

USER MANUAL

DUPLEX SOFTENER

CSOFT MV UFS D18-D63

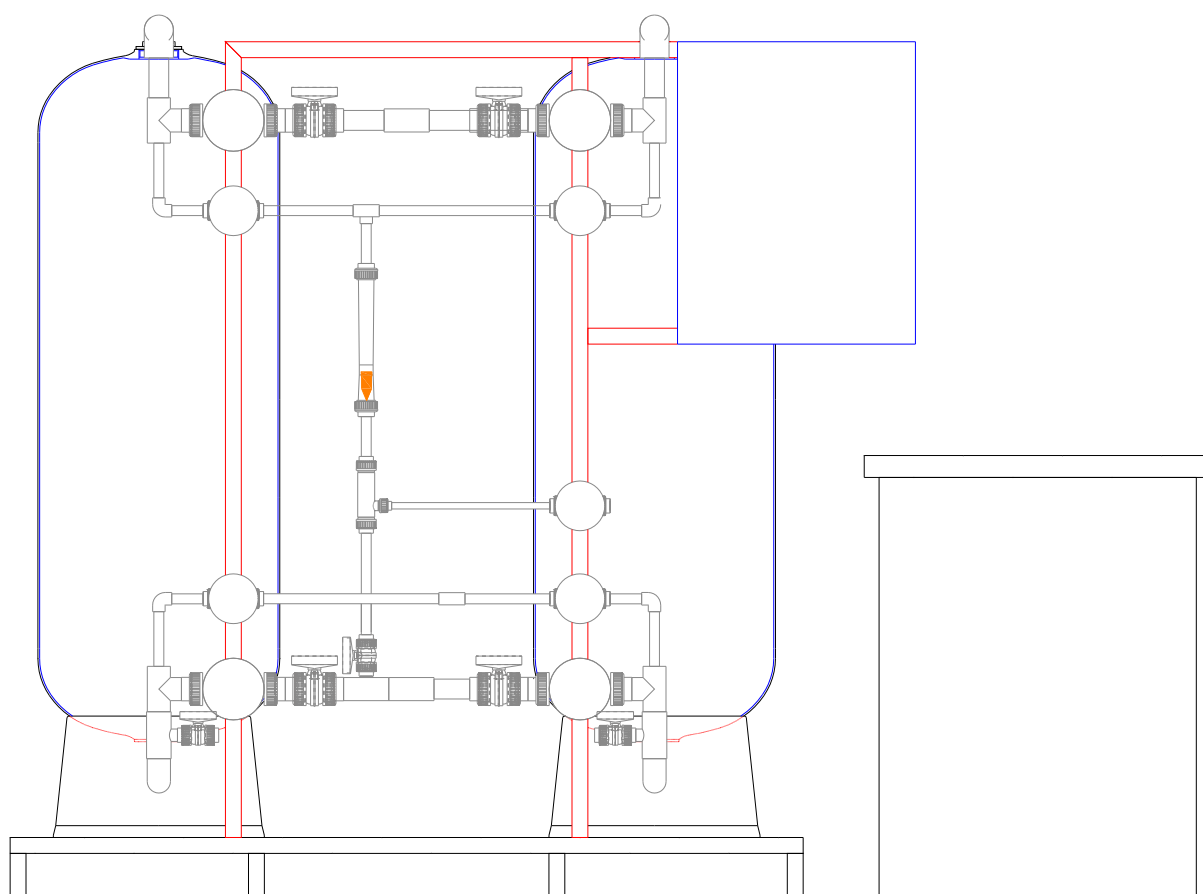


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1. Safety instructions

1.1. Introduction

Please read this manual carefully before installation, start-up, and operating the device. This manual contains general information for the correct assembly, operation and maintenance. This manual should be stored with the device.

1.2. Understanding

! HAZARD Indicates that a certain situation may cause personal damage or damage to the system.



! INFO! Provides information to make the operation of the device simpler and safer.



1.3. Qualification and training of employees

Employees working on or with the system must be qualified for this type of work. The employees must be trained and given instructions. The employees must read and understand the entire contents of this manual prior to starting the assembly, the commissioning, start-up or maintenance.

1.4. Ignoring the safety instructions/hazards

Non-adherence to the safety regulations may cause damage to the system or persons resulting from electrical or mechanical breakdown.

1.5. Safe operation

The instructions in this manual and existing regional and/or national regulations for accident prevention must be adhered to when working on or with the system. Maintenance of the unit is only permitted when the system is switched off.



1.6. Adjustments to the installation and spare parts



Alterations or adjustments are only permitted after written agreement with the manufacturer. Only use original parts that have been approved by the manufacturer. The use of other parts shall invalidate the warranty.

1.7. Unauthorised operation



The system must only be used for the purpose for which it has been designed, and with respect for the technical features and limitations set out in the “technical information”. It is strictly prohibited to use the device outside of these limitations.

1.8. Safety instructions



It is the responsibility of the operator to ensure that any work in connection with the maintenance, inspection and fitting is carried out solely by authorised and qualified employees.



Prior to any repairs or maintenance being carried out, the system must be stopped and secured against ‘inadvertent restarting’.

Before work is carried out on the electrical system and facilities, it has to be checked whether the system is voltage-free. Moreover, the system must be safeguarded against ‘inadvertent restarting’.

During maintenance, employees must wear protective clothing appropriate for the hazards.

Immediately after termination of the maintenance, all safety devices must be refitted and rendered operational.

1.9. Maintenance



To guarantee the long-term problem-free operation of the system, regular maintenance must be carried out on the system, and the operating parameters must be recorded, logged (see example page 7) and submitted to the manufacturer regularly.

The operator of the system carries out the maintenance and records the operating parameters.

By entering into a maintenance contract with the supplier, the latter may take over the responsibility for regular maintenance.

A protocol sheet must be maintained for recording the parameters. This protocol sheet can be found on page 7 in this manual. The objective of maintaining this protocol sheet is an ongoing registration of the operating parameters. Breakdowns in the system may be detected and resolved quicker this way. Maintenance must be recorded on the maintenance protocol provided to this end.

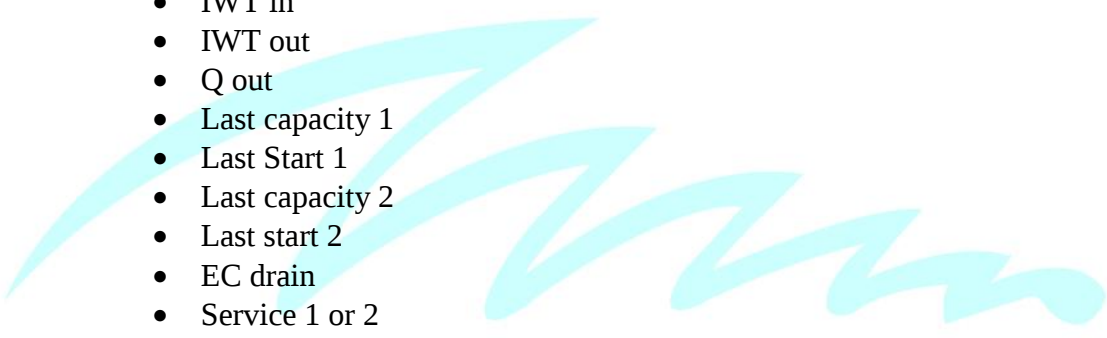
The brine pipe, resins and discharge pipe can be cleaned using PA103/5 (item no. 1004020060). This liquid product is poured in the brine bin after which a regeneration is started. This must be repeated a second time for the other vessel!

1.10. Monitoring/follow-up



The following parameters must be monitored and recorded daily or weekly:

- Date
- P in
- P out
- TH in
- TH out
- IWT in
- IWT out
- Q out
- Last capacity 1
- Last Start 1
- Last capacity 2
- Last start 2
- EC drain
- Service 1 or 2
- Salt consumption



2. Feature

2.1. Objective

Softening or demineralisation is a much used, very robust method to remove calcium and magnesium from water. The filter bed consists of a specific cation resin. By way of ion exchange, calcium and magnesium are removed.

2.2. Objective

Softening or demineralisation is mostly considered a chemical process, exchange of ions.

Softening or demineralisation is a widespread method to remove Mg and Ca from water. In most of the cases, the filter bed consists of a layer of resin with a uniform particle size:

- The gravel bed supports the filter material to prevent fine resins from escaping the system. The gravel bed supports the regeneration to properly disperse water and brine.
- The resin is solely responsible for the ion exchange.
- On top of the resin is a layer of inert resin to prevent the upper divider from getting blocked by small resin granules and to prevent fine resins from escaping the system. Moreover, this layer ensures proper dispersion of the brine across all of the surface of the tank.

Most common applications:

Softening for:

- o Cooling water production;
- o Boiler water production;
- o Sanitary water;
- o Pre-treatment potable water production;
- o Pre-treatment membrane technology;
- o Post-treatment water.

2.3. Operation

In service the flow of the untreated water runs from the bottom to the top through a resin-filled tank. After having treated a certain amount of water, the resins must be regenerated. This procedure may be activated on the basis of:

- Timer control
- Volumetric water counting
- Hardness reading at outlet

The filtration speed is high, up to 40 to 60m/h to ensure the exchange of Ca and Mg ions through the resins. On the other side, the backwash flow rate will be low (13m/h) in order to rinse the filter bed properly while minimising water consumption.

Untreated water flows through a valve system in the bottom of the tank through the resin bed. Any hardness is exchanged in the resin bed.

2.4. Cleaning cycle

The softener must be regenerated on a regular basis to reload the resins with sodium ions. The interval depends of the hardness of the supplied water, the resin volume, the brine volume and the purified water volume.

2.4.1. Brining

After 'end of capacity' the microprocessor operates the pneumatic control of the valves. The resins are flooded with NaCl. This requires saturated brine which is absorbed during approx. 30 minutes. Ca and Mg are exchanged by Na. The resins are now reloaded with sodium.

2.4.2. Slow rinse

After brining (all brine has been absorbed from the brine bin) the device runs a slow rinse. The brine is displaced by water. The brine remaining in the tank will be rinsed slowly through the resins. Thus all brine is made 100% useful. Once the brine has been displaced, the rinse of the resin bed starts.

2.4.3. Backwash

After the slow rinse, the microprocessor operates the pneumatic control of the valves again. Treated water flows into the top of the filter tank. The water runs through the resins, remaining brine is washed away. The rinse water exits the filter tank through a supporting layer of the gravel to the bottom distributor and flows on to the drain. An EC meter on the drain ensures that a minimum in water is consumed.

2.4.4. Filling the brine bin

After the backwash, the microprocessor operates the pneumatic control of the valves again. Just enough water flows back into the brine bin to form brine for the following regeneration.

If ready-to-use brine is available on site, the extra relay may be used to turn on the brine pump. Turning on the pump occurs at the end of the regeneration during the time programmed in 'brine refill'. An extra electric float in the brine bin will stop the pump once the level has been reached to prevent overflowing.



3. Fitting and installation

3.1. Check the delivery

You must unpack the system first.

Before fitting the softener, please make sure that all parts have been supplied and nothing was damaged during transport. Any deviations or damage must be reported to the manufacturer immediately.

Transport the system carefully with a suitable lift vehicle to the appropriate location.

Please take extra care with the lower dividing systems before filling the tank. Please contact us immediately in the event of broken or missing parts.

3.2. Location

! WARNING !

The system must be installed in a clean and dry space, protected against frost or extreme heat with sufficient ventilation.

The required positioning space can be derived from the technical specifications (see technical information 6.0). In addition, a space of 1 metre around the system is required for the operation and maintenance of the system.

The floor must be even, level and sufficient load bearing to be able to support the system in operation (see technical information 6.0).

The softener must be placed in the vicinity of a properly working drain. The capacity of the drain must be checked in relation to the flow rate of the backwash flows (see technical information 6.0).

To prevent flooding due to leaks the positioning space must be fitted with a drain in the floor and/or leak protection fitted with an alarm.

The drain pipes must be shorter than 5 metres. The drain cannot be higher than 1 metre above the drain of the softener.

At the location, the required electrical connections must be available within a distance not exceeding 2 metres from the system.

The supply water connection must be provided with a valve.

The supply water pressure must be between 3 and 6 bars, please provide a suitable pressure pump or pressure regulator where appropriate.

A compressed air connection with expansion valve must be provided within a maximum distance of 2 metres. The connection to the control box to be fitted is tubing 6mm.

3.3. Qualification of plumbers

The waterside connection may only be fitted by qualified professionals. When installing the system, the general guidelines and local installation regulations must be observed.

3.4. Qualification of electricians

The electric connections must only be fitted by electricians in conformity with the applicable national and regional regulations.

The wiring diagram of the system is provided in the appendix to this user manual.

Check if the relevant main switch is turned off prior to connecting the supply voltage. Connect the supply voltage for the system and check and fuse it according to the specifications (see appendix in this user manual; the electric circuit diagram).

3.5. Qualification of the installation employees

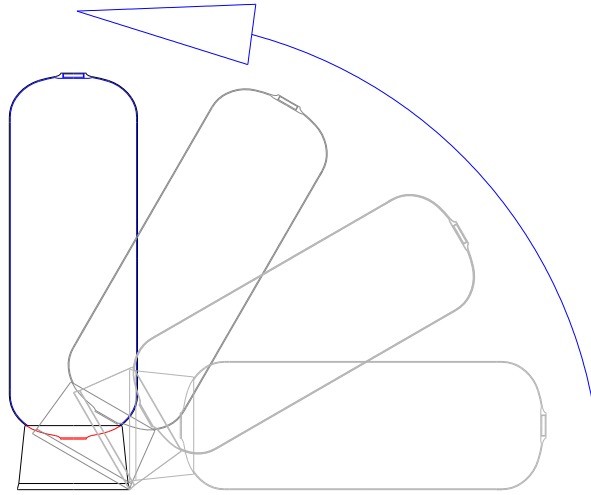
The commissioning of the system must be carried out by qualified employees.

Prior to commissioning of the system, all screw connections must be checked.

3.6. Installation

Put the tank safely in a straight position according to the local safety regulations. Compensate the level difference with appropriate corrosion-proof material where necessary. See specifications on the tank for securing and placing it in a straight position.

! WARNING !

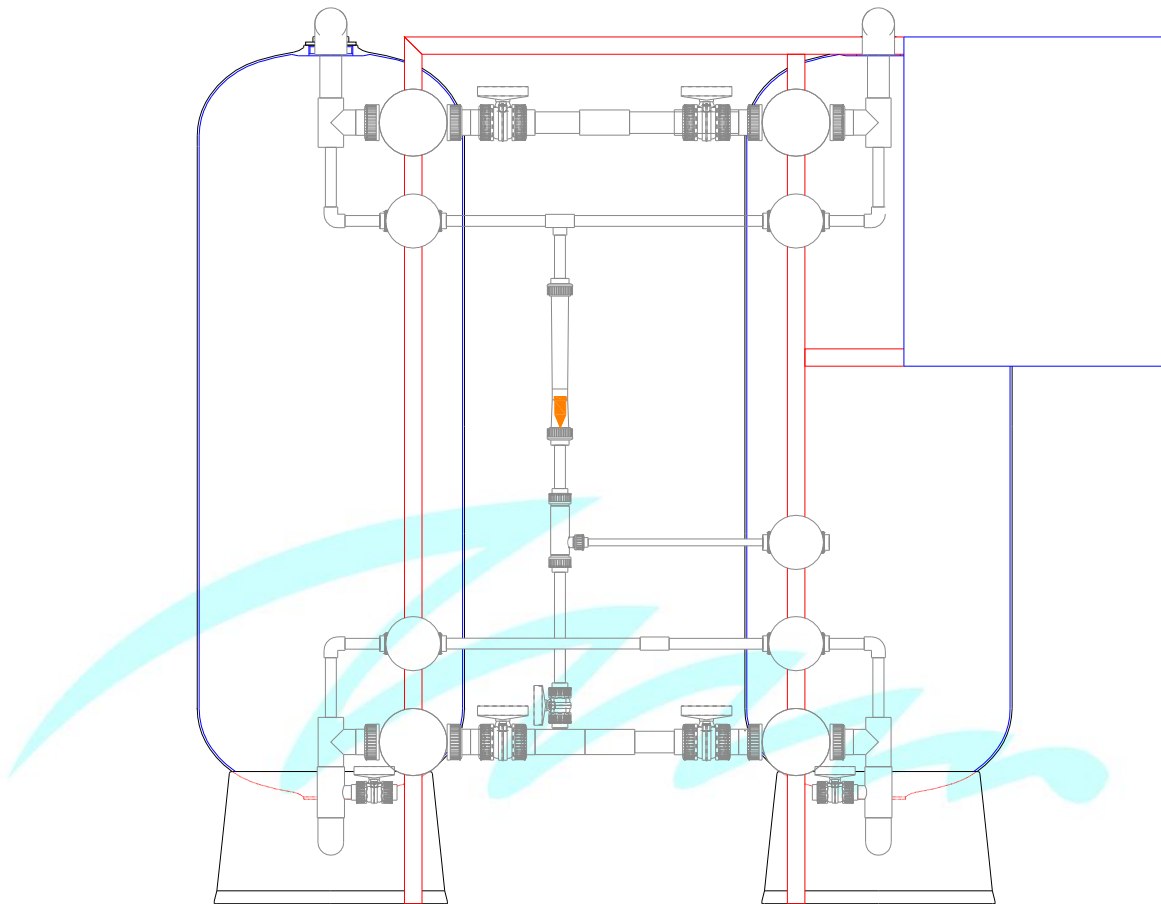


Do the same with the second and third filter if it concerns a duplex or triplex.

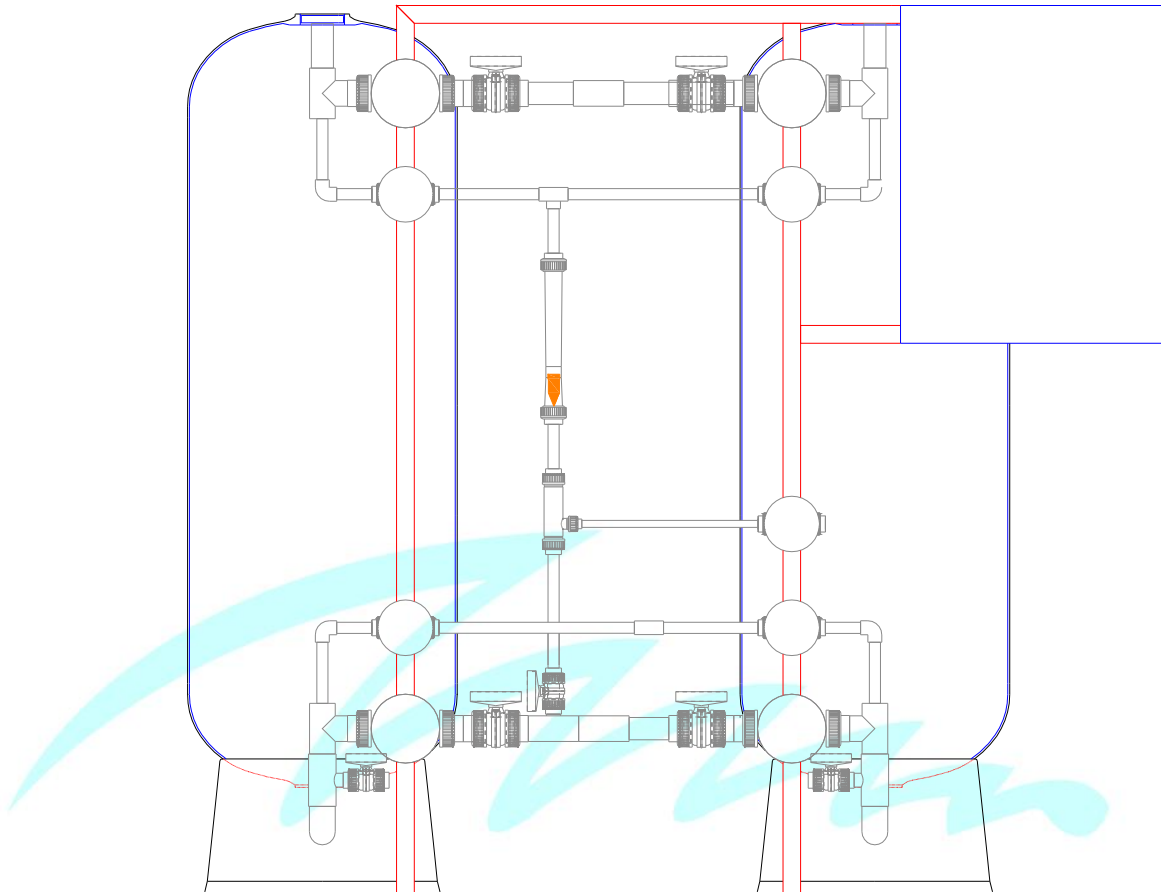
Check the lower lateral distribution systems. Should the distribution systems be damaged, please contact your supplier immediately.



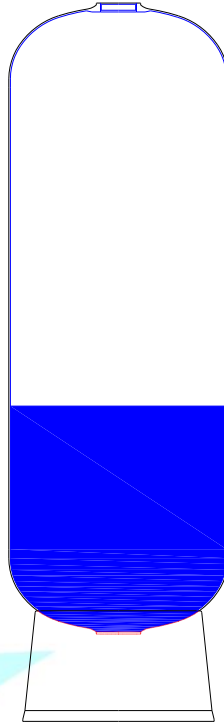
Straighten the stainless-steel supports supporting the PVC collectors (manifold). Fit all PVC parts as shown below. Ensure that everything is level to prevent the PVC from pinching. Should you encounter problems or difficulties in this respect, please contact your supplier.



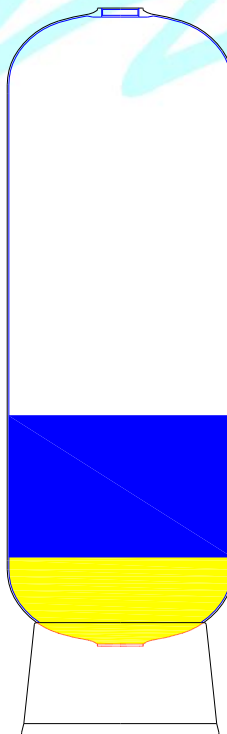
Disassemble the top distributor and upper pipes so that the tank can be filled with water, Silex and resin.



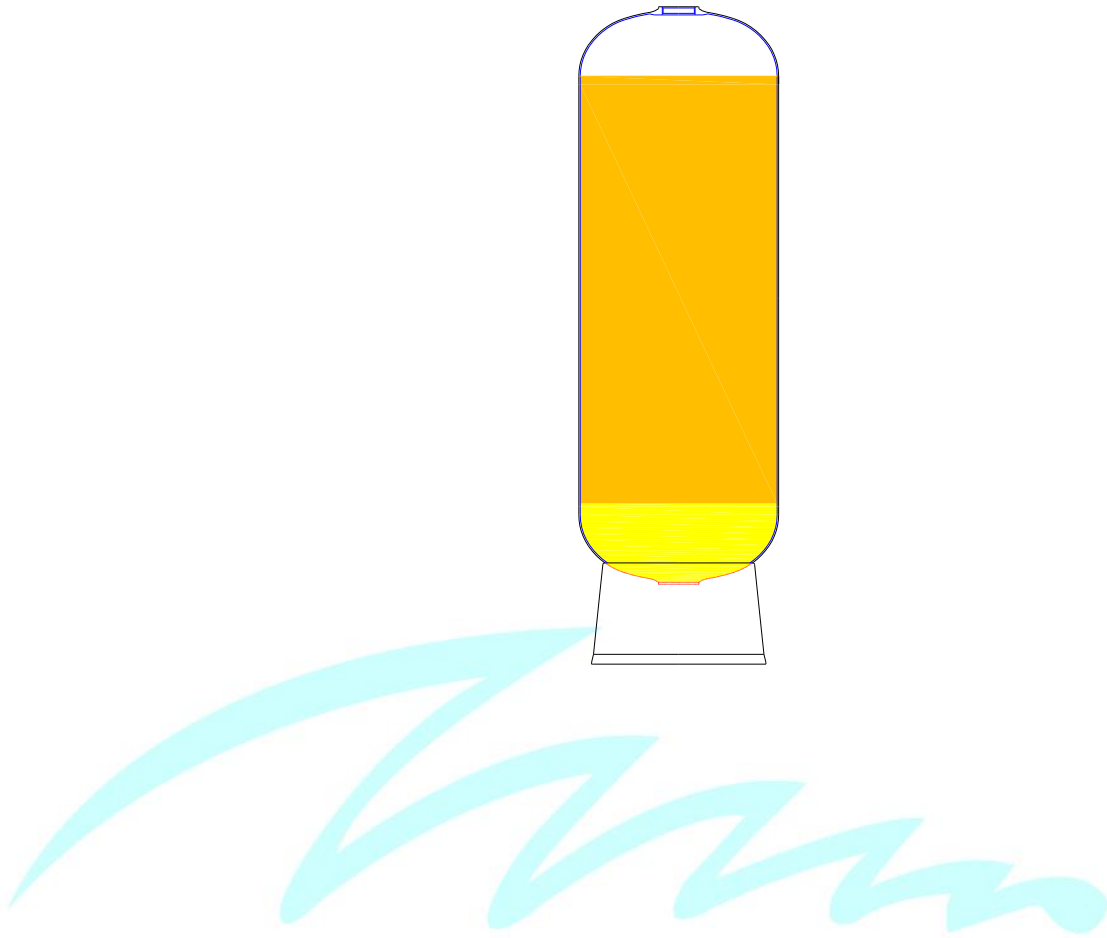
Fill approximately 1/3 of the tank with water via the top opening with a flexible pipe. This will break the fall of the Silex (during filling) and protect the bottom distributor.



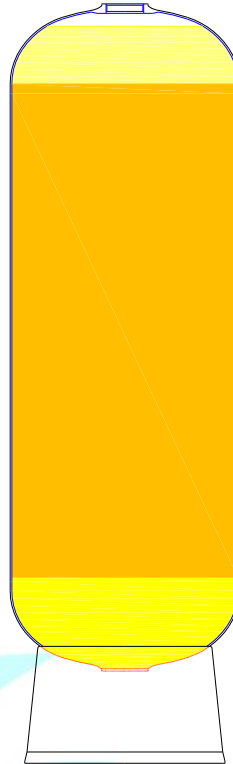
Fill the gravel layer in the tank first. Distribute the supplied Silex across the vessels.



Fill the tank subsequently with the supplied resin via the top opening. Distribute the supplied resins across the vessels as well.



Fill up the tank with the supplied inert resin via the top opening and fit the top distributor and the PVC pipe work.



Use the correct pipes (in diameter and material) to connect the system according to the local regulations and plumbing codes.

Pipe connections must be voltage free. Pipes must be adequately supported to prevent stress. The pipework must be able to deal with any tank expansion. Where necessary, use flexible connectors. Use flexible connectors according to the recommendations of the tank manufacturer. Take the necessary measures against possible water hammer.

Discharge pipes must be placed slanted up to the drain. Limit the use of bends and T's. Ensure a free discharge flow of waste water.

Vacuum breakers must be installed to prevent implosion of the vessel. See technical recommendations of the tank manufacturer. In case of a risk of a vacuum (absolute pressure < 0.1 bar) if the system was installed before a booster set or an RO system, a vacuum breaker must be installed. Vacuum may cause damage, the softener may implode!

The client/installer must place the required non-return valves and safety valves both in the inlet and outlet pipes.

A manual bypass across the softener facilitates maintenance.

4. Filter mass: calibrated sand, food grade resin

4.1. Use

INFO

Most common applications as a softener for:

- Cooling water production;
- Pretreatment potable water production;
- Pretreatment membrane technology;
- Post-treatment of waste water

4.2. Specifications

INFO

Resin is a copolymer of styrene and divinylbenzene in the shape of sodium. This product is not classified as hazardous according to EC criteria. It is a top product that complies with all specific safety, health and environmental regulations and legislation for the substance or the mixture.

“US Toxic Substances Control Act” (TSCA)

All components of this product have been included in the TSCA list or have been exempted under no. 40 - CFR 720.30.

“European inventory of existing chemical trade substances” (EINECS)

All components of this product have been included in the EINECS list or have been exempted.

General treatment

Static electricity may accumulate in dry resins. Leave space for expansion as dry resins may expand when dampened and/or changed in ionic form. Everything must be compatible with supply standards, regeneration, ionic form and waste water of the ion exchange process. Store resins in closed packaging.

Storage:

Store in a dry place. Keep packaging closed if not required immediately.

Store at a recommended temperature between 0 and 50°C.

Material characteristics of Silex:

Physical form	Granules > 98% SiO ₂
Colour	Grey-brown
Odour	Odourless
Temperature	> 200 °C according to literature
Bulk density	1550 kg/m ³ according to literature

Material characteristics of resin:

Physical form	Inert granular
Colour	Colourless to white
Odour	Odourless
Operating temperature	Max. 100 °C
Specific gravity	0,8 kg/l
Apparent density	570 kg/m ³

5. Lay-out water softener and valve position

Phased plan regeneration:

A in service:

AV1 and AV2: **OPEN**

AV3, AV4, AV5, AV6, AV7, AV8 and AV9: **CLOSED**

Brine A:

AV3, AV4, AV5, AV6 and AV9: **OPEN**

AV1, AV2, AV7 and AV8: **CLOSED**

Backwash A:

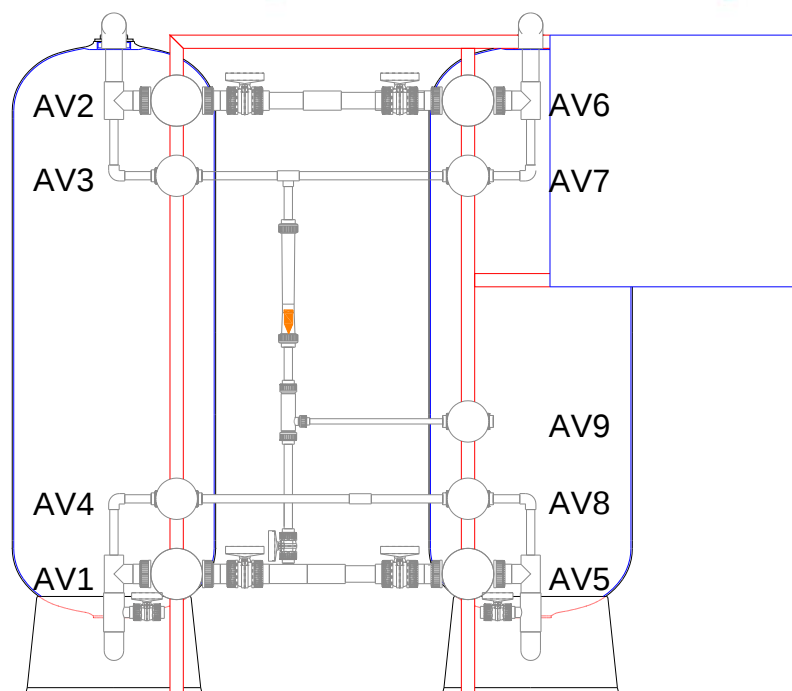
AV2, AV4, AV5, AV6: **OPEN**

AV1, AV3, AV7, AV8 and AV9: **CLOSED**

Fill brine bin:

AV5, AV6 and AV9: **OPEN**

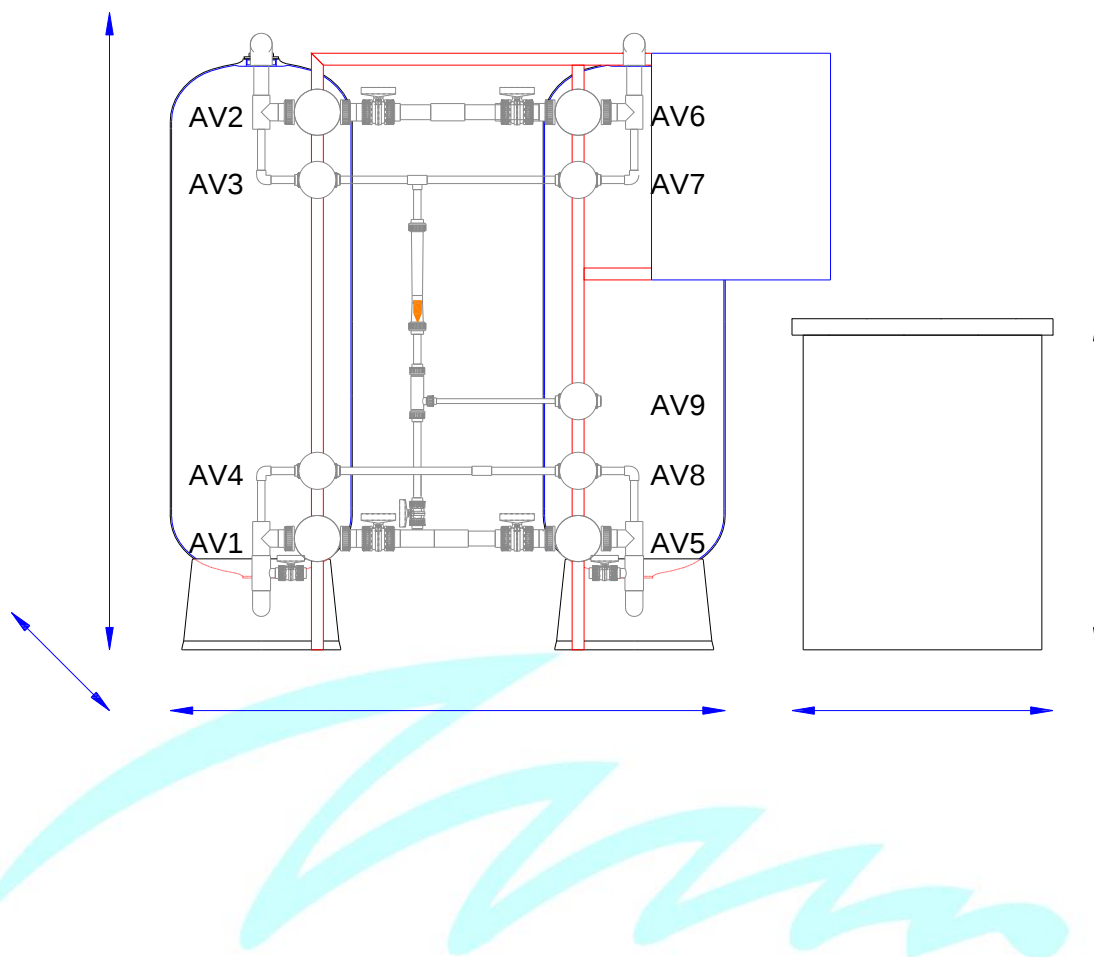
AV1, AV2, AV3, AV4, AV7 and AV8: **CLOSED**



6. Technical data duplex softener

		CSoft MV UFS D18	CSoft MV UFS D21	CSoft MV UFS D24	CSoft MV UFS D30
Tech. spec's / vessel					
Tank diameter	mm	457	533	610	762
Total tank height	mm	1.880	1.760	2.010	2.040
Volume – total	L	250	302,5	436,5	710
Filter media / vessel					
Inert resins Bags of 25L	L	38	38	50	75
Monodisperse resins Bags of 25L	L	175	200	300	500
Support layer (1,7-2,5 mm) Bags of 25kg	kg	25	50	75	100
Flow rates					
Qnom @1,0 bar dP	m³/h	8,0	11	12	15
Qmax @1,5 bar dP	m³/h	10	14	16	21
Exchange capacities / vessel					
°F.m³ (5,5 °F.m³ per L resin)		963 – 1.138	1.100 – 1.300	1.650 – 1.950	2.750 – 3.250
dH.m³		541 – 639	618 – 730	927 – 1.096	1.545 – 1.826
kg CaCO3		10 – 11	11 - 13	17 – 20	28 - 33
Regeneration					
Salt consumption	kg	15	18	26	44
Brine consumption	L	51	59	88	147
Brine tank type	L	200		300	400
Water consumption	m³	0,30	0,34	0,51	0,85
Connections					
IN/OUT		DN40			DN50
DRAIN		DN15	DN20		DN25
BRINE		DN15			DN20
Approx. Dimensions Softener					
Width	mm	1.714	1.867	2.019	2.324
Depth	mm	957	1.033	1.110	1.262
Height	mm	2.380	2.260	2.510	2.540
Estimated operating weight ¹	kg	850	1.000	1.350	2.100
Dimensions Brine tank					
Diameter	mm	680		760	880
Height	mm	830		1.000	920
Reference code		4407055497	4407055498	4407055499	4407055500

¹ Brine tank excluded



		CSoft MV UFS D36	CSoft MV UFS D42	CSoft MV UFS D48	CSoft MV UFS D55	CSoft MV UFS D63
Tech. spec's / vessel						
Tank diameter	mm	914	1.067	1.219	1.397	1.600
Total tank height	mm	2.350	2.430	2.465	2.681	3.270
Volume – total	L	1.020	1.360	1.840	2.619	4.265
Filter media / vessel						
Inert resins Bags of 25L	L	125	150	175	325	325
Resins Bags of 25L	L	725	950	1.275	1.650	3.000
Support layer (1,7-2,5 mm) Bags of 25kg	kg	175	275	425	750	1.025
Flow rates						
Qnom @1,0 bar dP	m³/h	21	34	43	44	53
Qmax @1,5 bar dP	m³/h	30	47	55	59	74
Exchange capacities / vessel						
°F.m³ (5,5 °F.m³ per L resin)		3.988 – 4.713	5.225 – 6.175	7.013 – 8.288	9.075 – 10.725	16.500 – 19.500
dH.m³		2.240 - 2.647	2.935 – 3.469	3.940 – 4.656	5.098 – 6.025	9.270 – 10.955
kg CaCO3		40 – 47	52 – 62	70 – 83	91 – 107	165 - 195
Regeneration						
Salt consumption	kg	64	84	112	145	264
Brine consumption	L	213	279	374	484	880
Brine tank type	L	750		1.000	1.750	2.500
Water consumption	m³	1,24	1,62	2,17	2,81	5,12
Connections						
IN/OUT		DN65	DN80	DN100		
DRAIN		DN32		DN40	DN50	
BRINE		DN20	DN25			DN32
Dimensions Softener						
Width	mm	2.629	2.934	3.238	3.594	4.000
Depth	mm	1.414	1.567	1.719	1.897	2.100
Height	mm	2.850	2.930	2.965	3.181	3.770
Estimated operating weight ²	kg	2.950	3.900	6.500	7.500	11.900
Dimensions Brine tank						
Diameter	mm	1.030		1.100	1.300	1.420
Height	mm	1.120		1.290	1.500	2.060
Reference code		4407055501	4407055502	4407055503	4407055504	4407055505

² Brine tank excluded

7. Control box

7.1. System

The system consists of two vessels with an identical effect.

The control of the installation consists of one electric box with HMI (*human-machine interface*), a main switch and an alarm. The pin code for this control box = 4444. Only authorised persons should have this pin code.

The following chapters deal with the creation and use of the HMI for the total system.

7.1.1. Plant cycles

The system has two cycles, service and regeneration. The regeneration exists also of four cycles. This is the same for both vessels, but may be programmed differently where necessary.

For each step in the cycle, the valves will be switched in a different way. This may be set up in the HMI for each step, the duration of each step can be set freely as well.

Service:

During the service one fixed valve position is used. One of the two vessels shall carry out the service while the other is in regeneration or 'stand-by'. Only during the 'stand-by' of one of the vessels, the second vessel may automatically come into service if an extremely high flow rate is requested and detected at the outlet. This may be programmed.

During normal operation, the duration of the service is determined by the volume of treated water that is supplied at the outlet of the system together with a quality check. Once this volume has been reached, or if the quality control has carried out a third unfavourable reading, the second cycle will be activated, i.e. the regeneration of the device that was in service. The other device will start working automatically.

It is possible to switch to regeneration in a different way:

- After a number of days following the previous regeneration.
- At a fixed time.
- Manually.

The regeneration

The regeneration consists of three steps:

- Step 1: Brine, slow rinse
- Step 2: backwash
- Step 3: Brine refill

If the regeneration is started, the other vessel switches immediately from ‘stand-by’ to service.

First phase: brine and slow rinse

During the first 10 minutes of step one the electric conductivity is monitored. Subsequently, the average is calculated and recorded for step three. The following step (slow rinse) is started after the brine from the brine bin has been fully absorbed. The transfer to step 2 only takes place after the set time. If in step 1 the electric conductivity on the outlet does not reach a ‘set point’, an alarm is activated. Salt alarm.

Phase 2: backwash.

If during step 2 the conductivity drops below the average EC value increased by a set value, step 3 is activated immediately. If this situation does not occur, the step continues until the set time has expired.

Phase 3: Brine refill.

Once step 3 has been taken, another valve position is maintained until the time has expired. During this time, the system makes just sufficient water flow back into the brine bin to dissolve the required quantity of salt. Subsequently, the ‘stand-by’ is switched on.

7.1.2. Control box

The control box for the high performance softener is located in the direct vicinity of the softener. Figure 1 shows the control box.



Figure 1

The following parts are on the control box:

- Red light: indication of an activated alarm.
- HMI: visualisation of the system.
- Main switch: to safely switch off the system.

On the system the following digital sensors are used:

- Compressed air detection
- Water pulse counter on the inlet
- Water pulse counter on the outlet
- Float for releasing the 6th valve
- Brine bin float to protect the brine pump

The following analogue sensors are used as well:

- Pressure meter inlet
- Pressure meter outlet
- Electric conductivity meter

7.2. HMI – touch screen

7.2.1. Information Hydris

The info page contains general information regarding Hydris. Figure 2 shows this screen.

Each screen has a menu bar on the left hand side for navigating between the various screens. Moreover, touch buttons are located at the bottom of the screen which correspond with the menu bar. The top button on the menu bar is the left button of the touch buttons at the bottom of the screen.



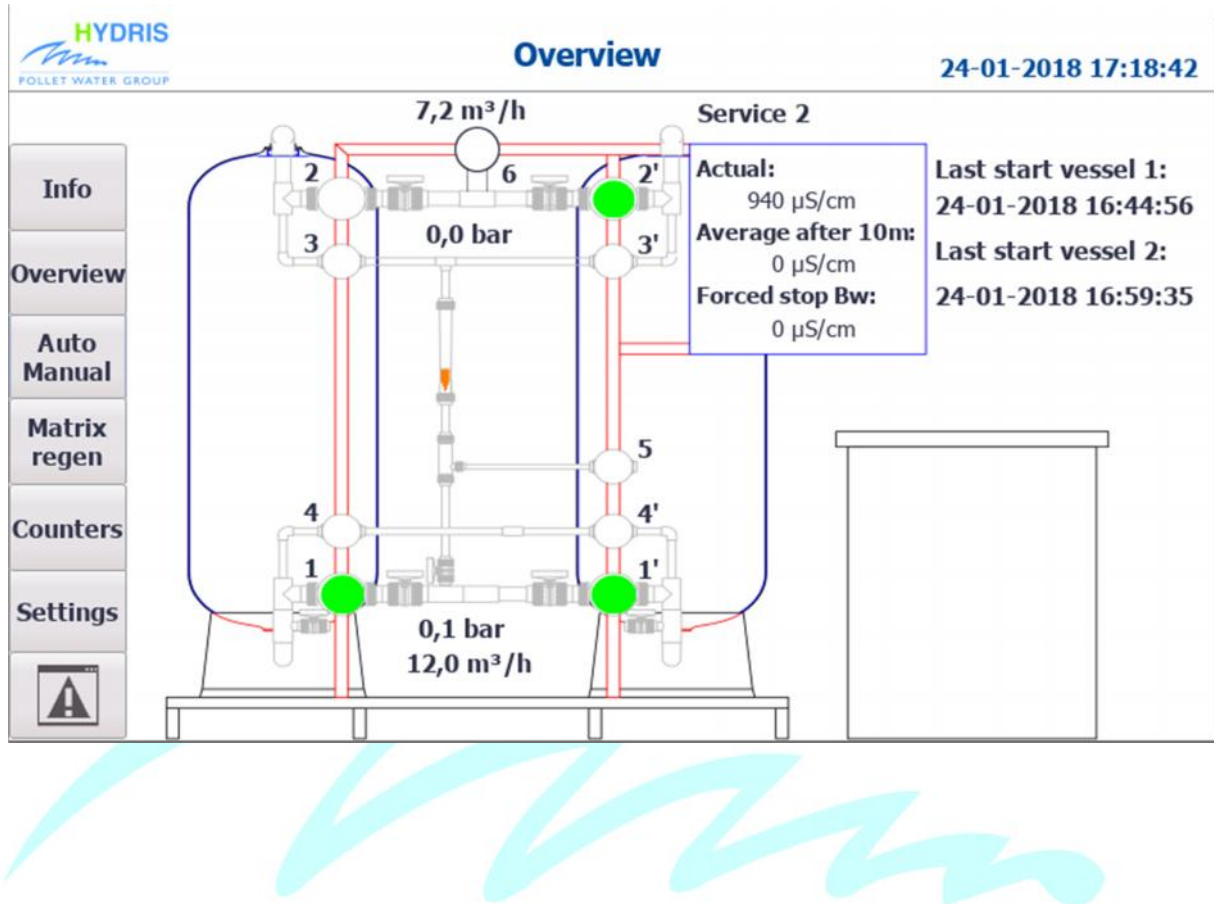
Figure 2

7.2.2. Overview

In the overview screen all valves are displayed as balls, which become green when they are opened. At the inlet and outlet the pressure and flow rate are displayed. The step the system is operating in and the time the last service was started per vessel are displayed on the right.

To the left of this, the EC reading on the outlet is displayed:

- The actual value
- The average value after 10 minutes in the first step of regeneration.
- The value at which the second step of the regeneration stops.



7.2.3. Automatic/manual

In automatic mode the system can be switched manually to the other vessel and start the regeneration for vessel 1 or vessel 2. The step in which the system is operating and how long it has been active is displayed at the bottom as well. In Figure 4 the automatic mode is shown.



Automatic / manual

24-01-2018 17:21:15

Info	☒	Auto			
Overview	☐	Semi auto			
Auto Manual					
Matrix regen					
Counters	Switch service	Regeneration 1	Regeneration 2		
Settings	Change over	Start	Start		
	Actual step:	Service 2			
	Steptime:	0 dag(en) 0 uur 21 min 41 s			

Figure 4

When a switch to semi-automatic mode is made, a manual switch may be made to the following step, in order to test the operation or skip a step. In manual control, care should be taken that brine cannot flow to the consumers. The semi-automatic mode is shown in Figure 5.

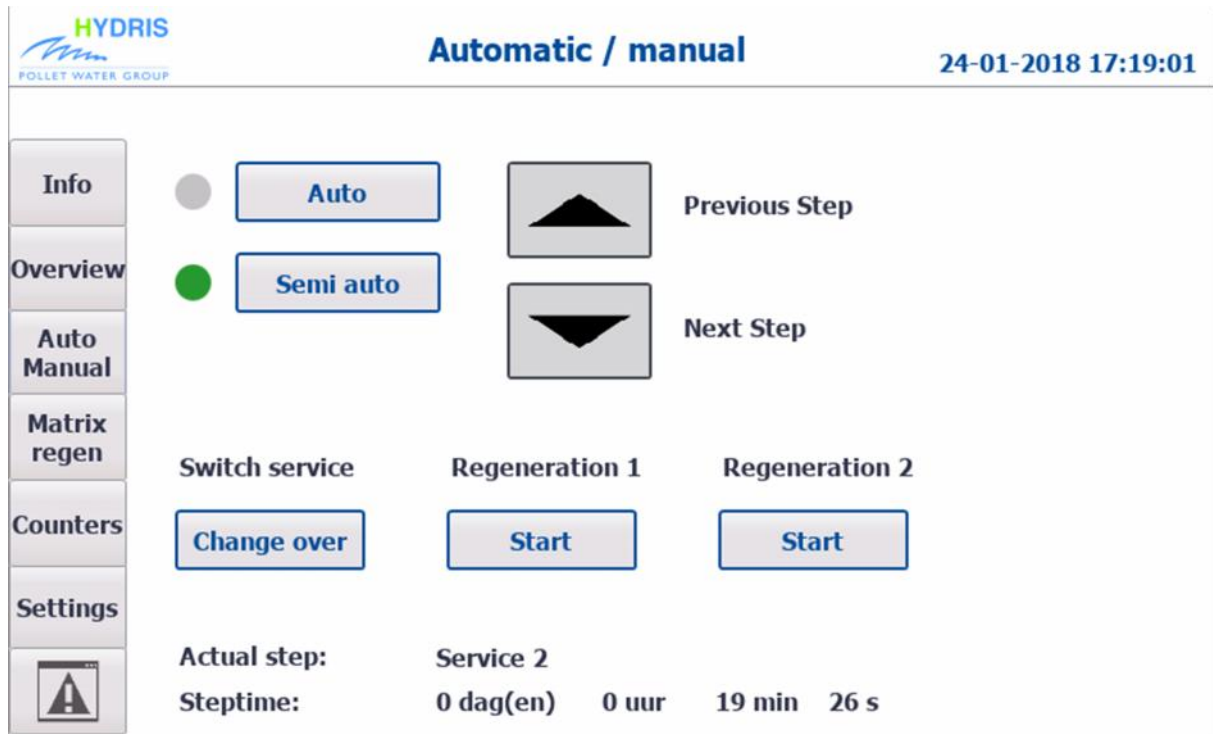


Figure 5

7.2.4. Matrix regeneration

In this screen, the matrix with the valve positions can be adjusted. For each step the system goes through, the valve that needs to be switched may be set. The max. duration of the activation of this step can also be set. For the service this is based on outgoing volume. For the other steps this is on a time basis. The screen is shown in Figure 6.

The step can be adjusted by first selecting the step. When it turns green, the values of the selected step may be adjusted. This should all be carried out or adjusted by qualified employees.

HYDRIS POLLET WATER GROUP		Matrix regeneration											24-01-2018 17:21:35	
		Duration	1	2	3	4	5	1'	2'	3'	4'	6		
Info	service 1	385,0 m³	O	O	C	C	C	O	C	C	C	O		
Overview	Brine	70 min	C	C	O	O	O	O	O	C	C	O		
Auto Manual	Back wash	3 min	C	O	C	O	C	O	O	C	C	O		
Matrix regen	Brine refill	8 min	O	C	C	C	O	O	O	C	C	O		
Counters	Service 2	385,0 m3	O	C	C	C	C	O	O	C	C	O		
	Brine	70 min	O	O	C	C	O	C	C	O	O	O		
Settings	Back wash	15 min	O	O	C	C	C	C	O	C	O	O		
	Brine Refill	8 min	O	O	C	C	O	O	C	C	C	O		

Figure 6

7.2.5. Counters

The counter screens show counters and logging. Moreover, general information about the system is displayed.

The first screen (Figure 7) displays the step information and time, comparable to the screen on semi-automatic operation. Below are the following counters:

- Volume to be processed before vessel 1 must regenerate.
- Volume to be processed before vessel 2 must regenerate.
- Total volume outlet. (Only to be reset by the manufacturer)
- Volume outlet for the present day. (Only to be reset by the manufacturer)
- Total volume inlet. (Only to be reset by the manufacturer)
- Volume outlet for the present day. (Only to be reset by the manufacturer)
- Difference between volume inlet and outlet: the regeneration volume

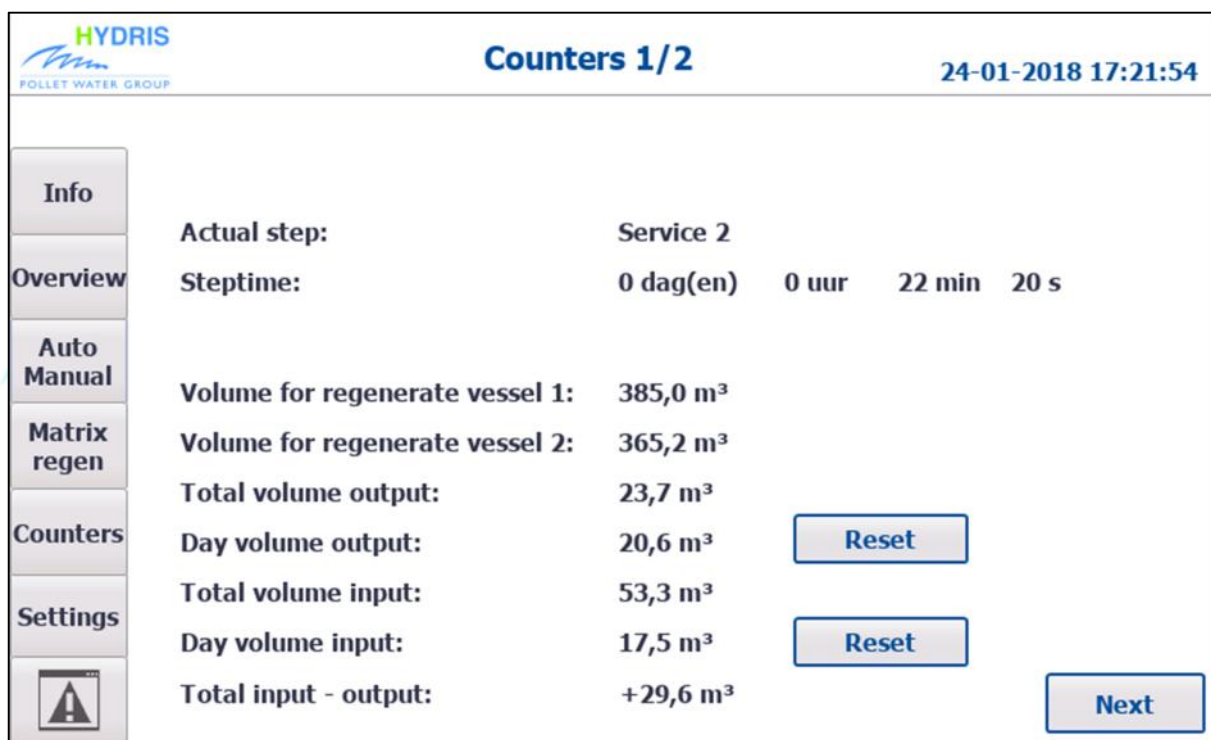


Figure 7

The second screen (Figure 8) displays the historic data. These are always the ten last values. The most recent value is displayed at the top and will move down.

The first table shows the water consumption during regeneration. This is the difference in volume between the inlet and outlet between the start of the regeneration and the end of the backwash.

The second table shows the outlet volume of the last services.

HYDRIS POLLET WATER GROUP		NA		24-01-2018 17:22:08	
		<u>Waterconsumption in regeneration:</u>		<u>Volume in service:</u>	
Info Overview Auto Manual Matrix regen Counters Settings 	Vessel1:	Vessel2:	Vessel1:	Vessel2:	
	0,2 m ³	0,0 m ³	0,0 m ³	20,0 m ³	
	0,3 m ³	0,0 m ³	0,1 m ³	0,0 m ³	
	5,7 m ³	0,0 m ³	0,1 m ³	0,0 m ³	
	4,8 m ³	0,0 m ³	0,2 m ³	0,0 m ³	
	4,4 m ³	0,0 m ³	0,0 m ³	0,1 m ³	
	0,1 m ³	0,0 m ³	0,0 m ³	0,0 m ³	
	0,7 m ³	0,0 m ³	0,0 m ³	1,2 m ³	
	0,0 m ³	0,0 m ³	0,0 m ³	1,5 m ³	
	0,0 m ³	0,0 m ³	0,0 m ³	0,0 m ³	
	0,0 m ³	0,0 m ³	0,0 m ³	0,0 m ³	
				Prev	

Figure 8

7.2.6. Settings

The first partial screen (Figure 9) displays general settings:

- Maximum pressure differences between inlet and outlet (display alarm).
- Volume for detection high flow rate (activating both vessels).
- Volume for detection low flow rate (activating recirculation pump).
- Minimum pressure at inlet (display alarm).
- Hardness of supplied water for automatic calculation of capacity.
- Exchange capacity for calculating total capacity.
- Volume of resin for calculating capacity.
- Choice of reaction to salt alarm (stopping cycle or proceeding).
- Setting of PLC time.

HYDRIS
POLLET WATER GROUP

Settings 1/3 24-01-2018 17:22:33

Info	Max pressure difference in and out	1,0 bar
Overview	Setpoint high flow	16,0 m³/h
	Setpoint low flow	0,1 m³/h
Auto Manual	Min pressure input	0,0 bar
Matrix regen	Water hardness	5,0 °F
	Exchange capacity	5,50
Counters	Liters resin	350
Settings	Reaction on salt alarm	Continue
		Set time

Cap = 385,0 m³

01-01-1970 0:00:00

Next

Figure 9

The second partial screen (Figure 10) displays settings regarding regeneration:

- Minimum achieved conductivity during the first step of the regeneration (otherwise salt alarm).
- A value that is increased with the average value of the first 10 minutes. If the EC drops below this EC in the second step (backwash), the system shall switch to the third step (brine refill) of the regeneration immediately.
- Delay on signal of hardness meter to start regeneration.
- Minimum hours between two regenerations on the basis of hardness meter.
- Switching on/off of regeneration at a certain time.
- Switching on/off of regeneration on a timed basis.

The screenshot shows the 'Settings 2/3' screen of the HYDRIS interface. The top bar includes the HYDRIS logo, the title 'Settings 2/3', and the timestamp '24-01-2018 17:22:52'. On the left is a vertical menu with options: Info, Overview, Auto Manual, Matrix regen, Counters, Settings, and a warning icon. The main area displays four settings with input fields: 'Min conductivity after first step' (50000 µS/cm), 'Max deviation after regeneration' (50 µS/cm), 'Remote external start delay' (5 s), and 'Min hours between regeneration 1 and 2' (1 uur). Below these are two toggle switches: 'Starthour regeneration disactivated' and 'Regeneration time based disactivated'. At the bottom are 'Prev' and 'Next' buttons.

Setting	Value
Min conductivity after first step	50000 µS/cm
Max deviation after regeneration	50 µS/cm
Remote external start delay	5 s
Min hours between regeneration 1 and 2	1 uur
Starthour regeneration disactivated	Disactivated
Regeneration time based disactivated	Disactivated

Figure 10

If the last two settings are activated, extra fields will appear. This has been indicated in Figure 11.

If regeneration is activated at a starting time, a field with hours and minutes appears. If a regeneration is required, it will start at this time. This is a delayed regeneration with immediate exchange of vessels.

If regeneration on a timed basis is activated, it is possible to fill in the number of days. A forced regeneration will only start after this number of days. The field underneath counts down the number of hours to the forced regeneration. This may be adjusted where required.

The screenshot shows the 'Settings 2/3' screen of the HYDRIS Pollet Water Group interface. The top bar includes the HYDRIS logo, the title 'Settings 2/3', and the timestamp '24-01-2018 17:23:05'. On the left is a vertical menu with options: Info, Overview, Auto Manual, Matrix regen, Counters, Settings (highlighted), and a warning icon. The main area contains several settings with input fields:

- Min conductivity after first step**: 50000 $\mu\text{S}/\text{cm}$
- Max deviation after regeneration**: 50 $\mu\text{S}/\text{cm}$
- Remote external start delay**: 5 s
- Min hours between regeneration 1 and 2**: 1 uur
- Starthour regeneration activated**: 2 uur (with a 30 min field next to it)
- Regeneration time based activated**: 200 dagen
- Remaining hours next regeneration**: 4800 h

At the bottom are 'Prev' and 'Next' buttons.

Figure 11

The last partial screen (Figure 12) displays settings regarding the sensors:

- Scaling pressure sensor at inlet (4 - 20mA).
- Scaling pressure sensor at outlet (4 - 20mA).
- Scaling conductivity reading (4 – 20mA).
- K value impulse water meter inlet (option - so may be switched off).
- K value impulse water meter outlet.

The screenshot shows the 'Settings 3/3' screen of the HYDRIS system. The interface includes a sidebar with navigation options: Info, Overview, Auto Manual, Matrix regen, Counters, Settings, and a warning icon. The main content area is titled 'Settings 3/3' and shows a timestamp of '24-01-2018 17:23:37'. The settings are organized into two columns. The left column lists the sensor type and current setting, while the right column shows the target value in a text input field. The settings are as follows:

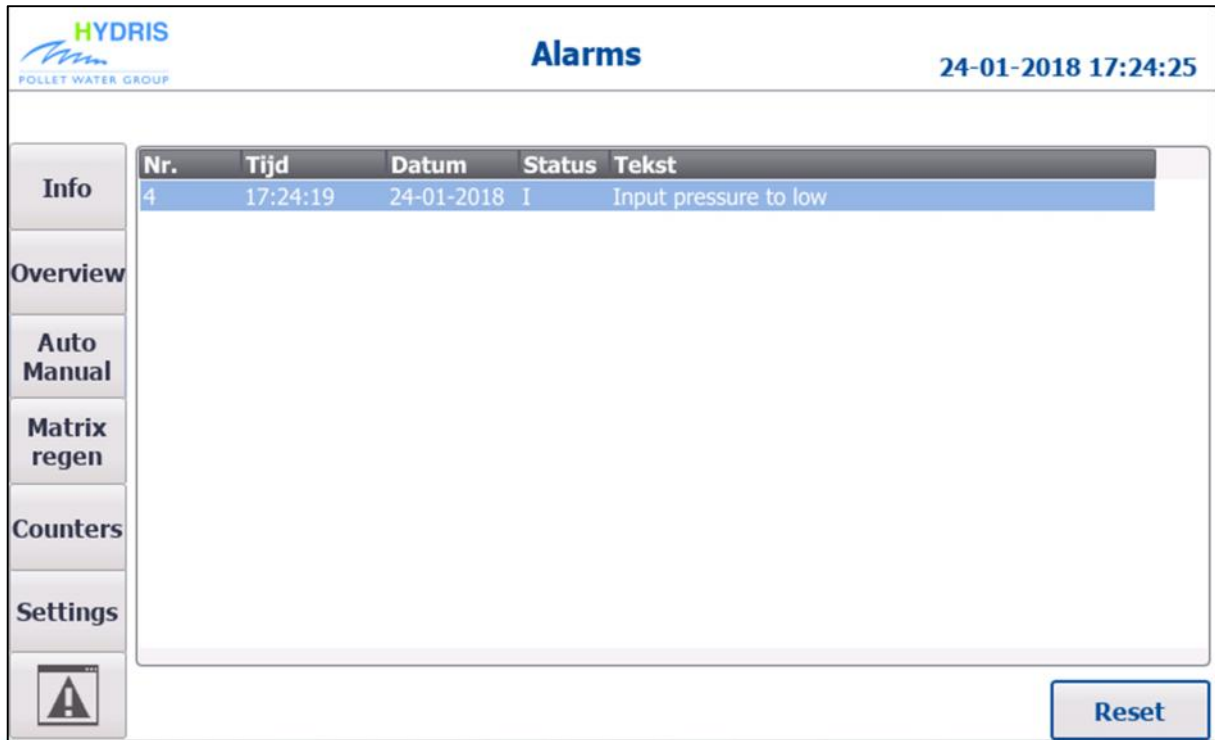
Setting	Current Value	Target Value
Pressure sensor input: 4 mA	0,0 bar	0,0 bar
Pressure sensor input: 20 mA	1,0 bar	1,0 bar
Pressure sensor output: 4 mA	0,0 bar	0,0 bar
Pressure sensor output: 20 mA	1,0 bar	1,0 bar
EC-measurement: 4 mA	0 µS/cm	0 µS/cm
EC-measurement: 20 mA	2000000 µS/cm	2000000 µS/cm
Water counter input	Absent	Absent
Water counter output	10 l/puls	10 l/puls

At the bottom left, there is a 'Prev' button and a warning icon.

Figure 12

7.2.7. Alarms

This screen displays the alarms that are active on the system. The time and date when the alarm has occurred is displayed along with a brief description. Figure 13 shows an example of an alarm. Bottom right is a reset button to reset the alarms after the cause has been removed. Some alarms are reset automatically after the problem has been resolved.



Nr.	Tijd	Datum	Status	Tekst
4	17:24:19	24-01-2018	I	Input pressure to low

Figure 13

Table 1 gives an overview of the various alarms that may occur. The cause and the necessary action are displayed below as well.

No	Description	Cause	Solution
1	Error compressed air	No pressure detected on valve terminal.	Check the compressed air connection and pressure.
2	Salt alarm	Minimum conductivity during regeneration is not achieved.	Check if there is sufficient salt in the brine bin. Clean the EC meter. Clean the injector.
3	Pressure difference in - output	Pressure difference not correct according to setting.	Check the consumed flow rate, is it not too high for this installation? Check any pumps and connections. Check the pressure meters.
4	Input pressure too low	Pressure not high enough according to setting	Check the inlet pressure, the pumps and connections. Check the pressure sensor.
5	Sycon 2800 asks for regeneration too soon	Hardness meter requests regeneration if the time of regeneration has not yet finished. (according to setting)	Check hardness meter Sycon 2800 and the full system.

Table 1

8. Electrical circuit diagram

 HYDRIS ENGINEERING POLLET WATER GROUP		HYDRIS Engineering Textielstraat 13 8790 WAREGEM Tel: +32 56 43 29 54 info@hydrispwg.com http://www.hydrisengineering.com	
---	--	---	--

INSTALLER		END USER	
NAME		NAME	
STREET		STREET	
TOWN		TOWN	
PROJECT ENG.		PROJECT ENG.	
TEL		TEL	
MOBILE		MOBILE	
MAIL ADDRESS		MAIL ADDRESS	

Name of the cabinet MC Project description Upflow Performance Softener with RO link Project number 134022 Responsible for project Johan Creten	Power supply 230VAC 50Hz + PE Control voltage 24V DC
---	--

Revision			
Created on	5/06/2018		
Edit date	4/09/2018	By RDP	Number of pages 53

schematic overview

End customer

Pag. 1	Title page
Pag. 2	schematic overview
Pag. 3	Terminal-strip overview
Pag. 4	codif. conductors - codif. components
Pag. 5	Symbol identifier
Pag. 6	Installation overview (P&ID)
Pag. 7	Network overview
Pag. 8	Table of contents

Schemes general cabinet (+AK)

Pag. 1	Arrival main supply (3x400VAC)
Pag. 10-19	Controller supply (VAC/VDC)
Pag. 20-99	Power circuits (motors, ovens,...)
Pag. 100-149	Control (contactor, relais,...)
Pag. 150-199	Safety circuit
Pag. 200-299	PLC overview + HMI + network overview
Pag. 300-399	Supply PLC (CPU, COM, ETH, DI, DO,...)
Pag. 400-499	Digital inputs
Pag. 400-499	Digital inputs
Pag. 500-599	Digital outputs
Pag. 500-599	Digital outputs
Pag. 600-699	Analog inputs
Pag. 700-749	Analog outputs
Pag. 750-799	Serial communication
Pag. 800-.....	Cabinet layout
Pag. 900-.....	Other pages

Schemes control cabinets (+BK)

Pag. 1-.....	Scheme operating box
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Lists (=LJSTEN)

Pag. 1-999	List of terminals
Pag. 1000-1999	Cable overview
Pag. 2000-2999	Device tag list
Pag. 3000-3999	List to order

Wire coding - Component coding

Wire coding - Component coding

Principle : Connections connected to PLC (signal oriented)

--> Address of the PLC

VB : Q2.3, I5.7, PIW256

Principle : Other connections
(grid orientated)

-- > Principle counter (3 characters)

VB : Q2.3, I5.7, PIW256

Comonent numbering

Principle : Page letter code counter

-- > 14K1

14 = Page
K = Relays, contactors
1 = counter

Color codification

POWER CIRCUIT (AC/DC)

Power wires (L1,L2,L3)	Black
Neutral (N)	Light blue

CONTROL CIRCUIT (AC)

Power wires (L1,L2,L3)	Red
Neutral (N)	Light blue

(DC)

24VDC	Dark blue
0VDC	Dark blue

External

Extern tension	Orange
----------------	--------

Symbol identifier

<u>Ident. letter</u>	<u>Description of identif. letter</u>
A	PLC
B	Encoder / inverter
C	Capacitor
D	Diode
E	lighting
F	Breaker / fuse
H	Signalisation / reports
K	Contactor / Relais
L	Current transformer (TI)
M	Motors
P	Meter (A/V/...)
Q	Disconnecter / Thermal
R	Resistors
S	Switch / pushbutton
T	Transformer
U	Inverter
V	Power
W	Cable
X	terminals / connectors
Y	Valve
Z	Filter

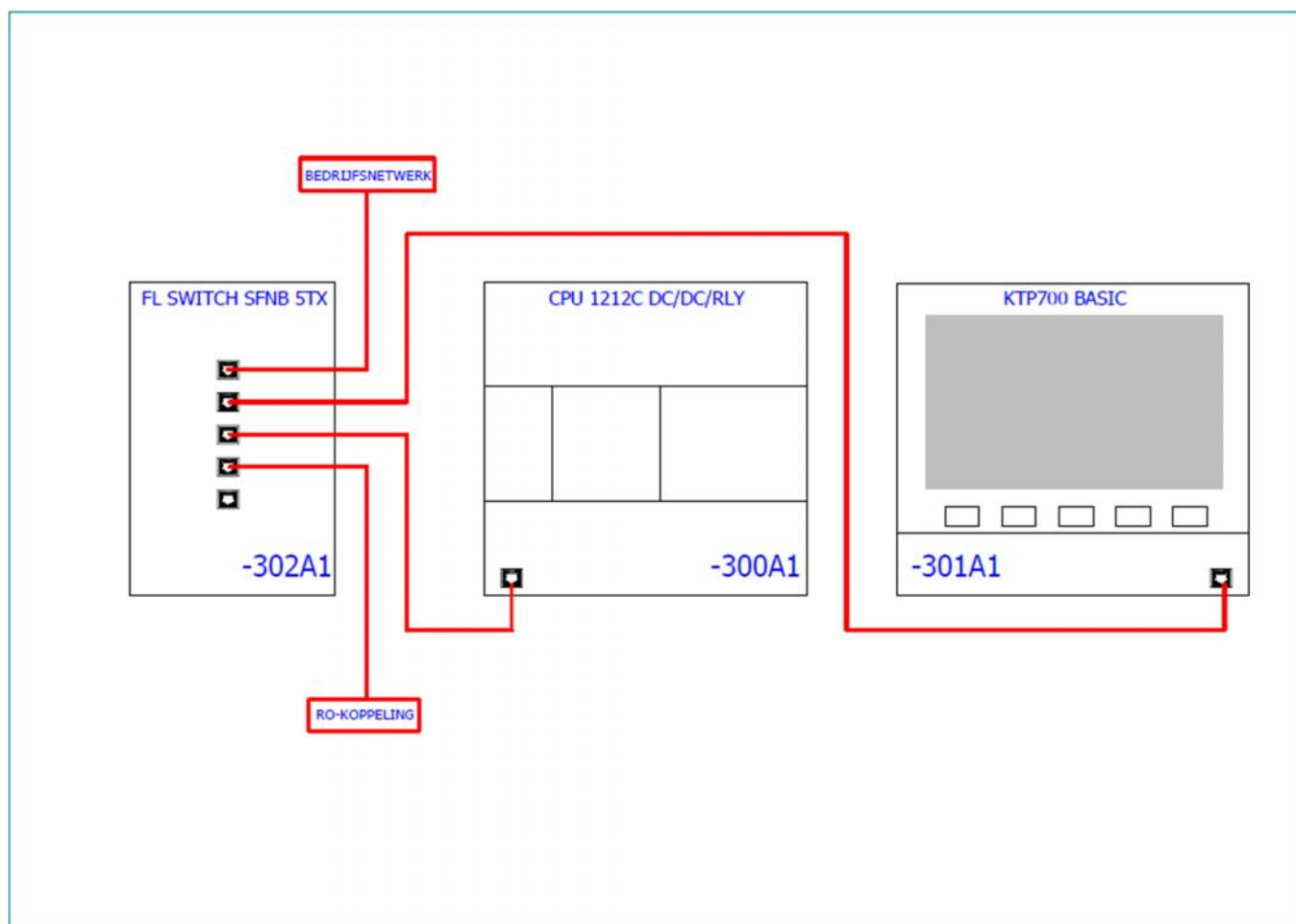


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Page	Page description	Date	Last editor
=GENERAL/1	Title page	5/06/2018	user
=GENERAL/2	schematic overview	25/06/2018	User
=GENERAL/3	Terminal-strip overview	4/09/2018	RDP
=GENERAL/4	Wire coding - Component coding	25/06/2018	User
=GENERAL/5	Symbol identifier	25/06/2018	User
=GENERAL/7	Network overview	25/06/2018	User
=GENERAL/8	Table of Contents	4/09/2018	RDP
=GENERAL/8.1	Table of Contents	4/09/2018	RDP
=INSTALLATION+MC/0	Title page	25/06/2018	User
=INSTALLATION+MC/1	Arrival main supply (3x400VAC)	25/06/2018	User
=INSTALLATION+MC/10	Circulation Pump	25/06/2018	User
=INSTALLATION+MC/100	Signal Extension	25/06/2018	User
=INSTALLATION+MC/200	PLC overview + HMI + network overview	25/06/2018	User
=INSTALLATION+MC/300	Supply PLC	27/06/2018	user
=INSTALLATION+MC/301	Supply HMI	27/06/2018	user
=INSTALLATION+MC/302	Supply Switch	27/06/2018	user
=INSTALLATION+MC/400	Digital inputs	25/06/2018	User
=INSTALLATION+MC/500	Digital outputs	25/06/2018	User
=INSTALLATION+MC/501	Digital outputs	25/06/2018	User
=INSTALLATION+MC/502	Digital outputs	27/06/2018	user
=INSTALLATION+MC/600	Analog inputs	24/08/2018	RDP
=INSTALLATION+MC/601	Analog inputs	4/09/2018	RDP
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=LISTS/4	Terminal Connection list =INSTALLATION+MC-X3	4/09/2018	RDP
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=LISTS/6	Terminal Connection list =INSTALLATION+MC-X4	4/09/2018	RDP
=LISTS/7	Terminal Connection list =INSTALLATION+MC-X5	4/09/2018	RDP
=LISTS/8	Terminal Connection list =INSTALLATION+MC-X8	4/09/2018	RDP
=LISTS/1000	Cable overview	4/09/2018	RDP
=LISTS/1010	Cable connection list PN1	4/09/2018	RDP
=LISTS/1011	Cable connection list PN2	4/09/2018	RDP

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8.1

			Date	4/09/2018	Cabinet name	MC		= GENERAL		
			Ed.	SDP	Project description	Upflow Performance Software with RO link		general information	PAGE	8
					Project number	134532		+		
Modification	Date	Name			Responsible	Johan Cretien			Total	53



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Page	Page description	Date	Last editor
=LISTS/1012	Cable connection list W1	4/09/2018	RDP
=LISTS/1013	Cable connection list W3	4/09/2018	RDP
=LISTS/1014	Cable connection list W4	4/09/2018	RDP
=LISTS/1015	Cable connection list W5	4/09/2018	RDP
=LISTS/1016	Cable connection list W6	4/09/2018	RDP
=LISTS/1017	Cable connection list W7	4/09/2018	RDP
=LISTS/1018	Cable connection list W8	4/09/2018	RDP
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=LISTS/1021	Cable connection list W11	4/09/2018	RDP
=LISTS/1022	Cable connection list W12	4/09/2018	RDP
=LISTS/1023	Cable connection list W13	4/09/2018	RDP
=LISTS/1024	Cable connection list W14	4/09/2018	RDP
=LISTS/1025	Cable connection list W15	4/09/2018	RDP
=LISTS/1026	Cable connection list W16	4/09/2018	RDP
=LISTS/1027	Cable connection list W17	4/09/2018	RDP
=LISTS/1028	Cable connection list W18	4/09/2018	RDP
=LISTS/1029	Cable connection list W19	4/09/2018	RDP
=LISTS/2000	Device tag list	4/09/2018	RDP

8

Date	4/09/2018	Cabinet name	MC
Ed.	RDP	Project description	Upflow Performance Softener with RO link
		Project number	134022
		Responsible	Johan Creten



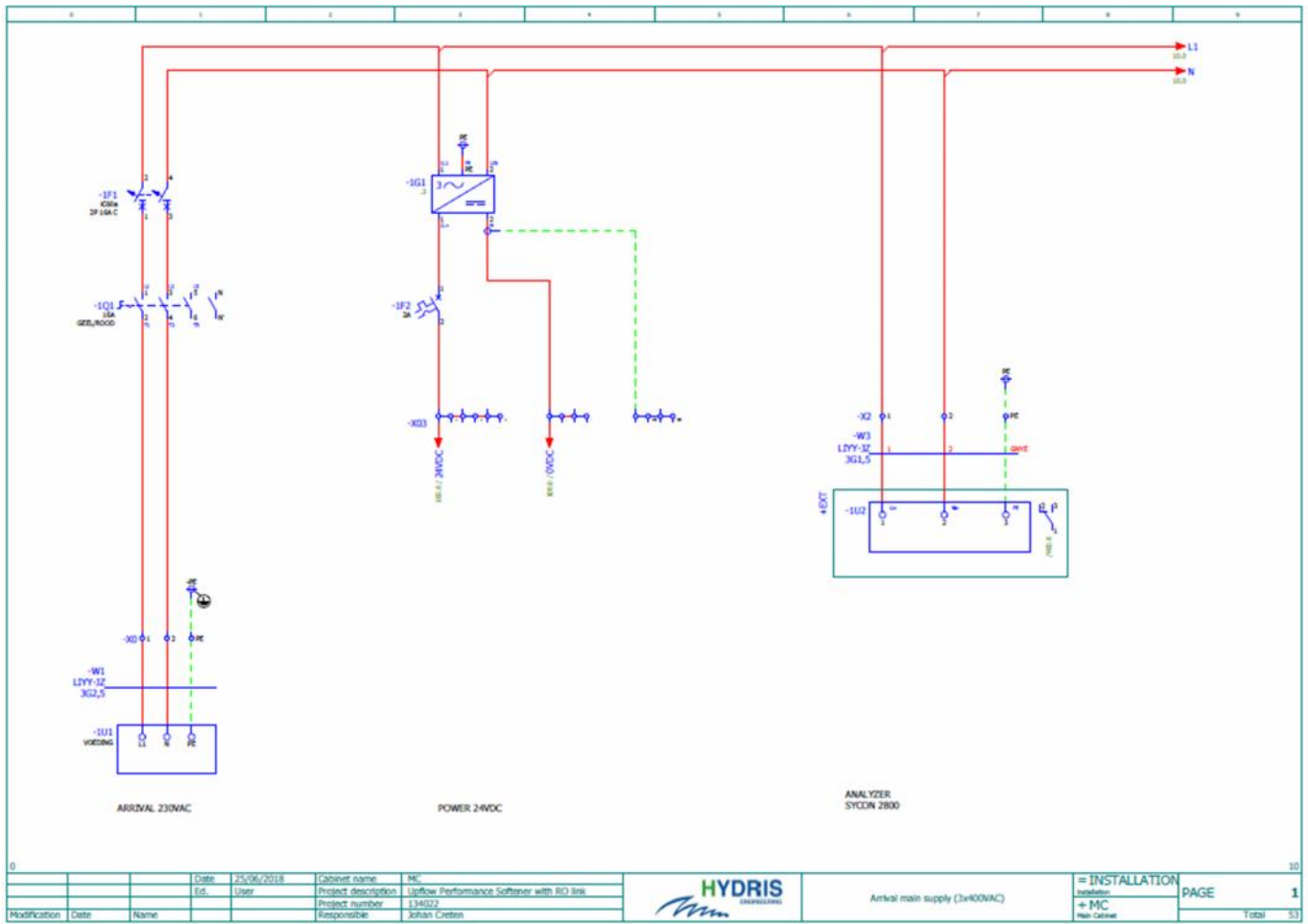
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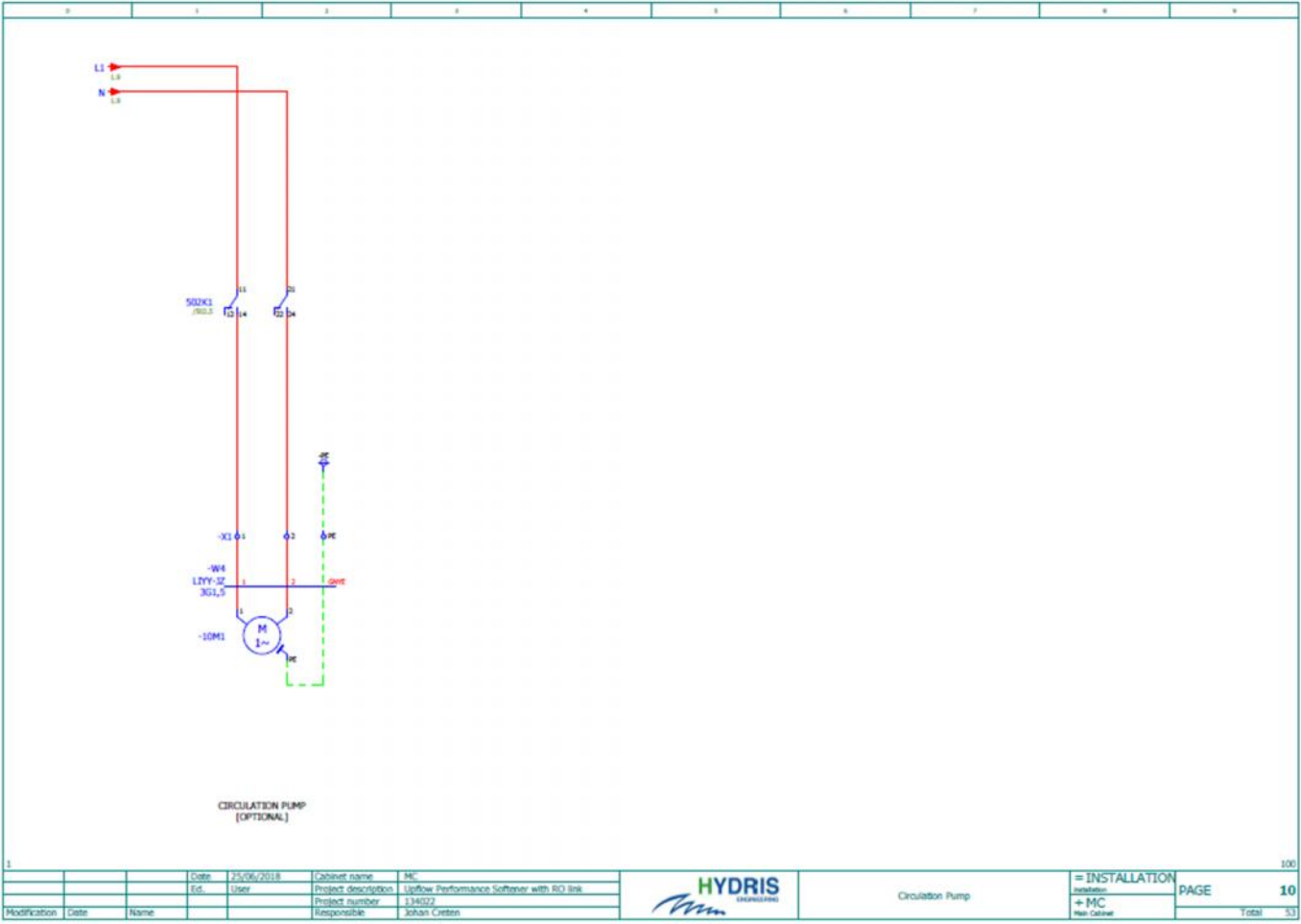
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General information		
+		
	Total	53

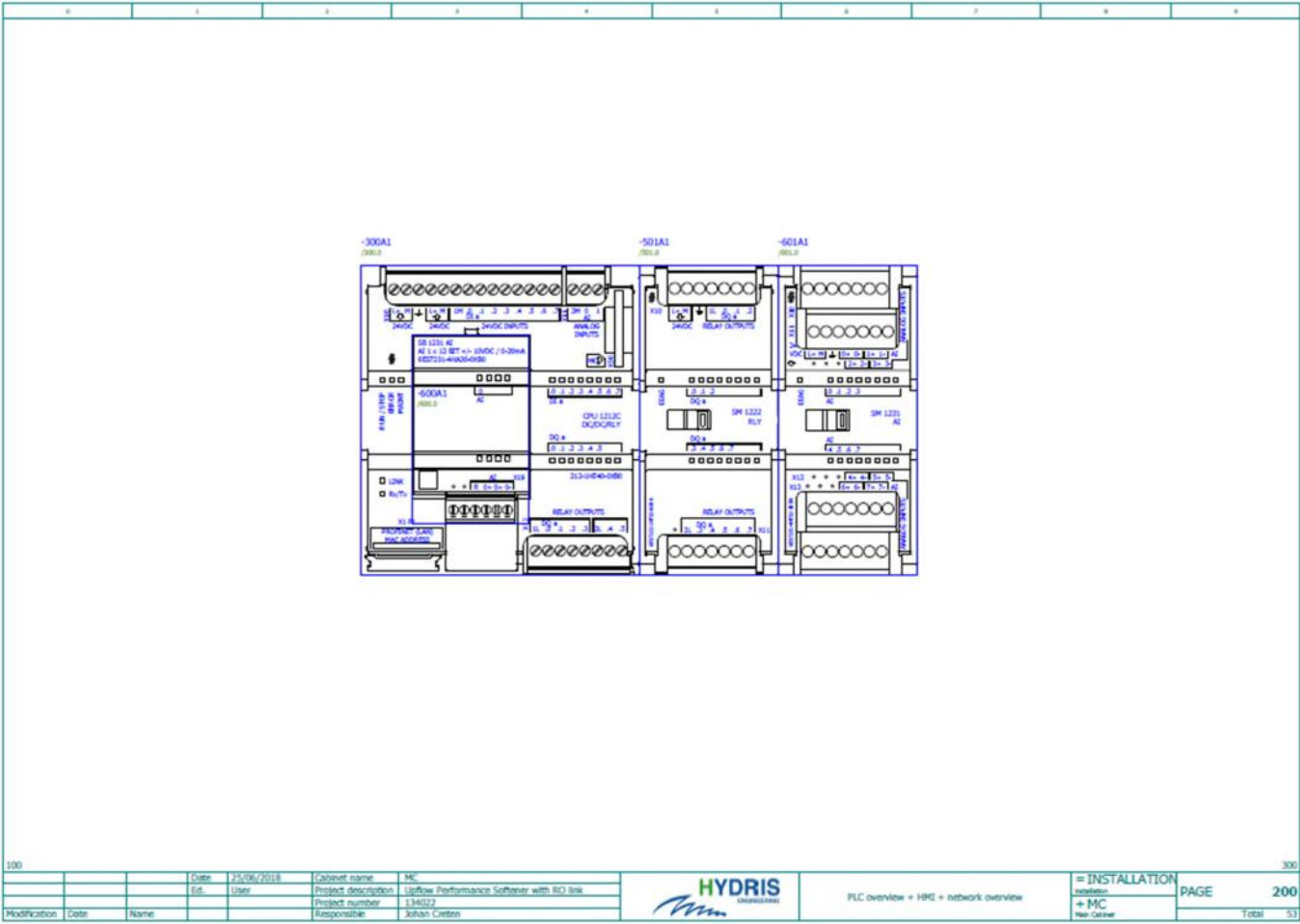
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MC Main Cabinet	

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Modification Date Name		Responsible Johan Creten		Total 53					





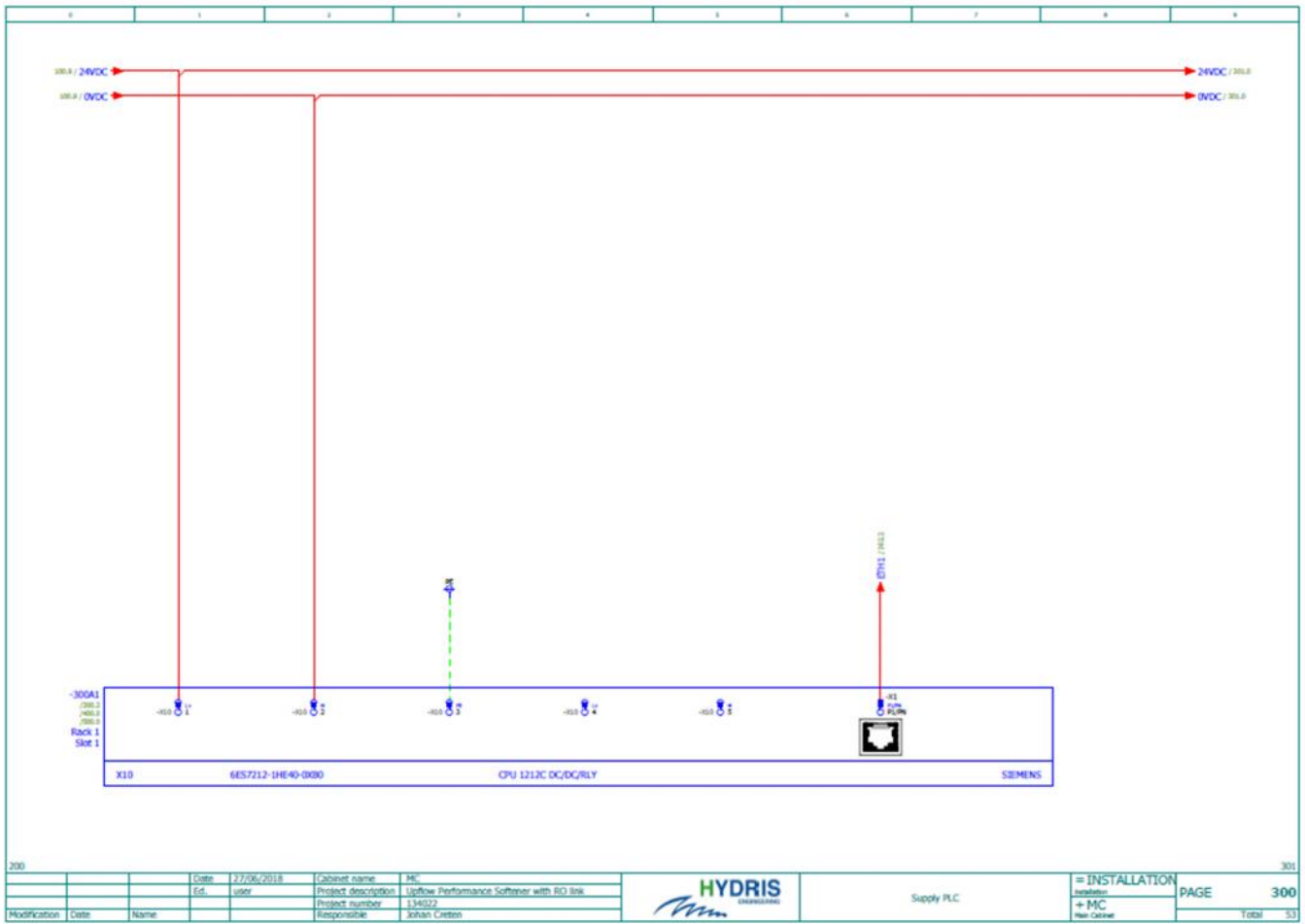


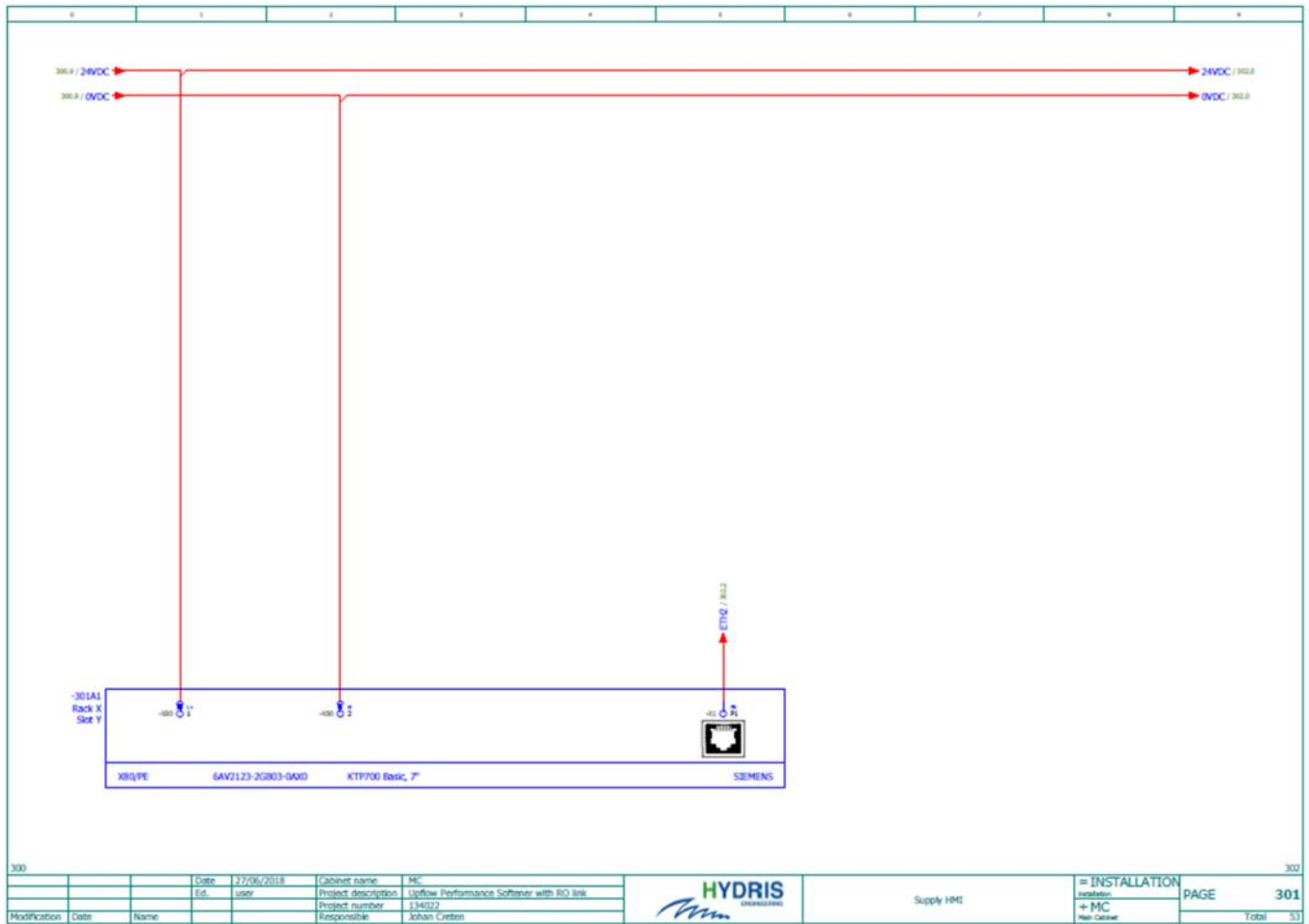
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					Project number	134022				
					Responsible	John Carlin				
Modification	Date	Name								

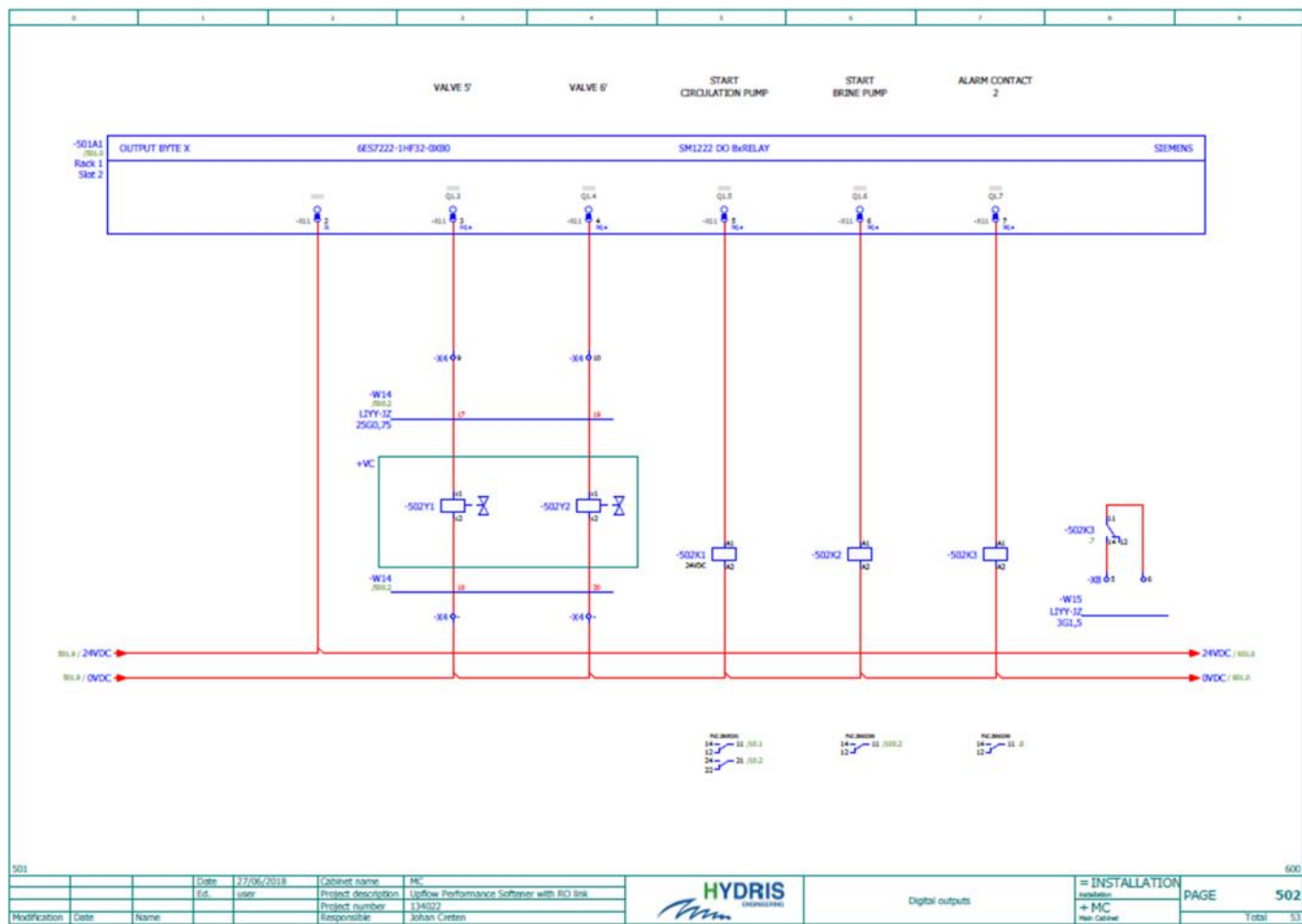


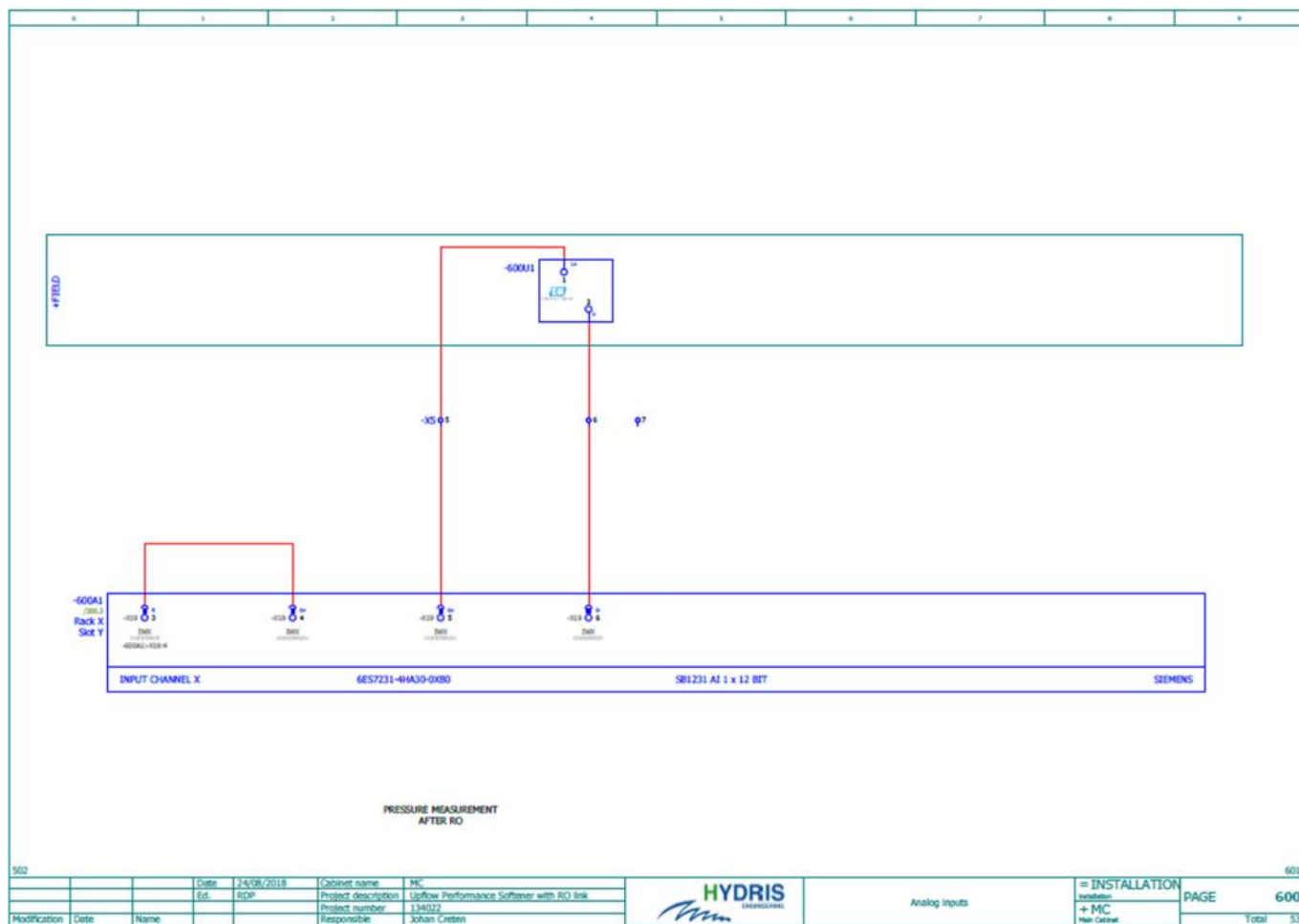
PLC overview + HMI + network overview

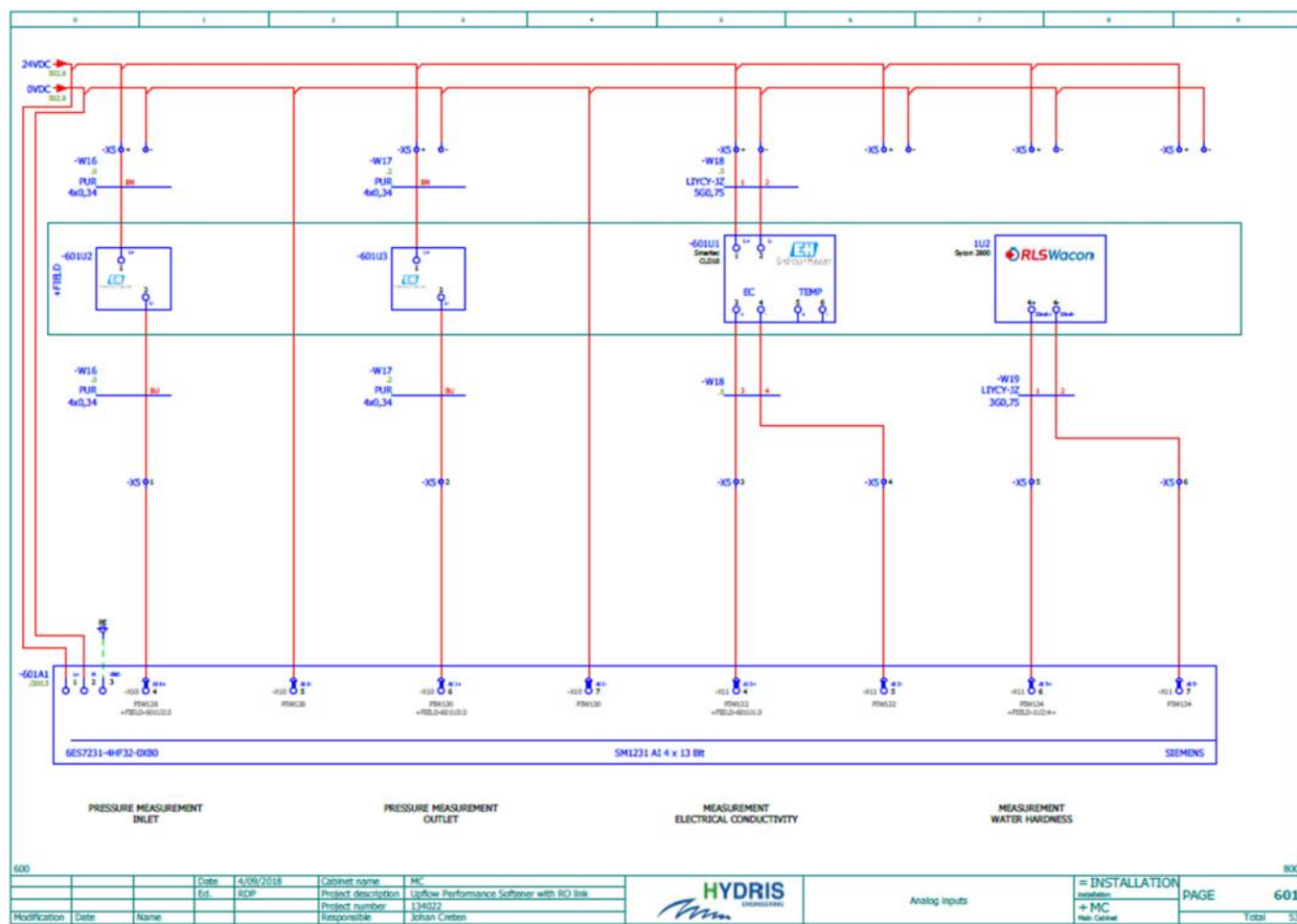
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+ MC		
Hydris Cabinet	Total	53











[illegible]

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			Date	4/09/2018	Cabinet name	MC		Terminal Connection list =INSTALLATION+MC-XG	= LISTS	PAGE	1
			Ed.	BDP	Project description	Upflow Performance Softener with RO link					
					Project number	134032					
Modification	Date	Name			Responsible	Johan Creten			+		Total 53

[illegible]

			Date	4/05/2018	Coauthor name	ME		Terminal Connection list =INSTALLATION+MC-XI	=	LISTS	PAGE	3
Modification	Date	Name	Ed.	BDP	Project description	Upliftow Performance Software with BCI link			Project number	334622	+	
					Project responsible	Johan Creston					Total	53

[illegible]66

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										7	
		Date	4/09/2018	Cabinet name	MC		Terminal Connection list = INSTALLATION + MC-X4	= LISTS	PAGE	6	
		Ed.	RDP	Project description	Upflow Performance Software with RO link						
				Project number	134022						
Modification	Date	Name		Responsible	John Cretin			+		Total	53

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6		Date: 4/09/2018		Cabinet name: MC						= LISTS		8	
		Ed: RDP		Project description: Lifesize Performance Software with RG line								PAGE	
Modification		Date		Name		Project number: 13402		Project manager: Johan Linton		Terminal Connection list =INSTALLATION+MC-XS		7	
						Responsible:				+		Total 53	

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		Ed.	ROP	Project description	Lifeline Performance Software with RO line				PAGE	8
Modification		Date	Name	Project number	13402			+	Total	53
				Responsible	Johan Crutten					

Cable overview

Device tag	Source	End	Cable type	Function text	Gland
PN1	=INSTALLATION+MC-301A1	=INSTALLATION+MC-302A1		ETHERNET CABLE	--
PN2	=INSTALLATION+MC-300A1	=INSTALLATION+MC-302A1	=		--
PN3				=	--
PN4				=	--
W1	=INSTALLATION+MC-X0	=INSTALLATION+MC-1U1	L2YY-3Z_3G2,5	MAIN CABLE	M20
W3	=INSTALLATION+MC-X2	=INSTALLATION+EXT-1U2	L2YY-3Z_3G1,5	CABLE ANALYZER	M16
W4	=INSTALLATION+MC-X1	=INSTALLATION+MC-10M1	L2YY-3Z_3G1,5	CABLE CIRCULATION PUMP	M16
W5			L2YY-3Z_3G1,5	CABLE SIGNAL EXTENSION WATERPULSATION	M16
W6			L2YY-3Z_3G1,5	CABLE BRINE PUMP	M16
W7	=INSTALLATION+MC-X3	=INSTALLATION+EXT-400U2	L2YY-3Z_3G0,75	CABLE WATER METER INPUT	M16
W8	=INSTALLATION+MC-X3	=INSTALLATION+EXT-400U3	L2YY-3Z_3G0,75	CABLE WATER METER OUTLET	M16
W9	=INSTALLATION+MC-X3	=INSTALLATION+EXT-400S1	L2YY-3Z_3G0,75	CABLE RELEASE VALVE 6	M16
W10	=INSTALLATION+MC-X3		L2YY-3Z_3G0,75	CABLE INHIBIT REGENERATION	M16
W11	=INSTALLATION+MC-X3	=INSTALLATION+EXT-1U2	L2YY-3Z_3G0,75	CABLE START REGENERATION	M16
W12	=INSTALLATION+MC-X3	=INSTALLATION+EXT-400S2	L2YY-3Z_3G0,75	CABLE FLOAT SWITCH BRINE TANK	M16
W13	=INSTALLATION+MC-X3	=INSTALLATION+EXT-400U2	L2YY-3Z_5G0,75	CABLE PULSE METER BRINE	M16
W14	=INSTALLATION+MC-X4	=INSTALLATION+VC-500Y1	L2YY-3Z_25G0,75	MULTICABLE VALVES	M25
W15			L2YY-3Z_3G1,5	CABLE ALARM CONTACT 2	M16
W16	=INSTALLATION+MC-X5	=INSTALLATION+FIELD-601U2		CABLE PRESSURE MEASUREMENT INLET	
W17	=INSTALLATION+MC-X5	=INSTALLATION+FIELD-601U3		CABLE PRESSURE MEASUREMENT OUTLET	
W18	=INSTALLATION+MC-X5	=INSTALLATION+FIELD-601U1	L2YY-3Z_5G0,75	CABLE MEASUREMENT ELECTRICAL CONDUCTIVITY	M16
W19	=INSTALLATION+MC-X5	=INSTALLATION+FIELD-1U2	L2YY-3Z_3G0,75	MEASUREMENT WATER HARDNESS	M16

8

		Date: 4/09/2018	Cabinet name: MC	
		Ed: RDP	Project description: Upflow Performance Softener with RO link	
			Project number: 134022	
			Responsible: Johan Creten	
Modification	Date	Name		



Cable overview

= LISTS

+

PAGE

1000

Total

53

Cable diagram

Cable name PN1			Cable type UTP					
Function text ETHERNET CABLE			No. of conductors			Cross-section		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
	=INSTALLATION+MC/301.5	=INSTALLATION+MC/301A1	X1:P1		=INSTALLATION+MC/302A1	X2	=INSTALLATION+MC/302.5	

1000

1011

1000		Date	4/09/2018	Client name	ME	 Cable connection list PH1	= LISTS	PAGE	1010
		Est.	REP	Project description	Hydrow Performance Software with RC Jole				
Modification	Date	Name		Project number	134027				
				Responsible	John Cretten		+		Total

Cable diagram

Cable name PNZ			Cable type UTP					
Function test ETHERNET CABLE			No. of conductors			Cross-section		Cable length
Function test	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function test
	=INSTALLATION+MC/300A	=INSTALLATION+MC-300A1	-X1.P1/PN		=INSTALLATION+MC-302A1	X3	=INSTALLATION+MC/302A	

1010

		Date	4/09/2018	Cabinet name	MC
		E.d.	RDP	Project description	Lifeline Performance Software with RIO link
				Project number	134022
Modification	Date	Name		Responsible	Johan Carlsen

Cable connection list PNZ

= LISTS

+

PAGE

101

101

Total

Cable diagram

Cable name W1			Cable type LTYJ-JZ					
Function text MAIN CABLE			No. of conductors 3G			Cross-section 2,5		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
ARRIVAL 230VAC	=INSTALLATION+MC/L.1	=INSTALLATION+MC-XD	1		=INSTALLATION+MC-1U1	L1	=INSTALLATION+MC/L.1	
=	=INSTALLATION+MC/L.1	=INSTALLATION+MC-XD	2		=INSTALLATION+MC-1U1	N	=INSTALLATION+MC/L.1	
=	=INSTALLATION+MC/L.1	=INSTALLATION+MC-XD	PE		=INSTALLATION+MC-1U1	PE	=INSTALLATION+MC/L.1	

1011			Date	4/09/2018	Cable name	MC			1013
			Est.	BDP	Project description	Upflow Performance Softener with RO line			
					Project number	134022			
Modification	Date	Name			Responsible	Johann Cretten			



Cable connection list W1

= LISTS

PAGE

1012

+

Total 53

Cable diagram

Cable name W3			Cable type LIYY-3Z					
Function text CABLE ANALYZER			No. of conductors 3G			Cross-section 1,5		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
ANALYZER SYCON 2800	=INSTALLATION+MC/1,7	=INSTALLATION+MC:X2	PE	GNVE	=INSTALLATION+EXT-1U2	3	=INSTALLATION+MC/1,7	
=	=INSTALLATION+MC/1,6	=INSTALLATION+MC:X2	1	1	=INSTALLATION+EXT-1U2	1	=INSTALLATION+MC/1,6	
=	=INSTALLATION+MC/1,7	=INSTALLATION+MC:X2	2	2	=INSTALLATION+EXT-1U2	2	=INSTALLATION+MC/1,7	

1012			Date	4/09/2018	Labovet name	Mk		Cable connection list W3	=	LISTS	1014
			Est.	RDP	Project description	Upflow Performance Software with RO line					
Modification	Date	Name			Project number	134022			+	PAGE	1013
					Telephone	Johns Lyden				Total	5

Cable diagram

Cable nameW4			Cable typeLDYY-3Z					
Function textCABLE CIRCULATION PUMP			No. of conductors3G		Cross-section1,5		Cable length	
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
CIRCULATION PUMP (OPTIONAL)	=INSTALLATION+MC/10.2	=INSTALLATION+MC-X1	PE	GNYE	=INSTALLATION+MC-10M1	PE	=INSTALLATION+MC/10.1	
	=INSTALLATION+MC/10.1	=INSTALLATION+MC-X1	1	1	=INSTALLATION+MC-10M1	1	=INSTALLATION+MC/10.1	
CIRCULATION PUMP (OPTIONAL)	=INSTALLATION+MC/10.2	=INSTALLATION+MC-X1	2	2	=INSTALLATION+MC-10M1	2	=INSTALLATION+MC/10.1	

1013					1015						
		Date	4/09/2018	Cabinet name	MC		Cable connection list WH	= LISTS	PAGE	1014	
		Ed.	RDP	Project description	Upflow Performance Software with RO link			+			Total
Modification	Date	Name		Project number	134022						
				Responsible	Johan Creten						

Cable diagram

Cable name WS			Cable type LIYY-JZ					
Function text CABLE SIGNAL EXTENSION WATERPULSATION			No. of conductors 3G			Cross-section 1,5		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				

1014		Date	4/09/2018	Labovert name	ML		Cable connection list W5	=	LISTS	PAGE 1015	1016
		Ed.	RDP	Project description	Workflow Performance Software with RCO link						
Modification	Date	Name		Project number	134022			Responsible	JOHAN CRETEN		
									Total	53	

Cable diagram

Cable name W5			Cable type LIYY-JZ					
Function text CABLE BRINE PUMP			No. of conductors 3G			Cross-section 1,5		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				

1015										1017									
			Date	4/09/2018	Cabinet name	HC		Cable connection list W6	=	LISTS	PAGE	1016							
			Est.	RDP		Project description			Hyflow Performance Software with RD link										
						Project number			134022										
Modification	Date	Name				Responsible			John Cretten				Total	53					

Cable diagram

Cable name W7			Cable type LVY-JZ					
Function text CABLE WATER METER INPUT			No. of conductors 3G			Cross-section 0,75		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
WATER METER INPUT [OPTIONAL]	=INSTALLATION+MC/400.2	=INSTALLATION+MC-X3	=		=INSTALLATION+EXT-400J2	1	=INSTALLATION+MC/400.2	WATER METER INPUT [OPTIONAL]
=	=INSTALLATION+MC/400.2	=INSTALLATION+MC-X3	1		=INSTALLATION+EXT-400J2	2	=INSTALLATION+MC/400.2	=

1016										1018									
			Date	4/09/2018	Cabinet name	M1		Cable connection list W7	=	LISTS	PAGE	1017							
			Ed.	RDP	Project description	Upgrade Performance Software with RO link			+										
Modification	Date	Name			Project number	134022						Total	53						
					Responsible	Johan Cretien													

Cable diagram

Cable name WS			Cable type LDYY-JZ					
Function text CABLE WATER METER OUTLET			No. of conductors 3G			Cross-section 0,75		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
WATER METER OUTLET	=INSTALLATION+MC/400.3	=INSTALLATION+MC-X3	+		=INSTALLATION+EXT-400U3	1	=INSTALLATION+MC/400.3	WATER METER OUTLET
=	=INSTALLATION+MC/400.3	=INSTALLATION+MC-X3	2		=INSTALLATION+EXT-400U3	2	=INSTALLATION+MC/400.3	=

1017										1018	
		Date	4/09/2018	Cabinet name	MC		Cable connection list W8	= LISTS	PAGE	1018	
		Ed.	RDP	Project description	Lifflow Performance Softener with RO Ink			+	Total	5.1	
Modification	Date	Name		Project number	134022						
				Responsible	Johan Creten						

Cable diagram

Cable name W9			Cable type LIYY-JZ					
Function text CABLE RELEASE VALVE 6			No. of conductors 3G			Cross-section 0,75		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
RELEASE VALVE 6	=INSTALLATION+MC/400.4	=INSTALLATION+MC-XI	+		=INSTALLATION+EXT-400S1	13	=INSTALLATION+MC/400.4	RELEASE VALVE 6
+	=INSTALLATION+MC/400.4	=INSTALLATION+MC-XI	3		=INSTALLATION+EXT-400S1	14	=INSTALLATION+MC/400.4	+

1018										1020	
		Date	4/09/2018	Contract name	MC		Cable connection list W9	= LISTS	PAGE	1019	
		Ed.	RDP	Project description	Upflow Performance Software with RO link			+		Total	
				Project number	134022						
Modification	Date	Name		Responsible	Johan Cretien						

Cable diagram

Cable name W10			Cable type LVYY-3Z					
Function text CABLE INHIBIT REGENERATION			No. of conductors 3G			Cross-section 0,75		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
INHIBIT REGENERATION	=INSTALLATION+MC/400,5	=INSTALLATION+MC-X3	+			13	=INSTALLATION+MC/400,5	INHIBIT REGENERATION
=	=INSTALLATION+MC/400,5	=INSTALLATION+MC-X3	+			14	=INSTALLATION+MC/400,5	=

10209										1021																	
		Costs		4/09/2018		Cabinet name		MC		 										Cable connection list W10		= LISTS		PAGE		10.20	
		Est.		RDP		Project description		Lignof Performance Softener with ISO line																			
						Project number		23422																			
Modification		Costs		Name				Responsible		JOHAN CANTON												+		Total		5.3	

Cable diagram

Cable name W11			Cable type LVYY-3Z					
Function text CABLE START REGENERATION			No. of conductors 3G		Cross-section 0,75		Cable length	
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
START REGENERATION	=INSTALLATION+MC/400,6	=INSTALLATION+MC-X3	+		=INSTALLATION+EDT-11U2	1	=INSTALLATION+MC/400,6	
=	=INSTALLATION+MC/400,6	=INSTALLATION+MC-X3	5		=INSTALLATION+EDT-11U2	3	=INSTALLATION+MC/400,6	

[illegible]

Cable diagram

Cable name W12			Cable type LIYY-JZ					
Function text CABLE FLOAT SWITCH BRINE TANK			No. of conductors 3G		Cross-section 0,75		Cable length	
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
FLOAT SWITCH BRINE TANK	=INSTALLATION+MC/400.0	=INSTALLATION+MC-X3	+		=INSTALLATION+EDT-400S2	13	=INSTALLATION+MC/400.0	FLOAT SWITCH BRINE TANK
=	=INSTALLATION+MC/400.0	=INSTALLATION+MC-X3	6		=INSTALLATION+EDT-400S2	14	=INSTALLATION+MC/400.0	=

1021		Date	4/09/2018	Contract name	HL			Cable connection list W12	= LISTS	1023	
		Est.	BDP	Project description	Hydro Performance Software with RIO link					PAGE	1022
Modification	Date	Name		Project number	134022				+	Total	53
				Responsible	Johan Crestes						

Cable diagram

Cable name W13			Cable type LDYY-JZ					
Function text CABLE PULSE METER BRINE			No. of conductors 5G			Cross-section 0,75		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				
				3				
				4				
PULSE METER BRINE	=INSTALLATION+MC/400,9	=INSTALLATION+MC-X3	+		=INSTALLATION+EXT-400X2	1	=INSTALLATION+MC/400,9	PULSE METER BRINE
=	=INSTALLATION+MC/400,9	=INSTALLATION+MC-X3	7		=INSTALLATION+EXT-400X2	2	=INSTALLATION+MC/400,9	=

1024

		Date	4/09/2018	Cabin name	MC		Project description	Cable connection list W13	= LISTS	PAGE	1023
		Ed.	RDP								
				Project number	134022						
Modification	Date	Name		Responsible	Johan Cretien				+		Total 53

Cable name W14			Cable type LNYY-3Z		Cross-section 0,75			Cable length
Function text MULTICABLE VALVES			No. of conductors 25G		Cross-section 0,75		Cable length	
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	
				GNYE				
VALVE 1	=INSTALLATION+MC/500.2	=INSTALLATION+MC-X4	1	1	=INSTALLATION+VC-500Y1	x1	=INSTALLATION+MC/500.2 VALVE 1	
=	=INSTALLATION+MC/500.2	=INSTALLATION+MC-X4	-	2	=INSTALLATION+VC-500Y1	x2	=INSTALLATION+MC/500.2 =	
VALVE 2	=INSTALLATION+MC/500.3	=INSTALLATION+MC-X4	2	3	=INSTALLATION+VC-500Y2	x1	=INSTALLATION+MC/500.3 VALVE 2	
=	=INSTALLATION+MC/500.3	=INSTALLATION+MC-X4	-	4	=INSTALLATION+VC-500Y2	x2	=INSTALLATION+MC/500.3 =	
VALVES 3/4	=INSTALLATION+MC/500.4	=INSTALLATION+MC-X4	3	5	=INSTALLATION+VC-500Y3	x1	=INSTALLATION+MC/500.4 VALVES 3/4	
=	=INSTALLATION+MC/500.4	=INSTALLATION+MC-X4	-	6	=INSTALLATION+VC-500Y3	x2	=INSTALLATION+MC/500.4 =	
VALVE 5	=INSTALLATION+MC/500.5	=INSTALLATION+MC-X4	4	7	=INSTALLATION+VC-500Y4	x1	=INSTALLATION+MC/500.7 VALVE 5	
=	=INSTALLATION+MC/500.7	=INSTALLATION+MC-X4	-	8	=INSTALLATION+VC-500Y4	x2	=INSTALLATION+MC/500.7 =	
VALVE 6	=INSTALLATION+MC/500.8	=INSTALLATION+MC-X4	5	9	=INSTALLATION+VC-500Y5	x1	=INSTALLATION+MC/500.8 VALVE 6	
=	=INSTALLATION+MC/500.8	=INSTALLATION+MC-X4	-	10	=INSTALLATION+VC-500Y5	x2	=INSTALLATION+MC/500.8 =	
VALVE 1'	=INSTALLATION+MC/501.5	=INSTALLATION+MC-X4	6	11	=INSTALLATION+VC-501Y1	x1	=INSTALLATION+MC/501.5 VALVE 1'	
=	=INSTALLATION+MC/501.5	=INSTALLATION+MC-X4	-	12	=INSTALLATION+VC-501Y1	x2	=INSTALLATION+MC/501.5 =	
VALVE 2'	=INSTALLATION+MC/501.6	=INSTALLATION+MC-X4	7	13	=INSTALLATION+VC-501Y2	x1	=INSTALLATION+MC/501.6 VALVE 2'	
=	=INSTALLATION+MC/501.6	=INSTALLATION+MC-X4	-	14	=INSTALLATION+VC-501Y2	x2	=INSTALLATION+MC/501.6 =	
VALVES 3'/4'	=INSTALLATION+MC/501.7	=INSTALLATION+MC-X4	8	15	=INSTALLATION+VC-501Y3	x1	=INSTALLATION+MC/501.7 VALVES 3'/4'	
=	=INSTALLATION+MC/501.7	=INSTALLATION+MC-X4	-	16	=INSTALLATION+VC-501Y3	x2	=INSTALLATION+MC/501.7 =	
VALVE 5'	=INSTALLATION+MC/502.3	=INSTALLATION+MC-X4	9	17	=INSTALLATION+VC-502Y1	x1	=INSTALLATION+MC/502.3 VALVE 5'	
=	=INSTALLATION+MC/502.3	=INSTALLATION+MC-X4	-	18	=INSTALLATION+VC-502Y1	x2	=INSTALLATION+MC/502.3 =	
VALVE 6'	=INSTALLATION+MC/502.4	=INSTALLATION+MC-X4	10	19	=INSTALLATION+VC-502Y2	x1	=INSTALLATION+MC/502.4 VALVE 6'	
=	=INSTALLATION+MC/502.4	=INSTALLATION+MC-X4	-	20	=INSTALLATION+VC-502Y2	x2	=INSTALLATION+MC/502.4 =	
COMPRESSED AIR PRESENT	=INSTALLATION+MC/400.1	=INSTALLATION+MC-X4	+	21	=INSTALLATION+MC-400U1	1	=INSTALLATION+MC/400.1 COMPRESSED AIR PRESENT	
=	=INSTALLATION+MC/400.1	=INSTALLATION+MC-X4	11	22	=INSTALLATION+MC-400U1	3	=INSTALLATION+MC/400.1 =	
				23				
				24				

MAN – CSOFT MV UFS – 2018 v02 (EN)

Cable diagram

Cable name W15			Cable type LDY-JZ					
Function text CABLE ALARM CONTACT 2			No. of conductors 3G			Cross-section 1,5		Cable length
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
				GNYE				
				1				
				2				

1024										1026									
			Date	4/09/2018	Cabinet name	ME		Cable connection list W15	= LISTS	PAGE	1025								
			Ed.	RDP	Project description	Liflow Performance Software with R3 link													
					Project number	134022													
Modification	Date	Name			Responsible	Johan Creten													
								+		Total	53								

Cable diagram

Cable name W16			Cable type PUR					
Function text CABLE PRESSURE MEASUREMENT INLET			No. of conductors 4			Cross-section 0,34		Cable length 25
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
	=INSTALLATION+MC/601.0	=INSTALLATION+MC/XS	+	BN	=INSTALLATION+FIELD-601U2	1	=INSTALLATION+MC/601.0	
PRESSURE MEASUREMENT INLET	=INSTALLATION+MC/601.1	=INSTALLATION+MC/XS	1	BU	=INSTALLATION+FIELD-601U2	3	=INSTALLATION+MC/601.1	PRESSURE MEASUREMENT INLET

1025			Date	4/09/2018	Callback name	MR		Cable connection list W16	=	LISTS	PAGE 1026	1027	
			Ed.	RIP	Project description	Upflow Performance Software with RCI link							
Modification	Date	Name			Project number	134022						+	Total

Cable diagram

Cable name W17			Cable type PUR					
Function text CABLE PRESSURE MEASUREMENT OUTLET			No. of conductors 4		Cross-section 0,34		Cable length 25	
Function text	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function text
PRESSURE MEASUREMENT INLET	=INSTALLATION+MC/601	=INSTALLATION+MC-XS	+	BN	=INSTALLATION+FIELD-601U3	1	=INSTALLATION+MC/601	
PRESSURE MEASUREMENT OUTLET	=INSTALLATION+MC/601	=INSTALLATION+MC-XS	2	BU	=INSTALLATION+FIELD-601U3	3	=INSTALLATION+MC/601	PRESSURE MEASUREMENT OUTLET

1026

		Date	4/09/2018	Cable name	M1		Cable connection list W17	= LISTS	PAGE 1028
		Ed.	RDP	Project description	Upflow Performance Software with RQ link				
				Project number	134022				
Modification	Date	Name		Responsible	Johan Cretien			+	TOTAL 53

1038

Cable diagram

Cable name W18			Cable type LIYYC-JZ					
Function test CABLE MEASUREMENT ELECTRICAL CONDUCTIVITY			No. of conductors 5G			Cross-section 0,75		Cable length 25
Function test	Page / column	Target designation from	Connection point	Conductor	Target designation to	Connection point	Page / column	Function test
				GNYE				
MEASUREMENT ELECTRICAL CONDUCTIVITY	=INSTALLATION+MC/601.5	=INSTALLATION+MC/XS	+	1	=INSTALLATION+FIELD-601U1	1	=INSTALLATION+MC/601.5	MEASUREMENT ELECTRICAL CONDUCTIVITY
"	=INSTALLATION+MC/601.5	=INSTALLATION+MC/XS	-	2	=INSTALLATION+FIELD-601U1	2	=INSTALLATION+MC/601.5	
"	=INSTALLATION+MC/601.5	=INSTALLATION+MC/XS	3	3	=INSTALLATION+FIELD-601U1	3	=INSTALLATION+MC/601.5	MEASUREMENT ELECTRICAL CONDUCTIVITY
"	=INSTALLATION+MC/601.5	=INSTALLATION+MC/XS	4	4	=INSTALLATION+FIELD-601U1	4	=INSTALLATION+MC/601.5	
				SH				

1027												1029	
		Date	4/09/2018	Cabinet name	MC		Cable connection list W18	=	LISTS	PAGE	1028		
		Ed.	RDP	Project description	Upflow Performance Softener with RO link								
Modification	Date	Name		Project number	134022			+			Total		
				Responsible:	John Cretton								

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Cable diagram

Cable name			W19			Cable type			LTYCY-IZ						
Function text			MEASUREMENT WATER HARDNESS			No. of conductors		3G		Cross-section		0,75		Cable length	
Function text		Page / column		Target designation from		Connection point	Conductor	Target designation to		Connection point	Page / column		Function text		
							GNYE								
MEASUREMENT WATER HARDNESS		=INSTALLATION+MC/601.7		=INSTALLATION+MC/X5		5	1	=INSTALLATION+FIELD-1U2		4+	=INSTALLATION+MC/601.7		MEASUREMENT WATER HARDNESS		
=		=INSTALLATION+MC/601.9		=INSTALLATION+MC/X5		6	2	=INSTALLATION+FIELD-1U2		4-	=INSTALLATION+MC/601.9				
							SH								

1028

Date

4/09/2018

Cabinet name

MC

Ed.

RDP

Project description

Upflow Performance Softener with RO line

Project number

134022

Responsible

Johan Cretten

HYDRIS

HYDRIS

Cable connection list W19

= LISTS

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PAGE

1029

Total

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2000

9. Parts list

	CSoft MV UFS D18	CSoft MV UFS D21	CSoft MV UFS D24	CSoft MV UFS D30
Vessel & Distribution system				
Vessel	0101023391	0101023393	0101023394	0101023395
Top distributor	0201023740	0201023740	0201023740	0201023740
Bottom distributor	0201023750	0201023752	0201023752	0201023754
Filter media				
Inert resins Bags of 25L	0801010005			
Monodisperse resins Bags of 25L	0801010001			
Support layer (1,7-2,5 mm) Bags of 25kg	0901016151			
Pneumatic valves				
IN	1909010064			1909010065
OUT	1909010064			1909010065
DRAIN	1909010060	1909010061		1909010062
BRINE	1909010060			1909010061
Instrumentation				
Pressure transmitter	On request			
Flow pulsmeter - water	2803010005			2803010006
Flow pulsmeter - brine	2803010013			2803010014
Conductivity meter	4810030001			
Hardness monitor	4802020003			
Hardness indicator	4802030022			
Solenoid valve	1908025125			
PLC Controller	4709010001			
Brine tank & accessories				
Brine tank	0602078339		0602011187	0602011255
injector	1902018128			1902011575
Flow meter	4807010009			4807010011

	CSoft MV UFS D36	CSoft MV UFS D42	CSoft MV UFS D48	CSoft MV UFS D55	CSoft MV UFS D63
Vessel & Distribution system					
Vessel	0101033428	0101033429	0101033430	0101033431	0101033435
Top distributor	0201043804	0201043814	0201043832	0201043834	0201043836
Bottom distributor	0201043812	0201043822	0201043832	0201043834	0201043836
Filter media					
Inert resins Bags of 25L	0801010005				
Resins Bags of 25L	0801010001				
Support layer (1,7-2,5 mm) Bags of 25kg	0901016151				
Pneumatic valves					
IN	1906012055	1906012056	1906012057		
OUT	1906012061	1906012062	1906012063		
DRAIN	1909010063		1909010063	1909010064	
BRINE	1909010061	1909010062			1909010063
Instrumentation					
Pressure transmitter	On request				
Flow pulsmeter - water	2803000007	2803000008	2803000009		
Flow pulsmeter - brine	2803010014	2803010015			2803010016
Conductivity meter	4810030001				
Hardness monitor	4802020003				
Hardness indicator	4802030022				
Solenoid valve	1908025125				
PLC Controller	4709010001				
Brine tank & accessories					
Brine tank	0602011259		0602011261	0602011263	On request
injector	1902011575	1902011576	1902010045		1902010046
Flow meter	4807010011	4807010013	4807010014	4807010016	

10.EC declaration

EC DECLARATION OF CONFORMITY FOR MACHINERY

(Directive 89/392/EEC)

Manufacturer: Hydris bvba
Address : Textielstraat 13, 8790 Waregem, Belgium

Hereby declares that:

the water treatment system with our reference 'Pallas Duplex Upflow Softener', consisting of:

- Composite tank Pentair (97/23/EC)
- Pneumatic controlled valves Gemü (2014/68/EU)
- Lewatit resins (EU 1935/2004 – RESAP(2004)3)
- Siemens S7 control panel (2014/35/EU)
- Digital pressure sensors IFM (2011/65/EU & 2014/30/EU)
- Conductivity meter E+H (2014/30/EU)
- Residue hardness meter Sycon (2014/35/EU)

complies with the provisions of the Machinery directive (Directive 89/392/EEC, as amended), and with the national legislation for the implementation of this directive and its additions.

Drawn up in Waregem (Belgium), on 3 October 2017

Johan Creten
General Manager