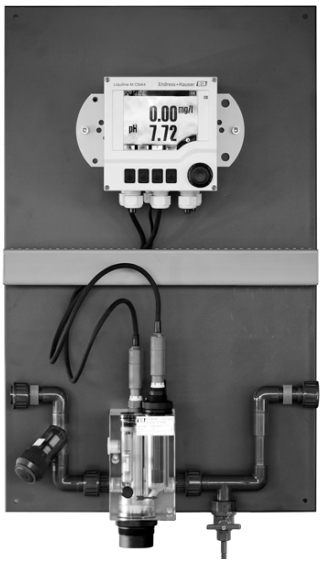
Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Compact measuring station for disinfection (DI) CCE10 / CCE11

Station for the measurement of chlorine, total chlorine or chlorine dioxide and pH – ready for connection



Application

- Water treatment, drinking water plants, process water
- Swimming pools
- Chlorine dosing in water treatment (CCE10)
- Quality control and monitoring in distribution networks (CCE11)

Your benefits

- System ready for connection
- CCE10
  - Based on Liquisys M CCM253
  - Measurement of free chlorine, chlorine dioxide or total chlorine as well as pH and temperature
  - The allround panel for measurement and control
- CCE11
  - Based on Liquiline CM330
  - Measurement of free chlorine, pH and temperature
  - Digital sensors with Memosens technology for free chlorine and pH
  - Use of pre-calibrated sensors possible
    No complicated on-site calibration necessary
- Various connections for water pipes available
  - Metric G¾ (e.g. for Europe): Adapter for pipe connection D16 included in scope of delivery
  - Inch FNPT ½" (e.g. for North America)
- Water circuit with integrated coarse filter and sampling tap for DPD reference measurements
- Assembly with integrated flow setting and flow monitoring; proximity switch triggers alarm when minimum flow is too low (CCE10: via Liquisys; CCE11: external evaluation necessary)
- Check valve
- Easy maintenance
  - Extremely easy monitoring of flow, soiling and air bubbles thanks to transparent assembly block
  - All sensors can be calibrated in installed position

TI440C/07/en/09.09
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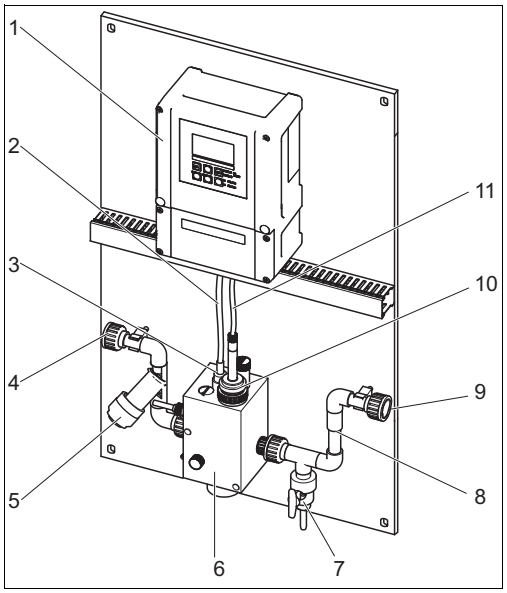
Endress+Hauser
People for Process Automation

Function and system design

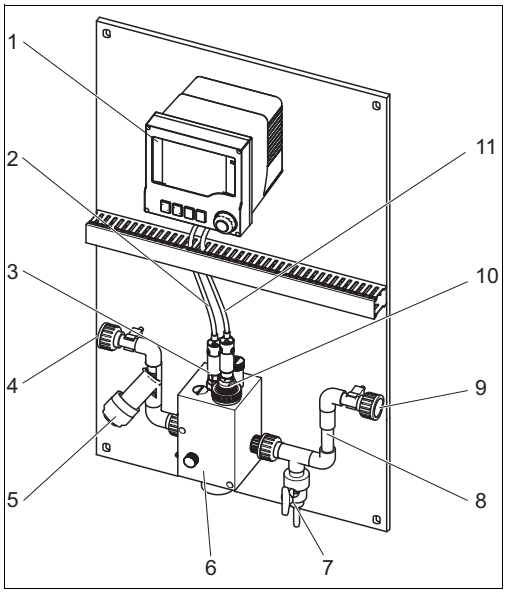
Measuring system

The measuring system is competely mounted and wired. It consists of:



CCE10

1	*Liquisys M CCM253 transmitter*
2	*Special measuring cable for pH sensors*
3	*CPS31 pH sensor*
4	*Inlet*
5	*Dirt trap*
6	*Flowfit CCA250 assembly*
7	*Sampling tap*
8	*Check valve*
9	*Outlet*
10	*CCS120/140/141/240/241 sensor (DI)*
11	*Special measuring cable for DI sensor*



CCE11

1	*Liquiline CM330 transmitter*
2	*CYK10 Memosens data cable*
3	*CPS11D pH sensor*
4	*Inlet*
5	*Dirt trap*
6	*Flowfit CCA250 assembly*
7	*Sampling tap*
8	*Check valve*
9	*Outlet*
10	*CCS142D sensor (DI)*
11	*CYK10 Memosens data cable*

Outputs

Output signal

CCE10: 0/4 to 20 mA, galvanically separated, active
CCE11: 0/4 to 20 mA, galvanically separated, passive
External power supply required!

Power supply

Supply voltage

CCE10: depending on ordered version:
100/115/230 V AC +10/-15 %, 48 to 62 Hz
24 V AC/DC +20/-15 %, 48 to 62 Hz
CCE11: 24 V DC ±20 %

Power consumption

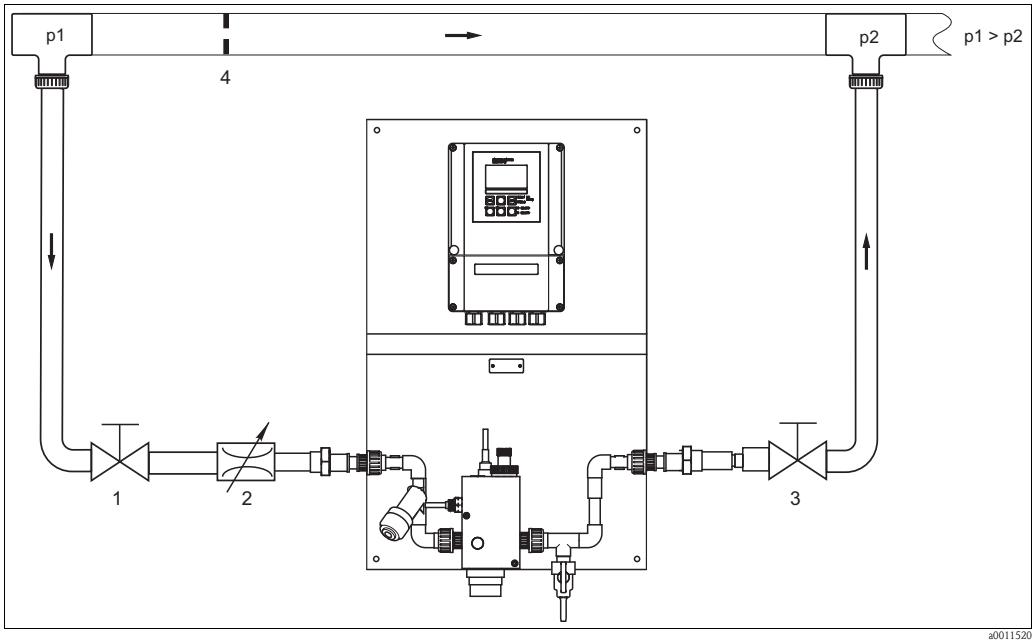
CCE10: approx. 7.5 VA
CCE11: approx. 1 W

Installation

Installation notes

Bypass operation

To achieve a flow through the bypass, pressure p1 has to be higher than pressure p2. Therefore, you have to install an orifice plate or a throttle valve in the main pipe (→ , pos. 4).

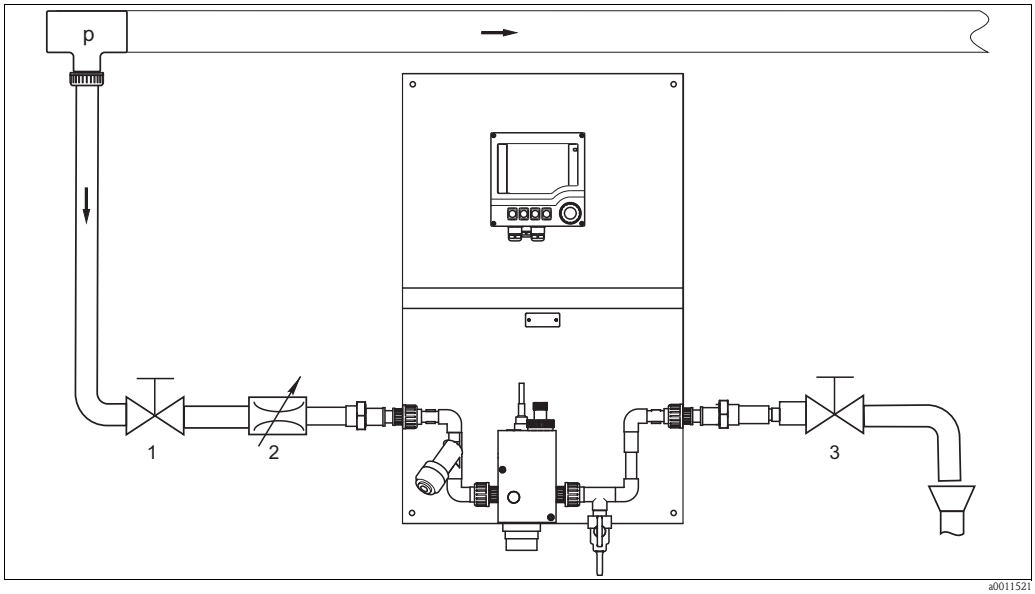


Installation example with bypass and orifice plate in the main pipe

1 Stop valve (to be provided by customer)
2 Pressure reducer (if p1 > 4 bar (58 psi)) (to be provided by customer)
3 Stop valve (to be provided by customer)
4 Orifice plate in the main pipe (to be provided by customer)

Caution!
p2 must not exceed the permissible operating pressure of the assembly of 4 bar (58 psi).

Open outlet operation



Installation example with open outlet

1 Stop valve (to be provided by customer)
2 Pressure reducer (if p > 4 bar (58 psi)) (to be provided by customer)
3 Stop valve (to be provided by customer)

Environment

Ambient temperature	0 to 50 °C (32 to 120 °F)
Storage temperature	0 to 50 °C (32 to 120 °F)

Process

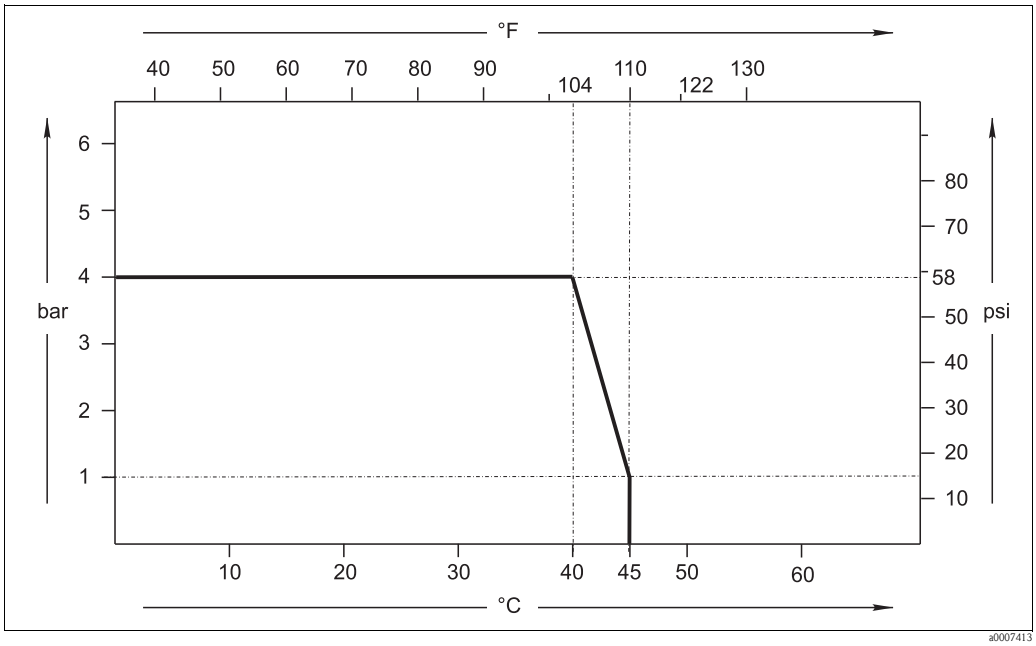
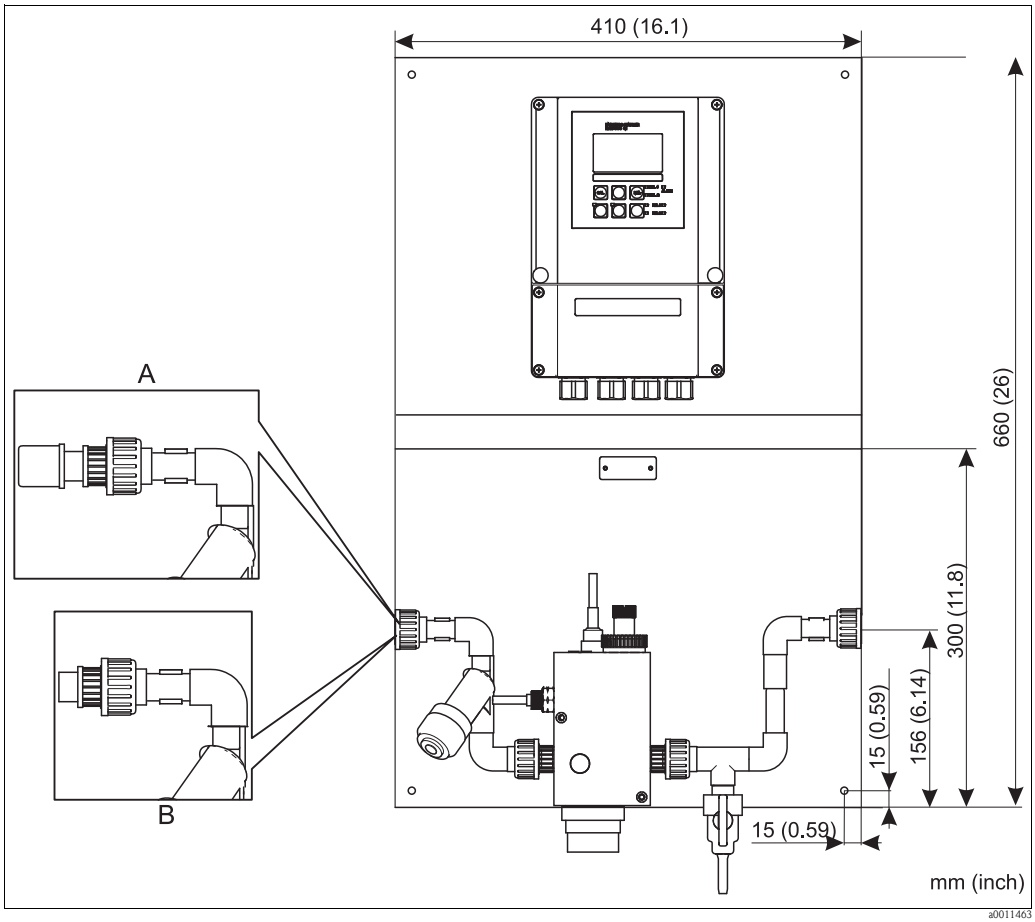
Process temperature	0 to 45 °C (32 to 110 °F), non-freezing
Process pressure	max. medium pressure: 4 bar (58 psi) at 40 °C (104 °F), see also diagram below
Temperature-pressure diagramm	

Fig. 1: Temperature-pressure diagram

Flow	optimum 30 l/h (7.9 gal/h) 30 to 120 l/h (7.9 to 31.7 gal/h), adjustable

Mechanical construction

Design, dimensions



Dimensions

A CCE1X-1 version, metric with G¾ union nut and adapter for hose D6/12
B CCE1X-2 version, inch with G1 union nut and FNPT ½" adapter

Weight

approx. 5 kg (11 lbs)

Materials

In contact with medium:

Assembly body	plexiglass (PMMA)
Built-in parts	PVC, stainless steel 1.4571 (AISI 316Ti), EPDM, Viton
Pipes	PVC-U
O-rings	EPDM
Dirt trap	
Material	PVC
Mesh size	0.5 mm (0.02")

Process connections

CCE1X-1:	PVC G¾ union nut, adapter for hose D6/12
CCE1X-2:	PVC G1 union nut , FNPT ½" adapter

Sensors

	CCE10	CCE11
Parameter, measuring range		
A1	CCS140	CCS142D-AAS80
A2	CCS141	CCS142D-GAS80
B1	CCS240	–
B2	CCS241	–
C2	CCS120	–
pH		
EP	CPS31	CPS11D

Note!
The pH sensors indicated above are included in the scope of delivery if ordered accordingly. You may also use different pH sensors such as CPS71, CPS71D (see "Accessories").

Ordering information

CCE10 product structure

Media connection							
1	PVC G¾ union nut, adapter hose ID6, OD12						
2	PVC G1 union nut, adapter FNPT ½"						
	Parameter; measuring range						
	A1	Free chlorine; 0 to 20 mg/l (CCS140)					
	A2	Free chlorine; 0 to 5 mg/l (CCS141)					
	B1	Chlorine dioxide; 0 to 20 mg/l (CCS240)					
	B2	Chlorine dioxide; 0 to 5 mg/l (CCS241)					
	C2	Total chlorine; 0 to 10 mg/l (CCS120)					
		pH measurement/ pH compensation					
		EK	without				
		EP	with				
			Power supply				
			0	230 V AC			
			1	115 V			
			2	230 V AC; CSA Gen. Purp.			
			3	115 V AC; CSA Gen. Purp.			
			5	100 V AC			
			7	24 V AC/DC; CSA Gen. Purp.			
			8	24 AC/DC			
				Output			
				0	1 x 20 mA; Cl_2 / ClO_2		
				1	2 x 20 mA; Cl_2 / ClO_2 + temp. / P(ID) / pH/ORP / Cl_2/ClO_2		
				3	PROFIBUS PA		
				4	PROFIBUS DP		
				5	1 x 20 mA; Cl_2 / ClO_2 HART		
				6	2 x 20 mA; Cl_2 / ClO_2 HART + temp. / P(ID) / pH/ORP / Cl_2/ClO_2		
						Additional contacts	
						05	not selected
						10	2 x relay; limit / P(ID) / timer
						15	4 x relay; limit / P(ID) / Chemoclean
						16	4 x relay; limit / P(ID) / timer + 3-point step controller
						20	20 mA input + 2 x relay; limit / P(ID) / timer
						25	20 mA input + 4 x relay; limit / P(ID) / Chemoclean + 3-point step controller
						26	20 mA input + 4 x relay; limit / P(ID) / timer + 3-point step controller
CCE10-							complete order code

CCE11 product structure

	Media connection				
	1	PVC G¾ union nut , adapter for hose D6/12			
	2	PVC G1 union nut , adapter FNPT ½"			
		Parameter; measuring range			
		A1	Free chlorine; 0 to 20 mg/l (CCS142D-A)		
		A2	Free chlorine; 0 to 5 mg/l (CCS142D-G)		
			pH measurement/pH compensation		
			1	without	
			2	with	
CCE11-					complete order code

Scope of delivery

The scope of delivery comprises:

- 1 measuring station, assembled with
  - transmitter
  - assembly
  - DI sensor
  - pH sensor (if selected)
  - cables
  - water pipes
- 1 accessory bag with
  - 2 hose connections D6/12 glued to union nut D16 (CCE1X-1) or 2 PVC male threads G 1 to FNPT ½" (CCE1X-2)
  - lower cap with calibration vessel for CCA250
  - dummy plugs of installation positions pH/ORP/chlorine
  - removable part of ball valve in OFF position with dummy plug F18
  - filling electrolyte and membrane cap of the DI sensor
- Operating Instructions for
  - transmitter
  - sensor
  - assembly

Accessories

Note!
In the following sections, you find the accessories available at the time of issue of this documentation.
For information on accessories that are not listed here, please contact your local service or sales representation.

Sensors

CCE10

- CCS120
  Amperometric sensor for total chlorine
  Measuring range 0.1 to 10 mg/l
  Ordering acc. to product structure, see Technical Information (TI388C/07/en)
- CCS140
  Membrane-covered amperometric sensor for free chlorine
  Measuring range 0.05 to 20 mg/l
  Ordering acc. to product structure, see Technical Information (TI058C/07/en)
- CCS141
  Membrane-covered amperometric trace sensor for free chlorine
  Measuring range 0.01 to 5 mg/l
  Ordering acc. to product structure, see Technical Information (TI058C/07/en)
- CCS240
  Membrane-covered amperometric sensor for chlorine dioxide
  Measuring range 0.05 to 20 mg/l
  Ordering acc. to product structure, see Technical Information (TI114C/07/en)
- CCS241
  Membrane-covered amperometric trace sensor for chlorine dioxide
  Measuring range 0.01 to 5 mg/l
  Ordering acc. to product structure, see Technical Information (TI114C/07/en)

- Orbisint CPS11
  pH electrode for process applications with dirt-repellent PTFE diaphragm
  Ordering acc. to product structure, see Technical Information (TI028C/07/en)

Ceratex CPS31
- pH electrode especially suited for swimming pools, with 3 ceramic diaphragms
- Ordering according to product structure, see Technical Information (TI030C/07/en)

- Ceragel CPS71
  pH electrode with double junction reference system and integrated bridge electrolyte
  Ordering acc. to product structure, see Technical Information (TI245C/07/en)

CCE11

CCS142D
- Membrane-covered amperometric sensor for free chlorine
- Memosens technology
- Measuring range 0.01 to 20 mg/l
- Ordering acc. to product structure, see Technical Information (TI419C/07/en)

- Orbisint CPS11D
  pH electrode for process applications with dirt-repellent PTFE diaphragm
  Memosens technology
  Ordering acc. to product structure, see Technical Information (TI028C/07/en)

- Ceragel CPS71D
  pH electrode with double junction reference system and integrated bridge electrolyte
  Memosens technology
  Ordering acc. to product structure, see Technical Information (TI245C/07/en)

Connection accessories

Special measuring cable with TOP68 plug-in head for CCS120
- Length: 1 m (3.28 ft)
- Order no.: 51517204

Special measuring cable with TOP68 plug-in head for CPS11/CPS31/CPS71
- Length: 1 m (3.28 ft)
- Order no.: 51513423

CYK10 Memosens data cable
- For digital sensors with Memosens technology
- Ordering according to product structure, see Technical Information (TI376C/07/en)

Calibration accessories

Free chlorine/chlorine dioxide

CCM182
- Microprocessor-controlled photometer for determining chlorine and pH value
- Measuring range for chlorine: 0.05 - 6 mg/l
- Measuring range for pH value: 6.5 - 8.4
- Order no.: CCM182-0

Cuvettes for CCM182
- 3 pieces
- Order no. 51507203

DPD tablets no. 1
- 100 pieces for free chlorine
- Order no. 50035461

DPD tablets no. 3
- 100 pieces for total chlorine
- Order no. 51502871

pH

High-quality buffer solutions of Endress+Hauser - CPY20
The secondary buffer solutions have been referenced to primary reference material of the PTB (German Federal Physico-technical Institute) and to standard reference material of NIST (National Institute of Standards and Technology) according to DIN 19266 by a DKD (German Calibration Service) accredited laboratory.

	pH value					
	A	pH 2.00 (accuracy ± 0.02 pH)				
	C	pH 4.00 (accuracy ± 0.02 pH)				
	E	pH 7.00 (accuracy ± 0.02 pH)				
	G	pH 9.00 (accuracy ± 0.02 pH)				
	I	pH 9.20 (accuracy ± 0.02 pH)				
	K	pH 10.00 (accuracy ± 0.05 pH)				
	M	pH 12.00 (accuracy ± 0.05 pH)				
		Quantity				
		01	20 x 18 ml (0.68 fl.oz) only buffer solutions pH 4.00 and 7.00			
		02	250 ml (8.45 fl.oz)			
		10	1000 ml (0.26 US gal)			
		50	5000 ml (1.32 US gal) canister for Topcal S			
			Certificates			
			A	Buffer analysis certificate		
				Version		
				1	Standard	
CPY20-						complete order code

Maintenance kits

Service kit for CCS120
- 2 membrane caps and 1 bottle of electrolyte (50 ml (1.69 fl.oz))
- Order no. 51517284

Service kit CCS14x
- For chlorine sensors CCS140/CCS141/CCS142D
- 2 replacement cartridges, filling electrolyte 50 ml, polishing sheets
- Order no. 71076921

Service kit CCS24x
- For chlorine dioxide sensors CCS240/CCS241
- 2 replacement cartridges, filling electrolyte 50 ml, polishing sheets
- Order no. 71076922

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People for Process Automation

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