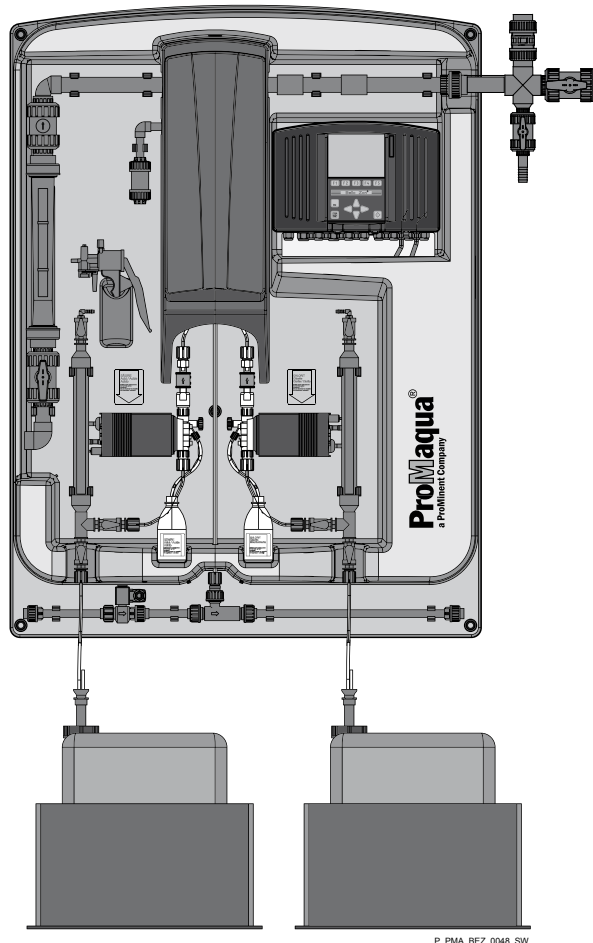


Operating instructions

Chlorine dioxide systems

Bello Zon® Type CDVc

Part 1



To ensure operation of the Bello Zon® system is safe and in accordance with regulations, part 1 and 2 of the operating instructions are required. Both sets of operating instructions are only valid when read together.

Part 1 is only intended for ProMaqua service technicians or competent persons authorised by ProMaqua.

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.

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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.

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1 Identity code

CDV product range, version c					
CDVc	Type	Capacity			
02	CDV 20	20 g/h			
04	CDV 45	45 g/h			
06	CDV 120	120 g/h			
08	CDV 240	240 g/h			
10	CDV 600	600 g/h			
14	CDV 2000	2000 g/h			
	Version				
	P	ProMaqua			
	S	Special version			
		Operating voltage:			
		U	100-230 V + 10 %, 50/60 Hz (for versions without suction)		
		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 bypass pump (not CDVc 2000)	
			06	Bypass PVC-U for storage module with water supply 230 V (only CDVc 45-600)	
			07	Bypass PVC-U for storage module with water supply 24 V (only CDVc 45-600)	
			Ventilation unit		
			0	Without reactor housing with ventilation, without calibration device, but with measurement cylinder	
			1	Without reactor housing with ventilation, with calibration device	
			2	With reactor housing with ventilation, without calibration device, with measuring cylinder (only in operating voltage A or B designs).	
			3	With reactor housing with ventilation, with calibration device	
			Suction lance, suction fitting for chemicals		
			0	None	
			1	Suction lance for 5..60 l-tank (only CDVc 20-600)	
			2	Suction lance for 200 l-tank (only CDVc 20-600)	
			3	Flexible suction assembly up to 5 m with two-stage level switch (only CDVc 20-600)	
			4	Suction lance for 25 l-tank with 2 40 l collecting pans without leakage probe (only CDVc 20-600)	
		Mechanical design			
		0	Standard		

						M	Modified
							Preset language
						DE	German
						EN	English
						FR	French
						IT	Italian
						ES	Spanish
							Control
						0	Base version
						1	With measurement and control features (only for "extended inputs and outputs" = 1 or 3)
						2	With measurement and control features, data logger and screen writer (only for "extended inputs and outputs" = 1 or 3)
							Extended inputs and outputs
						0	none
						1	2 analog inputs, freely configurable for control variables (only for control with measurement and control properties) and flow
						2	1 analog output, freely configurable
						3	2 analog inputs, freely configurable for control variables (only for control with measurement and control properties) and flow and 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 Bello Zon® acid (dilute HCl) and Bello Zon® chlorite (dilute NaClO₂) must never be brought into contact except in the reactor! Otherwise poisonous ClO₂ gas forms abruptly and can then decompose explosively!
2. - Never operate the chlorine dioxide Bello Zon® CDV with undiluted acid or undiluted sodium chlorite! Otherwise poisonous ClO₂ gas forms abruptly and then decomposes explosively within the reactor!
3. - The bypass water must never be exposed to a vacuum pressure! Otherwise the ClO₂ solution in the reactor is placed under a vacuum, the ClO₂ outgasses, forms a richer mixture and can decompose explosively!

Correct and proper use

- The Bello Zon® CDV system is intended solely for producing a ClO₂ containing disinfectant solution from diluted hydrochloric acid (9 %) and sodium chlorite solution (7.5 %) and 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 ClO₂!
- 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 certified training and have been authorised by ProMaqua® to work on the system.

Personal protective equipment

- Face mask
- Rubber or plastic boots
- Protective gloves (ClO₂-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 ClO₂ gas

Under rare fault conditions ClO₂ solution can escape via a leak.

- To overcome this, for example, install a gas detector which switches off the system if ClO₂ gas escapes and triggers an alarm that is readily apparent from a distance. This ensure that save operation is possible with every ClO₂ 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
- Food safe
- 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 supplied with concentrated chemicals and the dosing pumps have already pumped them 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)*)! Place the suction lances in separate individual buckets of water and procure drums of chemicals with dilute chemicals. Arrange for the concentrated chemicals to be properly disposed off. 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!

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:

CDVc	20	45	120	240	600	2000
	26	27	27	45	75	120

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 CDVc 600 and 2000) 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, raw/plugs, washers and nuts (mounting kit = plastic bags with fixings and threaded cable glands...).

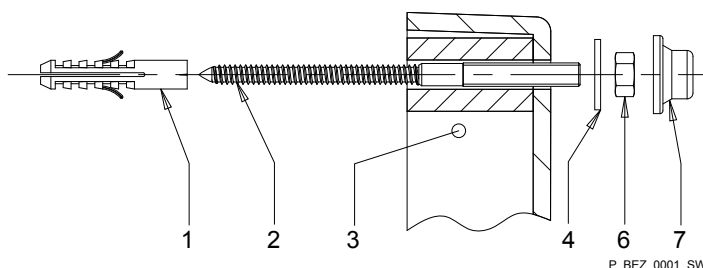
Select the mounting height so that:

- 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).



P_BEZ_0001_SW

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

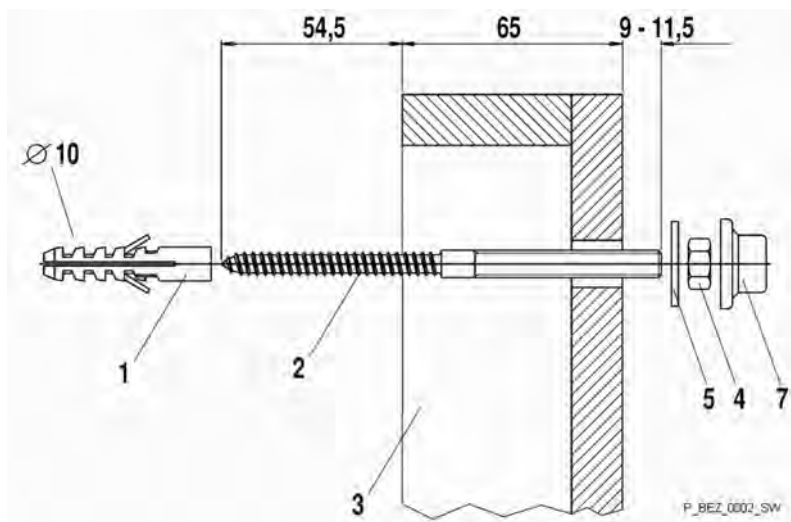


Fig. 3: Securing of the welded panel

- 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
	<div>Chlor. dioxide equipment</div> <div>Access only for trained personnel</div> <div><small>P_BEZ_0004_SW</small></div>	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 (Bello Zon® chlorite) is stored or used:

Warning sign *	Warning label *	Included text
	<div>Sodium chlorite</div> <div>NaClO_2</div> <div><small>P_BEZ_0005_SW</small></div>	Sodium chlorite NaClO_2
* Mandatory in Germany		

c) Attach this sign in rooms in which sodium chlorite (Bello Zon® chlorite) is handled:

Warning label *	Included text
<div> <p>Do not use storage tank and devices alternately</p> <p>Sodium chlorite + acid = highly toxic chlor. dioxide gas</p> <p>DANGER TO LIFE!</p> <p><small>P_BEZ_0005_SW</small></p> </div>	<p>Do not interchange containers and devices.</p> <p>Sodium chlorite + acid = highly toxic chlorine dioxide gas.</p> <p>Danger to life!</p>
<p>* Mandatory in Germany</p>	

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/m³ 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

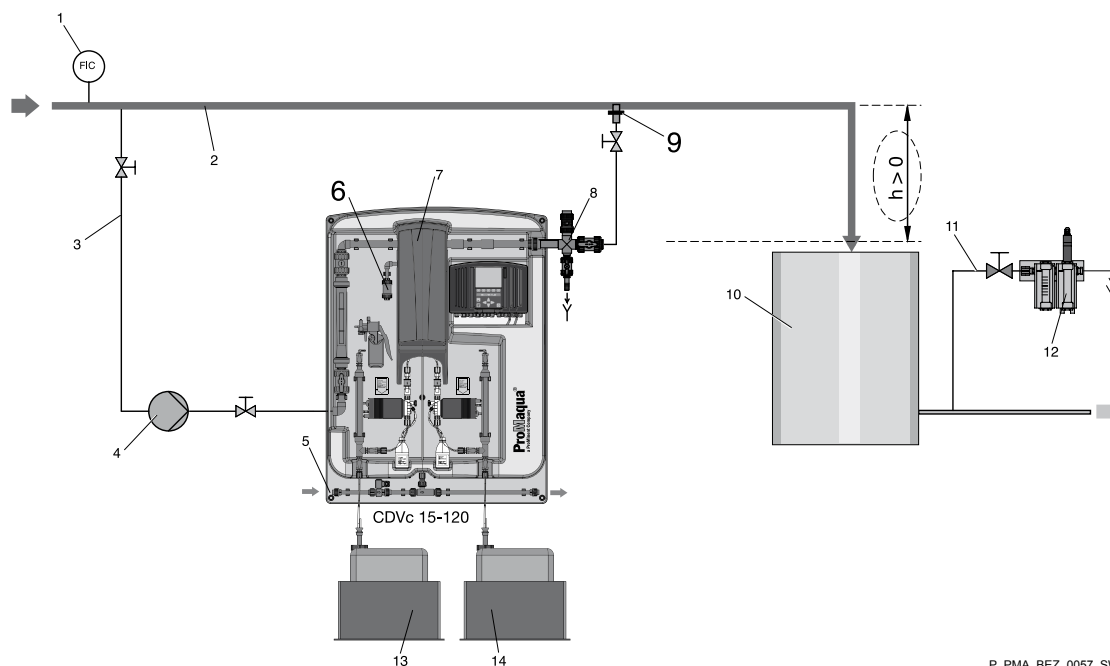
Main components

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 chloride
- Suction lance and level switch for water
- Water supply suction mechanism (optional)

Installation examples

Installation example A



P_PMA_BEZ_0057_SW

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) | 9 | Point of injection (flange and immersion pipe) |
| 2 | Main water supply | 10 | Delay tank |
| 3 | Bypass line | 11 | Sample water line |
| 4 | Bypass pump | 12 | Chlorine dioxide measuring point (e.g. with CDE sensor) |
| 4a | Hydraulic module "water supply" | 13 | Bello Zon® acid in safety bund |
| 5 | Water connection for ventilation | 14 | Bello Zon® chlorite in safety bund |
| 6 | Reactor housing vent valve | 16 | Back pressure valve |
| 7 | Reactor outlet valve | 17 | Pre-storage module CIO2 solution |
| 8 | Flushing equipment with vacuum relief valve | | |

Installation example B

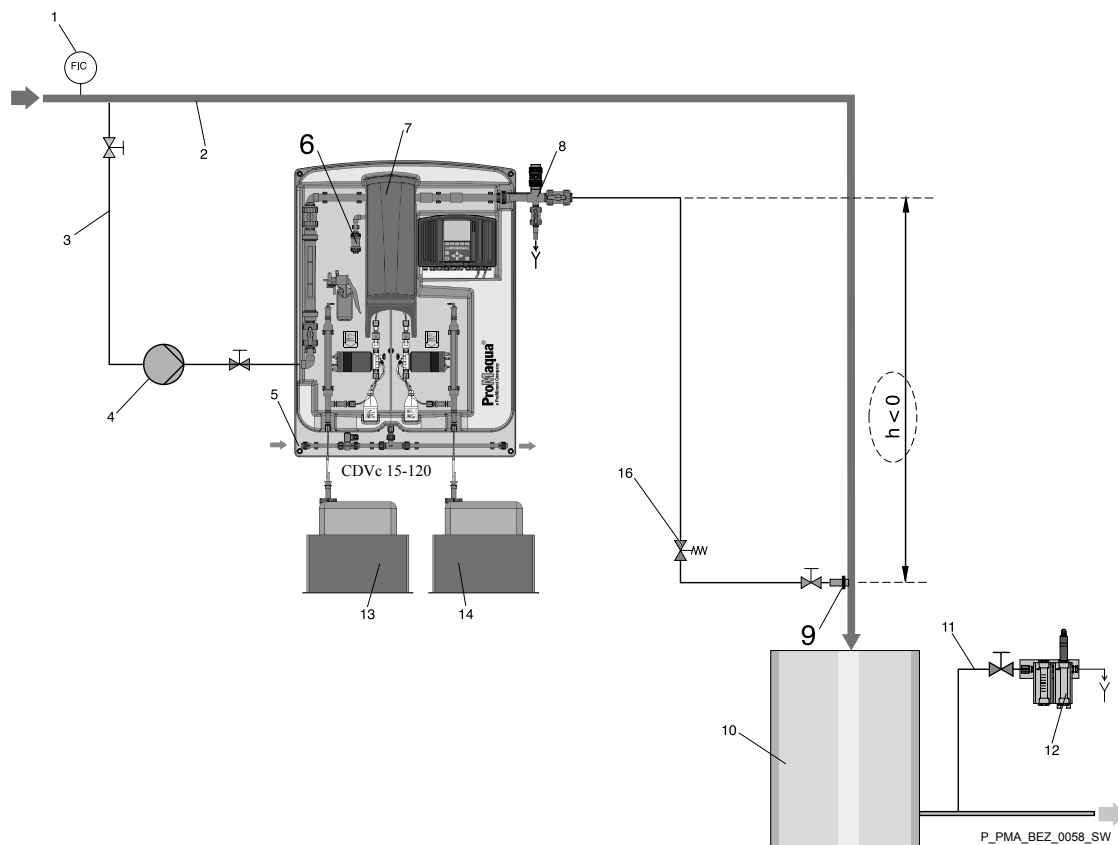


Fig. 5: Installation example B: the reactor outlet valve (7) of the Bello Zor® system is located above the point of injection (9) Back pressure valve and vent valve required in the bypass line.

Installation example C

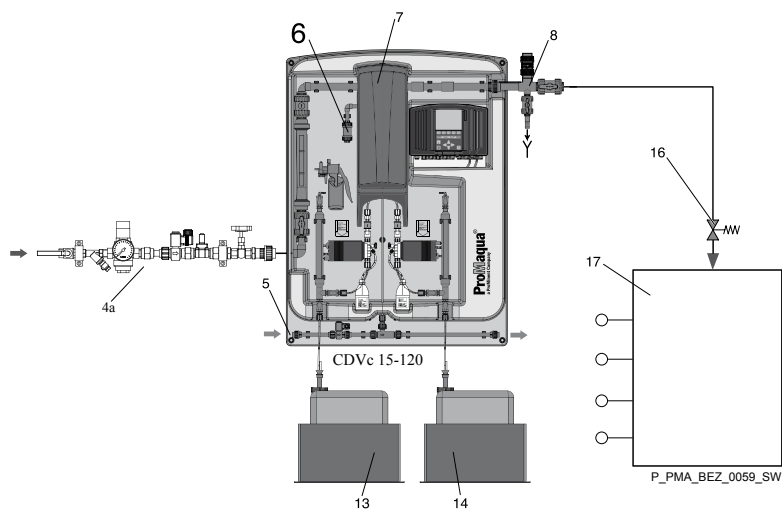


Fig. 6: Installation example C: Bello Zor® system with "bypass version for storage module"

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 ClO₂ containing water against light radiation (direct sunlight, fluorescent tubes, ...). Otherwise the photochemical breakdown of the ClO₂ in the pipes will cause the ClO₂ 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 CDVc 20

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

* with PVC piping

Bypass line specifications for CDVc 45 and 120

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	20 ... 250	l/h

* with PVC piping

Bypass line specifications for CDVc 240 and 600

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 CDVc 2000

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 ... 10,000	l/h

* with PVC piping

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 19, 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 19 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 ClO₂ 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 ClO₂ 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 ClO₂ solution can escape

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

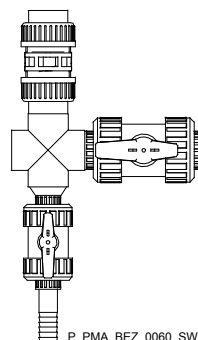


Fig. 7: Flushing equipment with vacuum relief valve

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!

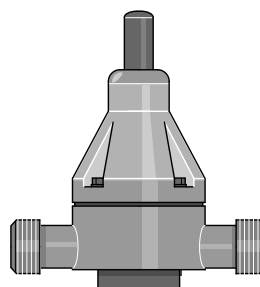


Fig. 8: Back pressure valve DHV-RM, back pressure effect-free

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

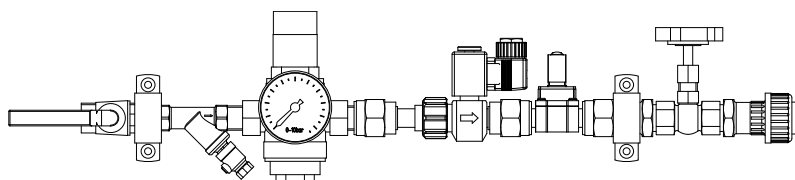


Fig. 9: Hydraulic module "water supply"

6.1.7 Point of injection

Install an "immersion pipe in the main water supply line (for better mixing of the ClO₂ 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.

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).

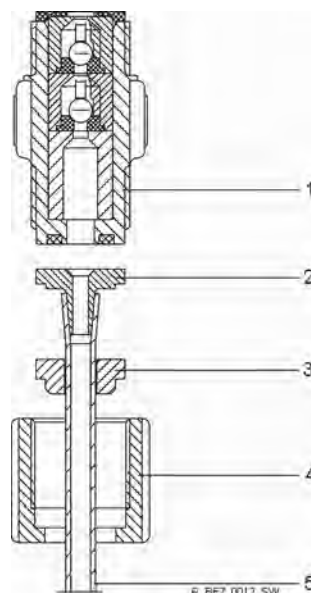


Fig. 11: Installing the hose

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

6.1.12 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

6.1.13 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 cable of the "FULL level monitor" to the control - see the wiring diagram.

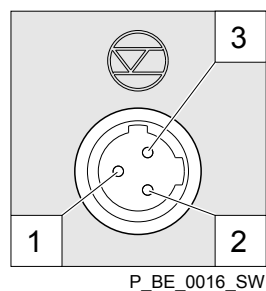


Fig. 12: Pump "level" input

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



Only CDVc 20 ... 120: So that it is easier to lead the cable into the control housing, remove the housing from the panel, see below.

- ➔ Loosen the 4 housing screws and place the front part in the parked position.
- ➔ 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.
- ➔ Further steps are contained in .
Thereafter please continue with the following steps:
- ➔ Tighten the union nuts (see , item 4) of the threaded cable glands so that they are leak-tight.
- ➔ Fit the front part on the rear part.



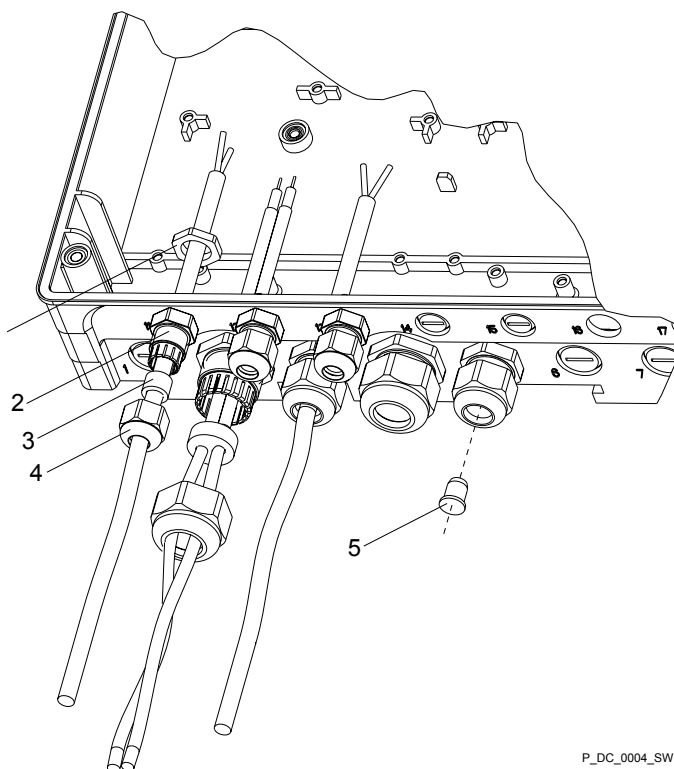
WARNING!

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.

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



P_DC_0004_SW

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 Removing the housing from the panel

Removing the housing

1. ➡ Pull the two snap-hooks (1) at the bottom of the housing outwards.
⇒ The housing snaps upwards slightly.
2. ➡ Press the housing upwards and fold away at the top away from the panel.

Fitting the housing

1. ➡ Clip the housing in at the bottom in the wall panel , ①) and use light pressure at the top to press it against the wall panel (, ②).
2. ➡ Check whether the wall panel is clipped in at the top and press downwards until it audibly engages , ③).

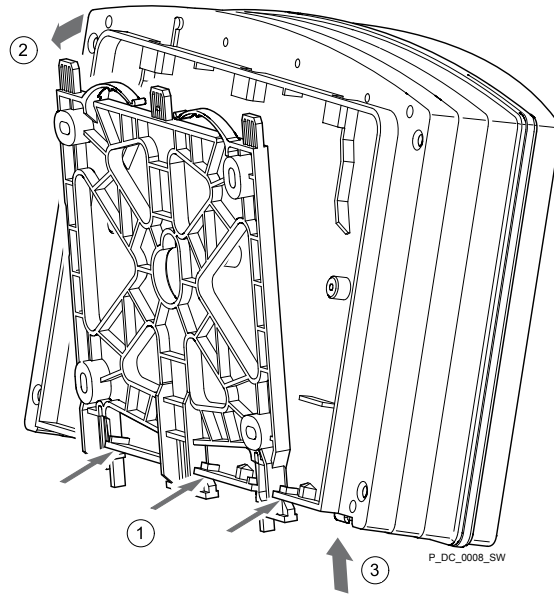


Fig. 14: Fitting the housing

6.2.3.2 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.

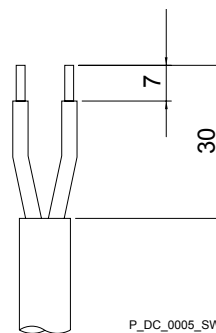


Fig. 15: Removing the wiring insulation

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 EC Declaration of Conformity

EU Declaration of Conformity

We, hereby declare that,

ProMaqua GmbH
Maaßstraße 32/1
D - 69123 Heidelberg

on the basis of its functional concept and design and in the version marketed by us,
 the product specified in the following complies with the relevant, fundamental safety and health stipulations
 laid down by EC regulations.
 Any modification to the product not approved by us will invalidate this declaration.

Product description: **Chlorine dioxide generating system Bello Zon®**

Product type: **CDVc...**

Serial number: **Please refer to the type plate on the device**

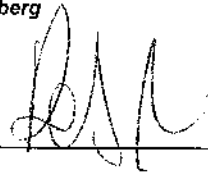
Relevant
 EC regulations **EU - Machinery Directive (2006/42/EC)**
EU - EMC Directive (2004/108/EC)
EU Pressure Equipment Directive (97/23/EC)
Compliance with the protection targets of the Low Voltage
Directive 2006/95/EC according to Appendix I, No. 1.5.1 of the
Machinery Directive 2006/42/EC

Harmonised standards applied,
 in particular: **EN ISO 12100-1, EN ISO 12100-2, EN 809,**
EN 60204-1, EN 60529, EN 61000-6-1/2/3/4

Harmonised national standards and
 other technical specifications
 applied, in particular: **DVGW standards: technical rules W 224 and W 624**

Technical documents have been
 compiled by
 documentation specialists: **Dr. W. Weibler**
Maaßstraße 32/1
D - 69123 Heidelberg

Date /manufacturer's signature: **7.5.2010**



The undersigned: **Ralf Kiermaier, Managing Director of ProMaqua GmbH**

8 Dimensions sheets

Dimension sheet CDVc 15 ...120

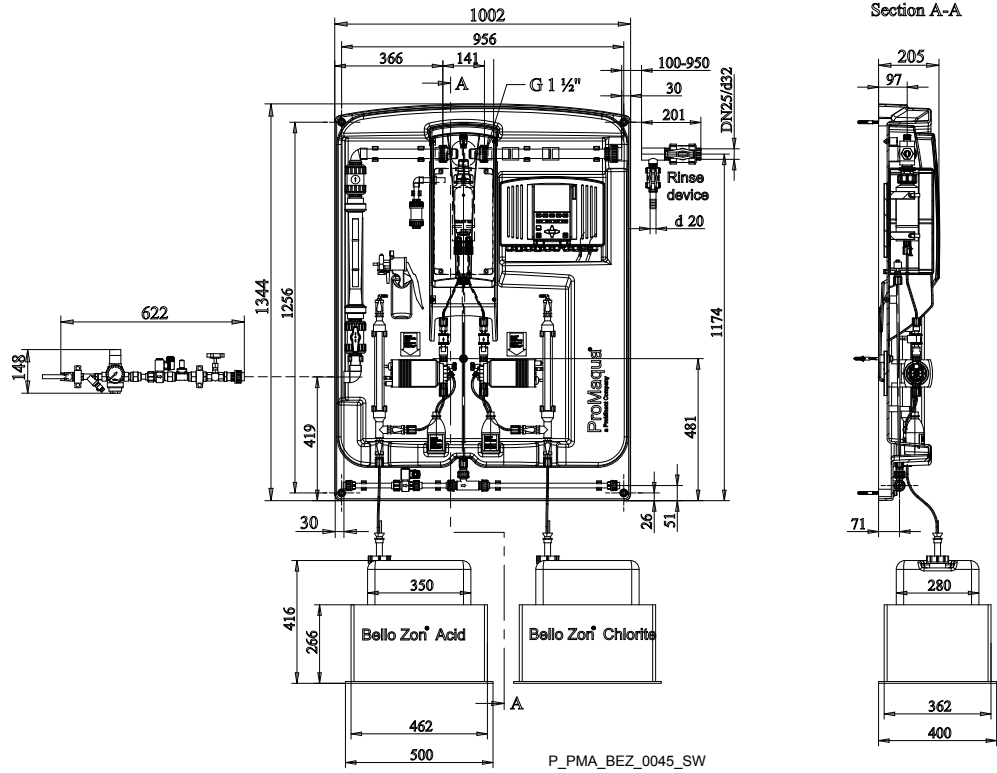


Fig. 16: Dimension sheet CDVc 15 ...120 - dimensions in mm

Dimension sheet CDVc 240

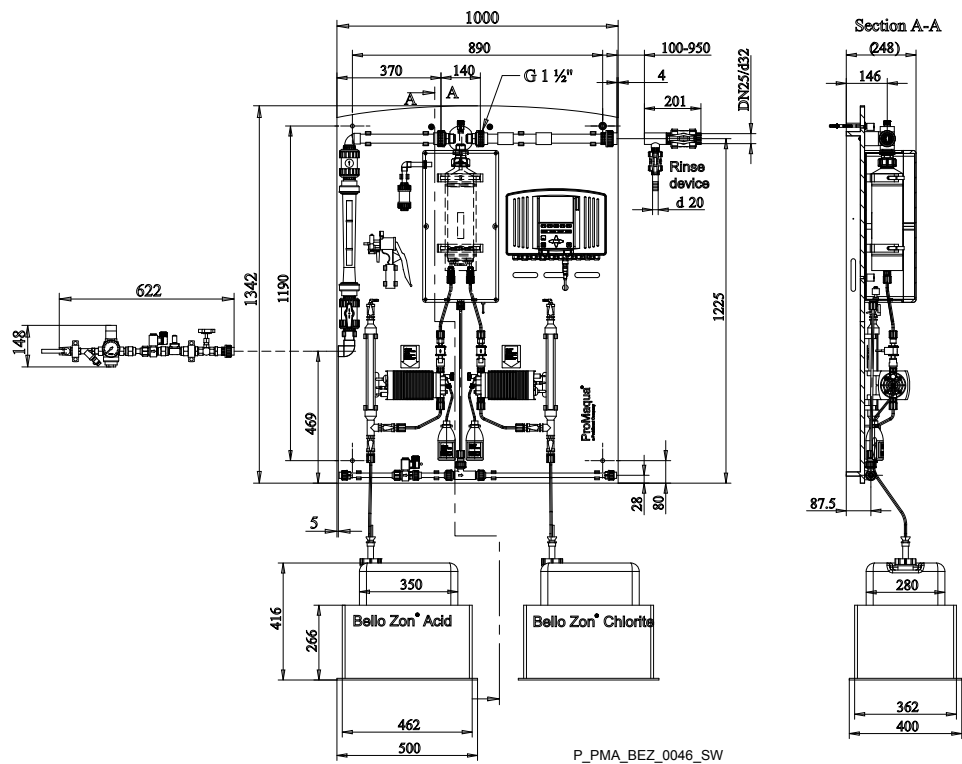


Fig. 17: Dimension sheet CDVc 240 - dimensions in mm

Dimension sheet CDVc 600

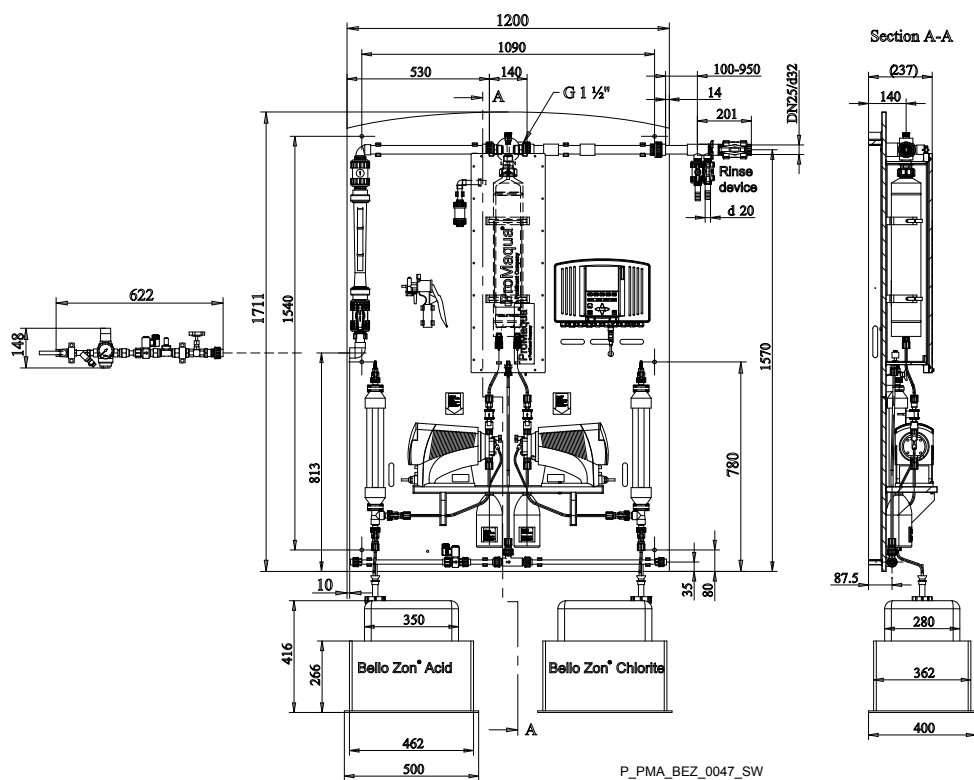


Fig. 18: Dimension sheet CDVc 600 - dimensions in mm

9 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
CDVc 20	1 ... 20	6.4	8	10 ... 40	1.8	1344x1002x200
CDVc 45	2 ... 45	16	8	10 ... 40	2.0	1344x1002x200
CDVc 120	6 ... 120	40	8	10 ... 40	3.0	1344x1002x200
CDVc 240	12 ... 240	80	8	10 ... 40	3.0	1342x100x248
CDVc 600	30 ... 600	140	8	15 ... 40	3.0	1711x1200x273
CDVc 2000	100 ... 2000	468	5	15 ... 40	1.0 ... 2.0 #	1900x1400x370

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 system 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 with bypass pump
	A	A
CDVc 20	0.9	2.7
CDVc 45	0.9	2.7
CDVc 120	0.9	2.7
CDVc 240	1.2	2.7
CDVc 600	1.4	2.8
CDVc 2000	3.2	4.1

Weight

Weight in kg, without packaging:

CDVc	20	45	120	240	600	2000
	26	27	27	45	75	120

Control

Power supply

Data	Value	Unit
Nominal voltage, ± 10 %	90 ... 240	V*
Nominal voltage, ± 10 %	230	V*

Data	Value	Unit
Nominal voltage, $\pm 10\%$	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.

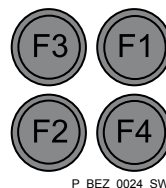


Fig. 19: Fuse layout in the control

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 k Ω

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 μ s

Contact inputs (XK3 ... XK6):

for contacts or switching transistors:

Open circuit voltage: 12 V \pm 1 V

Short circuit current: 5 mA

Contact: open, $R > 100\text{ k}\Omega$

Contact: closed, $R > 1\text{ k}\Omega$

Standard signal outputs (mA) (XE1 and XE2):

0/4 ... 20 mA, isolated

Insulation voltage: 500 V

Input resistance: $50\text{ }\Omega$

Load capacity: 30 mA

Inputs with 2 conductors

Connection (sliding supply): Supply voltage 22.0 V ... 25.0 V

Measuring accuracy: $\pm 1\%$ 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: $600\text{ }\Omega$

10 Terminal Wiring Diagram

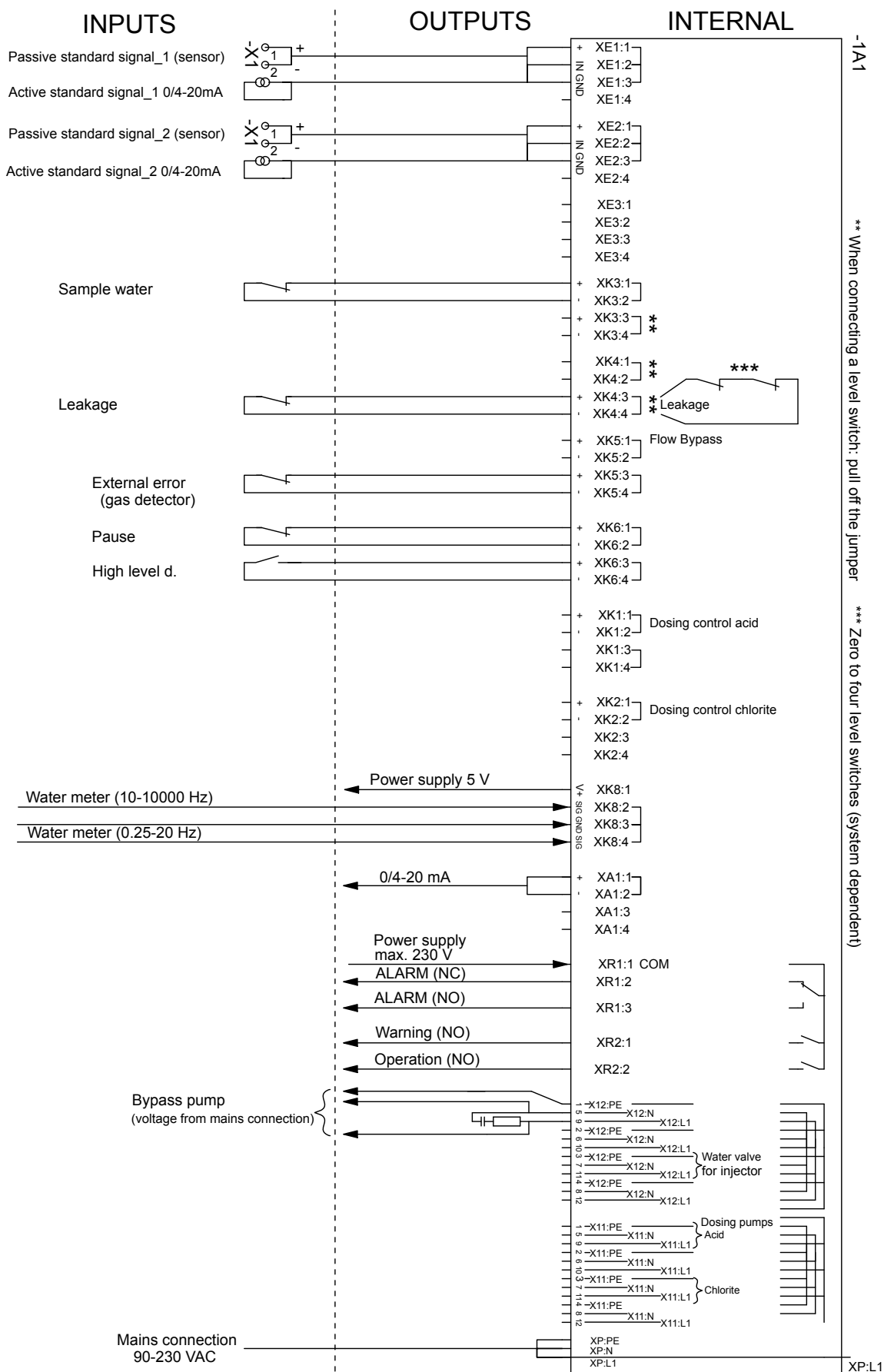


Fig. 20: Wiring diagram CDVc

Terminal Wiring Diagram

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	not occupied				
	XK4/1,2	not occupied				
	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 chemicals tank	M 16	1	2	2xØ4
4	XK1/1,2	Dosing control acid	M 20	1	2	3xØ4
	XK1/3,4	not occupied				
	XK2/1,2	Dosing control chlorite	M 20	1	2	3xØ4
5	XK8/2,3	Water meter (open collector) (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	Relay: root	M 16	1	5	Ø4.5-Ø10
	XR1/2,3	Relay: Alarm	M 16	1	5	Ø4.5-Ø10
	XR2/1	Relay: Warning	M 16	1	5	Ø4.5-Ø10
	XR2/2	Relay: Operation	M 16	1	5	Ø4.5-Ø10
7	X11	Power supply acid dosing pump	M 16	1	3	Ø4.5-Ø10
8	X11	not occupied				
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						
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

Cable feed-through	Terminal	Cable use	Threaded cable gland	Number of cables	Leads per cable	Cable Ø min.-max.
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	not occupied				
19	X12/3,7,11	Valve works water injector	M12	1	2	Ø3.5-Ø6.5

11 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

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 be 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
CDVc 20 - 600	DN 25	32	0.5 ... 2,5
CDVc 2000	DN 40	50	1,5 ... 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 CDVc 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.
CDVc 20	1034758
CDVc 45	1034759
CDVc 120	1034760
CDVc 240	1034761
CDVc 600	1034762
CDVc 2000	1034763

12 Decontamination declaration

ProMinent®

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: _____

Gerätetyp:

Serial number: _____

Seriennummer:

Process data:

Prozessdaten:

Temperature: _____ [°C]

Temperatur:

Pressure: _____ [bar]

Druck:

Mediums and warnings:

Warnhinweise zum Medium:



	Medium/ Concentration Medium/ Konzentration	Identi- fication CAS No.	flammable entzünd- lich	toxic giftig	corrosive ätzend	harmful/ irritant gesundheits- schädlich/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: _____
Contact person: _____
Street: _____
Address: _____

Phone number: _____
Fax: _____
E-Mail: _____
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

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