N-**M0c**		0.01			3326411
MST1MA2	0,005 … 2,00	0,1	4 … 20 mA	12 … 30 VDC RL 50Ω … RL 900Ω	3326440

Additional technical data:

Type:	Slope:	Connection:	Special characteristics:
MST1H-**An**	-100 mV/ppm	4-pole plug	–
MST1N-**An**			
MST1H-**M0c**	Modbus RTU	M12 male	
MST1N-**M0c**			
MST1MA2	8,0 mA/ppm	two pole terminal	

Spare parts:

Spare part:	for sensor:	Item number:
Membrane cap M48.2	**MST1** (all types)	9026020
Electrolyte EMST1/Gel	**MST1** (all types)	9026053

Accessories:

Type:	for sensor:	Item number:
DOSA*Sens* **Sensor simulator** pH, Redox, Cl	all sensors with mV signal	21131100
DOSA*Sens* **Simulator** SIM11.1n	0 mV, -100 mV, -1000mV	9026205
DOSA*Sens* **Simulator 4 … 20 mA**, current sensor	all sensors with mA signal	90249000
DOSA*Sens* **mV Simulator and mA Tester**	all sensors with mV signal or mA signal	21131105
DOSA*Control* **Photometer** for calibration	chlorine, total chlorine, isocyanuric, pH, chlorite	90231010