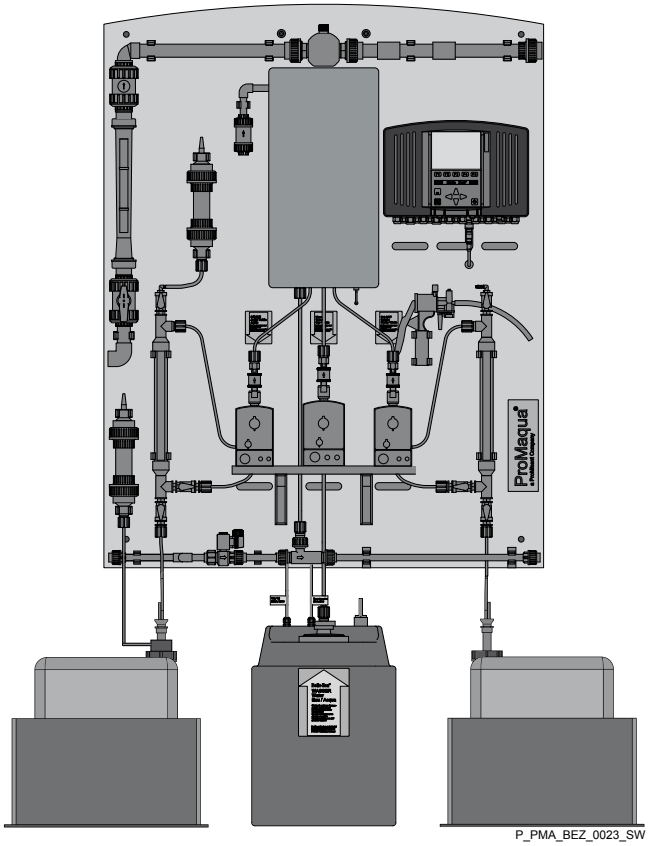
Operating instructions

Chlorine Dioxide Systems

Bello Zon® Type CDKc

Part 1



These operating instructions are only valid in conjunction with the "Operating instructions Chlorine dioxide systems Bello Zon® Type CDKc, Part 2

Please carefully read these operating instructions before use! · Do not discard!
The operator shall be liable for any damage caused by installation or operating errors!
Technical changes reserved.

ProMaqua GmbH
Maaßstraße 32/1
69123 Heidelberg
Germany
Telephone: +49 6221 6489-400
Fax: +49 6221 6489-402
email: info@promaqua.com
Internet: www.promaqua.com

986041, 1, en_GB

© 2010

Supplementary information

Fig. 1: Please read!

Read the following supplementary information in its entirety! Should you already know this information, you have an even greater need of the Operating Instructions.

The following are highlighted separately in the document:

- Enumerated lists

- refer to references

→ Instructions

⇨ Results

'User interface text'

[Keys]

Information

This provides important information relating to the correct operation of the system or is intended to make your work easier.

Safety information

Safety information is identified by pictograms - see Safety Chapter.

Notes for the System Operator

This document includes notes and quotes from German guidelines relating to the system operator's scope of responsibility. This information does not discharge operators from their responsibility as an operator and is intended only to remind them or make them aware of specific problem areas. This information does not lay claim to being complete, nor applicable to every country and every type of application, nor to being unconditionally up-to-date.

Version number of the hardware and software

The version number of the hardware and software can be found here: In the display press *'Equipment OFF'* *[F2 SETTING]* , change to the menu *'CAN overview'* and press the *[ENTER]* key. In case of complaints, or if expanding the scope of use of the device, specify the version number in addition to the identity code.

Table of contents

1 Identity code

CDK product range, version c									
CDKc	**Type**	**Capacity**							
02	CDKc 170	170 g/h							
04	CDKc 420	420 g/h							
06	CDKc 900	900 g/h							
08	CDKc 2100	2100 g/h							
10	CDKc 3000	3000 g/h							
12	CDKc 7500	7500 g/h							
	Version								
	P	ProMaqua							
	N	Neutral							
		Operating voltage:							
		A	230 V + 10 %, 50/60 Hz (for versions with "bypass" 04)						
		B	100-115 V + 10 %, 50/60 Hz (not available for versions with "bypass" 04 or 06)						
			Bypass version, bypass monitoring						
			00	Without bypass					
			02	Bypass PVC-U with float flow meter and pump					
			04	Bypass PVC-U with float flow meter and pump (VA) only with "Operating voltage" - "A" (only with CDKc 170-900 g/h)					
			06	Bypass PVC-U for storage module, with water supply. 230 V (only with CDKc 170-900 g/h)					
			07	Bypass PVC-U for storage module, with water supply. 24 V (only with CDKc 170-900 g/h)					
				Ventilation unit					
				1	Without reactor housing with ventilation unit, with calibration device				
				3	With reactor housing with ventilation unit, with calibration device				
					Suction lance, suction assembly chemicals				
					0	None			
					2	Suction lances for 200 l-tank			
					3	Flexible suction assembly 5 m			
						Mechanical design			
						0	Standard		
							Preset language		
							DE	German	
							EN	English	
							FR	French	
							IT	Italian	
							ES	Spanish	

CDK product range, version c																		
								Control										
								0	Base version									
								1	With measurement and control features (only in conjunction with "extended inputs and outputs" = 1 or 3)									
								2	With measurement and control features with data logger and screen writer (only in conjunction with "extended inputs and outputs" = 1 or 3)									
									Extended inputs and outputs									
									0	none								
									1	2 analog inputs for control variables and flow freely configurable								
									2	1 analog output, freely configurable								
									3	2 analog inputs, 1 analog output, freely configurable								
										Communication interfaces								
										0	None							
											Certification							
											01	CE mark						
												Temperature monitoring						
												0	No temperature monitoring					
													Hardware					
													0	Standard				
														Software				
														0	Standard			

2 Safety chapter

Explanation of the safety information

The following signal words are used in these operating instructions to denote different severities of danger:

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
WARNING!	This combination of symbol and signal word indicates a possible dangerous situation that can result in death or serious injury if it is not avoided.
CAUTION!	This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.

Warning signs denoting different types of danger

The following warning signs are used in these operating instructions to denote different types of danger:

Warning signs	Type of danger
	Warning – corrosive substances.
	Warning – high-voltage.
	Warning – explosive substances.
	Warning – toxic substances.
	Warning – danger zone.

The three basic rules

1. - **The two components acid (HCl) and chlorite (dilute $NaClO_2$) must never be brought into contact except in the reactor! Otherwise poisonous ClO_2 gas forms abruptly and can then decompose explosively!**
2. - **Never operate the chlorine dioxide Bello Zon® CDV without diluting water! Otherwise poisonous ClO_2 gas forms abruptly and then decomposes explosively within the reactor!**
3. - **The bypass water must never be exposed to a vacuum pressure! Otherwise the ClO_2 solution in the reactor is placed under a vacuum, the ClO_2 outgasses, forms a richer mixture and can decompose explosively!**

Correct and proper use

- The Bello Zon® CDK system is intended solely for producing a ClO_2 containing disinfectant solution from hydrochloric acid, sodium chlorite solution and diluting water and then for dosing it into a bypass line together with water.
- Any other uses or modifications to the system are prohibited!
- Die Bello Zon® system is not designed for treating liquids (other than water) or gaseous media as well as substances with ClO_2!
- The system must not be operated under conditions other than those described in the technical data!
- Do not allow untrained personnel to operate the Bello Zon® system! All other activities should only be carried out by trained and authorised personnel, see the following table!
- You are obliged to observe the information contained in the operating instructions at the different phases of the system's service life!
- Please observe the relevant national regulations and guidelines at every phase of the system's service life!

Qualification of personnel

WARNING!
According to accident statistics, holiday replacements are a safety risk.

– Holiday replacements must also hold the named qualifications and have been instructed accordingly.

Activity	Qualification level
Installation, installation of hydraulic system	Technical personnel
Electrical installation	Electrician
Initial commissioning	Customer service - authorised by ProMaqua
Start up	Technical experts
Operation, canister replacement	Instructed personnel
Maintenance, repair	Customer service - authorised by ProMaqua
Decommissioning, disposal	Technical experts
Troubleshooting	Customer service - authorised by ProMaqua, technical experts, instructed personnel (fault-dependent)

Explanation of the terms:

Technical experts

A technical expert is deemed to be a person who is able to assess the tasks assigned to him and recognize possible hazards based on his/her technical training and experience, as well as knowledge of applicable regulations.

Qualified personnel

A qualified employee is deemed to be a person who is able to assess the tasks assigned to him and recognise possible hazards based on his/her technical training, knowledge and experience, as well as knowledge of pertinent regulations.

Instructed personnel

An instructed person is deemed to be a person who has been instructed and, if required, trained in the tasks assigned to him/her and possible dangers that could result from improper behaviour, as well as having been instructed in the required protective equipment and protective measures.

Customer Service department

Customer service refers to service technicians who have received certificated training and have been authorised by ProMaqua® to work on the system.

Personal protective equipment

- Face mask
- Rubber or plastic boots
- Protective gloves (ClO_2-resistant type!)
- Protective apron
- Full-face protective mask
- 1 replacement filter per protective mask

Safety Equipment

Which safety equipment is available and how it is tested, is contained in the "Start up" chapter.

Safety information

WARNING!

Danger from incorrect operation

Incorrect operation can result in dangerous conditions for the system and its surroundings.

– The operating personnel must be instructed by a ProMinent service technician. (Undertaken during initial commissioning.)
– The operating instructions must be available by the system.

WARNING!

Danger due to toxic and explosive ClO_2 gas

Under rare fault conditions ClO_2 solution can escape via a leak.

– To overcome this, for example, install a gas detector which switches off the system if ClO_2 gas escapes and triggers an alarm that is readily apparent from a distance. This ensure that save operation is possible with every ClO_2 system.

NOTICE!

Warning of illegal operation

Observe the regulations that apply where the device is installed.

Instructions for entering a room in which a chlorine dioxide system is installed

- Access only for trained personnel.
- If there is a smell of chlorine dioxide (pungent, chlorine-like smell) access is only permitted to personnel wearing the specified protective equipment.
- If there is a smell of chlorine dioxide, immediately switch off the system from a safe position, e.g. emergency stop switch, which is installed at a distance from the system.

Note for the system operator

Keywords when searching for the necessary regulations:

- Chlorine dioxide systems
- Chlorine dioxide (possibly chlorination as well)
- Drinking water
- Hydrochloric acid
- Sodium chlorite
- Storage
- Dangerous substances
- Personal protective equipment

Information in the event of an emergency

- You have already come into contact with acid: See the "EC acid safety data sheet" provided by the supplier!
- You have already come into contact with chlorite: See the "EC chlorite safety data sheet" provided by the supplier!
- You have come into contact with ClO_2 solution or ClO_2 gas: See data sheet "Chlorine dioxide hazardous substance data sheet: Properties of chlorine dioxide and instructions for handling aqueous solutions" in the operating instructions, part 2, appendix!
- An orange-yellow ClO_2 gas has escaped: clear the room immediately and disconnect the power supply, for example using the emergency stop switch! Wear complete personal protective equipment and ensure the gas is precipitated out of the atmosphere using a water spray! See also the data sheet "Chlorine dioxide hazardous substance data sheet: Properties of chlorine dioxide and instructions for handling aqueous solutions" in the operating instructions, part 2, appendix!
- An orange-yellow ClO_2 solution has escaped: clear the room immediately and disconnect the power supply, for example using the emergency stop switch! Wear complete personal protective equipment and pour sodium thiosulphate solution over the ClO_2 solution, then dilute with lots of water and wash away into the drain. See also the data sheet "Chlorine dioxide hazardous substance data sheet: Properties of chlorine dioxide and instructions for handling aqueous solutions" in the operating instructions, part 2, appendix!
- The Bello Zon® system was started without diluting water and the dosing pumps have already pumped concentrated chemicals as far as the reactor: clear the room immediately and disconnect the power supply, for example using the emergency stop switch! Inform the fire brigade, explaining about the risk of an explosion due to concentrated ClO_2 gas! ClO_2 gas can still explode after several hours! See also the data sheet "Chlorine dioxide hazardous substance data sheet: Properties of chlorine dioxide and instructions for handling aqueous solutions" in the operating instructions, part 2, appendix!
- The Bello Zon® system was supplied with concentrated chemicals and the dosing pumps have not yet started to pump: immediately switch the Bello Zon® system to *'dosing OFF'* (*[Start/Stop]*)! Only start the system as soon as trouble-free operation of the diluting pump is ensured.

Sound Pressure Level

The sound pressure level is < 70 dB (A)

at a maximum stroke length, maximum stroke rate, maximum counter pressure (water) according to:

DIN EN 12639 (Noise testing on liquid pumps).

3 Storage and transport

Safety information

WARNING!

Only return the device for repair in a cleaned state and with hydraulic components - refer to the chapter "Decommissioning"!

Only send the unit complete with a filled in Decontamination Declaration form. The Decontamination Declaration constitutes an integral part of an inspection / repair order. A unit can only be inspected or repaired when a Decontamination Declaration Form is submitted that has been completed correctly and in full by an authorised and qualified person on behalf of the operator.

The "Decontamination Declaration Form" can be found in the Appendix or under *www.prominent.com*.

NOTICE!

Danger of material damage

The device can be damaged by incorrect or improper storage or transportation!

- The device should only be stored or transported in a well packaged state - preferably in its original packaging.
- The packaged unit should also only be stored or transported in accordance with the stipulated storage conditions.
- The packaged unit should be protected from moisture and the ingress of chemicals.

Packaging

The chlorine dioxide Bello Zon® system is supplied with wooden packaging.

Ambient conditions

Data	Value	Unit
Minimum storage and transport temperature	-10	°C
Maximum storage and transport temperature	+40	°C
Maximum air humidity *	92	% rel. humidity

* non-condensing

Miscellaneous: Protect against sunlight

Scope of supply

In addition to the identity code options, the scope of supply includes:

- Flushing equipment with a vacuum relief valve - see chapter "Installation" - "Hydraulic Installation"
- The mounting kit (mounting equipment and threaded cable glands)
- Labels for suction lances / suction assemblies
- Warning signs - see chapter "Maintenance"

Weight

Weight in kg, without packaging:

CDKc	170	420	900	2100	3000	7500
	55	80	95	160	160	175

4 Requirements for the installation site

Safety information

CAUTION!

Warning against illegal operation

Observe the regulations that apply where the device is installed.

Requirements for the installation site

- The chlorine dioxide system must not be located outdoors.
- It must be possible to protect the chlorine dioxide system against unauthorised access.
- The site of the chlorine dioxide system must be protected against sun, frost-proof and well ventilated.
- Below 10 °C room temperature (15 °C for the CDKc 3000 and 7000) heating systems may have to be used for the suction lines of the dosing pumps.
- It must be possible to transport the component containers to the system without obstruction.
- There must be an emergency exit route.
- For installation of the Bello Zon® system, a smooth, vertical wall must be available.
- There must be a water tap available.
- There must be a drain available in the floor.
- It must be possible to fit a gas detector.
- There must be a mains connection, with an emergency stop switch outside the installation room.

Note for the system operator

Below are some of the regulations which apply within Germany:

- The accident prevention regulation (UVV) "Chlorination of Water", [in German] GUV-V D5 (previously GUV 8.15), April 1979
- "Chlorine dioxide dosing system", [in German] DVGW (German Gas and Water Association) Data Sheet W 624, DVGW e.V., Eschborn, 10/1996 "Chlorine dioxide in Water Treatment", [in German] DVGW-Arbeitsblatt W 224, DVGW e.V., Eschborn, 04/1986, ISSN 0176-3504
- The directives for the protection of ground water against pollution [in German] (section 19 of the German Federal Water Act (WHG) Edition 23/09/1986)
- The German Ordinance on Hazardous Substances (GefStoffV) - especially section 17 (general duty of protection) and section 20 (operating instructions; see also Accident Prevention Regulations section 9) [in German]

5 Installation

Safety information

WARNING!

Danger due to the sudden unexpected escaping of toxic chlorine dioxide solution

The seals which are exposed to chlorine dioxide solution, will start to leak if they are not replaced early enough.

– The system must be set up so that it can be accessed easily for maintenance.

Fitting the panel

The supplied mounting kit contains the necessary hangar bolts, rawlplugs, washers and nuts (mounting kit = plastic bags with fixings and threaded cable glands...).

Select the mounting height so that:

- The LCD screen of the control can be easily read
- The liquid level of the full component containers is below the dosing pumps
- The maximum priming lift of the dosing pumps is not exceeded, see table "Technical data" in the appendix
- as necessary, there is still sufficient space for the component containers below the panel.

Personnel: ■ Technical personnel

1. Secure the Bello Zon® system on a suitable, smooth and vertical wall, as close as possible to the point of injection. Dimensions sheets - see appendix
2. After fitting brush the metallic fastenings with Vaseline to prevent corrosion.
3. Attach the warning signs according to the national regulations at the access to the chlorine dioxide system and the chemical stores or any other locations so that they are clearly visible (Warning signs according to German regulations, see in the scope of supply).

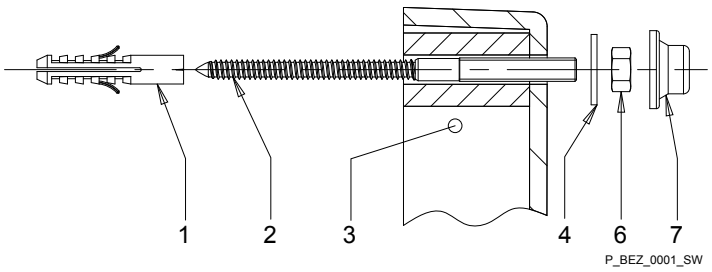


Fig. 2: Securing of the deep-drawn panel

1 Wall plug
2 Hanger bolt
3 panel
4 Washer (plastic)
6 Hexagon nut
7 Protective cap

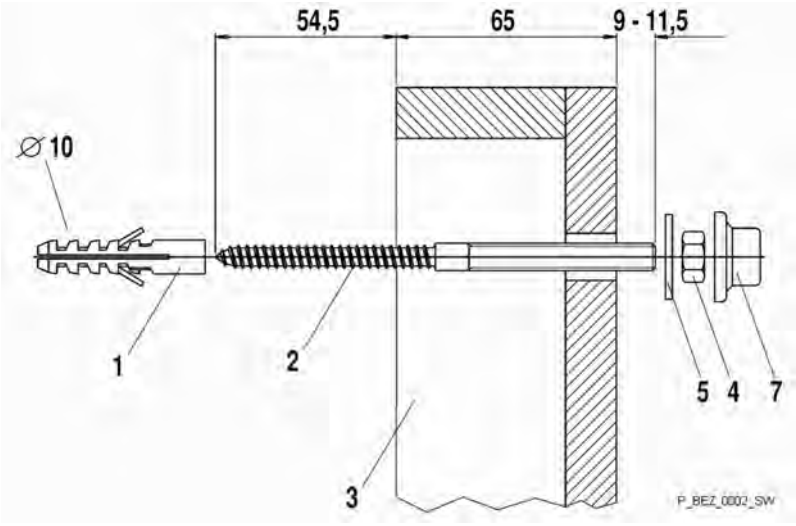


Fig. 3: Securing of the welded panel

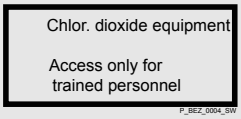
1 Wall plug
2 Hanger bolt
3 panel
4 Hexagon nut
5 Washer (metal)
7 Protective cap

Warning labels

CAUTION!
Warning against illegal operation
Observe the regulations that apply where the device is installed.

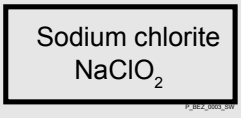
Provided national regulations do not require otherwise, used signs of the form and type given below.

a) Attach both these signs together at the entrances to rooms in which Bello Zon® chlorine dioxide systems are set up:

Warning sign *	Warning label *	Included text
		Chlorine dioxide Access only for trained personnel.

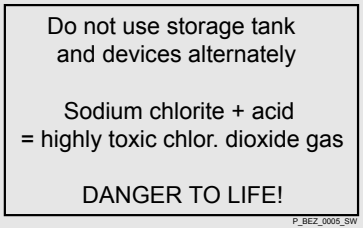
*** Mandatory in Germany**

b) Attach both these signs together at the entrances to rooms in which sodium chlorite is stored or used:

Warning sign *	Warning label *	Included text
		Sodium chlorite $NaClO_2$

*** Mandatory in Germany**

c) Attach this sign in rooms in which sodium chlorite is handled:

Warning label *	Included text
	Do not interchange containers and devices. Sodium chlorite + acid = highly toxic chlorine dioxide gas. Danger to life!
*** Mandatory in Germany**	

This applies to stores and decanting rooms in which the chemical drums are set up, which are then connected to the Bello Zon® systems.

Installation location gas detector (accessories)

Install the gas detector at approximately 1m height in the vicinity of the gas generation system so that it can provide reliable warnings!

6 Installation

CAUTION!

Warning against illegal operation

Observe the regulations that apply where the device is installed.

6.1 Hydraulic Installation

Safety information

DANGER!

Warning of toxic chlorine dioxide vapour

Toxic chlorine dioxide vapour can escape because of a broken bypass line.

- Only use PVC or PVDF pipes for the bypass line. Chlorine dioxide corrodes other materials too strongly.
- Only use PVC pipes of pressure rating PN 16 for the bypass line to allow for long-term scaling of the PVC.
- The maximum permissible system operating pressure must not be exceeded - see "Safety equipment bypass line" - "PVC bypass line specifications"). Pressure surges must also not occur.

WARNING!

The reactor can explode

This can result in uncontrolled sucking through of the chemicals, if the bypass line of the Bello Zon® system enters a vacuum pressure state. Subsequently, if a high vacuum pressure exists together with the simultaneous formation of gas/water mixed phases chlorine dioxide can gas out. Under unfavourable circumstances, the critical gas concentration of 300 g/m^3 is exceeded and an explosion of the reactor can occur.

- Take appropriate measures to ensure the bypass line of the Bello Zon® system does not become subject to a vacuum.

Qualification

Personnel: ■ Technical personnel

Main components

In essence, the following components must be hydraulically installed:

- Bypass line
- Safety equipment bypass line
- Additional safety fittings
- Flow generator bypass line
- Hydraulic module "water supply"
- Point of injection
- Flushing equipment with vacuum relief valve
- Suction lances / suction assemblies acid and chlorite
- Suction lance and level switch for water
- Water supply suction mechanism (optional)

Installation examples

Installation example A

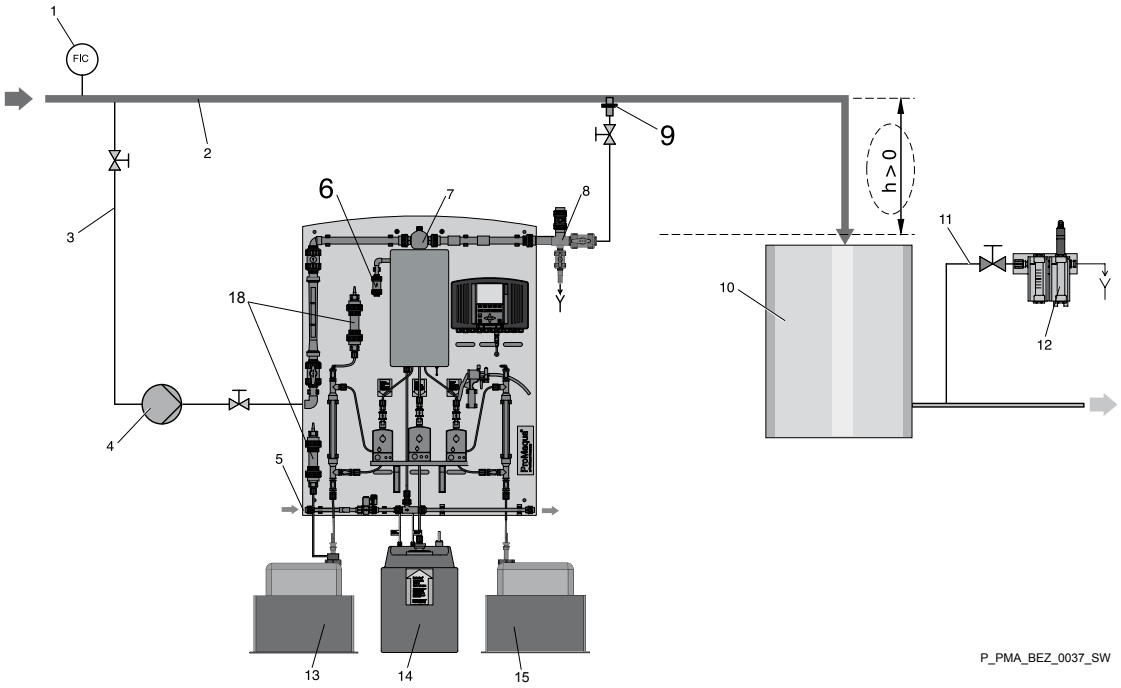


Fig. 4: Installation example A: the reactor outlet valve (7) of the Bello Zon® system is located beneath the point of injection (9)

1 Water meter (frequency or analog signal)
2 Main water supply
3 Bypass line
4 Bypass pump
4a Hydraulic module "water supply"
5 Water connection for ventilation
6 Reactor housing vent valve
7 Reactor outlet valve
8 Flushing equipment with vacuum relief valve
9 Point of injection (flange and immersion pipe)
10 Delay tank
11 Sample water line
12 Chlorine dioxide measuring point (e.g. with CDE sensor)
13 Acid canister in safety bund
14 Water canister
15 Chlorite canister in safety bund
16 Back pressure valve
17 Pre-storage module ClO2 solution
18 Acid vapour separator

Installation example B

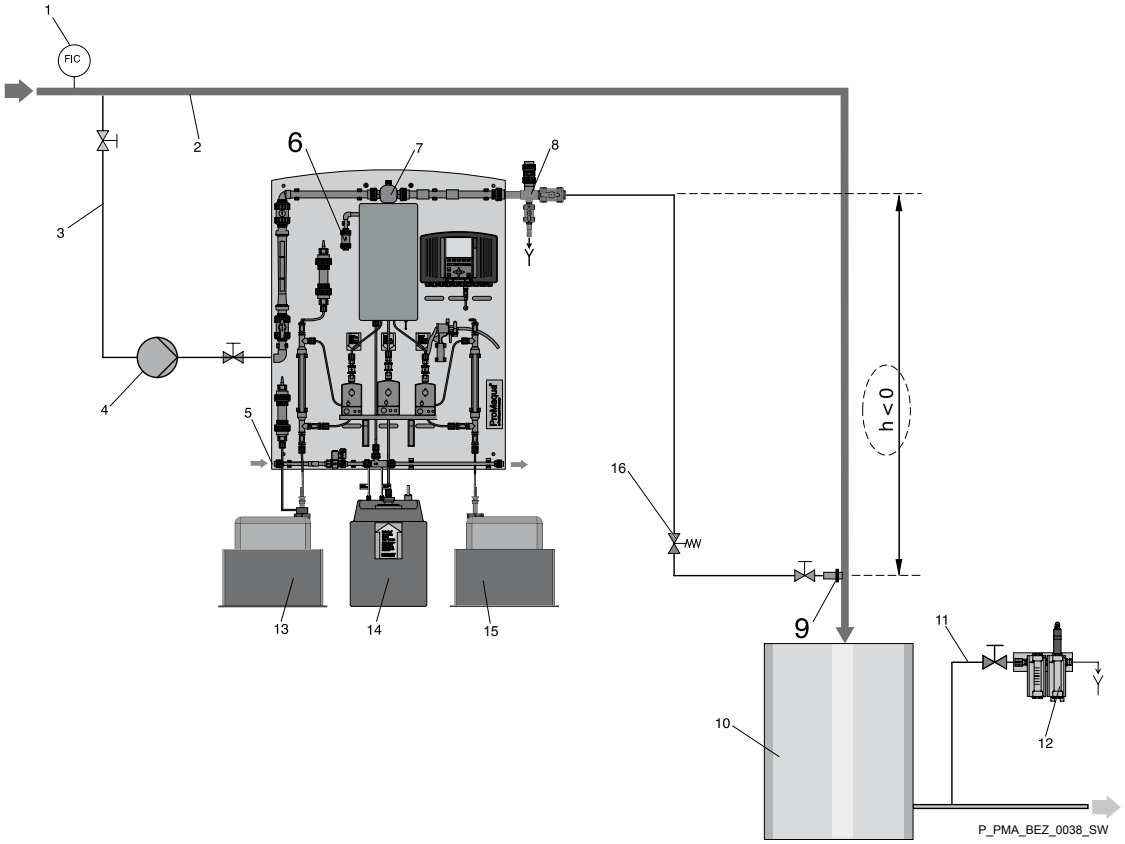


Fig. 5: Installation example B: the reactor outlet valve (7) of the Bello Zon® system is located above the point of injection (9) Back pressure valve and vent valve required in the bypass line.

Installation example C

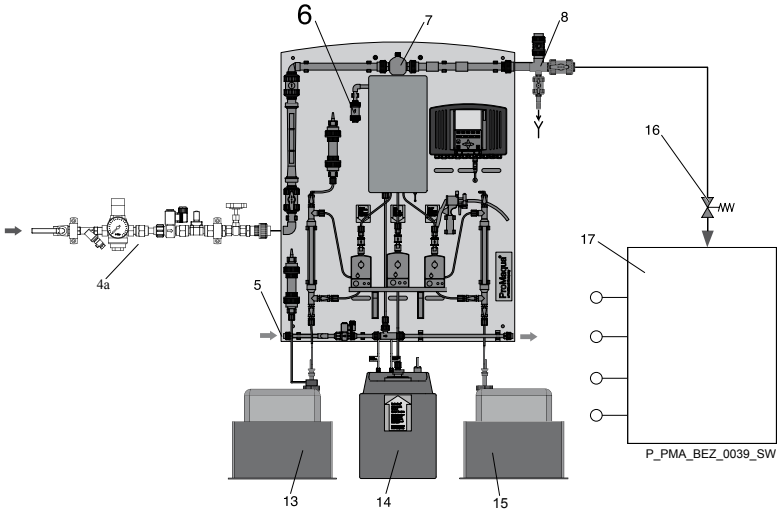


Fig. 6: Installation example C: Bello Zon® system with "bypass version for storage module"

6.1.1 Bypass line

DANGER!

Warning of toxic chlorine dioxide vapour

Toxic chlorine dioxide vapour can escape because of a broken bypass line.

- Only use PVC or PVDF pipes for the bypass line. Chlorine dioxide corrodes other materials too strongly.
- Only use PVC pipes of pressure rating PN 16 for the bypass line to allow for long-term scaling of the PVC.
- The maximum permissible system operating pressure must not be exceeded - see "Safety equipment bypass line" - "PVC bypass line specifications"). Pressure surges must also not occur.

WARNING!

Warning of toxic chlorine dioxide vapour

Toxic chlorine dioxide vapour can escape through a leaking bypass line. Some threaded connectors are loosened in the factory prior to transport.

- Check whether all threaded connectors of the bypass line on the panel are correctly tightened.

WARNING!

Danger of an explosion in the bypass line

Particles in the bypass water could block a flow meter. This can then lead to an unacceptably high concentration of chlorine dioxide. If a bypass line is not completely full with water, a critical gas phase can form, resulting in an explosion in the bypass line.

- If necessary, install a dirt-trap filter in the suction line.

Protect transparent pipes carrying ClO_2 containing water against light radiation (direct sunlight, fluorescent tubes, ...). Otherwise the photochemical breakdown of the ClO_2 in the pipes will cause the ClO_2 concentration to fall unexpectedly in the consumption location.

The bypass line is either fed from the main water supply or separately. The purpose of the bypass line is to dilute the chlorine dioxide concentration of the chlorine dioxide solution from the reactor from approximately 20 g/l (= 20,000 ppm) to approximately 0.1 - 1 g/l (= 100 - 1000 ppm) and to transport this solution to the point of injection.

6.1.2 Safety equipment bypass line

WARNING!

The reactor can explode

If the chlorine dioxide solution in the reactor becomes subject to a vacuum, it can explode.

– Hence the bypass line should be installed so that it is impossible for a vacuum to arise, not even when the machine is stationary or in the event of a fault.

WARNING!

Risk of explosion in the bypass line

If the dosing remains switched on when there is no water flow, it can then lead to an unacceptably high concentration of chlorine dioxide in the bypass line. If in addition, a bypass line is not completely full with water, a critical gas phase can form, resulting in an explosion in the bypass line.

– In Bello Zon® systems with bypass monitoring, the Bello Zon® control switches the dosing off if the minimum contact is correctly set.
– In Bello Zon® systems without bypass monitoring, the operator must ensure there is a sufficient water flow as long as dosing is switched on. E.g. use a flow meter with a minimum contact.

Bypass line specifications for CDKc 170 ... 420

Data	Value	Unit
Nominal width	DN25	
Diameter	32	mm
Operating pressure, min.	1.5	bar
Operating pressure, max.	8	bar
Pressure rating*	PN16	
Flow for bypass version 02 or 04	200 ... 2500	l/h
Flow for bypass version 06 or 07	150 ... 1000	l/h

* with PVC piping

Bypass line specifications for CDKc 900

Data	Value	Unit
Nominal width	DN25	
Diameter	32	mm
Operating pressure, min.	1.5	bar
Operating pressure, max.	8	bar
Pressure rating*	PN16	
Flow for bypass version 02 or 04	200 ... 2500	l/h
Flow for bypass version 06 or 07	200 ... 1000	l/h

* with PVC piping

Bypass line specifications for CDKc 2100 and 3000

Data	Value	Unit
Nominal width	DN40	
Diameter	50	mm
Operating pressure, min.	1.5	bar
Operating pressure, max.	5	bar
Pressure rating*	PN16	
Flow for bypass version 02 or 04	1500 ... 10000	l/h

* with PVC piping

Bypass line specifications for CDKc 7500

Data	Value	Unit
Nominal width	DN40	
Diameter	50	mm
Operating pressure, min.	1.5	bar
Operating pressure, max.	3	bar
Pressure rating*	PN16	
Flow for bypass version 02 or 04	1500 ... 10000**	l/h

* with PVC piping

** only approved for bypass version 02

Particular risk of vacuum exists, especially if the water is stationary, where:

- the flow direction reverses in the main water supply pipe (of large diameter) - non-return valves are never 100 % watertight!
- the main water supply line runs beneath the reactor outlet valve of the Bello Zon® system
- the bypass line is very long, especially where this runs downwards, i.e. the reactor outlet valve (7) of the Bello Zon® system lies above the point of injection (9) (h less than "0" ↳ *'Installation examples' on page 18*, installation example B). Then install a vent valve at the highest point on the bypass line, as shown in the figure . This ensures that there is always at least atmospheric pressure in the bypass line.

Depending on the application and the particular circumstances of the installation site, the chlorine dioxide system must be supplemented with the corresponding safety-relevant accessories.

6.1.3 Flushing equipment with vacuum relief valve

The supplied flushing equipment with vacuum relief valve must be installed in the bypass line after the Bello Zon® system, see ↳ *'Installation examples' on page 18* so that when the reactor is started up, it can be filled safely and in a depressurised state, and so that it is possible to safely rinse and empty the reactor ready for maintenance work.

In addition to this the valve acts to break the vacuum, should the bypass line enter a vacuum state.

WARNING!

Outgassing ClO_2 solution can still vaporize in the bypass line

If the vacuum relief valve becomes blocked due to dirt, then it cannot prevent outgassing of the ClO_2 solution if the bypass line is under vacuum.

– If dirt can enter the vacuum relief valve from above, provide it with a protective cover to protect it against dirt.

WARNING!

Poisonous ClO_2 solution can escape

– Protect the rinse valve against unintentional opening, e.g. using a cable tie or a padlock.

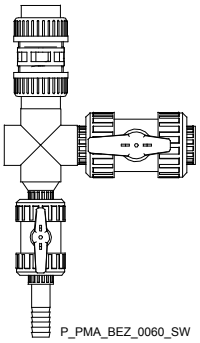


Fig. 7: Flushing equipment with vacuum relief valve

6.1.4 Back pressure valve

If necessary, install the following in the bypass line:

Back pressure valve

b) A back pressure valve at the end of the bypass line, shortly before the point of injection (opening pressure > 1.5 bar) (see fig. 5 and 6)! Use the back pressure effect-free design so that operation is maintained even at high back pressures!

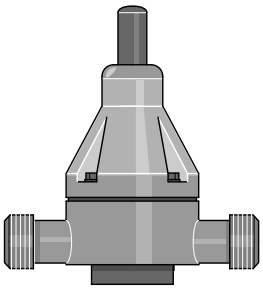


Fig. 8: Back pressure valve DHV-RM, back pressure effect-free

Type	Nominal width	Connector	Material	Part no.
DHV-RM	DN25	G 1 1/2″	PVC (PC1)	1000050
DHV-RM	DN32	G 2 ″	PVC (PC1)	1000051
DHV-RM	DN40	G 2 1/4″	PVC (PC1)	1000052
DHV-RM	DN50	-	-	on request

6.1.5 Flow generator bypass line

To create a flow in the bypass line, an alternative is to install:

- A choke valve in the main water supply line, e.g. gate, spring or weight-loaded non-return valve or
- a bypass water pump in the bypass line prior to the Bello Zon® system Here, the bypass pump can be locked via the control of the Bello Zon® system.

When installing a bypass pump, the fitting of an inclined seat valve is recommended to permit regulation of the flow at the inlet to the Bello Zon® system.

Accessories	Part no.
Inclined seat valve	1001877

6.1.6 Hydraulic module "water supply"

If in the case of systems with "Bypass version for storage module" chlorine dioxide solution is to be produced for storage, the "Water supply" hydraulic module is installed at the input to the bypass line

The "water supply" hydraulic module comprises:

- 1/2˝ brass ball valve, internal thread
- Filter insert
- Pressure reducer
- Manometer
- Solenoid valve
- Flow meter
- Needle valve
- Threaded connector PVC, DN15

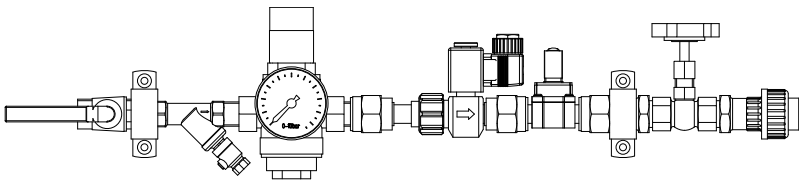


Fig. 9: Hydraulic module "water supply"

6.1.7 Point of injection

Install an "immersion pipe in the main water supply line (for better mixing of the ClO_2 in the main water flow):

The scope of supply includes Tangit cleaner, Tangit glue and a DN25 ball valve as a shut-off valve for shortening the immersion pipe.

1. Shorten the immersion pipe to the required length.
2. Glue the ball valve to the shortened end.
3. Fit the immersion pipe using a site supplied DN50 DIN flange.

Fig. 10: Immersion pipe

Accessories	Part no.
Point of injection up to nominal width DN80*, with ball valve	1018754
Point of injection from nominal width DN100*, with ball valve	1018753
*** Main water supply**	

6.1.8 Protective filter

When using a turbine wheel flow meter and solid particles are present in the bypass water, connect a protective filter upstream.

For example, with the CDKc 170 the filter DULCOFILT® protective filter G1" can be used. For larger system, select an appropriate filter type according to the level of dirt loading.

Accessories	Part no.
DULCOFILT® protective filter G1", mesh size 100 µm	791547

6.1.9 Inclined seat valve

An inclined seat valve is used to adjust the bypass flow when there is an installed bypass pump.

Accessories	Part no.
Inclined seat valve, DN 25	1001877

6.1.10 Kit for chlorine dioxide determination

Determination of the chlorine dioxide concentration can be carried out easily and reliably using the DPD method. The appropriate photometer is available for this purpose.

Accessories	Part no.
Photometer DULCOTEST® DT1	1003473
Photometer DULCOTEST® DT4	1022736

6.1.11 Suction lances / suction assemblies acid and chlorite

Safety information

WARNING!
Warning of toxic chlorine dioxide gas
Toxic chlorine dioxide can arise outside the reactor.

– Allocate parts correctly to the acid and chlorite sides.

WARNING!
Warning of corrosive acid or toxic chlorite solution
Corrosive acid or toxic chlorite can escape at the connections.

– Only use suitable hoses and connector kits.

Only use suction lances or suction assemblies with two-stage level switches and round plugs. Other suction lances are not suitable.

Installing suction hoses

The suction hoses must not be plugged into the component container yet!

1. Adjust the length of each suction lance - the foot valve must subsequently float in the container just above the floor.
2. Stick the "Acid" and "Chlorite" labels (as supplied) onto the suction lance heads or suction hoses so they are clearly legible.

"Acid", red, is attached on the left - "Chlorite", blue on the right!

3. Shorten the suction hoses so that subsequently they rise continuously and are free from tension.
4. Pull the cap nut (4) and clamp ring (3) over the suction hose (5) - see figure Fig. 11.
5. Push in the hose end up to the stop over the nozzle (2) (it may be necessary to slightly widen the hose end).
6. Fit the nozzle on the pump hose valve (1).
7. Press the suction hose (5) on to the nozzle (2) and tighten the cap nut (4).
8. Pull on the suction hose (5) briefly and tighten up the cap nut (4).

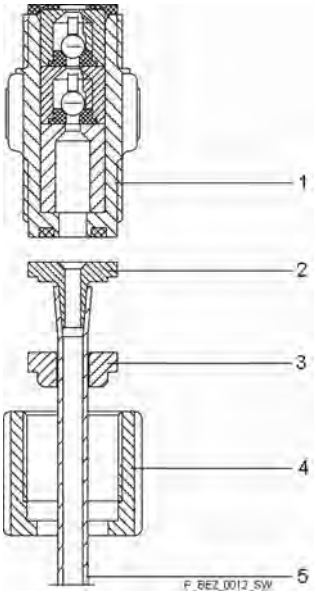


Fig. 11: Installing the hose

1 Pump suction valve
2 Nozzle
3 Clamp ring
4 Union nut
5 Hose

6.1.12 Suction lance and level switch for water

Safety information

Only use suction lances or suction assemblies with two-stage level switches and round plugs. Other suction lances are not suitable.

Installing suction hoses

Do not insert the suction lances into the water tank yet!

1. Adjust the length of the suction lance - the foot valve must subsequently float in the container just above the floor.
2. Stick the "Water" label (as supplied) onto the suction lance head or suction hose so it is clearly legible.

"Water", green, is in the middle!

3. Suspend the "FULL" level monitor (grey cable) slightly below the tank opening, so that during automatic filling it is impossible for the water to overflow.
4. Make the connection between the water connection at the storage tank and the hose connector (right alongside the lower solenoid valve) using a PVC soft hose 12/9 mm.
5. Cut the 8/5 mm hose to match the distance between the "Water" bleed cock and mid-height of the metering tank and then feed through the still open hole on the top side.
6. Shorten the hoses so that subsequently they rise continuously and are free from tension.

7. Pull the corresponding cap nut (4) and clamp ring (3) over the suction hose (5) - see figure Fig. 11.
8. Push the hose ends up to the stop over the nozzles (3) (it may be necessary to slightly widen the hose ends).
9. Fit the nozzles on their valves (1).
10. Press the hoses (5) on to their nozzles (2) and tighten the cap nuts (4).
11. Pull on the hoses (5) briefly and tighten up the cap nuts (4).

6.1.13 Heating system for chemical pipelines

With certain systems and ambient temperatures below 10 °C, the suction hoses for the chemicals must be heated using the heating system.

Accessories	Part no.
For Ø 6 / 4 mm	1001636
For Ø 8 / 5 mm	1001637
For Ø 12 / 9 mm	1001638
For Ø 19 / 16 mm	1001639

6.1.14 Water supply suction mechanism (optional)

For safety reasons, the suction mechanism (comprising the water jet pump and solenoid valve) regularly sucks the air out of the reactor housing.

WARNING!

Toxic chlorine dioxide gas

The suction mechanism cannot suck toxic chlorine dioxide gas, which may have arisen due to an accident, out of the reactor cupboard, because, in spite of the open solenoid valve, no water flows in its feed line. When the system is stationary, this is the case in the bypass line.

– Therefore route a separate water pipeline to the water jet pump. The bypass line cannot and must not be used for this purpose.

Characteristics required for the separate water supply:

- Water pressure: 1 ... 6 bar
- Water quality: Drinking water, chlorine-dioxide free, particle-free
- Tubing: PVC, DN10

1. Route the tubing from the water supply line to the system.
2. Route the tubing from the system to the drainage, so that it has a continuously falling slope and a free outlet.

6.2 Electrical Installation

Note for the system operator

Please observe the local regulations for electrical installation work!

To differentiate between two essentially identical cables (e.g. supply voltage to the acid metering pump and the chlorite metering pump), different identification rings should be attached to them. ("A" for acid, "C" for chlorite).

Qualification level

Personnel: ■ Electrician

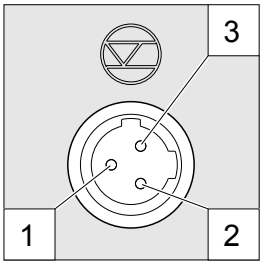
Main components

In essence, electrical installation involves the following work:

- Connect the level switch
- Install the minimum contact flow meter
- Wire the control
- Install the bypass pump
- Install the gas detector
- Install the emergency stop switch
- Preparing the mains connection

6.2.1 Connect the level switch

1. Connect the round plug for the acid suction lance (level switch) to the "Level" input on the left pump.
2. Connect the round plug for the chlorite suction lance (level switch) to the "Level" input on the right pump.
3. Connect the round plug for the water suction lance (level switch) to the "Level" input on the middle pump.
4. Connect the cable of the "FULL level monitor" to the control - see the wiring diagram.



P_BE_0016_SW

Fig. 12: Pump "level" input

6.2.2 Install the minimum contact flow meter

WARNING!

Risk of explosion in the bypass line

If the dosing remains switched on when there is no water flow, it can then lead to an unacceptably high concentration of chlorine dioxide in the bypass line. If in addition, a bypass line is not completely full with water, a critical gas phase can form, resulting in an explosion in the bypass line.

- In Bello Zon® systems with bypass monitoring, the Bello Zon® control switches the dosing off if the minimum contact is correctly set.
- In Bello Zon® systems without bypass monitoring, the operator must ensure there is a sufficient water flow as long as dosing is switched on. E.g. use a flow meter with a minimum contact.

→ Install the sensors according to the chapter "Electrical Installation".

6.2.3 Wire the control

1. → Loosen the 4 housing screws and place the front part in the parked position.
2. → Feed cables into the threaded cable glands. Where there are multiple sealing inserts (see figure below, "Fit threaded cable gland"), observe the permitted cable cross-section, see "Table Clamping Range" below in the appendix.
3. → Further steps are contained in .

   Thereafter please continue with the following steps:
4. → Tighten the union nuts (see , item 4) of the threaded cable glands so that they are leak-tight.
5. → Fit the front part on the rear part.

WARNING!

Danger of an electric shock

If moisture penetrates into the control, an electric shock may occur.

- Once again check the seating of the seals to ensure an IP 65 rating is correctly achieved.

6. → Check the seating of the seal once again.
7. → Manually tighten the housing screws until hand-tight.

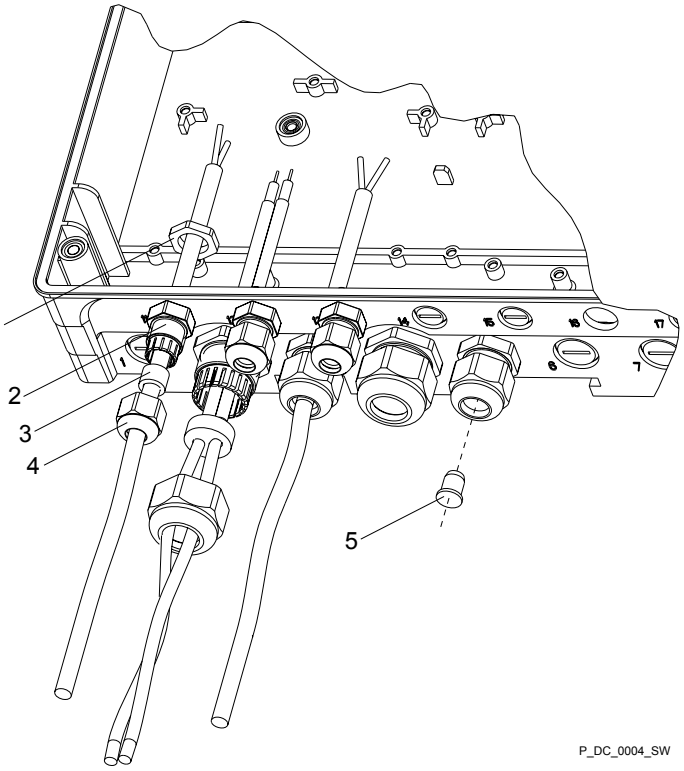


Fig. 13: Fitting the threaded cable gland

1 Lock nut
2 Threaded cable gland
3 Multiple seal insert
4 Union nut
5 Blanking plug

6.2.3.1 Connecting the terminals

1. Remove the cable insulation according to and crimp on the corresponding cable end sleeves.
2. Connect the cables according to the wiring diagram.
3. Check all of the cabling using the wiring diagram.
4. Tighten the clamping screws of the cable glands until they are leak-tight.

- *To install the leads for terminals XE1 to XA1 simply insert the leads into the terminals.*
- *To release the leads for terminals XK1 to X2 again, simply press on the white button of the required terminal using the tip of a ball-point pen and pull the lead out.*
- *The wiring diagram is contained in the appendix.*

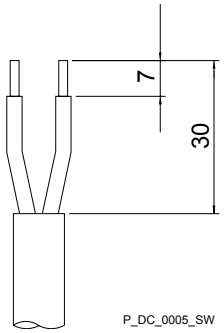


Fig. 14: Removing the wiring insulation

6.2.4 Installing the bypass pump

WARNING!
Control faults possible
– Fit the supplied RC member according to the wiring diagram between the bypass pump and the control.

CAUTION!
– For a bypass pump with a power rating up to the limit rating (see the table below), the control can supply the mains voltage. Consequently the bypass pump is simultaneously locked with the chlorine dioxide generator.
– For bypass pumps with electrical ratings greater than the limit rating, use a contactor relay.

Data	Value	Unit
Limit rating at 230 VAC	1.1	VA
Limit rating at 115 VAC	0.55	VA

6.2.5 Installing the gas detector (accessories)

To increase safety, it is worthwhile installing a chlorine dioxide gas detector. Fit the device to the control in accordance with the wiring diagram. As soon as the gas detector senses chlorine dioxide, it switches the system off, which simultaneously trips an alarm.

6.2.6 Installing the emergency stop switch

WARNING!

After particular incorrect operations or faults, it can be dangerous to approach the system. Then you must at least switch it off using an emergency stop switch, which is located at a safe distance.

- Install an emergency stop switch in the mains supply cable.
- The emergency stop switch must be installed in an easily accessible, invulnerable position in the vicinity of the door of the installation room of the chlorine dioxide system and must be labelled as such.
- The emergency stop switch must disconnect the electrical supply equipment connected to the system from the mains.

6.2.7 Preparing the mains connection

CAUTION!

If the system is started up unintentionally, chlorine dioxide may arise within the system.

- Only connect the Bello Zon® system to the mains voltage when starting it up!

CAUTION!

Warning against illegal operation

Observe the regulations that apply where the device is installed.

Prerequisites:

The power supply cables for the metering pumps and the control are already fitted in the factory.

→ The wiring of a bypass pump (accessories) to the distribution box and from there onwards to the control must be carried out on site by the customer.

- - - Preparation of the Bello Zon® system is now sufficient to permit its starting up by a ProMaqua service technician, see part 2 of the operating instructions! - - -

7 Dimensions sheets

Dimension sheet CDKc 170 ... 900

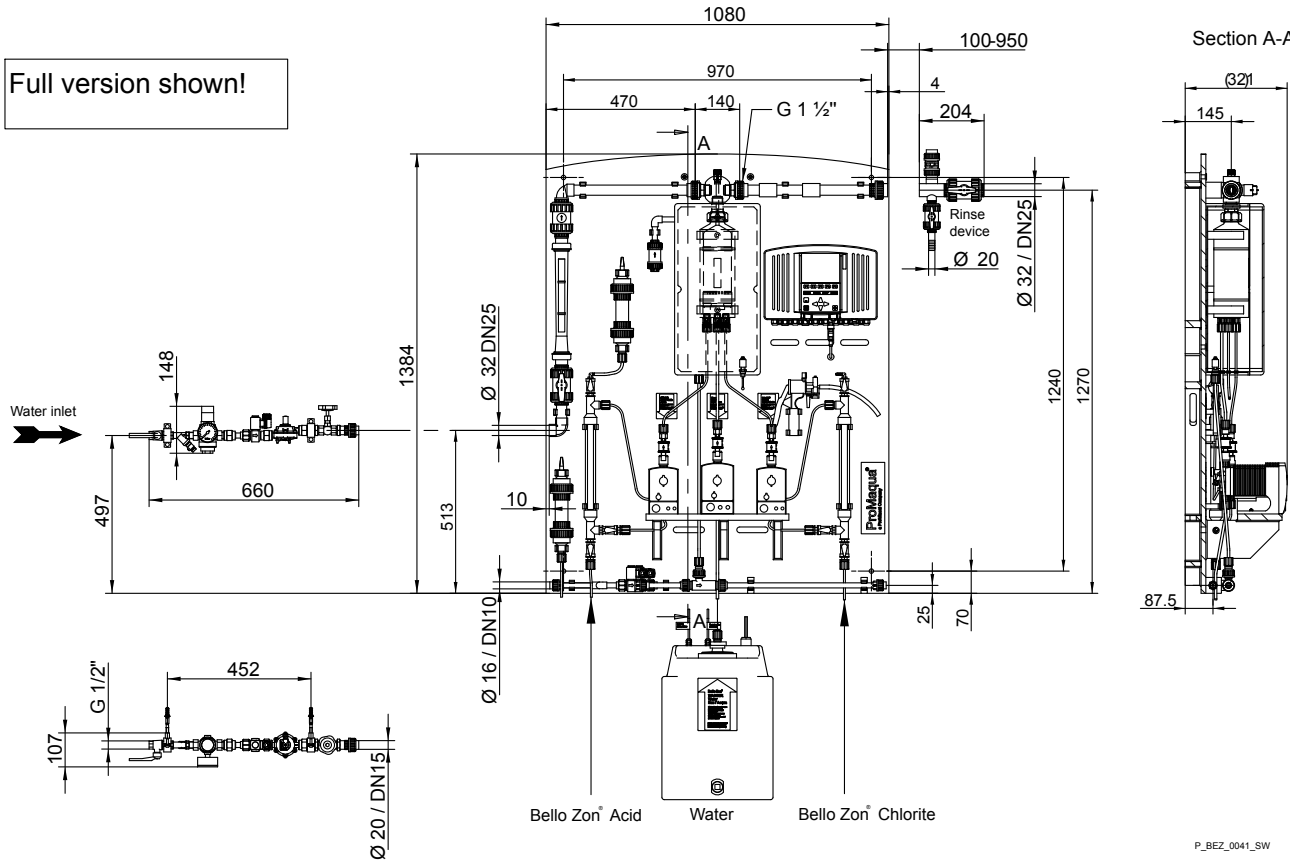


Fig. 15: Dimension sheet CDKc 170 ... 900, fully equipped version - dimensions in mm

CDKc	A	B	C	D	E	F	G	H	I	J	K	L	M
170	1384	1080	appro x. 321	70	-	1240	970	470	513	497	4	1270	145
420	1700	1100	appro x. 443	70	705	1555	990	480	829	813	14	1586	140
900	2000	1130	appro x. 509	80	925	1845	1020	495	1110	1094	9	1876	148

Dimension sheet CDKc 2100 ... 3000

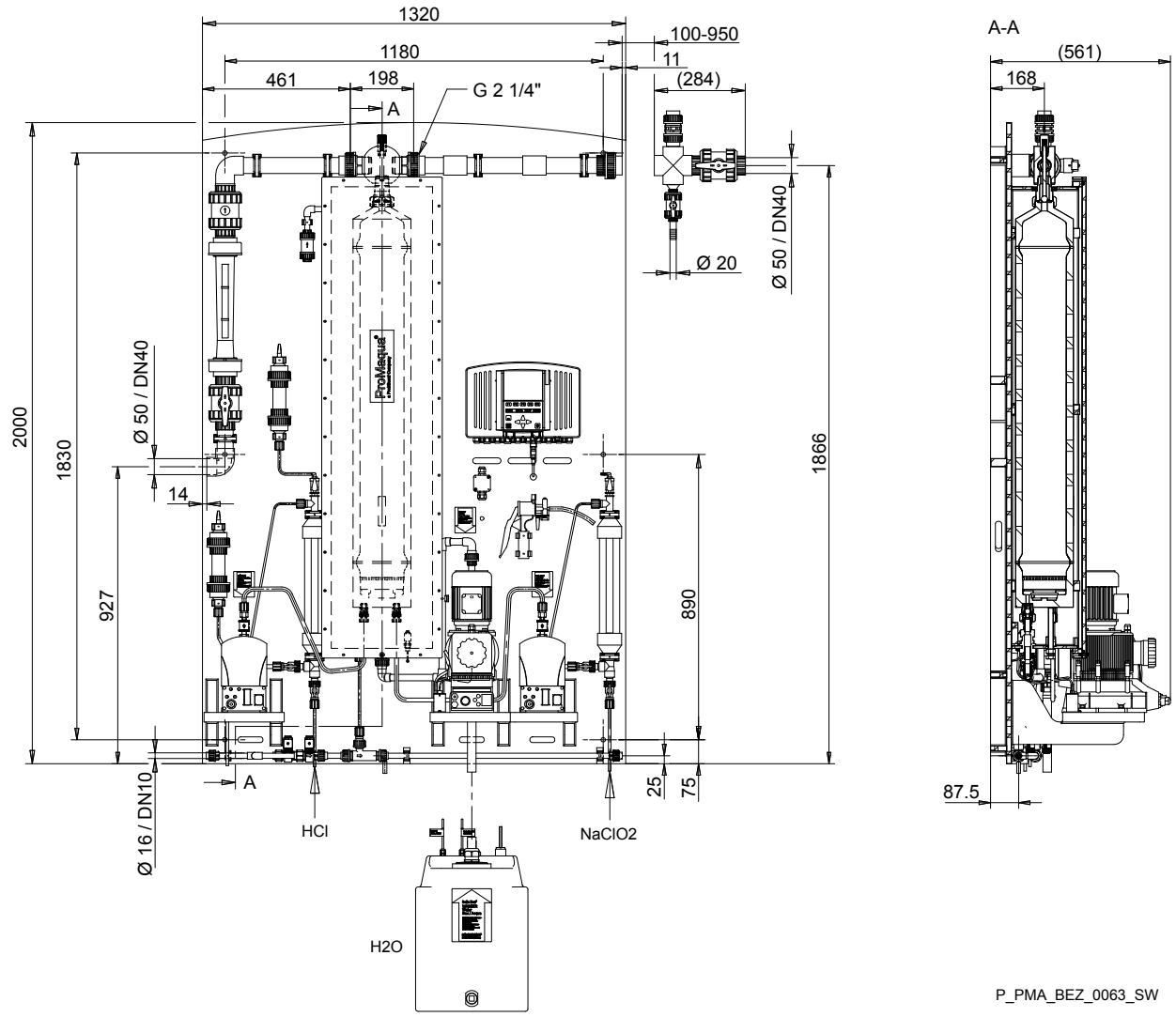


Fig. 16: Dimension sheet CDKc 2100 ... 3000, fully equipped version - dimensions in mm

Dimension sheet CDKc 7500

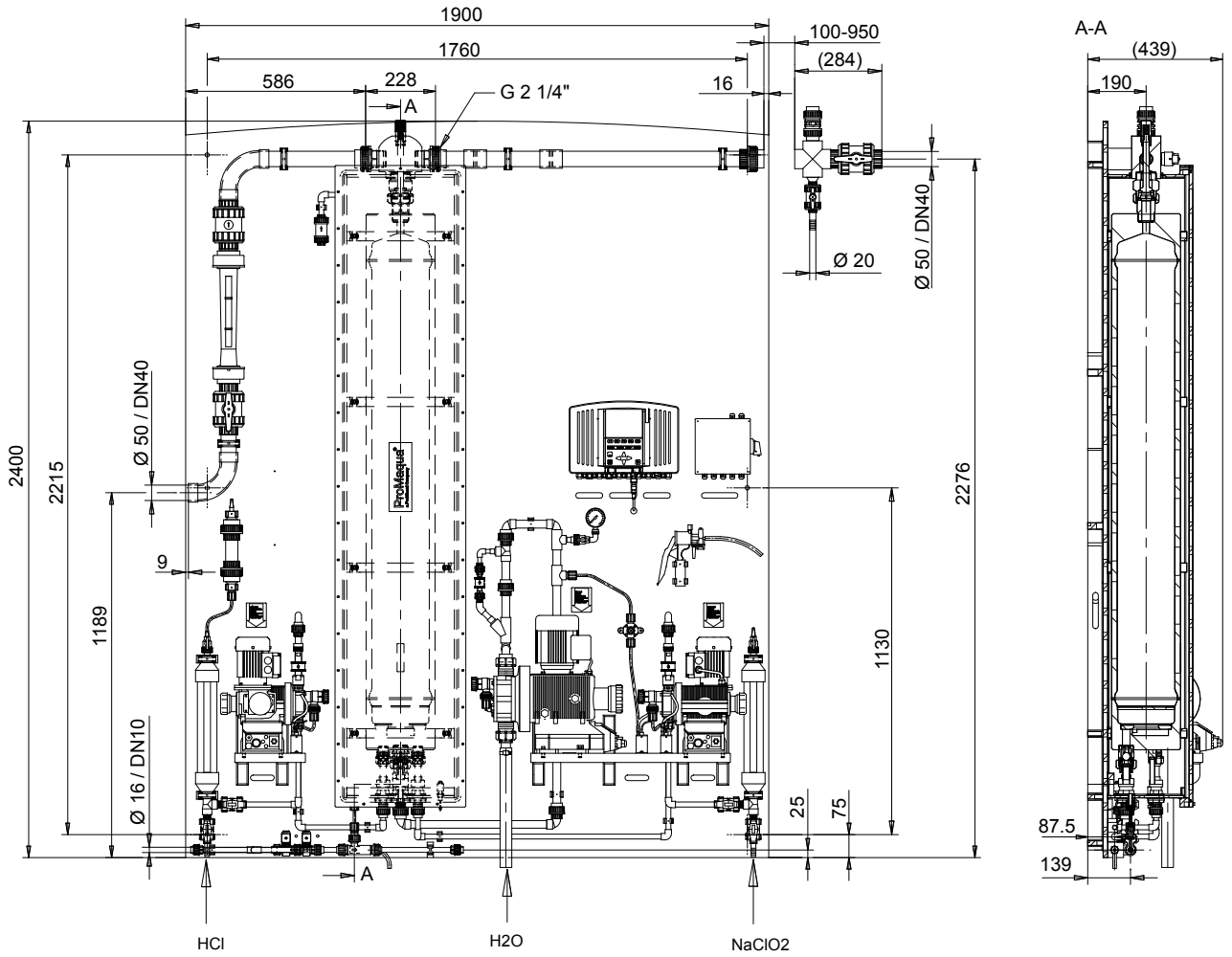


Fig. 17: Dimension sheet CDKc 7500, fully equipped version - dimensions in mm

8 Technical data

System

Type	Chlorine dioxide capacity*		Max. operating pressure	Operating temperature	Max. priming lift dosing pumps**	Dimensions:
	min.-max./ hour	min./day				HxBxD
	g/h	g/d	bar	°C	mWS	mm
CDKc 170	9 ... 120	56	8	10 ... 40	2.0	1384x1080x325
CDKc 420	21 ... 420	140	8	10 ... 40	3.0	1700x1100x450
CDKc 900	45 ... 900	300	8	10 ... 40	1 ... 2 #	2000x1130x510
CDKc 2100	105 ... 2100	700	5	10 ... 40	1 ... 2 #	approx. 2000x1320x550
CDKc 3000	150 ... 3000	700	5	15 ... 40	1 ... 2 #	approx. 2000x1320x550
CDKc 7500	375 ... 7500	1750	3	15 ... 40	1 ... 2 #	Approx. 2300x1500x560

The metering figures relate to 5 bar back pressure and an ambient temperature of 20 °C. The minimum capacity/per hour is based on the fact that when the system is operating at below 5 % of the nominal capacity, continuous metering is no longer possible, due to the then low pumping frequency of the metering pumps. When systems are not operating continuously, the reactor contents must be changed at least twice a day. The plant should not, therefore, be operated below the stated minimum capacity/day.

** Suction length at 100% stroke length.

*** without bypass pump, flushing equipment and "water supply" module.

With water, with moist valves, without back pressure.

Max. power consumption			
	115 V	230 V	230 V with bypass pump
	A	A	A
CDKc 170	1.2	0.7	2.7
CDKc 420	1.5	0.9	2.8
CDKc 900	2.5	1.4	2.9
CDKc 2100	3.5	2.2	
CDKc 3000	3.5	2.2	
CDKc 7500	4.5	2.7	

Weight

Weight in kg, without packaging:

CDKc	170	420	900	2100	3000	7500
	55	80	95	160	160	175

Control

Power supply

Data	Value	Unit
Nominal voltage, ± 10 %	90 ... 240	V*
Nominal voltage, ± 10 %	230	V*
Nominal voltage, ± 10 %	100 ... 115	V*
Mains supply frequency	50 / 60	Hz*

* dependent on version

Permitted fuses for the Bello Zon® control (230 V AC or 115 V AC)

Designation	Type	Supplied ...	Terminals	Part no.
F1	0.4 ATT	Control	XP	712060
F2	10 AT	Bypass pump	X12:1, 5, 9	712073
F3	1.0 AT	Solenoid valves	X12:2, 6, 10; X12:3, 7, 11	732409
F4	10 AT	Metering pumps	X11:1 ... 12	712073
Micro fuse 5 x 20 mm:				

The fuses are each contained in a fuse holder with a bayonet coupling. They are located in the terminal box of the control, on the right above the mains voltage terminals. For the layout, see figure below.

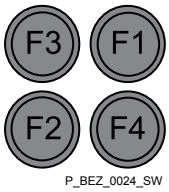


Fig. 18: Fuse layout in the control

Inputs

Digital inputs for contact water meter with reed-contact or Namur water meter with pulse width > 5 ms (XK8:3 and XK8:4):

Frequency range: 0.25 ... 20 Hz

Inputs: based on DIN 19 234 (Namur)

Supplied open circuit voltage: 8.2 V

Switching point: 4 kΩ

Contact input for contact water meter with Hall sensor or IDM with frequency output (XK8:2 and XK8:3):

Hall sensor:

Integrated supply voltage: +5 V, 10 mA

Contact gap: 0.1 ... 10 l / pulse

IDM (open collector):

Frequency range: 10 ... 10000 Hz

Pulse width: > 20 µs

Contact inputs (XK3 ... XK6):

for contacts or switching transistors:
Open circuit voltage: 12 V ± 1 V
Short circuit current: 5 mA
Contact: open, R > 100 kΩ
Contact: closed, R > 1 kΩ

Standard signal outputs (mA) (XE1 and XE2):
0/4 ... 20 mA, isolated
Insulation voltage: 500 V
Input resistance: 50 Ω
Load capacity: 30 mA
Inputs with 2 conductors
Connection (sliding supply): Supply voltage 22.0 V ... 25.0 V
Measuring accuracy: ± 1 % of the measuring range (at 25 °C)

Outputs

Switched mains outputs:
X12:1, 5, 9: "Bypass pump" max. 6 A constant current

Alarm relay (XR1:2 and XR1:1):
Type of contact: Change-over contact
Load capacity: 250 V AC / 3 A / 100 VA

Warning relay (XR2:1 and XR1:1):
Type of contact: N/O
Load capacity: 250 V AC / 3 A / 100 VA

Operating indicator relay (XR2:2 and XR1:1):
Type of contact: N/O
Load capacity: 250 V AC / 3 A / 100 VA

Standard signal outputs (mA) (XA1):
0/4...20 mA, potential-free
Maximum apparent ohmic resistance: 600 Ω

9 Terminal Wiring Diagram

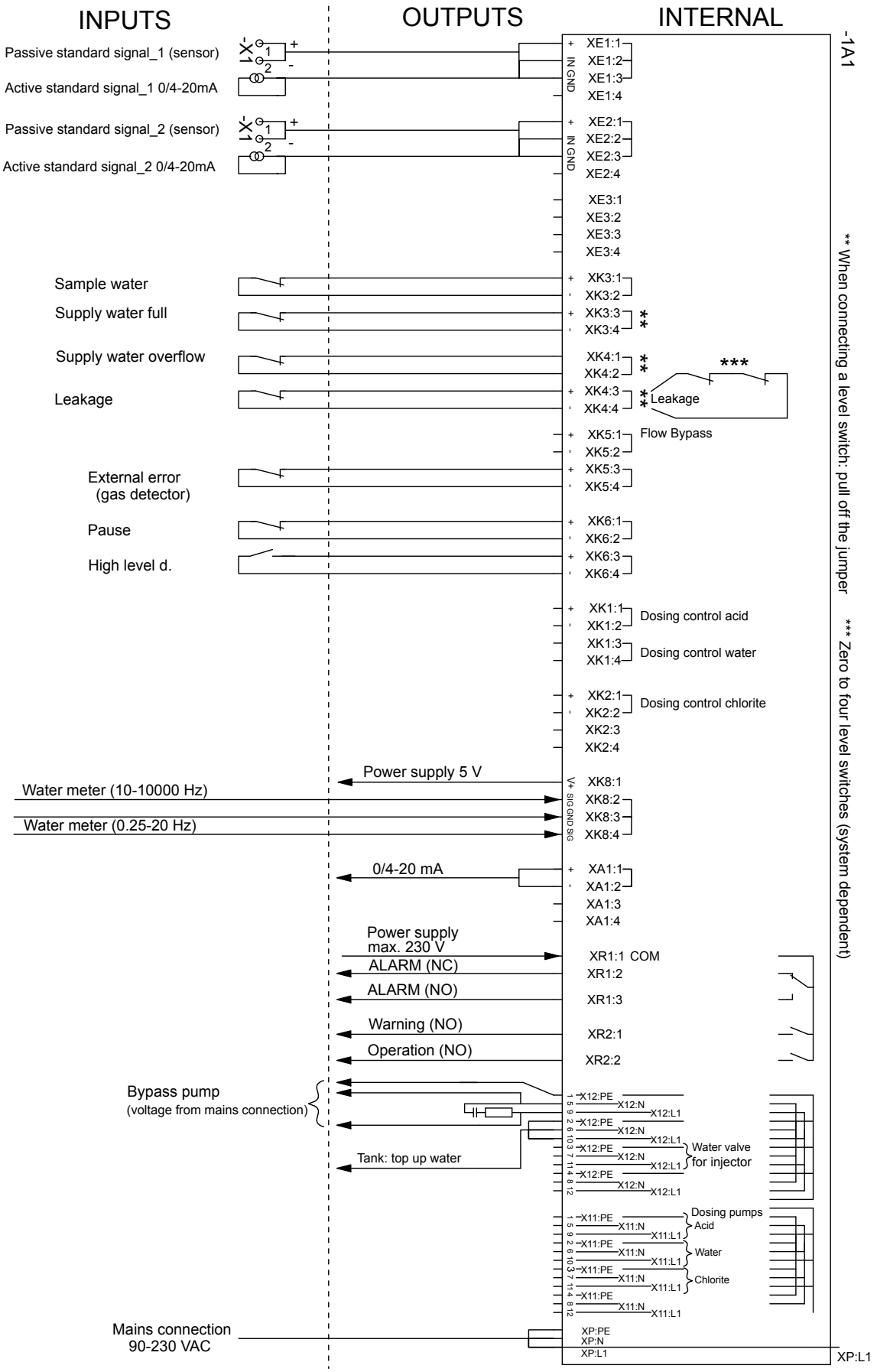


Fig. 19: Wiring diagram CDKc

Clamping ranges

Cable feed-through	Terminal	Cable use	Threaded cable gland	Number of cables	Leads per cable	Cable Ø min.-max.
Lower/rear row						
1	XE1/1,2,3	Flow, control var., disturb. var., ClO2 or chlorite	M 16	1	2	2xØ4
	XE2/1,2,3	Flow, control var., disturb. var., ClO2 or chlorite	M 16	1	2	2xØ4
2	XK3/3,4	Diluting water full	M 20	1	2	3xØ4
	XK4/1,2	Diluting water overflow	M 20	1	2	3xØ4
	XK5/1,2	Flow bypass	M 20	1	2	3xØ4
3	XK4/3,4	Leakage, acid chemicals tank	M 16	1	2	2xØ4
	XK4/3,4	Leakage, chlorite chemi-cals tank	M 16	1	2	2xØ4
4	XK1/1,2	Dosing control acid	M 20	1	2	3xØ4
	XK1/3,4	Dosing control water	M 20	1	2	3xØ4
	XK2/1,2	Dosing control chlorite	M 20	1	2	3xØ4
5	XK8/2,3	Water meter (open col-lector) (10 - 10000 Hz)	M 16	1	2	Ø4.5-Ø10
	XK8/3,4	Water meter (Namur) (0.25 - 20 Hz)	M 16	1	2	Ø4.5-Ø10
6	XR1/1	Relays: root	M 16	1	5	Ø4.5-Ø10
	XR1/2.3	Relays: Alarm	M 16	1	5	Ø4.5-Ø10
	XR2/1	Relays: Warning	M 16	1	5	Ø4.5-Ø10
	XR2/2	Relays: Opera-tion	M 16	1	5	Ø4.5-Ø10
7	X11	Power supply acid dosing pump	M 16	1	3	Ø4.5-Ø10
8	X11	Power supply water dosing pump	M 16	1	3	Ø4.5-Ø10
9	X11	Power supply chlorite dosing pump	M 16	1	3	Ø4.5-Ø10
10	X11	Power supply, control	M 16	1	3	Ø4.5-Ø10
Top/front row						

Cable feed-through	Terminal	Cable use	Threaded cable gland	Number of cables	Leads per cable	Cable Ø min.-max.
11	XK4/3,4	Leakage, e.g. reactor housing or other vessels	M12	1	2	Ø3.5-Ø6.5
12	XK3/1,2	Sample water	M12	1	2	Ø3.5-Ø6.5
13	XK5/3,4	External error	M12	1	2	Ø3.5-Ø6.5
14	XK6/1,2	Pause (remote control)	M12	1	2	Ø3.5-Ø6.5
15	XA1/1,2	Standard signal output	M12	1	2	Ø3.5-Ø6.5
16		CAN	M12	1	5	-
17	X12/1,5,9	Bypass pump	M12	1	2	Ø3.5-Ø6.5
18	X12/2,6,10	Valve fill water tank	M12	1	2	Ø3.5-Ø6.5
19	X12/3,7,11	Valve works water injector	M12	1	2	Ø3.5-Ø6.5

10 Ordering Information

Function extensions Bello Zon® control

With the Bello Zon® control, certain identity code features such as "Control" and "Extended inputs and outputs" can be expanded with certain features such as analog inputs or measurement and control features. To enable this, a suitable release code must be ordered from ProMinent®, suitable for the serial number of the control. A separate installation and configuration guide describes how the identity code features are enabled.

Back pressure valve

In installations with long bypass lines, especially when these are routed downwards where and the point of injection lies below the Bello Zon® system, as well as with installations with fluctuating back pressure, a back pressure valve which is free from back pressure effects must be fitted.

Type	Nominal width	Connector	Material	Part no.
DHV-RM	DN25	G 1 1/2″	PVC (PC1)	1000050
DHV-RM	DN32	G 2 ″	PVC (PC1)	1000051
DHV-RM	DN40	G 2 1/4″	PVC (PC1)	1000052
DHV-RM	DN50	-	-	on request

Acid vapour separator for acid canisters

To bind the HCl vapours which may arise during filing and drainage processes, an acid vapour separator is fitted to both the acid canister and the corresponding calibration device. Their padding is replaceable.

Accessories	Part no.
Acid vapour separator, 130 ml	1034692
Binding agent type 1, 150 ml	1035854

Chlorine dioxide injection point from PVC-U

For homogeneous distribution of the chlorine dioxide enriched bypass water in the main water supply pipe an immersion pipe is to be used, so that the mixing and distribution of the chlorine dioxide is optimized.

The immersion pipe must shorted in-situ to the desired length. Accordingly, included in the scope of supply is Tangit cleaner and glue as well as a DN 25 ball valve as a shut-off valve.

The immersion pipe is installed using a site supplied DN 50 DIN flange.

Accessories	Part no.
Point of injection up to nominal width DN80*, with ball valve	1018754
Point of injection from nominal width DN100*, with ball valve	1018753
*** Main water supply**	

Gas detector GMA 36 chlorine dioxide

The type GMA 36 chlorine dioxide gas detector is designed as a compact measuring and switching unit for monitoring the ambient air for dangerous concentrations of chlorine dioxide.

Accessories	Part no.
Gas detector GMA 36 chlorine dioxide	1023156
Replacement sensor for chlorine, chlorine dioxide, ozone	1023314

Safety bund for chemical tanks

Useful capacity	Version	Part no.
40 l	without leakage monitoring	791726
70 l	without leakage monitoring	740309
140 l	without leakage monitoring	740723

Leakage monitoring for Bello Zon® systems

Leakage monitoring comprising 1 level switch which is inserted in the 40, 70 or 140 l safety bund and connected to the control of the Bello Zon® system.

Accessories	Part no.
Level switch with 5 m lead	1003191

Bypass pump

Booster pumps made of cast iron (GG) or stainless steel (SS) for operation in the bypass line. Electrical version 220-230 V, 50 Hz, with integrated overload protection.

The required bypass flow should be considered when selecting a suitable bypass pump. The following flow data is recommended for the different systems:

System types	Bypass line	Diameter	Flow
		mm	m³/h
CDKc 170 - 900	DN 25	32	0.5 ... 2
CDKc 2100 - 3000	DN 40	50	2 ... 10
CDKc 7500	DN 40	50	6 ... 10

PVC should be used as the material for the bypass. The thickness should at least correspond to the pressure range PN 10, or even better PN 16 (bar).

Bypass pump technical data

Type	Material	Connector suction / discharge side thread	Pump capacity at 2 bar	Nominal power	Nominal current	Part no.
		Inch	m³/h	W	A	
CH 2-30	Grey cast iron	RP 1" / 1"	2.50	480	2.3	791389
CHI 2-30	SS	RP 1" / 1"	2.50	540	2.6	791535
CH 4-30	Grey cast iron	RP 1¼" / 1"	4.00	840	3.9	740829
CHI 4-30	SS	RP 1¼" / 1¼"	4.75	820	3.7	740830
CH 8-30	Grey cast iron	RP 1½" / 1¼"	9.00	970	4.3	1000842
CHI 8-20	SS	RP 1½" / 1½"	9.00	1350	6.2	1000843

Accessories

Accessories	Part no.
Panel for bypass pump	791474
Inclined seat valve PVC DN 25 for throttling the bypass pump	1001877

Maintenance sets for CDKc systems

The maintenance sets contain all wear parts which are to be exchanged within the scope of regular system maintenance.

Maintenance set, complete for	Part no.
CDKc 170	1036454
CDKc 420	1036455
CDKc 900	1036456
CDKc 2100	1036457
CDKc 3000	1036458
CDKc 7500	1036459

11 Decontamination declaration

Declaration of Decontamination

(see download: www.prominent.com)

Because of legal regulations and for the safety of our employees and operation equipment, we need the „declaration of decontamination", with your signature, before your order can be handled.
Please make absolutely sure to include it with the shipping documents, or – even better – attach it to the outside of the packaging.

Please return your products to:	

Type of instrument / sensor: _____ **Serial number:** _____
Gerätetyp: Seriennummer:

Process data: Temperature: _____ [°C] Pressure: _____ [bar]
Prozessdaten: Temperatur: Druck:

Mediums and warnings:
Warnhinweise zum Medium:

	Medium/ Concentration Medium/ Konzentration	**Identification** CAS No.	**flammable** entzündlich	**toxic** giftig	**corrosive** ätzend	**harmful/ irritant** gesundheitsschädlich/reizend	**other*** sonstiges*	**harmless** unbedenklich
Process medium Medium im Prozess								
Medium for process-cleaning Medium zur Prozessreinigung								
Returned part cleaned with Medium zur Endreinigung								

* explosive; oxidising; dangerous for the environment; biological risk; radioactive
* explosiv; brandfördernd; umweltgefährlich; biogefährlich; radioaktiv

Please tick should one of the above be applicable, include security sheet and, if necessary, special handling instructions.

Reason for return:

Company data:

Company: _____ Phone number: _____
Contact person: _____ Fax: _____
Street: _____ E-Mail: _____
Address: _____ Your order No: _____

"We hereby certify that the returned parts have been carefully cleaned. To the best of our knowledge they are free from any residues in dangerous quantities."

_____ _____
Place, date Company stamp and legally binding signature

12 Index